Supporting information for

Human exposure to legacy and emerging halogenated flame retardants via inhalation and dust ingestion in a Norwegian cohort

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Table S1: Applications, uses and production volumes of some important EFRs

Compound	Application and uses	Trade name (Company)	Production/import volume
TBP-AE	Expandable polystyrene (EPS) and PS foam[a]	PHE-65 (Chemtura Corp) [a]	<227 tons in 2006 for USA[a]
DBE-DBCH	EPS beads for house insulation, extruded polystyrene, for adhesives in fabric, electrical cable coatings, high impact plastic in appliances and some construction materials[a]	Saytex BCL-462 (Albemarle Corp) [a]	4.5-230 tons/year in the US from 1986 to 2002[a]
TBCO	Not available (NA)	Saytex BCL-48 (Albemarle Corp) [a]	NA
PBT	Unsaturated polyesters, polyethylene, polypropylene (PP), polystyrene, SBR-latex, textile, rubbers, acrylonitrile butadiene styrene (ABS) [a]	Flammex 5-BT (Berk Ltd, UK) [a] FR-105 (ICL Industrial Products and Chemtura Corp) [a]	between 1000 and 5000 tons/year[a]
PBEB	Thermoset polyester resins (circuit boards, textiles, adhesives, wire and cable coatings, polyurethane foam) [a]	Albemarle Corp[a] FR-105 (now ICL Industrial Products) [a]	NA
TBP-DBPE	NA	Bromkal 73-5PE (Chemische Fabrik Kalk, Germany) [a]	no longer be a commercial product[a]
HBBz	Paper, woods, textiles, electronic and plastic goods[a]	FR-B (Japanese Nippoh Chemicals Corp and Dayang Chemicals in China) [a]	350 tons in 2001 in Japan[a]
OBTMPI/ OBIND		FR-1808 (ICL Industrial Products) [a]	NA
BTBPE	ABS, high-impact polystyrene (HIPS), thermoplastics, thermoset resins, polycarbonate and coatings[a]	FF-680 (Chemtura Corp) [a]	450-4500 tons/year in the USA after 1998[a]
EH-TBB	Polyurethane foam (PUF) applications[a]	Firemaster 550 (Chemtura Corp) [a] Firemaster BZ-54 (Chemtura Corp) [a]	NA
BEH-TEBP	PVC and neoprene, wire and cable insulation, film and sheeting, carpet backing, coated fabrics, wall coverings and adhesives[a]	Firemaster 550 (Chemtura Corp) [a] BZ-54 (Chemtura Corp) [a] DP-45 (Chemtura Corp) [a]	450-4500 tons/year from 1996-2006 in the US[a]
DDC-CO	nylons, polybutylene terephthalate (PBT), PP, ABS, epoxy resins, electric wire and cable, synthetic elastomers[b]	OxyChem, New York[b]	450 tons/year into the US[b]
DBDPE	HIPS, ABS, polyphenylene and textiles[a]	Saytex®8010 (Albemarle Corp) [a] Firemaster®2100 (Chemtura Corp) [a]	between ~1000 and 5000 tons in 2001 (European imports, primarily to Germany) [a]
TBBPA	epoxy, polycarbonate and phenolic resins in printed circuit boards (PCB), ABS and phenolic resins[c]	Shangdong Brother Sci. & Tech. Co. Ltd (China) [c] Shandong Moris Tech. Co., Ltd (China) [c] Changlu Hangu Salt Field Co., Ltd. (China) [c]	between 10000 - 20000 tons/year from each company[c]

NA: not available
[a] Covaci et al. (2011)[1]
[b] Sverko et al. (2011)[2]
[c] Liu et al. (2016)[3]

Chemicals and materials

Dichloromethane, *n*-hexane, *n*-butyl chloride and ethyl acetate (EtOAc) (all LiChrosolv) were from Merck (Darmstadt, Germany); sulfuric acid (AnalaR, BDH) from VWR International (Pennsylvania, USA); diethyl ether (DEE) and iso-octane (both HPLC-grade) from LabScan (Gliwice, Poland); methanol (B&J brand) from Honeywell (Seelze, Germany). Other materials used were silica gel 60 (0.0063-0.20 mm) from Merck; anhydrous Na_2SO_4 from Scharlau (Barcelona, Spain); Bond Elut-SI columns (500 mg/3 mL) from Agilent (Santa Clara, CA, USA); ISOLUTE aminopropyl columns (500 mg/3 mL), empty SPE reservoirs and frits from Biotage (Uppsala, Sweden). Water was obtained from a Milli-Q water purification unit (Millipore AB, Solna, Sweden). All native and isotopically labelled standards used are given in Tables S1 and S2.

Table S2: The isotopically labelled standards used in the study; chemical purity, isotopic purity and manufacturer

abbreviation	compound name	Chemical Purity	Isotopic Purity	Manu-facturer	Used as surrogate standard for	Quantifier and qualifier ions (*m/z*)
M-BDE-155	2,2',4,4',6,6'-hexabromo[$^{13}C_{12}$]diphenyl ether	≥98%	99%	CIL	Tri-heptaBDEs *)	335/337
M-BDE-197	2,2',3,3',4,4',6,6'-octabromo[$^{13}C_{12}$]diphenyl ether	>98%	≥99%	WL	Octa-nonaBDEs	415/417
M-BDE-209	2,2',3,3',4,4',5,5',6,6'-decabromo[$^{13}C_{12}$]diphenyl ether	98%	99%	CIL	BDE-209, DBDPE	495/497
M-BTBPE	1,2-bis(2,4,6-tribromo[$^{13}C_6$]phenoxy)ethane	>98%	>99%	WL	BTBPE	257/259
M-EHTBB	2-ethylhexyl-d_{17}-2,3,4,5-tetrabromo[$^{13}C_6$]benzoate	>98%	≥99% ($^{13}C_6$); ≥98% ($^{2}H_{17}$)	WL	EHTBB	492/494
M-BEH-TEBP	Bis(2-ethylhexyl-d_{17})-tetrabromo[$^{13}C_6$]phthalate	>98%	≥99% ($^{13}C_6$); ≥98% ($^{2}H_{34}$)	WL	BEH-TEBP	537/539
M-*anti*-DDC-DO	$^{13}C_{10}$ Dechlorane Plus *Anti*	98%	99%	CIL	*anti*-DDC-DO	446/448
M-*syn*-DDC-DO	$^{13}C_{10}$ Dechlorane Plus *Syn*	98%	99%	CIL	*syn*-DDC-DO	446/448
MaHBCDD	α-1,2,5,6,9,10-hexabromo[$^{13}C_{12}$]cyclododecane	>98%	≥99%	WL	α-HBCD	651, 79/81
MbHBCDD	β-1,2,5,6,9,10-hexabromo[$^{13}C_{12}$]cyclododecane	>98%	≥99%	WL	β-HBCD	651, 79/81
MgHBCDD	γ-1,2,5,6,9,10-hexabromo[$^{13}C_{12}$]cyclododecane	>98%	≥99%	WL	γ-HBCD	651, 79/81
MTBBPA	3,3',5,5'-tetrabromobisphenol-A [$^{13}C_{12}$-rings]	>98%	≥99%	WL	TBBPA	555, 460/431
M-PCB-180	2,2',3,4,4',5,5'-heptachloro[$^{13}C_{12}$]biphenyl	100%	99%	CIL	Recovery std GC/MS	371/373
DbHBCDD	d_{18}-β-1,2,5,6,9,10-hexabromocyclododecane	>98%	98%	WL	Recovery std M-HBCDDs	660→79/81[a]
MTCBPA	Tetrachlorobisphenol A [$^{13}C_{12}$-rings]	≥98%	99%	CIL	Recovery std M-TBBPA	377→256/297[a]

