Supporting Information

Elevated Concentrations of Semi-volatile Organic Compounds in Social Housing Multi-unit Residential Building Apartments

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SI1: Sampling Design

Figure S1 demonstrates the set-up of the polydimethylsiloxane (PDMS) silicone rubber passive air sampler (highlighted in a blue frame) in the social housing multi-unit residential building (MURB) apartment. After being pre-cleaned by the method as described in SI3, PDMS silicone rubber passive air samplers were hooked on stainless steel paper clips, which were also pre-cleaned using the same method as that for PDMS silicone rubber passive air samplers. The samplers were then stored in the pre-cleaned jar (baked at 450 °C, rinsed with acetone, dichloromethane (DCM) and hexanes, and then dried up) at -20 °C before use. There was one blank (batch/preparation blanks) collected from each jar before going into the field. No contamination was found in any of the batch/preparation blanks.

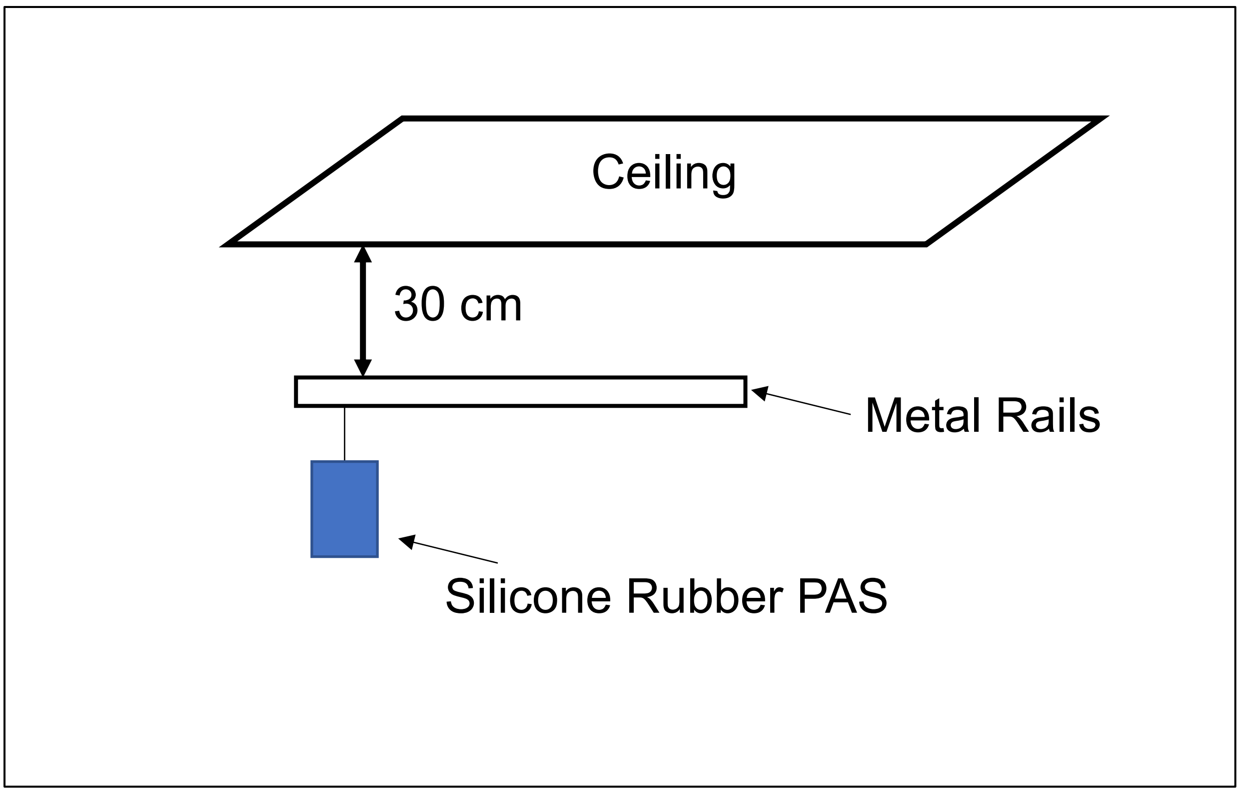

Figure S1. A diagram of the set-up for PDMS silicone rubber passive air samplers (highlighted in blue) in social housing MURB apartments[1,2].

Table S1 summarizes the major characteristics of the social housing MURBs including the type of residents. Studios have a single space that functions as a living room and bedroom.

Table S1. A summary of building characteristics in this study.

