7. Supplemental Information

7.1. Introduction

Table S1. Novel brominated flame retardants measured in dust samples.(Bergman and others 2012)

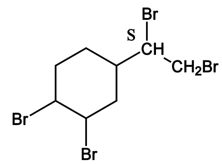
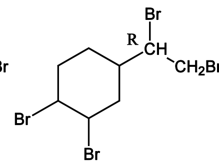
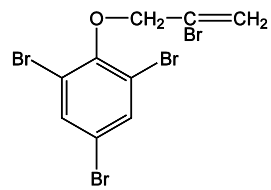
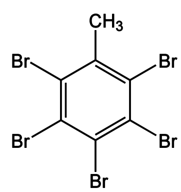
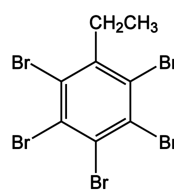
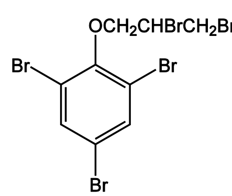
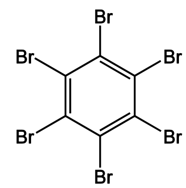
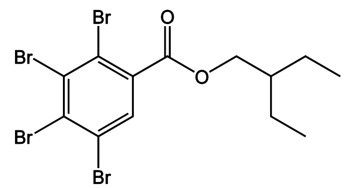
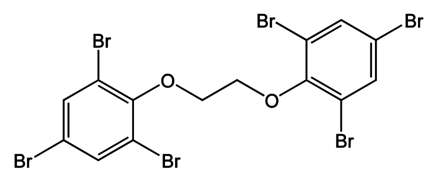
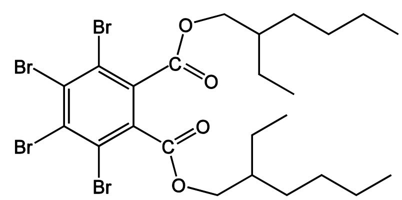
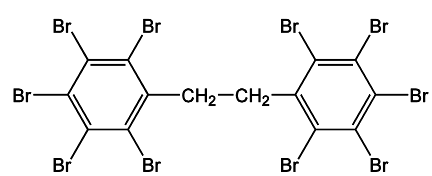
Chemical Name CAS #	Abbreviations[a] Common **Practical** *Structural*	Structure	
α, β-1,2-Dibromo-4-1,2-dibromoethyl)cyclohexane 3322–93–8	TBEC BrCyHx TBECH **DBE-DBCH** *DiBEt-DiBcH*	 β-DBE-DBCH	 α-DBE-DBCH
2-bromoallyl 2,4,6-tribromophenyl ether —	**BATE**		
Pentabromotoluene 878-83-2	PBT **PBT** *PeBT*		
Pentabromoethylbenzene 85-22-3	PeBrEtBz PBEB **PBEB** *PeBEtBz*		
2,3-dibromopropyl 2,4,6-tribromophenyl ether 35109-60-5	DPTE **TBP-DBPE** *TrBPh-DiBPrE*		

Table S1. Novel brominated flame retardants measured in dust samples.(Bergman and others 2012)

Chemical Name CAS #	Abbreviations[a] Common **Practical** *Structural*	Structure
Hexabromobenzene 87-82-1	HxBrBz HBB **HBB** *HxBBz*	
2-ethylhexyl-2,3,4,5-tetrabromobenzoate 183658-27-7	EHTeBB EHTBB TBB **EH-TBB** *EtH-TeBBzo*	
1,2-bis(2,4,6-tribromophenoxy)ethane 37853-59-1	TBEHxBrPoxE BTBPE **BTBPE** *bTBPhOEt*	
bis(2-ethylhexyl)tetrabromophthalate 26040-51-7	TeBrDEHP BEHTBP TBPH **BEH-TEBP** *bEtH-TeBPht*	
Decabromodiphenylethane 84852-53-9	DBDE EBPE DeBrPylE DBDPE **DBDPE** **BDPE-209** *DBDiPhEt*	

[a] Common (Roman type) abbreviations are those currently in use. **Practical (bold)** abbreviations and *Structural (italics)* abbreviations are those suggested by Bergman et al (Bergman and others 2012) in an attempt to standardize the abbreviations used for flame retardants.

7.2. Methods and Materials

7.2.1. Materials

Solvents (dichloromethane, hexane) were JT Baker Ultra-Resi-Analyzed® grade, and were used as is. Tetradecane was EMD Millipore 99%, and was used as is. Hydromatrix™ was used as the bulking agent for sample extraction, and was solvent rinsed prior to use. Silica gel (Fisher Scientific, 70-230 mesh, Grade 40) and anhydrous sodium sulfate were solvent rinsed immediately prior to use. Native and ^{13}C-labeled standards were purchased from Wellington Laboratories (Guelph, Ontario, Canada). The Standard Reference Material, SRM 2585 Organic Contaminants in House Dust, was purchased from The National Institute of Science and Technology, Gaithersburg, MD, USA.

7.2.2. Equipment

A Thermo (formerly Dionex) ASE 200 was used to extract the samples. ASE extracts were concentrated to less than 700 μL using a TurboVap 500 (Caliper Life Sciences). Silica gel columns and a Waters high pressure gel permeation chromatography (GPC) system comprising a 1515 isocratic pump; a 2489 dual wavelength absorbance detector; a 717 Plus autosampler; and a Fraction Collector III, were used for sample cleanup. The GPC eluate was concentrated to less than 300 μL using a Rapid-Vap/Rapid-Trap solvent reduction system (LabConco). Final extracts were concentrated using a six port Mini-Vap (Supelco).