*) and α- and β-DBE-DBCH, TBX, BATE, PBBz, TBCT, PBT, PBEB, TBP-DBPE, HBBz

WL, Wellington Laboratories Inc. (Guelph, Canada); CIL, Cambridge Isotope Laboratories Inc. (Andover, USA)

[a]: monitoring ion or transition

Table S3: The native standards used in the study; chemical purity and manufacturer

abbreviation	compound name	Chemical Purity	Manu-facturer	In air fraction	In dust fraction	Quantifier and qualifier ions (*m/z*)
TBE-AE	Ally 2,4,6-tribromophenyl ether	>98 %	WL	I	1	79/81
α-DBE-DBCH	α-tetrabromoethylcyclohexane	>98 %	WL	I	1	79/81
β-DBE-DBCH	β-tetrabromoethylcyclohexane	>98 %	WL	I	1	79/81
TBX	2,3,5,6-tetrabromo-p-xylene	>98 %	WL	I	1	329/331
BATE	2-bromoallyl 2,4,6-tribromophenyl ether	>98 %	WL	I	1	329/331
PBBz	1,2,3,4,5-pentabromobenzene	>98 %	WL	I	1	472/474
α-TBCO	α-1,2,5,6-tetrabromocyclooctane	>98 %	WL	I	1	79/81
β-TBCO	β-1,2,5,6-tetrabromocyclooctane	>98 %	WL	I	1	79/81
TBCT	tetrabromo-o-chlorotoluene	>98 %	WL	I	1	441/443
PBT	Pentabromotoluene	>98 %	WL	I	1	485/487
PBEB	Pentabromoethylbenzene	>98 %	WL	I	1	391/393
TBP-DBPE	2,3-dibromopropyl 2,4,6-tribromophenyl ether	>98 %	WL	I	1	160/251
HBB	Hexabromobenzene	>98 %	WL	I	1	471/473
HCDBCO	hexachlorocyclopentenyl-dibromocyclooctane	>98 %	WL	I	1	237/239
OBTMPI/OBIND	octabromotrimethylphenylindane	>98 %	WL	I	1	705/707
DBDPE	Decabromodiphenylethane	>98 %	WL	I	1	808/810
BTBPE	1,2-bis(2,4,6-tribromophenoxy)ethane	>98 %	WL	I	2	329/331
EH-TBB	2-ethylhexyl-2,3,4,5-tetrabromobenzoate	>98 %	WL	I	2	357/359
BEH-TEBP	bis(2-ethyl-1-hexyl)tetrabromophthalate	>98 %	WL	II	2	513/515
anti-DDC-CO	Dechlorane Plus *Anti*	98%	CIL	I	1	436/438
syn-DDC-CO	Dechlorane Plus *Syn*	98%	CIL	I	1	436/438
BDE-28	2,4,4'-tribromodiphenyl ether	99%	CIL	I	1	79/81
BDE-35	3,3',4-tribromodiphenyl ether	99%	CIL	I	1	79/81
BDE-47	2,2',4,4'-tetrabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-49	2,2',4,5'-tetrabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-66	2,3',4,4'-tetrabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-77	3,3',4,4'-tetrabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-85	2,2',3,4,4'-pentabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-99	2,2',4,4',5-pentabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-100	2,2',4,4',6-pentabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-153	2,2',4,4',5,5'-hexabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-154	2,2',4,4',5,6'-hexabromodiphenyl ether	99%	CIL	I	1	79/81
BDE-182	2,2',3,4,4',5,6'-heptabromodiphenyl ether	100%	AS	I	1	79/81
BDE-183	2,2',3,4,4',5',6-heptabromodiphenyl ether	99%	CIL	I	1	407/409
BDE-184	2,2',3,4,4',5,6'-heptabromodiphenyl ether	>98 %	WL	I	1	407/409
BDE-185	2,2',3,4,5,5',6-heptabromodiphenyl ether	99%	AS	I	1	79/81
BDE-191	2,3,3',4,4',5',6-heptabromodiphenyl ether	>98 %	WL	I	1	79/81
BDE-196	2,2',3,3',4,4',5,6'-octabromodiphenyl ether	>98 %	WL	I	1	407/409
BDE-197	2,2',3,3',4,4',6,6'-octabromodiphenyl ether	>98 %	WL	I	1	407/409
BDE-203	2,2',3,4,4',5,5',6-octabromodiphenyl ether	100%	AS	I	1	79/81
BDE-206	2,2',3,3',4,4',5,5',6-nonabromodiphenyl ether	>98 %	WL	I	1	407/409
BDE-207	2,2',3,3',4,4',5,6,6'-nonabromodiphenyl ether	>98 %	WL	I	1	407/409
BDE-208	2,2',3,3',4,5,5',6,6'-nonabromodiphenyl ether	>98 %	WL	I	1	407/409
BDE-209	2,2',3,3',4,4',5,5',6,6'-decabromodiphenyl ether	99%	CIL	I	1	485/487
α -HBCDD	α -1,2,5,6,9,10-hexabromocyclododecane	98%	CIL	II	3A	639/641/643→79/81[a]
β -HBCDD	β -1,2,5,6,9,10-hexabromocyclododecane	98%	CIL	II	3A	639/641/643→79/81[a]
γ -HBCDD	γ -1,2,5,6,9,10-hexabromocyclododecane	98%	CIL	II	3A	639/641/643→79/81[a]
TBBPA	3,3'5,5'-tetrabrombisphenol A	>98 %	WL	III	3B	543→448/420[a]

WL, Wellington Laboratories Inc. (Guelph, Canada); CIL, Cambridge Isotope Laboratories Inc. (Andover, USA); AS, AccuStandard Inc. (New Haven, USA)

[a]: monitoring ion or transition

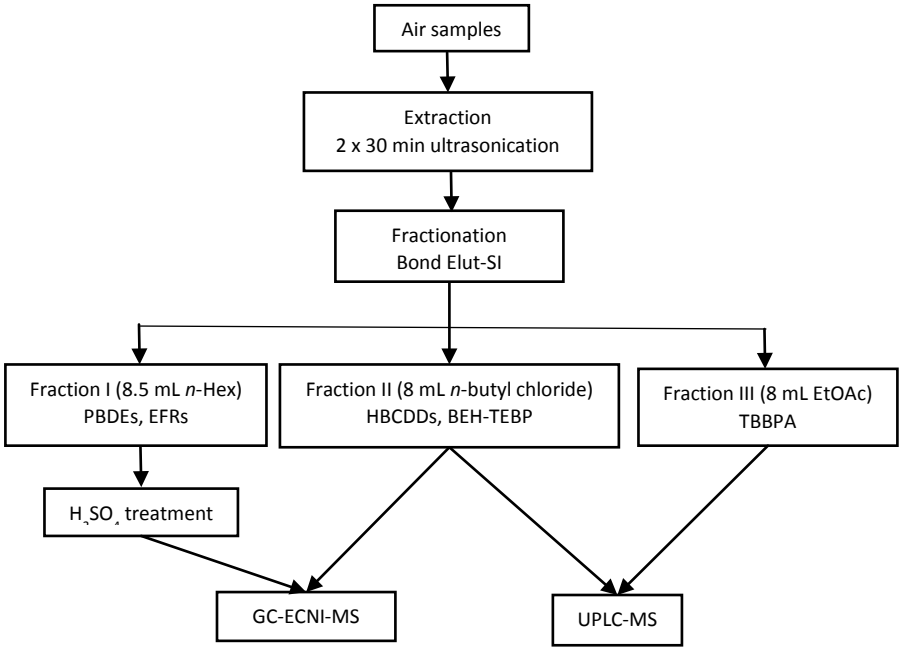

Figure S1: Fractionation scheme for stationary and personal air samples.

