

Levels of Polybrominated Diphenyl Ether (PBDE) Flame Retardants in Sediment Cores from Western Europe.

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Table 1: Concentrations of PBDEs in ng * g⁻¹ total organic carbon (TOC) in layers of a dated sediment core from the Drammenfjord, a branch of the Oslofjord (Norway).

Values below the limit of detection (LOD) are given as <LOD. %TOC indicates the percentage of organic carbon of dry weight. The values ± the year indicate the precision of the age estimate.

	1999±1	1998±1	1996±1	1994±1	1993±1	1988±1	1986±1	1985±1	1983±1	1981±1	1978±1	1975±1	1973±1	1966±2	1957±2	1946±3
BDE28	< 0.5	< 0.6	< 0.4	< 0.4	0.7	0.4	0.3	0.3	0.4	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE75	< 0.5	< 0.6	< 0.4	< 0.4	< 0.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE71	< 0.5	< 0.6	< 0.4	< 0.4	< 0.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE47	5.8	5.7	5.3	3.2	5.4	3.1	2.8	1.6	2.0	1.4	1.3	1.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE77	< 0.5	< 0.6	< 0.4	< 0.4	< 0.4	< 0.2	0.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE100	2.8	2.9	2.4	1.5	1.9	1.4	1.2	0.6	0.6	0.5	0.2	0.2	0.0	< 0.1	< 0.1	< 0.1
BDE119	< 0.5	< 0.6	< 0.4	< 0.4	< 0.4	< 0.2	< 0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE99	8.3	9.3	6.7	4.9	6.9	5.3	4.2	2.4	3.1	2.4	2.3	1.9	1.6	< 0.1	< 0.1	< 0.1
BDE85	< 0.5	< 0.6	< 0.4	< 0.4	< 0.4	0.0	0.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE154	1.9	1.8	1.7	1.2	1.4	0.9	0.8	< 0.2	0.6	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE153	1.6	1.6	1.4	1.1	1.2	0.7	0.6	0.4	0.4	0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE138	< 0.5	< 0.6	< 0.4	< 0.4	< 0.4	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1
BDE183	< 0.7	< 0.8	< 0.5	< 0.5	< 0.5	< 0.2	< 0.3	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
BDE190	< 0.7	< 0.8	< 0.5	< 0.5	< 0.5	< 0.2	< 0.3	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
BDE209	105	145	136	129	88	99	86	70	69	26	12	1.3	< 0.9	< 1.1	< 1.1	< 0.9
%TOC	2.5	2.0	2.1	2.6	2.6	2.6	2.7	2.6	2.6	2.7	3.1	3.4	4.7	3.4	2.8	3.1

Table 2: Concentrations of PBDEs in ng * g⁻¹ total organic carbon (TOC) in dated layers of a sediment core from 'De Vlieter' in the western Wadden Sea (the Netherlands). Values below the limit of detection (LOD) are given as <LOD. %TOC indicates the percentages of organic carbon of dry weight. The values ± the year indicate the precision of the age estimate.

	1995±2	1989±3	1978±8	1965±5	1945±5	1937±3
BDE28	< 2	25	23	< 1	< 2	< 1
BDE75	< 2	< 3	< 1	< 1	< 2	< 1
BDE71	< 1	< 2	< 1	< 1	< 2	< 1
BDE47	13	19	14	7	< 2	< 1
BDE77	< 2	< 3	< 1	< 1	< 2	< 1
BDE100	< 2	< 3	< 1	< 1	< 2	< 1
BDE119	< 2	< 3	< 1	< 1	< 2	< 1
BDE99	14	21	16	7	< 2	< 1
BDE85	< 2	< 3	< 1	< 1	< 2	< 1
BDE154	< 2	< 3	< 1	< 1	< 2	< 1
BDE153	< 2	< 3	< 1	< 1	< 2	< 1
BDE138	< 1	< 2	< 1	< 1	< 2	< 1
BDE183	< 2	< 3	< 2	< 1	< 3	< 1
BDE190	< 2	< 3	< 2	< 1	< 3	< 1
BDE209	250	380	229	< 6	< 16	< 9
%TOC	0.39	0.24	0.49	0.83	0.33	0.49

Table 3: Concentrations of PBDEs in ng * g⁻¹ total organic carbon (TOC) in dated layers of a sediment core from Lake Woserin in the state of Mecklenburg-Vorpommern, Germany. Values below the limit of detection (LOD) are given as <LOD. %TOC indicates the percentages of organic carbon of dry weight. The values ± the year indicate the precision of the age estimate.

	1997±1	1994±1	1991±1	1985±1	1979±2	1973±2	1628±10
BDE28	0.93	1.14	1.53	1.98	1.45	0.65	< 0.2
BDE75	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
BDE71	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
BDE47	4.97	5.78	5.60	6.73	7.58	2.16	< 0.2
BDE77	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
BDE100	1.52	1.57	1.70	2.05	2.30	1.29	< 0.2
BDE119	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
BDE99	8.99	11.26	11.58	9.44	7.16	3.17	< 0.2
BDE85	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
BDE154	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
BDE153	1.45	1.70	1.57	1.39	< 0.3	< 0.3	< 0.2
BDE138	< 0.3	< 0.2	< 0.2	< 0.2	< 0.3	< 0.3	< 0.2
BDE183	< 0.4	< 0.3	< 0.2	< 0.2	< 0.4	< 0.4	< 0.3
BDE190	< 0.4	< 0.3	< 0.2	< 0.2	< 0.4	< 0.4	< 0.3
BDE209	3.29	10.7	14.3	14.8	< 2	< 2	< 2
% TOC	8.5	8.0	7.7	6.8	5.9	7.0	6.0

Table 4: Concentrations of PBDEs in ng * g⁻¹ total organic carbon (TOC) in two layers of a sediment core from the Kimmeridge Clay Formation (Blackstone-Band) in southern England. Values below the limit of detection (LOD) are given as '<' LOD. %TOC indicates the percentages of organic carbon of dry weight.

Congener	100-150 My	100-150 My
BDE28	< 0.09	< 0.05
BDE75	< 0.09	< 0.05
BDE71	< 0.09	< 0.05
BDE47	< 0.09	< 0.05
BDE77	< 0.09	< 0.05
BDE100	< 0.09	< 0.05
BDE119	< 0.09	< 0.05
BDE99	< 0.09	< 0.05
BDE85	< 0.09	< 0.05
BDE154	< 0.09	< 0.05
BDE153	< 0.09	< 0.05
BDE138	< 0.09	< 0.05
BDE183	< 0.1	< 0.07
BDE190	< 0.1	< 0.07
BDE209	< 7	< 0.4
% TOC	15	25