Building ID	Residence Type	Stories	No. of Units Tested		Unit Type	Floor Area (m^2)
			Late Spring	Winter		
A	Senior	4	12	13	Studio & 1-Bedroom	10600
B	Senior	4	8	8	Studio & 1-Bedroom	9100
C	Bachelor	7	13	10	Studio	11800
D	Senior	7	3	3	1-Bedroom	3300
E	Bachelor	11	12	12	Studio	10900
F	Family	19	13	10	1-3 Bedroom	13800
G	Family	18	10	9	1-3 Bedroom	19200

SI2: Compounds of Interest

Table S2. A summary of names, abbreviations (Abbr.), CAS numbers (CAS No.), molecular formulas and molecular weights of the target compounds.

Compound Name	Abbr.	CAS No.	Molecular Formula	Molecular Weight (g/mol)
Flame Retardants (FRs)				
Tris(1,3-dichloro-2-propyl)phosphate	TDCiPP	13674-87-8	$C_9H_{15}Cl_6O_4P$	430.89
Allyl 2,4,6-tribromophenyl ether	ATE	3278-89-5	$C_9H_7Br_3O$	370.86
1,2,3,4,5-Pentabromobenzene	PBBz	608-90-2	C_6HBr_5	472.59
Pentabromotoluene	PBT	87-83-2	$C_7H_3Br_5$	486.62
Pentabromoethylbenzene	PBEB	85-22-3	$C_8H_5Br_5$	500.65
Hexabromobenzene	HBBz	87-82-1	C_6Br_6	551.49
2-Ethylhexyl 2,3,4,5-tetrabromobenzoate	EHTBB	183658-27-7	$C_{15}H_{18}Br_4O_2$	549.92
Bis(2-ethylhexyl) tetrabromophthalate	BEHTBP	26040-51-7	$C_{24}H_{34}Br_4O_4$	706.14
Syn-Dechlorane Plus	s-DP	135821-03-3	$C_{18}H_{12}Cl_{12}$	653.73
Ant-Dechlorane Plus	a-DP	135821-74-8	$C_{18}H_{12}Cl_{12}$	653.73
Octabromotrimethylphenylindane	OBIND	155613-93-7	$C_{18}H_{12}Br_8$	867.52
Decabromodiphenylethane	DBDPE	84852-53-9	$C_{14}H_4Br_{10}$	971.22
Polybrominated diphenyl ethers (PBDEs)				
2,2',4-Tribromodiphenyl ether	BDE-17	147217-75-2	$C_{12}H_7Br_3O$	406.90
2,4,4'-Tribromodiphenyl ether	BDE-28	41318-75-6	$C_{12}H_7Br_3O$	406.90
2,2',4,4'-Tetrabromodiphenyl ether	BDE-47	5436-43-1	$C_{12}H_6Br_4O$	485.80
2,2',4,5'-Tetrabromodiphenyl ether	BDE-49	243982-82-3	$C_{12}H_6Br_4O$	485.80
2,3',4,4'-Tetrabromodiphenyl ether	BDE-66	189084-61-5	$C_{12}H_6Br_4O$	485.80
2,3',4',6-Tetrabromodiphenyl ether	BDE-71	189084-62-6	$C_{12}H_6Br_4O$	485.80
2,2',3,4,4'-Pentabromodiphenyl ether	BDE-85	182346-21-0	$C_{12}H_5Br_5O$	564.69
2,2',4,4',5-Pentabromodiphenyl ether	BDE-99	60348-60-9	$C_{12}H_5Br_5O$	564.69
2,2',4,4',6-Pentabromodiphenyl ether	BDE-100	189084-64-8	$C_{12}H_5Br_5O$	564.69
2,2',3,4,4',5'-Hexabromodiphenyl ether	BDE-138	182677-30-1	$C_{12}H_4Br_6O$	643.59
2,2',4,4',5,5'-Hexabromodiphenyl ether	BDE-153	68631-49-2	$C_{12}H_4Br_6O$	643.59
2,2',4,4',5,6'-Hexabromodiphenyl ether	BDE-154	207122-15-4	$C_{12}H_4Br_6O$	643.59
2,2',3,4,4',5',6-Heptabromodiphenyl ether	BDE-183	207122-16-5	$C_{12}H_3Br_7O$	722.48
2,3,3',4,4',5,6-Heptabromodiphenyl ether	BDE-190	189084-68-2	$C_{12}H_3Br_7O$	722.48
Decabromodiphenyl ether	BDE-209	1163-19-5	$C_{12}Br_{10}O$	959.17
Phthalates				
Diethyl Phthalate	DEP	84-66-2	$C_{12}H_{14}O_4$	222.24
Diisobutyl phthalate	DiBP	84-69-5	$C_{16}H_{22}O_4$	278.35
Di-n-butyl phthalate	DnBP	84-74-2	$C_{16}H_{22}O_4$	278.35
Benzyl butyl phthalate	BzBP	85-68-7	$C_{19}H_{10}O_4$	312.35
Bis(2-Ethylhexyl) phthalate	DEHP	117-81-7	$C_{24}H_{38}O_4$	390.56

