

Supplementary information for the manuscript

Brominated flame retardants in Polar Bears (*Ursus maritimus*) from Alaska, the Canadian Arctic, East Greenland, and Svalbard

Authors: Derek C.G. Muir, Sean Backus, Andrew E. Derocher, Rune Dietz, Thomas J. Evans, Geir W. Gabrielsen, John Nagy, Ross J. Norstrom, Christian Sonne, Ian Stirling, Mitch K. Taylor, and Robert J. Letcher

Supplementary Table S1. Sampling years and geographic co-ordinates of 9 arctic and subarctic populations of polar bears sampled in this study.

Region	Years	Latitudinal range	Longitudinal range
Bering-Chukchi Sea (Alaska)	1994-2002	63 – 71°N	143 – 171°W
Amundsen Gulf	2001 – 2002	70 – 72°N	116 – 126°W
West Hudson Bay	2001 – 2002	59 – 63°N	92 – 95°W
Foxe Basin/Gulf of Boothia	2001 – 2002	69 – 70°N	80 – 92°W
Lancaster Sound/ Jones Sound	2001 – 2002	74 – 77°N	81 – 95°W
Northeast Baffin Island	2001 – 2002	70 – 73°N	68 – 80°W
Southeast. Baffin Island	2001 – 2002	63 – 68°N	63 – 71°W
Scoresbysund (East Greenland)	1999 – 2001	69 – 74°N	20 – 25°W
Svalbard area	2002	77 – 80°N	14 – 27°E

Supplementary Table S2. Recoveries (%) and method detection limits of PBDEs and HBCD.

Recoveries involved spiking Na₂SO₄ prior to Soxhlet extract, gel permeation and silica column fractionation. Spike level equivalent to 100 ng/g assuming a 1 g sample (N=3).

MDLs were calculated based on 3*SD of blanks (N=7) and where blanks were < IDL (3*S/N) then the IDL was used. MDLs based on average sample weight of 0.25 g and MDL (lw) based on average 80% lipid content of adipose tissue.

Compound	Mean	SD	MDL (ng/g ww)	MDL (ng/g lw)
BDE 17	108.3	26.4	0.03	0.03
BDE 28/33	99.3	16.7	0.19	0.24
BDE 71	102.3	21.1	0.01	0.01
BDE 47	128.8	23.1	1.19	1.48
BDE 66	106.7	26.5	0.01	0.01
BDE 100	95.7	12.1	0.43	0.54
BDE 99	81.4	7.1	0.96	1.20
BDE 85	86.2	14.6	0.01	0.01
BDE 154	92.9	12.4	0.01	0.01
BDE 153	85.0	8.8	0.07	0.08
BDE 138	87.6	16.4	0.05	0.06
BDE 183	97.8	22.1	0.01	0.01
BDE 190	84.1	12.6	0.01	0.01
HBCD	95.4	5.4	0.01	0.01

Chromatograms

Figure SI. GC-ECNIMS chromatograms of 32 PBDE congener standard and a polar bear fat extract from East Greenland.

