APPENDIX 2

TABLES ON OCCURRENCE (PCDFs)

Table 1. Concentrations of PCDFs in air

Reference	Origin; sample description (and no.)		Coll. period	Samp. meth. / Anal. meth.	PCDF concentration (pg/m³)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Austria														
Christmann *et al.* (1989b)	Brixlegg; ~ 280 m from Cu reclamation plant	(1)	2/88	G/P	1.9	2.5	1.4	0.9	0.7	ND	0.7	3.0	ND	1.1
		(1)	5/88	CSI	2.0	2.1	0.9	0.8	0.8	ND	0.7	4.6	ND	ND
		(1)	6/88		1.9	1.3	0.6	0.4	0.3	ND	0.2	0.9	0.07	0.9
		(1)	7/88		2.0	2.3	1.0	0.7	0.7	ND	0.4	2.7	0.1	0.8
Belgium														
Wevers *et al.* (1992)	Antwerp; tunnel air	(1)	91	G/P BSN	0.0013	0.0072	0.0193	0.0073	0.0093	0.0143	0.0004	0.005	0.0007	0.0003
Canada														
Steer *et al.* (1990a)	SW Ontario; burning tyre dump		2/90	G/P CSO										
	1 km downwind	(5)			I-TEQ for PCDFs only, 0.012–2.2									
	3 km downwind	(4)			I-TEQ for PCDFs only, 0.032–0.23									
Germany														
Bruckmann & Hackhe (1987)	Hamburg;			G/P/S										
	Dump site	(1)	2/85	BSI	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	ND	ND	0.27
	Dump site, oil	(1)	4/85		< 0.1	–	–	–	–	–	–	< 0.2[a]		< 0.2
	Residential, west of dump	(2)	4/85 3/86		< 0.1–0.12	0.09	0.08	0.46	0.42	< 0.03	0.09	< 0.2–0.47[a]		< 0.3–0.19
	Residential, highway, dump, industrial	(5)	85–87		0.04–0.37	0.06–1.06	0.05–1.2	0.08–1.1	0.06–1.4	< 0.01–0.33	0.02–0.80	1.0–5.1[a]		0.14–7.0
	Close to copper industry	(2)	1 & 2/87		0.04–0.16	0.07–0.16	0.04–0.05	0.04	0.11–0.13	0.01	0.03–0.05	0.41–0.70[a]		0.1–0.25
	Industry, highway	(2)	1 & 10/86		0.23–0.38	0.29–0.42	0.25–0.43	0.27–0.36	0.24–0.31	< 0.02–0.05	0.10–0.12	2.0–3.6[a]		0.78–< 2.6
	Industry, 2 MWI	(2)	85–86		0.36–0.5	0.17–0.79	0.47	0.12–0.5	0.09–0.50	< 0.03–0.08	0.05–0.36	0.20–4.2[a]		< 0.06–< 0.97
	Highway tunnel	(2)	1/86		0.17–0.72	0.36–0.40	0.19	0.13–0.26	0.15–0.16	< 0.05	< 0.05–0.12	1.2–1.9[a]		< 1.0–< 1.3
	Suburb, highway	(1)	9/86		0.04	0.06	< 0.03	< 0.03	0.12	< 0.04	< 0.04	0.59[a]		0.50
	Suburb (north)	(1)	8/86		< 0.02	< 0.02	< 0.02	0.03	< 0.03	< 0.03	< 0.03	0.23[a]		0.10
	Suburb (13 km SE)	(1)	4/86		0.04	0.04	0.03	0.03	0.03	< 0.01	0.03	0.10[a]		< 0.11
	Forest (20 km N)	(1)	4/86		< 0.05	< 0.02	< 0.02	< 0.03	< 0.03	< 0.03	< 0.03	ND	ND	< 0.12

Table 1 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Samp. meth. / Anal. meth.	PCDF concentration (pg/m³)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Kirschmer (1987)	Rhine-Ruhr; Mean of 11 sites/wide range of uses	(33)	85–86	G/P CSI	0.09	0.14	0.10	0.13	0.08	–	0.14	1.02[2] (total HpCDFs)		0.49
Christmann *et al.* (1989b)	Ambient air; Berlin-Dahlem	(10)	1/87	G/P CSI	ND	ND	ND	< 0.1	< 0.1	ND	ND	1.6	ND	0.2
	Bad-Kreuzberg	(1)	2/88		ND	ND	ND	ND	ND	ND	ND	0.3	ND	ND
	Gelsenkirchen	(5)	87–88		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	ND	< 0.1	0.7	ND	ND
	Recklinghausen	(3)	5–9/87		ND–0.2	ND	ND	ND–0.5	ND–0.5	ND	ND–0.6	ND–3.7	ND–0.6	ND–1.3
	Indoor air; PCP application	(1)			ND	ND	ND	0.5	1.0	0.2	0.4	19.5	ND	10.3
Päpke *et al.* (1989a)	Indoor air; PCP application	(1)	86	G/P BSI	< 0.01	0.04	0.04	0.74	1.98	0.16	0.17	51.0	0.40	25.3
König *et al.* (1993)	Hessen; ambient air		90	G/P										
	Rural	(21)		BSI	0.024	0.031	0.032	0.060	0.029	0.005	0.024	0.107	0.011	0.08
	Rural/industry	(21)			0.040	0.049	0.052	0.087	0.051	0.008	0.040	0.168	0.013	0.11
	Rural/industry	(21)			0.037	0.049	0.049	0.085	0.048	0.009	0.037	0.155	0.014	0.13
	Industry	(21)			0.065	0.104	0.098	0.157	0.108	0.021	0.083	0.553	0.029	0.48
	Industry	(21)			0.056	0.089	0.072	0.145	0.068	0.010	0.053	0.197	0.014	0.14
	Traffic	(21)			0.040	0.050	0.053	0.085	0.051	0.008	0.038	0.163	0.013	0.13
Hippelein *et al.* (1996)	Augsburg; ambient air (mean)			G/X BSI										
	March–April	(6)	92		0.027	0.023	0.023	0.023	0.016	–	0.023	0.062	0.010	< 0.059
	April–May	(6)	92		0.015	0.013	0.013	0.011	< 0.009	–	0.013	0.033	0.007	0.035
	June–July	(6)	92		< 0.010	0.008	0.009	0.008	0.006	–	0.009	0.026	0.004	0.024
	July–September	(6)	92		0.009	0.007	0.009	< 0.008	< 0.006	–	0.010	0.033	0.004	< 0.028
	Sept.–October	(6)	92		0.023	0.022	0.027	< 0.029	< 0.021	–	< 0.023	0.064	0.012	0.064
	Oct.–November	(6)	92		0.037	0.035	0.038	0.038	0.025	–	0.030	0.086	0.017	0.079
	Nov.–January	(6)	92–93		0.063	0.091	0.080	0.080	0.057	–	0.048	0.180	0.029	0.120
	January–February	(6)	93		0.047	< 0.051	0.059	0.050	0.039	–	0.044	0.120	0.018	0.098
	Mean of mean	(48)	92–93		0.029	0.031	0.032	0.031	0.022	–	0.025	0.076	0.012	0.063