Di-n-octyl phthalate	DnOP	117-84-0	$C_{24}H_{38}O_4$	390.56
Diisononyl phthalate	DiNP	28553-12-0 68515-48-0	$C_{26}H_{42}O_4$	418.62
Diisodecyl phthalate	DiDP	26761-40-0 68515-49-1	$C_{28}H_{46}O_4$	446.67
Polycyclic aromatic hydrocarbons (PAHs)				
Naphthalene	Nap	91-20-3	$C_{10}H_8$	128.17
Acenaphthylene	Acy	208-96-8	$C_{12}H_8$	152.20
Acenaphthene	Ace	83-32-9	$C_{12}H_{10}$	154.21
Fluorene	Fle	86-73-7	$C_{13}H_{10}$	166.22
Phenanthrene	PH	85-01-8	$C_{14}H_{10}$	178.23
Anthracene	An	120-12-7	$C_{14}H_{10}$	178.23
Fluoranthene	Fla	206-44-0	$C_{16}H_{10}$	202.26
Pyrene	Py	129-00-0	$C_{16}H_{10}$	202.26
Benz[a]anthracene	B[a]A	56-55-3	$C_{18}H_{12}$	228.29
Chrysene	Chr	218-01-9	$C_{18}H_{12}$	228.29
Benzo[b]fluoranthene	B[b]F	205-99-2	$C_{20}H_{12}$	252.32
Benzo[k]fluoranthene	B[k]F	207-08-9	$C_{20}H_{12}$	252.32
Benzo[a]pyrene	B[a]P	50-32-8	$C_{20}H_{12}$	252.32
indeno[123-cd]pyrene	Ind	193-39-5	$C_{22}H_{12}$	276.34
Benzo[ghi]perylene	B[ghi]P	191-24-2	$C_{22}H_{12}$	276.34
Dibenz[ah]anthracene	D[ah]A	53-70-3	$C_{22}H_{14}$	278.35

SI3: Analytical Methods

Silicone rubber passive air samplers were cut and pre-cleaned with pentane using an accelerated solvent extractor (ASE) (Dionex ASE-350) operated under the following conditions: Temperature 75 °C; Heating time 5 mins; Pressure 1500 psi; Static time 5 mins; Flush volume 100%; Purge time 60 s; Static cycles 10. The silicone rubber was then contracted in methanol for 48 hours before use[3,4]. All the solvents used in this study were HPLC grade (Fisher Scientific, Fair Lawn, NJ, USA).

Table S3 demonstrates the masses of surrogate and internal standards spiked in this study during the analysis. Surrogate standards were spiked onto the samples before extraction, and internal standards were added into the sample extracts before the quantification on GC-MS. All standards were purchased from the AccuStandard Inc., USA via the Canadian distributor Chromatographic Specialties Inc., and from Wellington Laboratories Inc. in Guelph, Ontario, Canada.

Table S3. Surrogate and internal standards used in the study.

Compound Name	Type	Mass (ng)
BDE-118	Internal Standard	50
mPBBz	Surrogate Standard	20
dTDCiPP	Surrogate Standard	100
mHBBz	Surrogate Standard	20
F-BDE-100	Surrogate Standard	20
F-BDE-154	Surrogate Standard	20
F-BDE-208	Surrogate Standard	20
Fluoranthene-d10	Internal Standard	150
DEP-d4	Surrogate Standard	200
DnBP-d4	Surrogate Standard	200
DEHP-d4	Surrogate Standard	200
Naphthalene-d8	Surrogate Standard	500
Acenaphthene-d10	Surrogate Standard	500
Phenanthrene-d10	Surrogate Standard	500
Benz[a]anthracene-d12	Surrogate Standard	500
Benzo[a]pyrene-d12	Surrogate Standard	500

SI4: Instrumental Parameters

Samples were analyzed using Agilent 6890N Gas Chromatograph (GC) coupled with an Agilent 5975 mass spectrometer detector (MSD). The analysis for flame retardants was performed using an Agilent 7890B GC coupled with an Agilent 5977A MSD via splitless injection using a 15 m DB-5 MS column (Agilent technologies, 0.25 mm x 0.25 µm) in electron capture negative ion chemical ionization (NCI) mode using the following oven temperature program: initial at 100 °C hold for 1.5 mins, 12 °C/min to 250 °C, 6 °C/min to 290 °C and hold for 3 mins, 60 °C/min to 320 °C and hold for 12 mins[4].