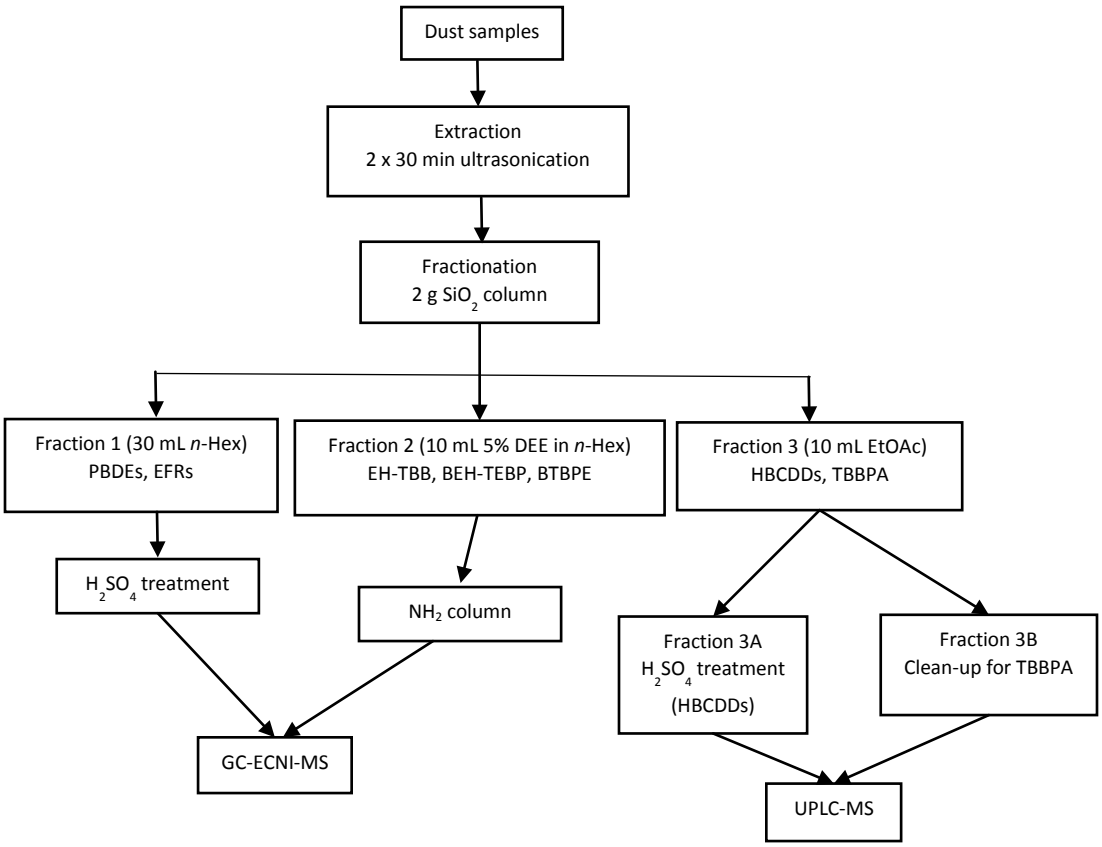

Figure S2: Fractionation scheme for dust samples.

Clean-up for TBBPA (Fraction 3B)

Fraction 3B containing TBBPA was evaporated to a small volume and solvent-changed to 1 mL of *n*-Hex in a test tube with screw cap. Three mL of 0.01 M NaOH (pH 12) were added and the test tube was vigorously shaken to extract the ionized TBBPA into the basic water solution. After centrifugation the organic phase was discarded. Then, 0.6 mL H_2SO_4 (1 N) was added to the water phase (to pH ~1) and TBBPA was back-extracted into 2 mL of *n*-Hex. The extraction was repeated with 2 mL *n*-Hex:DEE 1:1 (v/v). The extracts were pooled and solvent-changed to MeOH before analysis.

Instrumental analysis

GC-ECNI-MS parameters

Fractions I and II (PBDEs and EFRs) were injected (1 uL) into a gas chromatograph (GC) (Trace GC Ultra) coupled to a mass spectrometer (MS) (DSQ II MS, both Thermo Scientific, Waltham, USA) based on a previously described method (Sahlström et al.[4]). The GC was equipped with a programmable temperature vaporizer (PTV) injector and a HT 5 fused silica column (Thermo Scientific, Waltham USA, 0.25 mm inner diameter, 0.1 μm film thickness). A 15 m column was used for the analysis of octa-decaBDEs, OBTMPI, DBDPE, EH-TBB, BEH-TEBP, BTBPE, and *anti*- and *syn*-DDC-CO. The GC temperature program started at 80°C, hold 2 min, ramp 25°C/min to 310°C, and hold for 10 min. For tri-heptaBDEs and other EFRs (*α*,*β*-DBE-DBCH, TBX, BATE, PBBz, TBCT, PBT, PBEB, TBP-DBPE and HBBz) a 30 m column was used. The GC temperature program for the 30 m column started at 80°C, hold 2 min, ramp 25°C/min to 200°C, ramp 8°C/min to 280°C, ramp 4°C/min to 315°C, hold 5.5 min. Helium (purity 4.6, Aga, Lidingö, Sweden) was used as the carrier gas (1.5 mL/min). Electron capture negative ionization (ECNI) with ammonia (purity 5.0, Aga) as moderating gas (5.0 mL/min) was used, and ion source set to 280°C. The MS was operated in selected ion monitoring mode recording the bromide ions (*m/z* of -79 and -81) and heavier mass fragments for the different analytes (Tables S1 and S2). The quantification was performed with XCalibur 2.0.7 (Thermo Finnigan, San Jose, CA, USA).

UPLC-MS parameters

Fractions containing HBCDDs and TBBPA were analysed essentially according to Sahlström et al.[4] using an ultra performance LC (ACQUITY UPLC) coupled to a tandem-quadrupole MS (Xevo TQ-S). The separation was performed on a UPLC column (ACUITY UPLC HSS C18, 1.8 um, 2.1 mm x 100 mm), with a precolumn (ACQUITY UPLC HSS C18, 1.8 um VanGuardTM; 2.1 x 5 mm) coupled. The UPLC/MS instrument and columns used were from Waters (Milford, USA). Electrospray ionization (ESI) in negative mode was applied for the ionization of the analytes, and the MS was run in multiple reaction monitoring mode. Transitions selected for monitoring and quantitation are listed in Table S1 and S2. The instrumental parameters and method are described in Table S3. The quantification was performed with MassLynx V4.1 (Waters, Milford, USA).