Table 1 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Samp. meth. / Anal. meth.	PCDF concentration (pg/m³)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Menzel *et al.* (1966)	Workplace air;		95	G/P/Ps N										
	Welding, MWI1 boiler pipes	(1)						Total 2,3,7,8-PCDF isomers, 833						
	Welding, MWI2 waste chute	(2)						Total 2,3,7,8-PCDF isomers, 238–1142						
	Milling, MWI1 boiler pipes	(1)						Total 2,3,7,8-PCDF isomers, 1451						
	Fitting, MWI1 waste chute	(2)						Total 2,3,7,8-PCDF isomers, 31 549–37 509						
	Fitting, MWI2 waste chute	(2)						Total 2,3,7,8-PCDF isomers, 897–2947						
	Air burning, MWI2 waste chute	(2)						Total 2,3,7,8-PCDF isomers, 415–8319						
	Cutting/welding, wood chip dryer	(1)						Total 2,3,7,8-PCDF isomers, 18						
	Open-air burning, power plant dem.	(2)						Total 2,3,7,8-PCDF isomers, 1651–2415						
	Open-air burning, metal reclamation 1	(2)						Total 2,3,7,8-PCDF isomers, 773–4804						
	Open-air burning, metal reclamation 2	(2)						Total 2,3,7,8-PCDF isomers, 2329–7825						
Japan														
Sugita *et al.* (1993)	Urban area; ambient air, mean summer	(2)	92	G/P BSI	0.173	0.401	0.484	0.687	0.714	0.261	1.381	5.020	0.630	5.338
	Ambient air, mean winter	(2)			0.308	0.868	0.898	1.317	1.308	0.233	2.321	5.948	0.771	5.588

Table 1 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Samp. meth. / Anal. meth.	PCDF concentration (pg/m^3)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Norway														
Oehme *et al.* (1991)	Tunnel air; *Northbound*		89	G/P CSI										
	Inlet, weekday	(1)			0.053	0.075	0.063	0.061	0.048	0.004	0.042	0.12	0.012	0.28
	Outlet, weekday	(1)			0.63	0.90	0.84	0.85	0.67	0.042	0.78	1.9	0.23	1.9
	Inlet, weekend	(1)			0.12	0.067	0.045	0.10	0.074	< 0.003	0.037	0.27	0.033	0.96
	Outlet, weekend	(1)			0.191	0.82	0.62	0.44	0.38	0.037	0.17	1.2	0.17	3.5
	Southbound													
	Inlet, weekday	(1)			0.14	0.079	0.075	0.11	0.087	0.011	0.057	0.33	0.046	1.1
	Outlet, weekday	(1)			0.23	0.14	0.11	0.33	0.26	0.012	0.14	2.7	0.54	2.0
	Inlet, weekend	(1)			0.060	0.054	0.035	0.16	0.12	0.013	0.039	0.63	0.11	2.2
	Outlet, weekend	(1)			0.180	0.10	0.053	0.17	0.20	–	0.059	0.39	0.043	3.5
Schlabach *et al.* (1996)	Spitzbergen, arctic;	(1)	5/95	G/P	0.0006	0.0013	0.0016	0.0030	0.0024	0.0004	0.0008	–	–	–
	ambient air	(1)	8/95	BSI	0.0005	0.0016	0.0007	0.0014	0.0014	0.0007	0.0004	0.0022	0.0013	0.0038
Poland														
Grochowalski *et al.* (1995)	Cracow centre;		3/95	G/P										
	Market square	(1)		CSI	0.38	0.26	0.51	0.79	0.6	0.25	0.58	5.55	1.35	7.5
	Mateczny crossroad	(1)			3.75	4.25	7.4	8.8	7.5	2.65	9.9	110	42	220
Russian Federation														
Kruglov *et al.* (1996)	Oil fire; residential area		96	BSO										
	100 m downwind	(1)			0.65	0.19	0.24	0.28	0.26	0.30	0.37	0.67	0.44	2.00
	100 m upwind	(1)			0.42	0.13	0.16	0.12	0.10	0.05	0.08	0.21	0.05	0.22

Table 1 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Samp. meth. / Anal. meth.	PCDF concentration (pg/m³)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Spain														
Abad *et al.* (1996)	Catalonia (ambient air)		93–95	G/P BSI										
	Urban, traffic	(8)			0.105	0.055	0.116	1.029	0.075	0.094	0.009	0.298	0.045	0.128
	Rural, near MWI	(12)			0.042	0.012	0.029	0.046	0.027	0.035	0.004	0.120	0.016	0.126
	Urban	(3)			0.313	0.030	0.063	0.180	0.073	0.097	< 0.001	0.387	0.043	1.213
	Urban	(3)			0.273	0.020	0.047	0.127	0.050	0.077	0.003	0.287	0.033	1.810
	MWI influence	(2)			0.535	0.115	0.230	0.595	0.210	0.315	0.015	3.425	0.335	126.8
	Industrial, MWI influence, traffic	(3)			0.377	0.027	0.127	0.413	0.217	0.387	0.020	1.380	0.200	4.090
	Heavy industry near	(2)			0.205	0.015	0.035	0.080	0.030	0.040	< 0.001	0.220	0.020	1.550
	MWI	(2)			0.350	0.225	0.410	0.480	0.425	0.450	0.020	1.300	0.110	0.755
Sweden														
Rappe *et al.* (1989a)	Rörvik; ambient air			G										
	Wind WSW	(1)	9/85	BSI	< 0.003	0.002	0.002	0.002	0.002	< 0.001	0.002	0.024[c] (total HpCDFs)		0.026
		(1)	1/86		0.005	0.007	0.006	0.008	0.008	0.003	0.007	0.120[c] (total HpCDFs)		0.100
	Wind W, N & E	(1)	1/86		0.015	0.018	0.027	0.021	0.017	0.004	0.018	0.190[c] (total HPCDFs)		0.270
	Wind E & N	(1)	1/86		0.062	0.058	0.069	0.038	0.033	0.014	0.032	0.500[c] (total HpCDFs)		0.440
	Wind SE	(1)	2/86		0.008	0.011	0.009	0.011	0.011	0.004	0.015	0.200[c] (total HpCDFs)		–
	Wind NE	(1)	2/86		0.016	0.017	0.018	0.014	0.014	0.003	0.017	0.200[c] (total HpCDFs)		0.140
	Gothenburg; ambient air													
	Wind W, N & E	(1)	1/86		0.030	0.039	0.051	0.023	0.020	0.004	0.010	0.200[c] (total HpCDFs)		0.150
	Wind E & N	(1)	1/86		0.240	0.190	0.240	0.100	0.079	0.0017	0.084	1100[c] (total HpCDFs)		0.480
	Wind SE	(1)	2/86		0.011	0.019	0.021	0.019	0.018	0.006	0.022	0.260[c] (total HpCDFs)		0.360
United Kingdom														
Clayton *et al.* (1993)	Ambient;			N										
	Cardiff	(42)	1/91–9/92	B	Mean (range) 2,3,7,8-isomers, 0.78 (ND–11)									
	Manchester	(43)	3/91–9/92		Mean (range) 2,3,7,8-isomers, 1.1 (ND–18)									
	London	(43)	1/91–11/92		Mean (range) 2,3,7,8-isomers, 0.48 (ND–7.1)									
	Stevenage	(43)	1/91–4/92		Mean (range) 2,3,7,8-isomers, 0.36 (ND–7.8)									