The analysis for PAEs and PAHs was performed via splitless injection using a 30 m DB-5 MS column (Agilent technologies, 0.25 mm x 0.25 µm) on Electron Ionization (EI) mode at the following oven temperature program: initial at 75 °C hold for 3 mins, 10 °C/min to 320 °C and hold for 5.5 mins[4,5].

SI5: Quantifier and Qualifier Ions

Table S4. List of the quantifier and qualifier ions used in this study.

Compound Name	Quantifier Ion	Qualifier Ion
FR analysis (GC-NCI-MS)		
BDE-118	78.9	80.9
ATE	78.9	80.9
mPBBz	479.7	481.6
PBBz	471.7	469.7
PBT	78.9	80.9
PBEB	78.9	80.9
dTDCiPP	328.9	326.9
TDCiPP	318.8	316.8
mHBBz	561.5	559.1
HBBz	549.4	469.7
EHTBB	78.9	80.9
BEHTBP	78.9	383.8
s-DP	651.8	653.8
a-DP	653.8	651.8
OBIND	78.9	80.9
DBDPE	80.9	78.9
BDE-17	78.9	80.9
BDE-28	78.9	80.9
BDE-49	78.9	80.9
BDE-71	78.9	80.9
BDE-47	78.9	80.9
BDE-66	80.9	78.9
F-BDE-100	501.5	422.5
BDE-100	80.9	78.9
BDE-99	78.9	80.9
BDE-85	78.9	80.9
BDE-154	78.9	80.9
F-BDE-154	80.9	78.9
BDE-153	78.9	80.9
BDE-138	80.9	78.9
BDE-183	80.9	78.9
BDE-190	78.9	80.9
F-BDE-208	488.5	486.5
BDE-209	488.5	80.9
PAE and PAH analysis (GC-EI-MS)		
Fluoranthene-d10	212	\

DEP-d4	153	181
DEP	149	177
DiBP	149	150
DnBP-d4	153	\
DnBP	223	149
BzBP	206	91
DEHP	279	149
DEHP-d4	153	\
DnOP	279	149
DiNP	293	149
DiDP	307	149
Naphthalene-d8	136	137
Naphthalene	128	127
Acenaphthylene	152	151
Acenaphthene-d10	164	162
Acenaphthene	153	154
Fluorene	166	165
Phenanthrene-d10	188	189
Phenanthrene	178	176
Anthracene	178	176
Fluoranthene	202	200
Pyrene	202	200
Benz[a]anthracene-d12	240	\
Benz[a]anthracene	228	226
Chrysene	228	226
Benzo[b]fluoranthene	252	250
Benzo[k]fluoranthene	252	250
Benzo[a]pyrene	252	250
Benzo[a]pyrene-d12	264	\
indeno[123-cd]pyrene	276	277
Dibenz[ah]anthracene	278	276
Benao[ghi]perylene	276	274

SI6: Method Detection Limits

Table S5.The method detection limits for each compound in this study.

Compound Name	**Method Detection Limits FRs (pg/m^3) PAEs and PAHs(ng/m^3)**
ATE	0.140
PBBz	0.0300
PBT	0.0700
PBEB	0.0700
HBBz	0.0300
EHTBB	1.36
BEHTBP	3.40
s-DP	0.350
a-DP	0.350
OBIND	6.80
DBDPE	8.19
BDE-17	0.210
BDE-28	0.210
BDE-47	0.210
BDE-49	0.210
BDE-66	0.210
BDE-71	0.210
BDE-85	0.210
BDE-99	0.210
BDE-100	0.210
BDE-138	0.210
BDE-153	0.280
BDE-154	0.280
BDE-183	0.280
BDE-190	0.0700
BDE-209	17.1
TDCiPP	2.89
DEP	0.0399
DiBP	0.0212
DnBP	0.151
BzBP	0.259
DEHP	0.268
DnOP	0.323
DiNP	0.418
DiDP	0.117