Table S4: Parameters for UPLC-MS analysis (HBCDDs and TBBPA)

Column temperature (˚C)	60	
Flow rate (mL/min)	0.6	
Solvent A	25% MeOH in H_2O	
Solvent B	MeOH	
Linear gradient:	**Time (min)**	**% B**
	Initial	50
	2	78
	3	85
	3.5	100
	4.8	100
	4.9	50
	6.9	50
Capillary voltage (kV)	3.2	
Cone voltage (V)	80	
Source offset (V)	60	
Source temperature (˚C)	150	
Desolvation temperature (˚C)	200	
Cone gas flow (L/hr)	150	
Desolvation gas flow (L/hr)	550	
Collision gas flow (mL/min)	0.15	
Nebuliser gas flow (bar)	7	
Collision energy (eV)	30	

Table S5: Comparison of concentrations (ng/g) in SRM 2585 between this study, NIST certified values and literature values.

	This study*			SRM 2585		Sahlström et al.[4]		Ali et al.[5]		Al-Omran and Harrad[6]	
	(n=3)			certified value		(n=13)		(n=6)		(n=3)	
	mean	SD	% recovery	mean	SD	mean	SD	mean	SD	mean	SD
EH-TBB	31	5.6				36	2.4	33	3.8	37.4	5.3
BTBPE	83	9.4				39	4.9	38	6.8	54.8	11.5
BEH-TEBP	860	72				1300	94	644	27	648.8	75.3
***syn*-DDC-CO**	39	8.8									
***anti*-DDC-CO**	70	33									
TBBPA	160	73									
α-HBCDD	24	19				25	5.6				
β-HBCDD	5.2	1.8				6	0.2				
γ-HBCDD	46	27				80	13				
BDE-28	54	2.4	115%	47	4.4	46	5.1	38.5	1.6	49.4	2.4
BDE-47	540	36	109%	497	46	520	62	412	10.9	513.8	57
BDE-49	56	6.4	104%	54	4.2	58	6.1				
BDE-66	31	3.6	106%	30	6.2	28	3.2				
BDE-85	44	4.1	101%	44	1.6	45	5.2				
BDE-99	910	87	102%	892	53	1000	120	665	27.6	835.9	91.7
BDE-100	140	13	97%	145	11	140	18	130	2.3	152.4	24.6
BDE-153	140	37	118%	119	1.0	130	15	114	9.0	123.6	15.2
BDE-154	93	18	111%	84	2.0	100	12	65	9.2	81.3	6.5
BDE-183	42	1.4	98%	43	3.5	55	13	34	0.9	39.1	5.8
BDE-196	35	0.17				20	1.7	24	2.1		
BDE-197	22	0.11						18	0.3		
BDE-203	32	5.7	87%	37	6.4	17	1.2	21	2.2		
BDE-206	200	70	74%	271	42	76	11				
BDE-207	97	20				65	5.4				
BDE-208	55	12				35	3.1				
BDE-209	2400	340	96%	2510	190	3400	450	2260	150	2711.3	286.9

SD: standard deviation

*Other not-listed target FRs (including TBE-AE, αβ-DBE-DBCH, BATE, PBBz, PBT, PBEB, TBP-DBPE, HBBz, PBBA, OBIND, DBDPE, BDE-35, -77, -182, -184, and -191) were not detected in SRM 2585.

Table S6: Method recoveries (%) of ^{13}C-labelled surrogate standards.

	Dust (n=60)	Stationary air (n=60)	Personal air (n=13)
	Mean (SD)	Mean (SD)	Mean (SD)
^{13}C-BDE-155	85 (20)	83 (17)	107 (6)
^{13}C-BDE-197	77 (18)	102 (17)	103 (7)
^{13}C-BDE-209	105 (39)	112 (22)	102 (19)
^{13}C^{2}H-EH-TBB	118 (31)	98 (30)	127 (33)
^{13}C-BTBPE	95 (30)	87 (23)	89 (12)
^{13}C^{2}H-BEH-TEBP	110 (39)	57 (39)	64 (38)
^{13}C-*anti*-DDC-CO	74 (37)	111 (23)	113 (11)
^{13}C-*syn*-DDC-CO	104 (36)	106 (17)	94 (14)
^{13}C-α-HBCDD	92 (38)	72 (37)	90 (17)
^{13}C-β-HBCDD	90 (29)	92 (29)	104 (19)
^{13}C-γ-HBCDD	82 (30)	77 (36)	105 (28)
^{13}C-TBBPA	84 (34)	89 (28)	92 (9)

SD: standard deviation

Table S7: Log K_{OA}, method limits of detection (mLOD) and method limits of quantification (mLOQ) for each compound in each matrix.

	Log K_{OA}	Dust (pg/sample)[c]		Stationary air (pg/m^3)[d]		Personal air (pg/m^3)[e]	
		mLOD	mLOQ	mLOD	mLOQ	mLOD	mLOQ
TBP-AE	8.27[a]	18	55	0.82	2.6	5.2	16
α-DBE-DBCH	8.05[a]	7.5	23	35	57	130	160
β-DBE-DBCH	8.05[a]	35	110				
BATE	9.6[b]	8.9	27	2.7	4.1	75	220
PBBz	9.1[b]			7.6	23		
PBT	8.99[a]	670	2000	14	43		
PBEB	9.63[a]	48	140	1.2	3.6		
DPTE	10.6[a]	8.7	26	0.67	2.0		
HBB	9.66[a]	27	81	0.88	2.7		
PBBA	12.4[b]			2.0	6.0		
EH-TBB	11.9[a]	32	96	22	33	170	260
BTBPE	14.7[a]	170	510				
BEH-TEBP	16.21[a]	32	97	5.3	8.5	28	85
***syn*-DDC-CO**	14.8[b]	55	170	1.7	5.0		
***anti*-DDC-CO**	14.8[b]	35	100	5.2	8.1		
OBTMPI/OBIND		19	57				
DBDPE	18.13[a]	10	31	1.7	2.7	10	31
TBBPA		81	130	3.7	5.7	2.7	8.1
α-HBCDD		14	19	0.23	0.68	9.0	27
β-HBCDD		1.7	2.2	0.090	0.27	15	45
γ-HBCDD		29	37	0.25	0.75	12	35
BDE-28	9.11[a]	17	50	2.1	6.3		
BDE-35		8.1	24				
BDE-47	10.23[a]	27	82	0.85	1.3	4.8	14
BDE-49		16	47	2.3	3.5		
BDE-66		9.5	29	0.30	0.90		
BDE-77		11	34				
BDE-85		20	59				
BDE-99	11.27[a]	260	410	0.35	1.0	12	36
BDE-100	11.67[a]	8.9	27	0.16	0.49		
BDE-153	12.36[a]	8.0	24	0.29	0.86		
BDE-154	12.86[a]	8.8	26				
BDE-182		15	46				
BDE-183	14.32[a]	20	59	1.3	4.0		
BDE-184		24	72				
BDE-191		24	72				
BDE-196		59	180				
BDE-197		33	48	1.4	1.8		
BDE-203		96	290	90	138		
BDE-206		75	230				
BDE-207		37	110	0.92	1.5	1.1	3.3
BDE-208						4.4	13
BDE-209	16.54[a]	170	250	160	250	99	150

[a] Cequier et al. (2014)[7]
[b] Liagkouridis et al.(2017)[8]
[c]: mLODs and mLOQs are given in pg/sample but differ for each sample depending on sample size (mg dust)
[d]: mLODs and mLOQs are calculated for a typical sample size of 17 m^3, however actual sample sizes deviated slightly from this
[e]: mLODs and mLOQs are calculated for a typical sample size of 1.4 m^3, however actual sample sizes deviated slightly from this
empty cell for mLOD and mLOQ: the analyte was not detected in samples therefore no mLOD and mLOQ was calculated

Inhalation rate used for FR exposure assessment

Body mass index (BMI) for each participant was calculated based on height and weight provided during questionnaires, to obtain their BMI category (i.e. normal weight or overweight). Inhalation rate used for exposure assessment is listed in Table S8 below.