Table 1 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Samp. meth. / Anal. meth.	PCDF concentration (pg/m³)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
United States														
Smith *et al.* (1989)	Niagara Falls; ambient air			G/P CSO										
	Downwind from	(1)	11/86		0.33	0.1	0.13	0.22	0.14	ND	0.11	0.55		0.39
	industry	(1)	11/86		3.81	0.61	1.92	ND	1.17	0.1	2.17	5.43		3.38
		(1)	1/86		0.28	0.03	ND	0.1	0.05	ND	ND	0.26		0.10
	Upwind from	(1)	11/86		0.08	ND	ND	ND	ND	ND	ND	ND	ND	0.12
	industry	(1)	1/87		0.14	ND	ND	0.06	0.02	ND	0.04	0.15	ND	0.12
		(1)	2/87		0.04	ND	ND	ND	ND	ND	ND	ND	ND	0.16
Edgerton *et al.* (1989)	Akron;		11–12/	G/P	0.20	0.026	0.032	0.100	0.055	0.039	< 0.036	0.25	< 0.035	0.19
	2 km from MWI		87	BSN	0.20	0.033	0.042	0.053	0.048	0.036	< 0.021	0.24	< 0.022	0.17
					0.19	0.029	0.034	0.095	0.092	0.020	< 0.005	0.22	0.031	0.18
	Columbus;													
	3/4 km from RDF				0.32	0.032	< 0.023	0.060	0.092	0.038	< 0.028	0.20	< 0.015	< 0.31
	1/4 km from SSI				0.49	0.057	0.089	0.270	0.190	0.120	< 0.012	0.47	< 0.028	0.21
	Highway				< 0.13	< 0.036	< 0.036	< 0.034	< 0.034	< 0.034	< 0.034	0.087	< 0.013	< 0.16
	Waldo; Background				0.13	0.021	< 0.033	0.098	0.014	0.097	< 0.008	0.22	0.019	0.077
Hahn *et al.* (1989)	Workplace air;		1/88	G/P/X										
	Bottom ash conveyor			N	0.069	0.012	ND	0.032	ND	ND	ND	0.107	ND	0.166
	Feed table floor				0.095	0.015	ND	0.052	ND	ND	ND	0.149	ND	0.254
Tiernan *et al.* (1989)	Dayton, OH; ambient air, near MWI		88	N	0.11	0.46	0.53	1.18	2.27	ND	ND	8.22	0.56	3.78
Kominsky & Kwoka (1989)	Boston;		9/86	G/Si										
	Office building	(12)		CN	< 0.37–1.4	< 0.012–1.9			< 0.09–0.36			< 0.39–< 1.5		< 0.54–< 1.8
	Ambient air	(4)			< 0.72–0.83	< 0.23–1.2			< 0.11–0.29			< 0.51–< 1.5		< 0.51–< 2.8
Harless *et al.* (1990	Green Bay, WI; ambient air	(4)	89	G/P BSI	< 0.01–0.04	0.02–0.09	< 0.02–0.07	0.01–0.05	0.01–0.04	< 0.01–< 0.02	< 0.01–< 0.02	0.03–0.15	< 0.01–0.01	0.02–0.2
Hunt & Maisel (1990)	Bridgeport, CT; ambient air	(29)	87–88	G/P BSI	[3]0.078	0.031	0.047	0.106	0.039	0.007	0.087	0.212	0.033	0.211

Table 1 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Samp. meth. / Anal. meth.	PCDF concentration (pg/m³)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Maisel (1990)	Bridgeport MWI; Ambient, pre-operational	(22)	87–88	G/P BSI	[3]0.062	0.032	0.049	0.11	0.041	< 0.010	0.10	0.22	0.031	–
Maisel & Hunt (1990)	Los Angeles, CA; Ambient	(1)	W/87	G/P BSI	0.021	0.077	0.077	0.150	0.250	< 0.083	< 0.069	< 0.190	< 0.018	0.056
Hunt & Maisel (1992)	S. California			G/P										
	Session I	(6)	12/87	BSI	0.046	0.401	0.098	0.188	0.407	< 0.070	< 0.298	< 1.162	< 0.094	0.108
	Session II	(2)	12/87		< 0.032	< 0.016	< 0.016	< 0.044	< 0.018	< 0.012	< 0.020	< 0.140	< 0.014	0.048
	Session III	(5)	7/88		< 0.022	< 0.068	< 0.068	< 0.060	< 0.060	< 0.060	< 0.060	< 0.160	< 0.088	< 0.073
	Session IV	(6)	7/88		< 0.048	< 0.050	< 0.050	< 0.068	< 0.052	< 0.046	< 0.052	< 0.272	< 0.078	< 0.148
	Session V	(7)	9/88		0.047	< 0.034	< 0.062	< 0.080	< 0.044	< 0.020	< 0.038	0.375	< 0.054	0.546
	Session VI	(1)	11/88		0.011	< 0.040	< 0.044	< 0.066	< 0.066	< 0.046	< 0.066	0.251	< 0.062	< 0.436
	Session VII	(6)	3/89		0.107	< 0.028	< 0.012	< 0.032	< 0.034	< 0.054	< 0.042	< 0.104	< 0.026	0.187
	Mean, all sessions	(33)			0.048	< 0.196	< 0.074	< 0.124	< 0.204	< 0.048	< 0.090	< 0.514	< 0.066	< 0.466

Analytical methods: All analyses use high-resolution gas chromatography; B, high-resolution mass spectrometry; C, low-resolution mass spectrometry; I, isomer-specific; O, others; N, no information; S, sophisticated clean-up (see Table 5 and Section 1.1.4 in monograph on PCDDs in this volume)

Sampling methods: G, glass fibre filter; P, polyurethane foam; X, XAD; C, carbon; Si, silica; Ps, personal sampling

ND, not detected; MWI, municipal waste incinerator; SSI, sewage sludge incinerator; RDF, refuse-derived fuel incinerator