Sample extracts were analyzed using a Thermo DFS high resolution gas chromatography/mass spectrometry (GC/MS) system (dual GC configuration). This system consisted of a DFS high resolution mass spectrometer, a Tri-Plus Extended Rail autosampler, and two Thermo Trace Ultra GCs. Each GC was equipped with a split/splitless injector, a programmed temperature vaporizing (PTV) injector, and electronic flow control. The analytical column for NBFR analysis was an Agilent/J&W DB5- MS (15m x 0.25 mm id x 0.25 μm film) with helium as the carrier gas.

7.2.3. Sample Analysis

Table S2. Mass spec parameters for the NBFRs, in order of retention time.

Analyte	Quantitation Mass	Ratio Mass	Internal Standard
DBE-DBCH	266.9202	264.9222	^{13}C-HBB
BATE	329.7708	331.7688	^{13}C-HBB
PBT	485.6105	487.6085	^{13}C-HBB
PBEB	499.6262	501.6241	^{13}C-HBB
TBP-DBPE	329.7708	331.7688	^{13}C-HBB
HBB	549.5054	547.5074	^{13}C-HBB
^{13}C-HBB	557.5235	559.5214	^{13}C-BDE-154
EH-EH-TBB	420.6714	418.6735	^{13}C-BTBPE
^{13}C-BDE-154	495.7352	493.7372	Recovery Stnd
BTBPE	356.7943	358.7922	^{13}C-BTBPE
^{13}C-BTBPE	364.8211	366.8191	^{13}C-BDE-154
BEH-TEBP	464.6613	462.6633	^{13}C-BTBPE
DBDPE	484.6027	486.6006	^{13}C-DBDPE
^{13}C-DBDPE	491.6262	493.6241	^{13}C-BDE-154

7.3. QA/QC Results

Table S3. Descriptive Statistics for Analysis of Contemporary House Dust and SRM 2585 House Dust QC Samples
All concentrations in ng/g.

	Contemporary House Dust (n=5)						SRM-2585 (n=7)					
	% Detects	Mean	Stnd Dev	Min	Median	Max	% Detects	Mean	Stnd Dev	Min	Median	Max
β-DBE-DBCH	100	2.86	2.10	1.37	1.50	6.04	42.9	2.19	2.31	< 0.64	< 0.64	6.62
α-DBE-DBCH	100	2.62	1.82	1.25	1.61	5.38	42.9	1.74	1.67	< 0.64	< 0.64	4.96
BATE	0	< 0.64		< 0.64	< 0.64	< 0.64	0	< 0.64	0	< 0.64	< 0.64	< 0.64
PBT	0	< 0.64		< 0.64	< 0.64	< 0.64	0	< 0.64	0	< 0.64	< 0.64	< 0.64
PBEB	0	< 0.64		< 0.64	< 0.64	< 0.64	85.7	8.96	3.69	< 0.64	10.3	10.9
TBP-DBPE	0	< 0.64		< 0.64	< 0.64	< 0.64	0	< 0.64	0	< 0.64	< 0.64	< 0.64
HBB	100	2.69	0.29	2.23	2.78	3.01	83.3	4.45	1.9	< 0.64	5.2	5.5
EH-TBB	100	895	123	731	905	1032	85.7	53.8	30.9	< 0.64	52.0	102.4
BEH-TEBP	100	148	46.9	101	156	208	85.7	502	279	< 0.64	544	874
BTBPE	100	22.5	2.52	20.3	22.5	24.7	85.7	62.2	30.0	< 0.64	65.9	97.8
DBDPE	100	5.85	1.00	5.19	5.45	7.31	0	< 2.6	0	< 2.6	< 2.6	< 2.6

7.4. Discussion

Table S4. PBDE concentrations for 59 NCCLS and 27 FOX samples used for NBFR analysis. All concentrations in ng/g.

	NCCLS (Whitehead and others 2013a)				FOX (Shen and others 2012)			
	Mean	Min	Median	Max	mean	min	median	Max
BDE-28	50.1	0.75	18.9	468	113	6.60	40.3	620
BDE-32	<MRL	<MRL	<MRL	<MRL	6.18	<MRL	<MRL	165
BDE-47	3330	40.6	1290	49800	14600	1310	5170	94900
BDE-66	56.0	0.96	24.5	609	301	18.9	96.3	2620
BDE-71	70.8	1.67	37.4	1080	482	<MRL	120	3310
BDE-99	5110	47.5	1830	67600	31000	2450	9240	201000
BDE-100	823	8.50	330	11800	5430	485	1720	36000
BDE-153	623	8.30	297	4820	3990	332	1220	23200
BDE-154	356	3.28	148	3040	2860	250	919	18100
BDE-155	10.5	0.21	8.13	185	167	17.3	51.1	1160
BDE-179	11.3	0.12	9.78	31.8	13.7	<MRL	<MRL	122
BDE-183	107	3.37	19.2	1170	151	16.9	77.9	644
BDE-190	6.21	0.26	1.82	70.9	13.1	<MRL	8.90	57.5
BDE-196	29.7	2.27	8.99	456	106	9.47	76.6	399
BDE-197	37.6	1.94	7.42	829	63.1	6.29	51.1	255
BDE-201	19.5	0.93	3.64	726	67.0	7.36	48.4	312
BDE-202	2.50	0.19	1.19	42.7	23.0	2.33	17.5	91.6
BDE-203	23.2	3.18	8.89	285	105	9.6	81.5	362
BDE-206	134	24.3	75.4	777	1860	214	1130	9680
BDE-207	100	17.4	54.2	666	852	109	592	4570
BDE-208	56.4	8.58	31.6	653	488	60.4	379	2250
BDE-209	4740	691	2520	31200	78200	8070	47000	391000