BMI	Category
<18.5	underweight
18.5-24.9	normal
25-29.9	overweight
>30	obesity

Source: U.S. Department of Health & Human Services (https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm)

Table S8: Inhalation rate used for exposure assessment

	Inhalation rate (m^3/d)			
	Female		Male	
Age	normal weight	overweight	normal weight	overweight
4-5.1	7.41	8.7	7.9	9.59
5.1-9.1	9.39	10.55	9.14	10.88
9.1-18.1	12.04	14.27	13.69	14.52
18.1-40.1	13.73	15.66	17.41	20.39
40.1-70.1	11.93	13.01	15.6	17.96

Source: Table 6-6 in USEPA Exposure Factors Handbook[9]

Table S9: Assumed absorption fractions of individual target FRs

	Molecular weight	Number of bromines	Bioaccessibility/Bioavailability data	Absorption fraction
TBP-AE	370.8	3		0.33
BDE-28	406.9	3	0.33[a]	0.33
BDE-35	406.9	3		0.33
α-DBE-DBCH	427.8	4		0.69
β-DBE-DBCH	427.8	4		0.69
BATE	449.8	4		0.69
PBBz	472.59	5		0.69
BDE-47	485.79	4	0.69[a]	0.69
BDE-49	485.79	4		0.69
BDE-66	485.79	4		0.69
BDE-77	485.79	4		0.69
PBT	486.62	5		0.69
PBEB	500.65	5		0.69
TBP-DBPE	530.67	5		0.69
TBBPA	543.9	4	0.94[b]	0.94
EH-TBB	549.9	4	0.48[c]	0.48
***anti*-DDC-CO**	653.7	0		0.48
***syn*-DDC-CO**	653.7	0		0.48
BTBPE	687.6	6		0.48
BDE-100	564.69	5	0.78[a]	0.78
HBB	551.49	6		0.39
BDE-85	564.69	5	0.39[a]	0.39
BDE-99	564.69	5	0.44[a]	0.44
α-HBCDD	641.7	6	0.92[b]	0.92
β-HBCDD	641.7	6	0.8[b]	0.8
γ-HBCDD	641.7	6	0.72[b]	0.72
BDE-153	643.58	6	0.73[a]	0.73
BDE-154	643.58	6	0.19[a]	0.19
BEH-TEBP	706.1	4	0.25[c]	0.25
BDE-182	722.48	7		0.48
BDE-183	722.48	7	0.48[c]	0.48
BDE-184	722.48	7		0.48
BDE-191	722.48	7		0.48
BDE-196	801.38	8	0.15[a]	0.15
BDE-197	801.38	8	0.49[a]	0.49
BDE-203	801.38	8	0.24[a]	0.24
BDE-206	880.27	9	0.1[a]	0.1
OBTMPI	867.52	8		0.23
BDE-207	880.27	9	0.23[a]	0.23
BDE-208	880.27	9		0.23
BDE-209	959.17	10	0.04[a]	0.04
DBDPE	971.2	10		0.04

[a] Huwe et al. (2008)[10]

[b] Abdallah et al. (2012)[11]

[c] Fang and Stapleton (2014)[12]

Table S10: Overview of recent studies on median levels of FR in indoor dust (ng/g).

Reference	This study	Ali et al.[13]			Cequier et al.[7]		Dodson et al.[14]	Fromme et al.[15]	Sahlström et al.[16]	Geens et al.[17]	Wang et al.[18]		Abdallah et al.[19]	Ni and Zeng[20]
Location	Norwegian home	UK classroom	Belgian home	Belgian office	Norway, living room	school classroom	North California house	German residence	Swedish home	Belgium home	Japan home	South Korea home	UK home	China office
Type of dust	SD	FD	FD	FD	FD	FD	NM	VCBD	SD	NM	NM	NM	FD	ACFD
α-DBE-DBCH	6.6				1.72	2.1			3.3					
β-DBE-DBCH	5.5								3.4					
BATE	0.11													
PBT					0.633	0.232			2.8					
PBEB	0.51													
TBP-DBPE	0.12					0.178								
HBB	0.43				0.671		<2							
EH-TBB	25	25	1	7	2.54	3.32	100	<0.3	2.6					
BTBPE	42	9	2	19	3.76	6.55	12	<10	6.3					
BEH-TEBP	300	96	13	64	78.5	103	260	343	61					
syn-DDC-CO	2.3				1.45	0.921								
anti-DDC-CO	8.3				4.16	2.63								
OBIND/ OBTMPI	0.57													
DBDPE	70	98	153	721	147	156	140	146	150					
TBBPA	62						200	28		10	140	84	62	980
α-HBCDD	94						62		56					
β-HBCDD	23						16		18					
γ-HBCDD	43						73		37					
BDE 28	0.50				0.688	0.371	14	0.1	0.99					
BDE 35	1.7													
BDE 47	22	26	8	21	126	46.9	1000	5.7	21					
BDE 49	1.2													
BDE 66	0.37						23							
BDE 77	0.12													
BDE 85	0.23						66							
BDE 99	27	36	9	45	171	42.4	1100	9.4	17					
BDE 100	0.16				33.1	7.95	240	<2	2.6					
BDE 153	2.5				26	8.93	150	<2	1.9					
BDE 154	1.8				12.7	5.76	110	<2						
BDE 182	0.19													
BDE 183	3.6	1.2	2	24	3.22	5.8	18	<2						
BDE 191	0.27													
BDE 196	4.3						4		2.8					
BDE 197	2.4	3.1	1.4	9			4		4.2					
BDE 203	4.8						2		3.5					
BDE 206	23								15					
BDE 207	20								8.7					
BDE 208	13								5					
BDE 209	940	5000	317	443	325	507	1200	419	310					

SD: settled dust; FD: floor dust; NM: not mentioned; VCBD: vacuum cleaner bag dust; ACFD: air conditioner filter dust
Empty cell: no data available

Table S11: Summary of recent studies on levels of FR in indoor air, pg/m^3, median (range).