Data presented are means. Figures in parentheses are ranges. Levels of congeners not detected at known detection limits (for examples, 0.02 pg/m³) are presented as < 0.02

[a] Contains non-toxic isomers

[b] Including non-2,3,7,8-substituted isomers

Table 2. Concentrations of PCDFs in water

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (pg/L)									
					TCDF	PnCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Canada														
Muir *et al.* (1995)	Downstream of pulp mill; river water, dissolved phase	NG	92–93	BN	0.09–0.10	–	–	–	–	–	–	–	–	–
Japan														
Matsumura *et al.* (1994)	Coastal seawater	(1)	NG	BIS	0.050	0.020	0.035	0.028	0.020	< 0.005	0.055	0.380	0.390	0.560
Russian Federation														
Fedorov (1993)	Chapaevsk; Artesian drinking water		6–9/92	N		70.0	70.0		23.5		1.8	16.3		39.4
Sweden														
Rappe *et al.* (1989b)	Bälinge, Uppsala; MWTP ingoing water	(1)	87	BIS	< 3.7	< 5.1	< 6.1	< 9	< 6	< 20	< 10	23	< 5	25
	Bälinge, Uppsala; MWTP outgoing water	(1)	87		< 0.57	< 0.33	< 0.39	< 1	< 1	< 1	< 1	2	< 1.2	< 3.0
	Henriksdal, Stockholm; MWTP ingoing water	(1)	87		2.8	< 1.6	< 1.8	< 8	< 4	< 8	< 6	< 7	< 82	< 65
	Henriksdal, Stockholm; MWTP outgoing water	(1)	87		< 0.32	< 0.22	< 0.24	< 1	< 0.5	< 1	< 1	< 2	< 10	< 20
	Järnsjön; Eman river	(1)	87		0.026	0.025	0.019	0.026	0.025	0.022	0.027	0.130	0.058	0.360
	Fliseryd; Eman river	(1)	87		0.022	0.013	0.014	0.021	0.019	< 0.014	< 0.012	0.083	0.030	0.150
	Filtered water; Eman river	(1)	87		< 0.017	< 0.011	< 0.014	< 0.024	< 0.023	< 0.029	< 0.024	< 0.011	< 0.030	< 0.059

Table 2 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (pg/L)									
					TCDF	PnCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Sweden (contd)														
Rappe *et al.* (1989b) (contd)	Blank; Laboratory	(1)	87	BIS	< 0.016	< 0.011	< 0.014	< 0.033	< 0.032	< 0.039	< 0.032	< 0.015	< 0.040	< 0.099
Rappe *et al.* (1990a)	Ringhals, in; Sea cooling water	(1)	89	BIS	0.016	0.0032	0.0034	0.0068	0.0021	< 0.005	< 0.004	0.025	< 0.007	0.026
	Ringhals, out; Sea cooling water	(1)	89		0.013	0.0097	0.0068	0.0066	0.0020	< 0.006	< 0.004	0.019	< 0.007	< 0.015
	Ringhals, in; Sea cooling water	(1)	89		0.0072	0.0020	0.0025	0.0021	0.0012	< 0.001	0.0019	0.010	< 0.002	0.020
	Ringhals, out; Sea cooling water	(1)	89		0.0091	0.0021	0.0023	0.0025	0.0013	< 0.001	0.0012	0.012	< 0.002	0.018
	River Ljusnan	(3)	89		0.011	0.0036–0.0073	0.0059–0.010	0.005–0.011	0.0038–0.0082	< 0.007	0.0047–0.0091	0.023–0.058	0.0003–0.004	0.018–0.044
	River Ljungan	(1)	89		0.026	0.0079	0.0085	0.0095	0.0031	< 0.0006	0.002	0.099	< 0.0009	0.100
	Drinking water	(1)	89		0.0096	< 0.0003	0.0023	0.0007	0.0006	< 0.0005	< 0.0004	0.0003	< 0.001	< 0.006
United States														
Meyer *et al.* (1989)	Lockport; Finished water, S	(1)	8/86	C/BOS	1.2/1.2		< 1.1			< 0.7			< 0.8	0.8
	Finished water, PB	(1)			< 0.8		< 2.0			< 1.1			< 1.2	< 0.5
	Blank; Distilled water, S	(1)	9/86		< 1.4		< 1.0			< 0.8			< 3.7	< 1.5
	Distilled water, PB	(1)			< 0.9		< 0.8			< 0.5			< 2.7	< 0.9
	Lockport; Finished water, S	(1)	2/88		< 3.4		< 4.0			< 4.4			< 6.6	< 15
	Finished water, PB	(1)			< 3.6		< 4.0			< 4.3			< 5.1	< 11
	Lockport; Finished water, S	(1)	8/88		< 2.5		< 2.3			< 3.1			< 4.4	< 6.8
	Finished water, PB	(1)			< 2.9		< 2.2			< 2.1			< 3.6	< 7.8

Table 2 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (pg/L)									
					TCDF	PnCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
United States (contd)														
Meyer *et al.* (1989) (contd)	19 other locations; Finished water, S	(19)	86–87		ND (0.3–2.6)	ND (0.3–2.7)		ND (0.3–1.7)				ND (0.8–4.8)		ND (0.6–8.6)
	Finished water, PB	(19)			ND (0.3–2.7)	ND (0.4–2.6)		ND (0.3–1.7)				ND (0.7–12.4)		ND (0.5–48)

Analytical methods: All analyses use high-resolution gas chromatography; B, high-resolution mass spectrometry; N, no information; C, low-resolution mass spectrometry; I, isomer-specific; O, others; S, sophisticated clean-up (see Table 5 and Section 1.1.4 in monograph on PCDDs in this volume)

ND, not detected; detection limit in parentheses; MWTP, municipal water treatment plant; S, soluble; PB, particle-bound

Data presented are means. Figures in parentheses are ranges. Levels of congeners not detected at known detection limits (for examples, 0.02 pg/m^3) are presented as < 0.02.