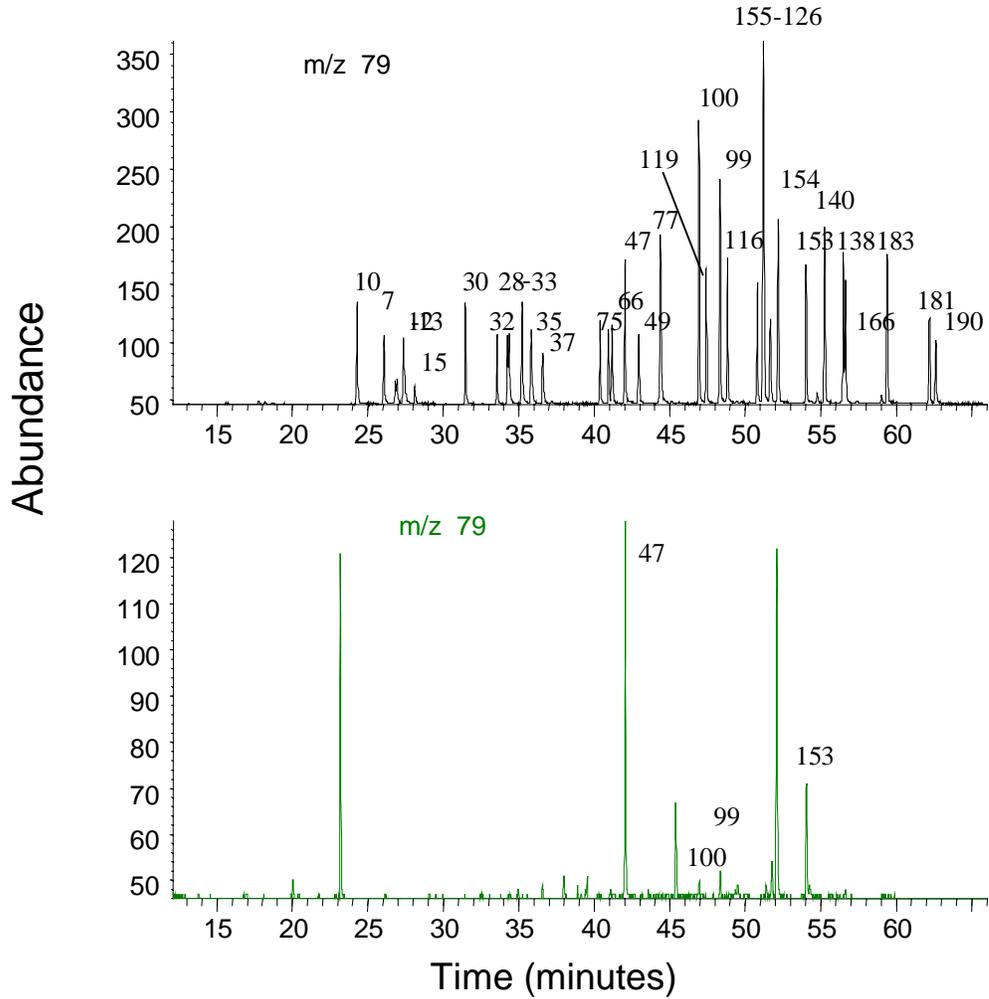


Figure S2. Detection frequency (1=100%) of PBDE congeners in polar bear adipose tissue from 4 Arctic areas. A total of 33 congeners were determined in East Greenland and Canadian samples. In the Bering-Chukchi and Svalbard samples 13 congeners were determined because of low frequency or non-detection in other areas.