Reference	This study	Venier et al. [21]			Tao et al. [22]		Cequier et al. [7] *		Fromme et al.[23]	Vorkamp et al. [24]	Newton et al.[25]
Location	**Norwegian home**	**U.S. home**	**Canadian home**	**Czech Republic home**	**UK home**	**UK office**	**Norwegian home**	**Norwegian classrooms**	**Germany home**	**Denmark home**	**Swedish indoor**
TBP-AE	<0.58 (<0.58-11)						4.59 (69.3)	<MLD (2.92)			
***α*-DBE-DBCH**	25 (4.3-220)				64 (17-350)	160 (74-440)	77.9 (4120)	46.6 (399)			55 (7.0-130)
***β*-DBE-DBCH**					45 (13-250)	120 (41-300)					
BATE	1.9 (0.66-110)										
PBBz	<5.4 (<5.4-73)	2.5 (ND-12)	4.8 (1.3-74)	3.4 (0.76-17)	5.3 (<0.10-22)	11 (3.4-47)	5.66 (50.8)	1.87 (7.35)			
PBT	<10 (<10-69)				11 (2.3-63)	4.7 (<0.10-200)	7.64 (213)	2.57 (4.14)			11 (2.6-29)
PBEB	ND	1.9 (ND-92)	3.9 (0.95-7.4)	0.49 (ND-1.4)	1.3 (0.41-5.4)	1.7 (0.31-35)	0.531 (30.6)				
TBP-DBPE	<0.48 (<0.48-31)				2 (<0.40-14)	1.9 (<0.40-280)	0.789 (132)	0.841 (10.6)			
HBB	<0.63 (<0.63-37)	4 (ND-58)	5.8 (0.85-60)	4.6 (ND-31)	4.2 (<0.20-91)	9.4 (<0.20-170)	4.11 (297)	4.03 (6.52)			3.6 (<5.1-64)
PBBA	<1.4 (<1.4-76)										
EH-TBB	150 (1.5-570)	9.2 (1.3-142)	12 (3.1-291)	5.5 (ND-15)	2 (0.05-44)	5.3 (0.67-240)					
BTBPE	ND	0.083 (ND-0.74)	1.0 (ND-2.4)	0.38 (ND-1.4)	5 (<1.0-50)	11 (0.7-220)					
BEH-TEBP	3.8 (1.1-22)	6 (ND-109)	3.1 (ND-43)	3.2 (ND-5.4)	2.1 (<0.10-130)	1.4 (<0.10-11)	<MLD (24.2)	<MLD (6.32)			<35 (<35-150)
***syn*-DDC-CO**	<1.2 (<1.2-150)	0.37 (ND-4.0)	23 (ND-76)		<2.0 (<2.0-4.6)	<2.0 (<2.0-7.7)	<MLD (7.39)				<36 (<36-48)
***anti*-DDC-CO**	<3.7 (<3.7-47)	4.1 (ND-23)	25 (ND-243)	65 (ND-65)	<1.2 (<1.2-20)	<1.2 (<1.2-24)	<MLD (7.61)				
DBDPE	1.2 (0.012-250)	42 (ND-71)	9.2 (ND-74)		<10 (<10-97)	<10 (<10-54)	<MLD (963)				<90 (<90-250)
TBBPA	2.6 (0.15-39)										
***α*-HBCDD**	<0.16 (<0.16-39)				<2.6 (<2.6-400)	5.4 (<2.6-31)					
***β*-HBCDD**	<0.064 (<0.064-9.0)				<2.2 (<2.2-160)	<2.2 (<2.2-15)					
***γ*-HBCDD**	<0.18 (<0.18-39)				110 (16-1400)	34 (3.1-320)					
BDE-28	<1.5 (<1.5-18)	2.2 (ND-145)	7.6 (1.0-166)	0.58 (0.10-9.2)	1.2 (0.21-310)	2.7 (0.81-13)	7.53 (52.5)	5.63 (21.1)	4.21 (1.06-17.2)	12.4 (<LOQ-26.6)**	
BDE-47	3.8 (<0.60-110)	52 (4.5-818)	39 (5.4-759)	1.6 (0.56-16)	13 (0.15-1700)	6 (0.15-380)	128 (718)	131 (459)	9.39 (3.17-169)	134 (49.9-747)	<13 (<13-51)
BDE-49	3.1 (0.58-46)									6.10 (1.69-33.3)	
BDE-66	<0.21 (<0.21-1.6)								0.31 (<0.02-4.87)	3.68 (<LOQ-14.49	
BDE-99	<0.25 (<0.25-39)	15 (ND-1291)	5.3 (1.3-73)	0.29 (0.16-1.4)	12 (0.05-1700)	7.9 (1.2-42)	21.0 (413)	23.0 (52.2)	2.65 (<0.52-189)	63.7 (18.3-378)	<13 (<13-34)
BDE-100	<0.11 (<0.11-5.4)	4.2 (ND-272)	1.8 (0.38-22)	0.11 (0.05-1.0)	1.5 (<0.10-600)	1.5 (<0.10-17)	6.78 (83.6)	8.02 (19.6)	0.54 (<0.23-33.3)	13.0 (3.40-36.8)	
BDE-153	<0.2 (<0.20-8.3)	5 (ND-71)	0.26 (0.06-5.7)	0.069 (ND-0.10)	1.8 (<0.4-180)	<0.4 (<0.4-3.6)	0.927 (262)	0.746 (1.89)	0.27 (<0.08-22.8)	<LOQ (<LOQ-4.20)	<12 (<12-17)
BDE-154	ND	0.62 (ND-122)	0.36 (ND-4.4)	0.045 (ND-0.056)	1.2 (<0.50-180)	<0.50 (<0.50-6)	0.383 (61.0)	0.501 (1.49)	0.20 (<0.06-10.9)	<LOQ (<LOQ-3.98)	<4.2 (<4.2-5.2)
BDE-183	<0.95 (<0.95-12)	2.5 (ND-5)	1.3 (ND-1.6)	0.12 (ND-0.23)	<1.0 (<1.0-12)	<1.0 (<1.0-3.8)	<MLD (534)	<MLD (101)	0.44 (<0.14-21.5)	<LOQ (<LOQ-29.7)	
BDE-197	0.98 (0.013-9.5)										
BDE-207	0.65 (0.26-3.6)										
BDE-209	2.5 (0.25-220)	257 (ND-5756)	49 (ND-1.6)	9.4 (ND-15)	170 (23-3800)	26 (2.3-350)	3.76 (4150)	<MLD (101)	9.50 (0.87-438)	119 (<LOQ-1830)	<31 (<31-130)

*median (max) concentration

**BDE28/33

Empty cell: no data available; ND: not detected; MLD: method detection limit; LOQ: limit of quantification

Table S12: Spearman rank correlation coefficients for concentrations of FRs in settled dust ($p < 0.05$).

	α-DBE-DBCH	β-DBE-DBCH	EH-TBB	BTBPE	BEH-TEBP	*syn*-DDC-CO	*anti*-DDC-CO	OBTMPI	DBDPE	TBBPA	α-HBCDD	β-HBCDD	γ-HBCDD	BDE-28	BDE-35	BDE-47	BDE-49	BDE-66	BDE-99	BDE-100	BDE-153	BDE-154	BDE-183	BDE-196	BDE-197	BDE-203	BDE-206	BDE-207	BDE-208	BDE-209
α-DBE-DBCH		0.74		0.39				-0.29	0.33																			0.33	0.29	0.26
β-DBE-DBCH			0.32	0.30		0.30		-0.33									0.43											0.40	0.41	0.31
EH-TBB				0.29	0.34																									
BTBPE											0.29										-0.29									
BEH-TEBP																			0.28		0.27	0.30								
***syn*-DDC-CO**							0.38										0.34	0.30												
***anti*-DDC-CO**										0.29						0.32		0.26	0.29		0.27				0.38					
OBTMPI																						0.26			0.44	0.39	0.49			
DBDPE																									-0.29					
TBBPA																		0.34			0.25					0.27				
α-HBCDD												0.66	0.56			0.39			0.29	-0.27			0.27							
β-HBCDD													0.74			0.41	0.26	0.29	0.37							0.30			0.31	
γ-HBCDD																0.41		0.32	0.34										0.26	
BDE-28																0.37		0.57					0.26							
BDE-35																	0.35													
BDE-47																		0.67	0.87		0.56	0.60	0.48	0.26	0.34					
BDE-49																		0.26		0.31									0.26	
BDE-66																			0.62	0.32	0.40	0.52	0.27			0.28				
BDE-99																					0.67	0.76	0.40	0.35	0.33					
BDE-100																														
BDE-153																						0.64	0.43	0.51	0.58		0.27			
BDE-154																							0.39	0.39	0.41	0.39	0.27			
BDE-183																								0.37	0.46	0.29		0.34		
BDE-196																									0.53	0.42	0.53	0.63	0.59	0.51
BDE-197																										0.47	0.61	0.38	0.31	0.30
BDE-203																											0.51	0.41	0.44	0.33
BDE-206																												0.60	0.54	0.61
BDE-207																													0.92	0.90
BDE-208																														0.84
BDE-209																														

Empty cell: no significant correlation

Table S13: Spearman rank correlation coefficients between concentrations of FRs in matched dust and air ($p < 0.05$).