Table 3. Concentrations of PCDFs in soil

Reference	Origin; sample description (and no.)	Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
				TCDF	PeCDF		HxCDF				HpCDF		OCDF
				2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Austria													
Boos *et al.* (1992)	Meadow; urban emission	90/91	CSI	ND	3.0	1.7	6.4	2.2	ND	1.9	11.3	ND	12.1
	Park; urban emission	90/91		ND	2.6	1.7	3.3	2.1	ND	ND	9.8	0.5	10.2
	Traffic island; heavy traffic	90/91		3.0	6.5	2.7	11.3	4.3	ND	ND	38.3	2.9	30.1
	Meadow; urban emission	90/91		6.1	4.2	2.2	2.7	3.6	ND	1.8	15.9	1.4	27.2
	Meadow; urban emission	90/91		ND	2.6	ND	1.3	2.1	ND	2.5	12.4	0.5	26.1
	Meadow; urban emission	90/91		ND	3.3	1.6	7.1	2.9	ND	2.8	16.6	1.8	20.9
	Meadow; urban emission	90/91		ND	1.7	ND	2.5	1.5	ND	3.9	26.2	4.2	45.6
	Park; urban emission	90/91		1.3	1.5	1.3	3.6	1.9	ND	5.4	12.0	ND	13.3
	Meadow; cable proc. plant	90/91		2.3	4.7	3.3	5.2	4.0	ND	5.5	19.0	1.8	30.1
	Meadow; cable proc. plant	90/91		3.8	13.4	5.3	14.0	5.2	1.2	3.2	18.5	4.1	12.8
	Meadow; cable proc. plant	90/91		2.2	2.3	2.8	3.2	2.9	ND	5.0	12.7	ND	3.5
	Meadow; diffuse emission	90/91		ND	2.7	1.7	5.1	3.2	2.8	4.1	13.5	ND	10.9
	Meadow; diffuse emission	90/91		ND	2.1	0.6	1.9	0.6	ND	ND	3.5	0.6	5.1
	Meadow; Diffuse emission, highway 100 m	90/91		ND	2.4	0.7	ND	ND	ND	ND	3.1	1.3	4.6
	Meadow; diffuse emission, highway 200 m	90/91		1.9	1.4	0.6	1.4	1.2	ND	ND	5.2	0.5	5.1
	Meadow; steel foundry	90/91		ND	1.7	0.8	1.8	0.8	ND	1.0	5.9	0.6	10.8
	Meadow; steel foundry	90/91		2.4	1.8	1.6	1.0	0.6	ND	1.2	5.7	0.5	6.8

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Austria (contd)														
Boos *et al.* (1992) (contd)	Meadow; industry		90/91	CSI	ND	3.3	2.3	4.2	2.5	ND	ND	8.2	ND	7.2
	Meadow; Alpine background		90/91		ND	ND	ND	ND	ND	ND	ND	5.4	ND	6.0
	Urban outskirts; 2ndary Al smelter	(1)	90/91		1.5	3.2	1.3	5.0	3.1	ND	2.6	20.3	1.3	52.7
	Urban outskirts; 2ndary Al smelter	(1)	90/91		2.5	6.7	3.5	6.9	6.2	ND	6.0	26.5	1.8	56.0
	Urban outskirts; diffuse emission	(1)	90/91		0.7	2.7	1.7	4.5	4.1	ND	9.6	20.8	0.8	11.3
	Meadow; highway 0.5 m	(1)	90/91		ND	4.9	2.0	3.9	2.4	ND	2.8	12.2	1.7	13.0
	Industrial area; metal smelter	(1)	90/91		12.0	7.3	11.1	9.3	6.9	ND	ND	85.0	ND	74.0
Canada														
Pearson *et al.* (1990)	Hamilton; vicinity incinerator	(11)	83	CSO					No other isomers reported					4 (ND–33)
	Scarborough; vicinity incinerator	(12)	87						No other isomers reported					43 (ND–230)
	Ontario; Rural soils	(1)	83		No other isomers reported									ND
	Rural soils	(26)	87						No other isomers reported					ND
	Rural soils	(15)	88						No other isomers reported					ND
	Rural soils	(1)	88						No other isomers reported					ND
	Ontario; Urban soils	(2)	83						No other isomers reported					41 (ND–81)
	Urban soils	(11)	87						No other isomers reported					19 (ND–160)
	Urban soils	(15)	88						No other isomers reported					77 (ND–600)
	Urban soils	(1)	88						No other isomers reported					ND

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
China, People's Republic														
Wu *et al.* (1995)	Ya-Er Lake area; soil 1	(1)	91–94	CSI	0.17	ND	0.05	0.49	ND	ND	0.04	0.01	ND	0.15
	Ya-Er Lake area; soil 2	(1)	91–94		ND	0.19	ND	0.45	ND	ND	ND	0.03	ND	0.13
Finland														
Assmuth & Vartiainen (1995)	Sawmill; depth, 0–0.5 m; soil	(10)	NG	BSI	15–3000	ND–530	ND–1 000	7500–800 000	ND–180	ND	ND–2200	20 000–1 200 000	ND	23 000–1 200 000
Germany														
Schlesing (1989)	Herbic. plant; Boring d., 1 m	(?)	< 89	NSI	TCDF-HpCDF only totals reported									1 661 000
	Herbic. plant; Boring d., 2 m	(?)	< 89		TCDF-HpCDF only totals reported									19 600
	Herbic. plant; Boring d., 3 m	(?)	< 89		TCDF-HpCDF only totals reported									17 600
	Herbic. plant; Boring d., 4 m	(?)	< 89		TCDF-HpCDF only totals reported									11 200
	Herbic. plant; Boring d., 1 m	(1)	< 89		TCDF-HpCDF only totals reported									61 200
	Herbic. plant; Boring d., 2 m	(1)	< 89		TCDF-HpCDF only totals reported									42 000
	Herbic. plant; Boring d., 3 m	(1)	< 89		TCDF-HpCDF only totals reported									27 100
	Herbic. plant; Boring d., 4 m	(1)	< 89		TCDF-HpCDF only totals reported									–
	Herbic. plant; Boring d., 5 m	(1)	< 89		TCDF-HpCDF only totals reported									700
	Herbic. plant; Boring d., 6 m	(1)	< 89		TCDF-HpCDF only totals reported									1 600
	Herbic. plant; Boring d., 7 m	(1)	< 89		TCDF-HpCDF only totals reported									261 000
	Herbic. plant; Boring d., 8 m	(1)	< 89		TCDF-HpCDF only totals reported									500