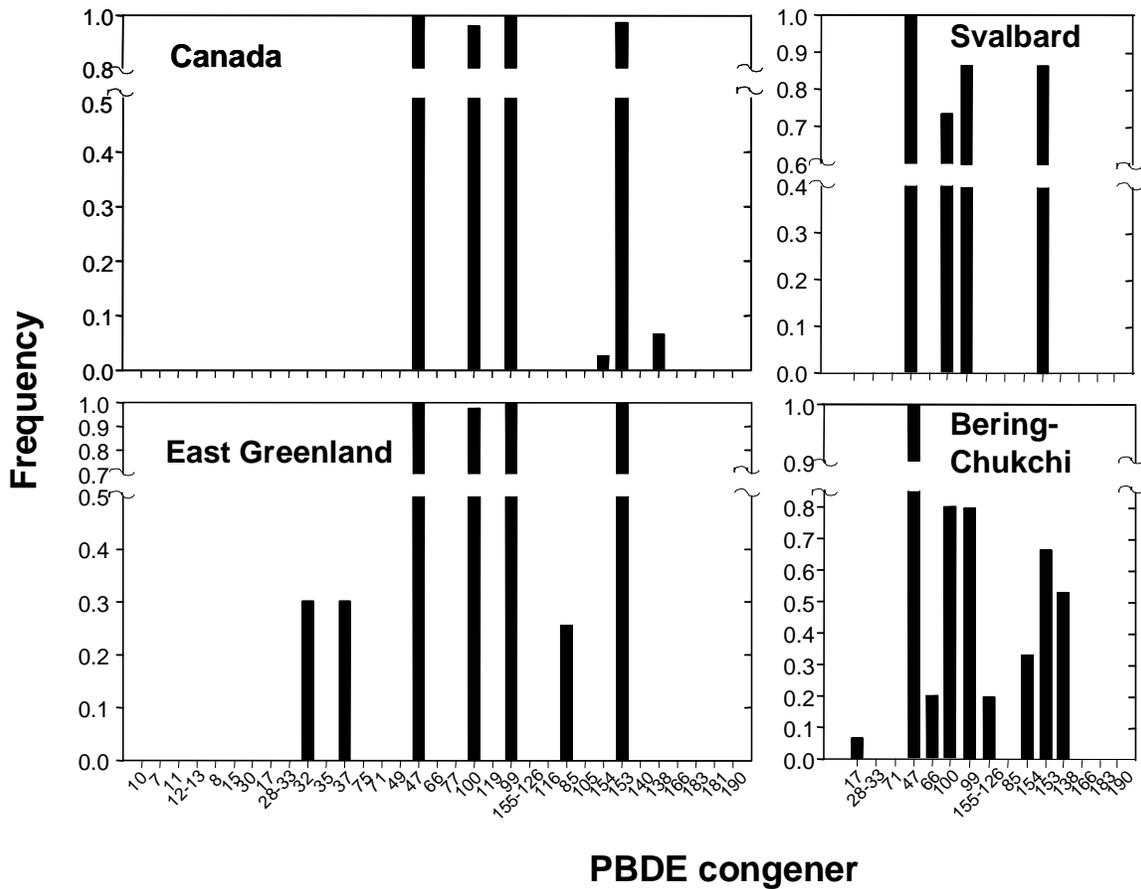


Figure S3. GC-ECNIMS chromatograms of BDE 209 (50 pg/uL) in analytical standard and in polar bear fat from Svalbard

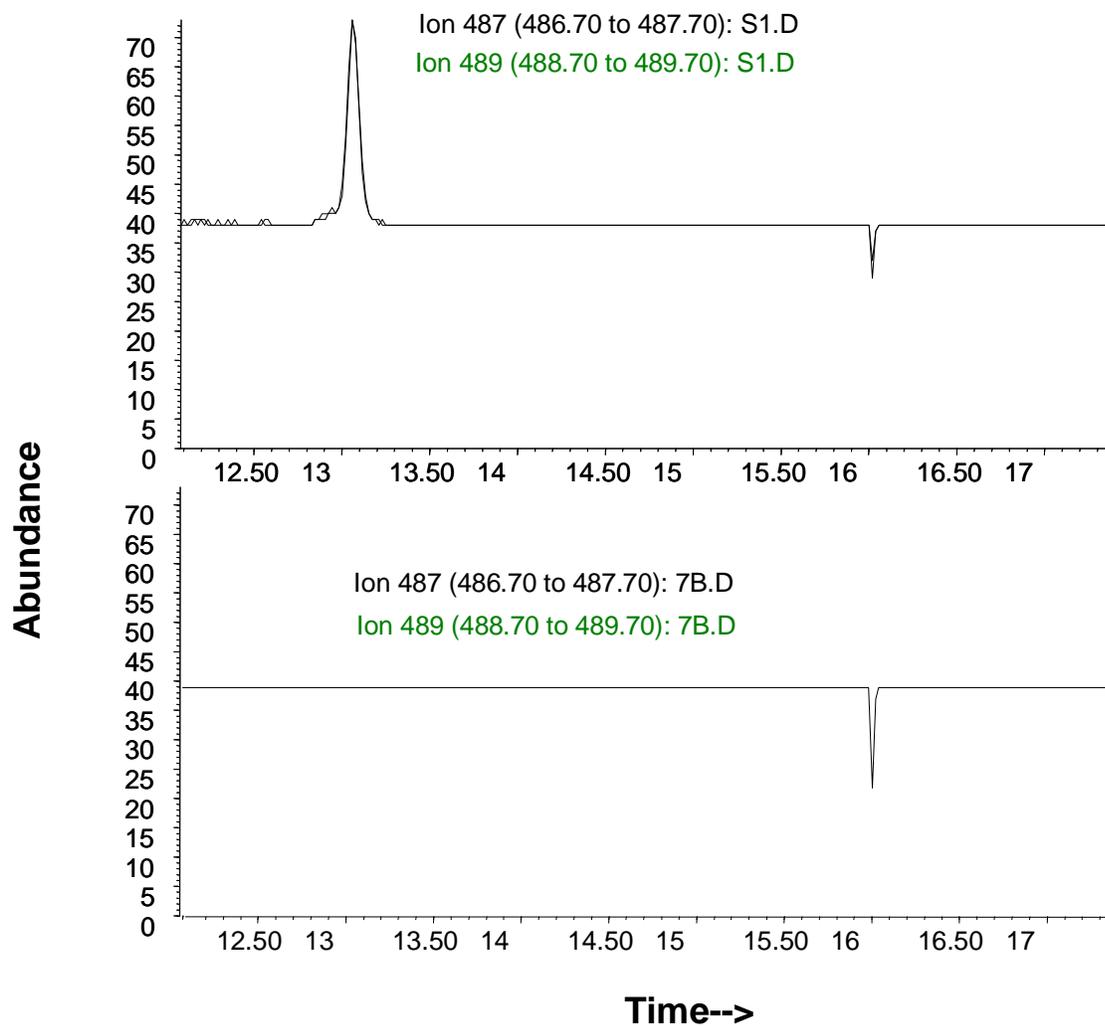


Figure S4. GC-ECNIMS chromatograms of HBCD in an analytical standard and in polar fat extract from East Greenland.