		Settled dust							
		α-DBE-DBCH	*β*-DBE-DBCH	EH-TBB	DBDPE	TBBPA	BDE-47	BDE-49	BDE-209
Stationary air	*αβ*-DBE-DBCH	0.33	0.52	0.26					
	EH-TBB								
	DBDPE								0.27
	TBBPA								
	BDE-47						0.57		
	BDE-49		0.33					0.45	
	BDE-209	0.32	0.33						

Empty cell: no significant correlation

Table S14: Spearman rank correlation coefficients between settled dust concentrations and indoor parameters ($p < 0.05$).

	α-DBE-DBCH	*β*-DBE-DBCH	*syn*-DDC-CO	*anti*-DDC-CO	DBDPE	*α*-HBCDD	*β*-HBCDD	*γ*-HBCDD	BDE-28	BDE-47	BDE-49	BDE-99	BDE-100	BDE-154	BDE-183	BDE-197	BDE-203	BDE-206	BDE-207	BDE-208	BDE-209	Sum EFR	Sum HBCDD
Total house sqm			-0.28				0.34	0.28		0.26													
Living room sqm					-0.34		0.35				0.35												
Living room kitchen combo sqm										0.41					0.52			-0.45					
stoves/fireplaces (yes/no)							-0.27																
residence_less50m_fromtraffic (yes/no)								0.32															
Vacuum living room times/month											0.27												
Ventilate living room hours									-0.61					-0.46									
TV flat (yes/no)			0.26	0.26								0.26	0.29										
TV flat number		0.32				0.36	0.49	0.36									0.34		0.39	0.46	0.45	0.42	0.34
videoDVD player (yes/no)			0.35																				
videoDVD player number						0.53	0.44	0.34												0.36	0.42	0.48	0.49
desktop(yes/no)						0.34	0.31		0.37	0.28					0.27	0.32							
Desktop number																			-0.26				
Laptop tablet (yes/no)																							
Laptop tablet number			-0.28				0.26																
PC screen (yes/no)						0.29	0.27		0.28							0.34							
PC screen number						0.29	0.28		0.31														

Empty cell: no significant correlation

Table S15: Correlation between stationary air concentrations and indoor parameters (Spearman rank test)

	αβ-DBE-DBCH	BATE	TBB	DBDPE	TBBPA	BDE-47	BDE-49	BDE-209
Total house sqm							0.27	
Living room sqm		0.35						
Living room kitchen combo sqm					0.34			
Desktop (yes/no)							0.47	
Desktop number							0.26	
PC screen (yes/no)							0.47	
PC screen number							0.42	

Empty cell: no significant correlation

Table S16: Kruskal-Wallis test for comparison of median concentration of FR in different sample matrix regarding the type of heating system used

	Type of heating system	N	Mean Rank	df	Chi-square, X^2	p
BATE in stationary air	central heating	9	47.2	4	15.865	0.003
	electric heating	21	28.8			
	stove, fireplace	3	37.3			
	oil, paraffin	1	53.0			
	other	26	24.4			
DBDPE in settled dust	central heating	9	18.2	4	9.741	0.045
	electric heating	22	34.0			
	stove, fireplace	2	13.5			
	oil, paraffin	1	9.0			
	other	26	33.9			

Table S17: Estimated daily inhalation and dust ingestion exposure (pg/kg bw/d) to FRs from stationary air, personal air and settled dust data compared to oral reference doses, where available.

	Oral RfD	dust ingestion			air inhalation (stationary air)			air inhalation (personal air)		
		5th %tile	median	95th %tile	5th %tile	median	95th %tile	5th %tile	median	95th %tile
TBP-AE		0.018	0.028	0.11	0.087	0.11	0.65	0.62	0.93	6.5
α-DBE-DBCH		0.022	2.1	14	1.1	4.6	16	20	26	161
β-DBE-DBCH		0.29	1.6	7.3						
BATE		0.021	0.033	0.89	0.26	0.42	3.1	9.0	13	26
PBBz		-	-	-	0.73	1.1	6.4	-	-	-
PBT		1.4	2.1	8.2	1.4	1.9	2.6	-	-	-
PBEB		0.10	0.16	0.70	-	-	-	-	-	-
DPTE		0.020	0.037	1.3	0.0065	0.092	1.2	-	-	-
HBB		0.036	0.072	1.9	0.091	0.13	2.5	-	-	-
PBBA		-	-	-	0.19	0.26	0.34	-	-	-
EH-TBB	2.0×10^{7} [a]	0.094	4.6	26	2.3	26	86	13	30	33
BTBPE	2.4×10^{8} [a]	0.34	9.6	38	-	-	-	-	-	-
BEH-TEBP	2.0×10^{7} [a]	5.8	34	130	0.51	0.70	1.6	3.4	5.1	26
***syn*-DDC-CO**		0.11	0.41	10	0.17	0.23	1.9	-	-	-
***anti*-DDC-CO**		0.076	1.7	13	0.50	0.72	1.2	-	-	-
OBTMPI/OBIND		0.017	0.058	0.96	-	-	-	-	-	-
DBDPE	3.3×10^{8} [a]	0.35	1.2	6.0	0.12	0.23	4.2	1.2	1.8	8.1
TBBPA		4.7	28	234	0.047	0.47	7.0	0.36	0.50	4.0
α-HBCDD		0.11	38	395	0.022	0.032	2.1	1.2	1.7	6.3
β-HBCDD		0.012	7.5	82	0.0089	0.0013	0.36	2.5	3.8	4.2
γ-HBCDD		1.4	15	163	0.024	0.034	1.8	1.5	2.1	6.5
BDE-28		0.019	0.074	0.64	0.21	0.29	1.2	-	-	-
BDE-35		0.022	0.25	1.5	-	-	-	-	-	-
BDE-47	1.0×10^{5} [b]	1.8	6.6	37	0.18	0.65	4.6	0.57	0.86	6.7
BDE-49		0.042	0.30	4.2	0.18	0.57	2.6	-	-	-
BDE-66		0.023	0.11	2.1	0.029	0.040	0.13	-	-	-
BDE-77		0.024	0.037	0.18	-	-	-	-	-	-
BDE-85		0.023	0.039	0.71	-	-	-	-	-	-
BDE-99	1.0×10^{5} [b]	1.2	4.7	38	0.034	0.046	0.060	1.4	2.2	34
BDE-100		0.024	0.059	5.8	0.016	0.022	0.39	-	-	-
BDE-153	2.0×10^{5} [b]	0.021	0.72	12	0.027	0.038	0.060	-	-	-
BDE-154		0.0065	0.14	1.8	-	-	-	-	-	-
BDE-182		0.026	0.039	0.20	-	-	-	-	-	-
BDE-183		0.092	0.70	4.7	0.13	0.18	0.23	-	-	-
BDE-184		0.041	0.060	0.24	-	-	-	-	-	-
BDE-191		0.035	0.056	0.26	-	-	-	-	-	-
BDE-196		0.036	0.27	3.8	-	-	-	-	-	-
BDE-197		0.12	0.49	4.4	0.021	0.18	0.23	-	-	-
BDE-203		0.089	0.51	12	-	-	-	-	-	-
BDE-206		0.031	1.0	40	-	-	-	-	-	-
BDE-207		0.74	2.1	40	0.072	0.12	0.17	0.15	0.20	1.2
BDE-208		0.38	1.1	14	-	-	-	0.53	0.79	1.1
BDE-209	7.0×10^{6} [b]	3.8	14	69	0.038	0.49	13	1.5	16	150
sum EFR		58	120	390	15	40	130	55	94	230
sum PBDE		16	43	310	1.5	3.3	25	4.7	24	170
sum HBCDD	2.0×10^{8} [c]	11	68	500	0.055	0.083	4.2	5.6	8.1	14