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Germany (contd)														
Schlesing (1989) (contd)	Herbic. plant; Boring d. 9 m	(1)	< 89		TCDF-HpCDF only totals reported									–
Hagenmaier *et al.* (1992)	Rastatt; site 1	(1)	87	BSI	24	25	20	36	21	4	18	110	12	80
		(1)	89		16	33	18	41	25	4	17	62	12	100
	Rastatt; site 2	(1)	87		5 000	8 240	5 240	7 010	3 880	740	3 280	20 900	2 860	14 200
		(1)	89		4 710	9 430	3 870	7 500	4 390	780	2 530	16 900	2 360	14 200
	Rastatt; site 3	(1)	87		440	780	480	880	470	70	370	2 200	280	1 700
		(1)	89		470	980	480	800	470	80	290	2 160	280	1 600
	Rastatt; site 4	(1)	87		250	420	300	610	330	70	260	1 770	220	1 400
		(1)	89		350	650	370	790	450	80	290	2 310	330	1 900
She & Hagenmaier (1996)	Rastatt; all samples[4]	(77)	87	BSI	140 (10–13 300)	350 (10–25 000)	240 (3–13 100)	390 (15–21 200)	240 (9–11 500)	21 (1–1470)	180 (6–7940)	1 010 (51–63 600)	120 (3–9630)	880 (40–37 000)
Theisen *et al.* (1993)	Kieselrot Cu slag		92	BSI	6 800	28 000	14 200	94 100	83 300	14 200	64 200	1 674 600	150 300	314 000
	Close to Kieselrot sport ground; garden soil		92		15	72	36	231	204	33	160	2988	200	8 120
	Corresponding standard soil		92		2.5	2	1.8	2.9	2.4	0.3	2.5	15.8	< 0.2	< 9
McLachlan & Reissinger (1990)	Field 1; no sludge[a]	(1)	89	CSI	0.64	0.72	0.88	0.57	0.45	0.06	0.39	3.0	0.20	2.8
	Field 2; sludge for 10 y[a]	(1)	89		0.63	1.6	0.89	2.0	0.94	0.19	0.59	7.4	0.38	9
	Field 3; sludge for 30 y[a]	(1)	89		2.1	4.2	2.7	5.4	3.2	0.70	1.3	19	1.1	29
	Meadow; sludge for 30 y[b]	(1)	89		2.4	6.4	5.9	9.7	3.8	1.1	1.9	31	1.6	43
	Sewage sludge	(1)	89		12	8.2	15	16	10	3.3	15	110	10	400

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Germany (contd)														
Rotard *et al.* (1994)	Ploughland	(14)	< 94	CSI	1.8 (0.7–3.4)	1.8 (0.5–3.4)	1.7 (0.7–3.1)	1.7 (0.9–3.3)	1.4 (0.7–2.4)	0.7 (0.5–0.9)	1.3 (0.7–2.8)	9.5 (3.2–25)	1.0 (0.4–1.6)	18 (3.3–54)
	Grassland	(7)	< 94		2.2 (0.7–3.6)	2.7 (0.9–5.0)	2.6 (1.2–5.3)	2.6 (1.0–4.8)	1.9 (0.7–3.7)	1.1 (0.7–1.8)	2.2 (0.1–3.7)	13.1 (4.6–34)	1.7 (0.8–2.8)	23.8 (7.4–82)
	Deciduous forest	(9)	< 94		25.4 (7.2–68)	36 (5.9–93)	30 (5.6–86)	35 (3.7–129)	26 (3.3–83)	7.6 (1.0–27)	18.6 (2.1–54)	184 (25–697)	15.8 (2.3–63)	390 (47–2142)
	Coniferous forest	(11)	< 94		27.9 (10.0–61)	36 (10.5–108)	32 (8.1–97)	25 (5.4–89)	21 (5.4–77)	4.4 (ND–16)	17.2 (4.1–63)	140 (23–646)	10.3 (1.6–50)	167 (18–985)
Jordan														
Alawi *et al.* (1996a)	Landfill, Amman;													
	Sample 1	(1)	95	CSI	< 10	644	494	377	372	< 10	581	1280	< 10	109
	Sample 2	(1)	95		< 10	160	115	96	90	< 10	145	327	< 10	195
	Sample 3	(1)	95		< 10	90	62	72	58	< 10	80	387	< 10	79
	Sample 4	(1)	95		< 10	109	55	44	38	< 10	53	156	< 10	15
	Sample 5	(1)	95		19	42	111	27	51	< 10	23	79	< 10	16
	Sample 6	(1)	95		< 10	< 10	< 10	< 10	< 10	< 10	< 10	36	< 10	24
The Netherlands														
van Wijnen *et al.* (1992)	Scrap car dealer	(4)	6/88	CSI	39–88	ND–53	37–80	44–100	52–120	ND	40–120	390–590	ND–28	150–860
	Cable burning	(3)	6/88		210–8000	220–12 000	210–14 000	250–9 300	230–15 000	34–1 600	270–16 000	800–32 000	46–2 200	180–11 000
	Scrap metal dealer, cable burning	(1)	6/88		370	340	560	980	2300	110	410	3700	360	12 000
	Scrap metal dealer, cable burning	(2)	6/88		ND	ND	ND–310	400–6 000	ND	ND	ND	1200–5 400	ND	690–5 800
	Scrap car and open air cable burning	(4)	6/88		100–5200	150–7 400	140–7 700	59–6 900	210–9 400	ND–680	150–11 000	470–15 000	ND–1300	330–5 100
	Scrap car and open air cable burning	(3)	6/88		17 000–23 000	52 000–91 000	41 000–53 000	75 000–190 000	75 000–120 000	8 200–18 000	94 000–150 000	240 000–450 000	10 000–24 000	79 000–270 000

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
The Netherlands (contd)														
van Wijnen *et al.* (1992) (contd)	Scrap car and open air cable burning	(3)	6/88		1 000–3 200	2 200–7 500	2 800–7 400	3 400–14 000	4 900–16 000	760–2 400	6 000–21 000	19 000–59 000	720–2 600	ND–36 000
Russian Federation														
Fedorov (1993)	Incinerator Ufa;			N										
	near sect. N 15		10/90		36 500					No other isomers reported				
	Near sect. N 11		10/90		59 000					No other isomers reported				
Fedorov *et al.* (1993)	Chapaevsk; CFP on site	(3)	92–93	CN						Only total reported				2 200–67 000
	Chapaevsk; 1.5 km from CFP	(2)	92–93							Only total reported				2 200–6 350
	Chapaevsk; 2 km from CFP	(1)	92–93							Only total reported				910
	Chapaevsk; 3 km from CFP	(1)	92–93							Only total reported				600
	Chapaevsk; 6 km from CFP	(1)	92–93							Only total reported				225
	Chapaevsk; 7 km from CFP	(1)	92–93							Only total reported				50
	Chapaevsk; 8 km from CFP	(1)	92–93							Only total reported				< 5
	Chapaevsk; 12 km from CFP	(1)	92–93							Only total reported				< 5
Spain														
Jiménez *et al.* (1996a)	Madrid; SW, 400 m fr. CWI	(1)	93	BSO	4.64	0.88	0.74	0.97	0.40	0.73	0.42	1.01	0.12	2.02
	Madrid; SE, 1200 m fr. CWI	(1)	93		4.81	0.91	1.27	2.09	0.86	0.17	1.07	3.49	0.30	5.19
	Madrid; NE, 600 m fr. CWI	(1)	93		5.51	0.89	1.26	1.64	0.61	0.37	0.73	1.57	0.15	1.26
	Madrid; NW, 1200 m fr. CWI	(1)	93		5.46	0.44	0.70	0.84	0.42	0.72	0.36	0.92	–	–