[a]: RfD values used by Ali et al. (2012)[5]

[b]: RfD values by IRIS, USEPA[26-29]

[c]: RfD value by NRC (2000)[30]

-: concentrations in all samples were below mLOD and thus no exposure was calculated

Table S18: Overview of estimated dust ingestion exposure to FR (median, pg/kg bw/d) in recent studies.

Reference	This study	Cequier et al. [7]	Tao et al.[22]	Fromme et al. [15]	Ali et al.[13]	Fromme et al. [23]	Shoeib et al. [31]	Kim et al.[32]	Abdallah et al. [33]			Abdallah et al. [19]	Hassan and Shoeib [34]
Country	Norway	Norway	UK	Germany	Belgium + UK	Germany	Canada	South Korea	France	Kazakhstan	Nigeria	UK	Egypt
Ingestion rate (mg/d)	30	100	50	30	20	50	4.16	20	20	20	20	20	20
Body weight (kg)	Individual	Individual	70	70	NA	60	70	62.8	70	70	70	70	70
TBP-AE	0.028	0											
α-DBE-DBCH	2.1	1.5	2.3										
β-DBE-DBCH	1.6		2.6										
BATE	0.033												
PBBz		0.15	0.67										
PBT	2.1	0.55	0.77										
PBEB	0.16	0	0.13										
DPTE	0.037	0.43											
HBB	0.072	0.58	1.0										
PBBA													
EH-TBB	4.6	2.2	2.7	1	0								
BTBPE	9.6	3.2	21	2	0								
BEH-TEBP	34	68	37	147	10								
syn-DDC-CO	0.41	1.3	0.83										
anti-DDC-CO	1.7	3.6	7.4										
OBIND/OBTMPI	0.058												
DBDPE	1.2	130	93	63	80								
TBBPA	28			12					31	4.3	13	19	
α-HBCDD	38												
β-HBCDD	7.5												
γ-HBCDD	15												
sum HBCDD	68			148								33	3
BDE-28	0.074	0.59	0.17										
BDE-35	0.25												
BDE-47	6.6	110	7.1			7.5							
BDE-49	0.30												
BDE-66	0.11												
BDE-77	0.037												
BDE-85	0.039	8											
BDE-99	4.7	150	12			10.4							
BDE-100	0.059	29	1.6			2.1							
BDE-153	0.72	22				2.3							
BDE-154	0.14	11	0.77			1.4							
BDE-182	0.039												
BDE-183	0.70	2.8	1.6			3.6							
BDE-184	0.060												
BDE-191	0.056												
BDE-196	0.27												
BDE-197	0.49												
BDE-203	0.51												
BDE-206	1.0												
BDE-207	2.1												
BDE-208	1.1												
BDE-209	14	280	1429	16		260	80	330					

NA: not available; empty cell: no data available

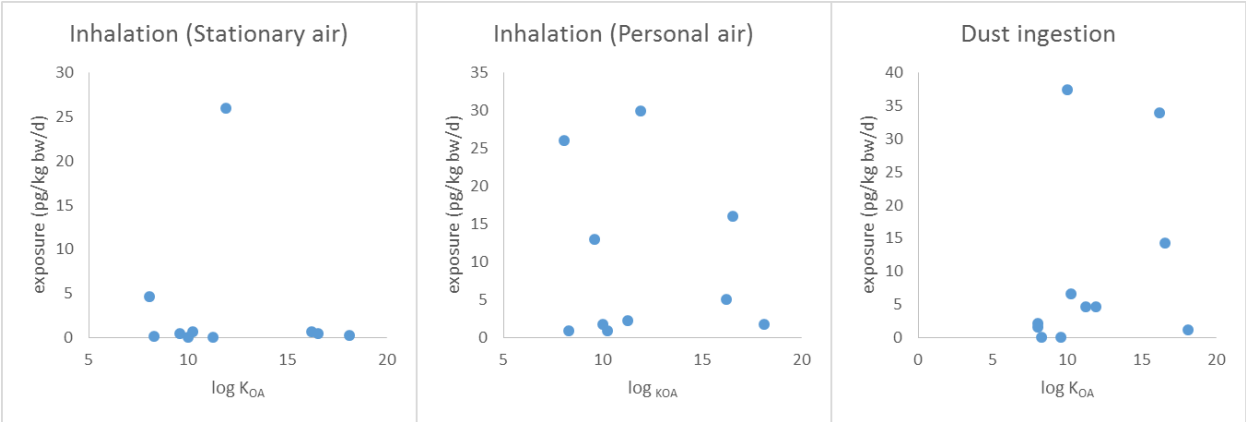

Figure S3: Estimated median exposure values for FRs detected in each sample type vs their log K_{OA} value

Table S19: Overview of estimated inhalation exposure to FR (median, pg/kg bw/d) in recent studies.

Reference	This study		Cequier et al.[7]	Fromme et al.[23]	Tao et al.[22]
Type of sample	Stationary air	Personal air	Stationary air	Stationary air	Stationary air
Inhalation rate (m^3/d)	13.73-20.39*	13.73-20.39*	13.3	13.3	20
Body weight (kg)	individual	individual	individual	60	70
TBP-AE	0.11	0.93	0.53		
α-DBE-DBCH	4.6	26	9		24
β-DBE-DBCH					17
BATE	0.42	13			
PBBz	1.1		0.65		3.0
PBT	1.9		0.88		2.9
PBEB	ND		0.06		0.40
DPTE	0.092		0.09		0.56
HBB	0.13		0.47		1.6
PBBA	0.26				
EH-TBB	26	30	0		0.76
BTBPE			0		1.9
BEH-TEBP	0.7	5.1	0		0.56
syn-DDC-CO	0.23		0		0.29
anti-DDC-CO	0.72		0		0.17
DBDPE	0.23	1.8	0		1.4
TBBPA	0.47	0.50			
α-HBCDD	0.032	1.7			0.37
β-HBCDD	0.0013	3.8			0.31
γ-HBCDD	0.034	2.1			29
BDE-28	0.29		0.86		0.50
BDE-47	0.65	0.86	14	1.9	4.4
BDE-49	0.57				
BDE-66	0.04				
BDE-99	0.046	2.2	2.4	0.5	2.7
BDE-100	0.022		0.78	0.1	0.39
BDE-153	0.038		0.11	0.1	2.3
BDE-154			0.04	0.03	1.3
BDE-183	0.18		0	0.1	0.14
BDE-197	0.18				
BDE-207	0.12	0.20			
BDE-208		0.79			
BDE-209	0.49	16	0.24	1.9	29

empty cell: no data available
*according to **Table S8**

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