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Spain (contd)														
Jiménez *et al.* (1996a) (contd)	Madrid; W, 2000 m fr. CWI	(1)	93	BSO	5.27	1.03	0.62	0.82	0.59	ND	0.41	ND	ND	1.56
	Madrid; SW, 2000 m fr. CWI	(1)	93		13.3	3.51	4.23	15.6	5.60	0.88	6.54	38.4	3.63	64.5
	Madrid; N, 2000 m fr. CWI	(1)	93		1.51	0.41	0.37	0.74	0.27	0.21	0.36	1.57	0.23	3.14
	Madrid; S, 1200 m fr. CWI	(1)	93		6.49	0.88	1.49	2.17	0.90	0.23	1.24	1.91	0.25	1.72
	Madrid; NE, 2600 m fr. CWI	(1)	93		2.92	0.66	0.55	1.03	0.40	0.27	0.52	1.46	0.10	1.52
	Madrid; NE, 2600 m fr. CWI	(1)	93		3.58	0.75	0.89	1.65	0.66	0.19	0.70	1.90	0.20	4.70
	Madrid; NE, 2600 m fr. CWI	(1)	93		5.45	1.20	0.96	1.36	0.59	0.54	0.62	1.63	0.17	1.98
	Madrid; NE, 3000 m fr. CWI	(1)	93		2.93	0.75	0.94	2.06	0.93	0.19	0.96	2.66	0.30	2.29
	Madrid; NE, 3000 m fr. CWI	(1)	93		1.27	0.40	0.40	0.56	0.25	0.17	0.29	0.94	0.08	3.04
	Madrid; NE, 3000 m fr. CWI	(1)	93		2.07	0.40	0.47	0.91	0.37	0.16	0.38	1.31	0.11	1.56
	Madrid, control; NW, 4500 m fr. CWI	(1)	93		2.36	0.37	0.44	0.53	0.19	0.22	0.25	0.66	0.11	0.66
	Madrid, control; NE, 4500 m fr. CWI	(1)	93		1.15	0.32	0.33	0.53	0.27	0.47	0.30	0.76	0.08	1.89
Schuhmacher *et al.* (1996)	Tarragona; 250 m fr. MSWI	(6)	< 96	BSO	0.34	0.09	0.10	0.22	–	ND	0.17	0.51	–	0.84
	Tarragona; 500 m fr. MSWI	(6)	< 96		0.69	0.20	0.12	0.23	0.09	0.06	0.15	0.64	0.09	0.85
	Tarragona; 750 m fr. MSWI	(6)	< 96		1.28	0.21	0.33	1.18	0.43	0.15	0.61	3.60	0.31	3.88
	Tarragona; 1000 m fr. MSWI	(6)	< 96		1.14	0.22	0.25	0.64	0.23	0.10	0.33	1.33	0.15	1.38

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Spain (contd)														
Schuhmacher *et al.* (1996) (contd)	Tarragona; NE fr. MSWI	(8)	< 96	BSO	0.35	0.07	0.08	0.16	0.07	0.09	0.14	0.40	0.08	0.36
	Tarragona; SE fr. MSWI	(8)	< 96		1.27	0.49	0.18	0.33	0.12	0.05	0.14	0.95	0.11	1.46
	Tarragona; SW fr. MSWI	(8)	< 96		0.45	0.05	0.09	0.19	0.09	0.04	0.18	0.57	0.07	0.71
Sweden														
Rappe *et al.* (1991b)	Plant B; soil I	(1)	90	BSI	30 000	33 000	12 000	17 000	2 800	160	820	1 700	1 600	4 900
	Plant B; soil II	(1)	90		2 500	1 700	870	1 300	280	18	75	170	31	–
	Outside plant B; grassfield; soil III	(1)	90		17	7.6	3.9	11	2.1	< 0.2	0.2	7.9	0.9	13
	Plant B; soil II	(1)	90		1300	910	420	680	140	24	42	240	110	1000
	Plant B; soil V	(1)	90		240	160	100	150	33	2	8.7	39	14	64
	Plant B; Cl_2 prod.; soil II	(1)	90		11 000	960	520	320	67	10	27	72	36	110
Taiwan														
Huang *et al.* (1992)	Electric wire incinerator site	(1)	89	BSI	2215	293	6630	1326	631	ND	837	541	41	86
	Electric wire incinerator site	(1)	89		68	58	786	157	89	ND	139	95	2	9
	Mainly magnetic card incinerator site	(1)	89		4	3	41	8	6	ND	17	8	–	1
	Mainly magnetic card incinerator site	(1)	89		6	5	116	23	7	ND	1	1	ND	ND
	Mainly magnetic card incinerator site	(1)	89		30	29	162	32	28	ND	37	16	–	–
	Mainly magnetic card incinerator site	(1)	89		8	1	12	2	3	ND	–	1	ND	–

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Taiwan (contd)														
Soong & Ling (1996)	PCP production plant site	(1)	< 96	CSO	311	2 596	65	211	162	172	293	41 150	1 089	432 700
	PCP production plant site	(1)	< 96		44 670	16 550	7 946	142 000	37 333	248 400	93 960	22 470 000	672 500	471 700 000
United Kingdom														
Kjeller *et al.* (1991)	Rothamsted (semi-rural); archived samples (0–23 cm depth)	(1)	1846	BSI	0.790	1.100	0.820	1.000	0.630	< 0.01	0.680	3.300	0.250	2.900
		(1)	1856		0.450	0.590	0.460	0.640	0.380	< 0.01	0.310	1.200	0.080	0.980
		(1)	1893		0.290	0.320	0.350	0.430	0.340	< 0.01	0.540	1.500	0.087	1.100
		(1)	1914		0.420	0.680	0.500	0.650	0.460	< 0.01	0.400	1.900	0.110	1.400
		(1)	1944		1.200	1.100	1.100	1.600	0.730	< 0.01	0.500	3.200	0.660	7.600
		(1)	1956		0.740	1.000	0.830	1.100	0.750	< 0.01	0.560	4.900	0.230	4.400
		(1)	1966		0.930	0.710	0.820	1.100	0.810	< 0.02	0.650	3.600	0.280	3.900
		(1)	1980		0.870	0.930	0.790	1.100	0.710	< 0.02	0.530	3.600	0.450	4.200
		(1)	1986		1.000	1.000	0.860	1.200	0.810	< 0.01	0.530	4.200	0.310	5.200
Creaser *et al.* (1989)	50 km grid UK; all samples	(77)	< 89	BSI					Only total reported					55 (< 2–622)
	50 km grid UK; reduced data set	(65)	< 89						Only total reported					27 (< 2–144)
Creaser *et al.* (1990)	Urban soils (5 cities)	(19)	< 90	BSI					Only total reported					196 (7.3–1100)
Stenhouse & Badsha (1990)	Different semi-urban sites	(12)	90	BSO	17 (3–50)	4 (1–10)	2 (1–5)		12 (3–30)			15 (3–39)		30 (10–90)
United States														
Reed *et al.* (1990)	Elk River, MI; site 1 untilled[c]	(1)	9/88	BSI	ND	ND	ND	ND	ND	ND	7.1	72	ND	120
	Elk River, MI; site 1 tilled[c]	(1)	9/88		ND	ND	ND	ND	ND	ND	ND	11	ND	ND
	Elk River, MI; site 2 untilled[c]	(1)	9/88		ND	ND	ND	ND	ND	ND	ND	26	ND	60
	Elk River, MI; site 2 tilled[c]	(1)	9/88		ND	ND	ND	ND	ND	ND	ND	80	ND	270

Table 3 (contd)

Reference	Origin; sample description (and no.)		Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
					TCDF	PeCDF		HxCDF				HpCDF		OCDF
					2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
United States (contd)														
Lorber *et al.* (1996b)	Columbus, OH; MSWI, on site[d]	(4)	95	BSI	86	140	200	197	209	12	157	641	58	184
	Columbus, OH; MSWI, down-wind off site[d]	(4)	95		9	15	21	30	23	1	19	106	10	109
	Columbus, OH; Urban[d]	(14)	95		2	2	4	4	4	0.3	3	23	1	26
	Ohio; rural[d]	(3)	95		0.5	0.2	0.2	0.2	0.5	0.2	0.6	4.0	0.3	11
Viet Nam														
Matsuda *et al.* (1994)	Hue, Phu Loc; sprayed area	(6)	89–91	CSI				No other isomers reported						n.a
	Ho Chi Minh; sprayed area	(9)	89–91					No other isomers reported						n.a
	Tay Ninh; sprayed area	(54)	89–91					No other isomers reported						3.6–560
	Song Be; sprayed area	(11)	89–91					No other isomers reported						ND
	Tam Nong; sprayed area	(4)	89–91					No other isomers reported						ND
	Dog Bin Kieu; sprayed area	(6)	89–91					No other isomers reported						ND
	Hanoi; background	(5)	89–91					No other isomers reported						n.a.

Table 3 (contd)

Reference	Origin; sample description (and no.)	Coll. period	Anal. meth.	PCDF concentration (ng/kg; ppt)									
				TCDF	PeCDF		HxCDF				HpCDF		OCDF
				2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Viet Nam (contd)													
Matsuda *et al.* (1994) (contd)	Ca Mau; sprayed area	(16)	89–91	No other isomers reported									ND

Analytical methods: All analyses use high-resolution gas chromatography; B, high-resolution mass spectrometry; C, low-resolution mass spectrometry; I, isomer-specific; O, others; N, no information; S, sophisticated clean-up; y, years;
ND, not detected; detection limit in parentheses
Data presented are means. Figures in parentheses are ranges. Levels of congeners not detected at known detection limits (for examples, 0.02 pg/m^3) are presented as < 0.02.
CFP, Chemical fertilizer plant; CWI, clinical waste incinerator; MSWI, municipal solid-waste incinerator
[a] Sample depth: 0–30 m
[b] Sample depth: 0–20 m
[c] 0–2.5 cm
[d] 0–7.5 cm

Table 4. Concentrations of PCDFs in cow's milk

Reference	Origin; sample description (and no.)		Coll. period	PCDF concentration (ng/kg fat)									
				TCDF	PeCDF		HxCDF				HpCDF		OCDF
				2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
Canada													
Ryan *et al.* (1990)	6 cities (2% fat)	(6)	85–88	73.3	ND	1.6	ND	ND	ND	ND	ND	NR	NR
Germany													
Beck *et al.* (1987)	Berlin	(8)	< 87	0.7	0.2	1.4	0.9	0.8	NR	0.7	< 0.5	NR	< 1
Fürst *et al.* (1990)	North Rhine Westphalia	(10)	89–90	4.1	0.3	2.7	1.7	1.1	NR	1.3	1.5	NR	1.2
Netherlands													
Liem *et al.* (1991b)			91	0.43	0.06	1.2	0.68	0.58	< 0.01	0.65	0.47	< 0.01	0.08
Spain													
Ramos *et al.* (1996)	Asturias	(15)	95	0.34	0.18	0.97	2.04	1.16	ND	1.21	7.21	0.23	8.55
Sweden													
Rappe *et al.* (1990b)	Gothenburg	(1)	89	0.5	0.1	0.5	0.2	0.1	< 0.1	< 0.1	0.3	< 0.2	< 0.2
	Malmö	(1)	89	0.6	0.3	1.2	0.84	0.6	< 0.2	0.3	0.5	< 0.2	< 1.5
	Stockholm	(1)	89	0.4	0.1	0.2	ND	0.4	< 0.1	< 0.1	0.2	< 0.2	< 0.3
	Umeå	(1)	89	0.4	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.2	< 0.3
	Vaxjo	(1)	89	0.43	0.3	0.7	0.3	0.2	< 0.2	< 0.2	0.4	< 0.3	< 0.3
Switzerland													
Rappe *et al.* (1987b)	Bern (retail)	(1)	86?	< 0.70	< 0.50	2.10	< 0.50	0.70	NR	< 0.50	< 3.00	NR	< 5.0
	Bowil (pool)	(1)	86?	< 0.49	< 0.49	1.61	< 0.40	< 0.49	NR	< 0.47	< 1.87	NR	< 2.10
	Bowil	(1)	86?	< 0.80	< 0.50	1.51	< 0.60	< 0.41	NR	< 0.41	< 2.98	NR	< 2.98
Schmid & Schlatter (1992)	Retail	(9)	90–91	0.24	0.09	1.13	0.56	0.51	0.03	0.61	0.36	0.05	0.18

Table 4 (contd)

Reference	Origin; sample description (and no.)		Coll. period	PCDF concentration (ng/kg fat)									
				TCDF	PeCDF		HxCDF				HpCDF		OCDF
				2378	12378	23478	123478	123678	123789	234678	1234678	1234789	
United Kingdom													
Harrison *et al.* (1996)	Derbyshire (4% fat assumed)	(47)	91–93	0.25	0.25	0.75	0.5	0.25	0.25	0.25	0.25	0.25	0.25
Startin *et al.* (1990)	Rural farms (4% fat assumed)	(7)	89	0.2	0.125	0.8	0.425	0.3	0.2	0.3	0.5	0.65	1.025
Wright & Startin (1995)	TDS	Pool	82	6.6	0.21	2.2	1	0.83	< 0.13	0.79	1.4	< 0.11	1.2
	TDS	Pool	92	< 0.37	< 0.17	1.2	0.75	0.68	< 0.14	0.65	0.69	0.13	23
United States													
Eitzer (1995)	Connecticut (4% fat assumed)	(17)	91	0.217	0.1	0.09	0.425	0.4	0.3	0.35	1.5	0.325	6.25

NR, not reported; ND, not detected and limit of detection not reported; TDS, Total Diet Dtudy