Naphthalene	0.0444
Acenaphthylene	0.0322
Acenaphthene	0.0199
Fluorene	0.0188
Phenanthrene	0.00940
Anthracene	0.0221
Fluoranthene	0.00738
Pyrene	0.0200
Benz[a]anthracene	0.00999
Chrysene	0.00923
Benzo[b]fluoranthene	0.0215
Benzo[k]fluoranthene	0.0280
Benzo[a]pyrene	0.0542
indeno[123-cd]pyrene	0.0231
Dibenz[ah]anthracene	0.0221
Benao[ghi]perylene	0.0227

SI7: Descriptive Statistics

Tables S6, S7 and S8 summarize the descriptive analysis for all measured flame retardants in pg/m^3, phthalates in ng/m^3 and polycyclic aromatic hydrocarbons (PAHs) in ng/m^3 in indoor air from all social housing multi-unit residential building (MURB) apartments in Toronto, Canada, combining two sampled seasons. Prior to statistical analysis, non-detects were substituted with half of the method detection limits (MDLs), as in Table S5.

Table S6. Descriptive statistics for flame retardants (pg/m^3) along with detection frequencies (D.F., %).

Compound Name	D.F. (%)	Geometric Mean	Median	Min	Selected Percentiles					Max
					10%	25%	50%	75%	90%	
TDCiPP	99%	1380	1640	9.03	245	562	1640	3320	7560	19600
ATE	99%	143	141	9.53	40.6	70.8	141	270	552	2890
PBBz	99%	34.8	33.6	1.35	11.7	18.4	33.6	63.7	123	461
PBT	99%	59.2	56.0	8.38	17.7	26.2	56.0	117	257	1030
PBEB	38%	0.746	0.0700	0.0700	0.0700	0.0700	0.0700	10.4	266	2360
HBBz	40%	0.561	0.0300	0.0300	0.0300	0.0300	0.0300	30.0	71.2	2810
EHTBB	46%	6.51	1.36	1.36	1.36	1.36	1.36	36.6	119	2350
BEHTBP	20%	4.88	3.40	3.40	3.40	3.40	3.40	3.40	20.7	242
s-DP	0%	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
a-DP	0%	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
OBIND	0%	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80
DBDPE	0%	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19	8.19
Total NFRs	100%	2110	2310	193	576	1010	2310	3850	8260	21600
BDE-17	98%	21.8	19.6	0.210	7.72	13.1	19.6	35.1	105	461
BDE-28	96%	41.9	42.1	0.210	7.73	20.9	42.1	104	300	1380
BDE-49	88%	14.3	21.8	0.210	0.210	8.29	21.8	47.2	109	280
BDE-71	23%	0.393	0.210	0.210	0.210	0.210	0.210	0.210	3.84	188
BDE-47	99%	243	187	18.9	54.0	102	187	406	1630	9170
BDE-66	0%	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210
BDE-100	0%	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210
BDE-99	97%	37.9	31.2	0.210	10.7	18.7	32.0	65.5	317	1690
BDE-85	0%	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210

BDE-154	0%	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210	0.210
BDE-153	0%	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280
BDE-138	0%	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280
BDE-183	0%	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280	0.280
BDE-190	0%	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700	0.0700
BDE-209	0%	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
$\sum_{15}$PBDEs	100%	433	327	51.0	119	198	327	654	2790	11900
Total FRs	100%	2960	3070	300	831	1460	3070	6260	10400	21900

Table S7. Descriptive statistics for phthalate esters (ng/m^3) along with detection frequencies (D.F., %).

Compound Name	D.F. (%)	Geometric Mean	Median	Min	Selected Percentiles					Max
					10%	25%	50%	75%	90%	
DEP	100	2280	1840	393	699	1100	1840	4200	9200	36100
DiBP	100	1240	1270	187	462	728	1270	1950	3480	9690
DnBP	100	471	486	83.1	209	294	486	773	1090	2160
BzBP	100	27.2	22.3	4.37	8.25	11.5	22.3	52.4	149	353
DEHP	100	77.9	73.1	15.4	33.3	43.3	73.1	113	198	7790
DnOP	100	1610	1640	665	913	1320	1640	2130	2440	3350
DiNP	100	322	323	147	187	239	323	429	549	1100
DiDP	100	25.1	25.5	8.88	12.2	18.6	25.5	33.0	42.8	1400
Σ_8PAEs	100	7170	6160	2560	3910	4740	6160	10400	15400	39100

Table S8. Descriptive statistics for polycyclic aromatic hydrocarbons (PAHs) (ng/m^3) along with detection frequencies (D.F., %).

Compound Name	D.F. (%)	Geometric Mean	Median	Min	Selected Percentiles					Max
					10%	25%	50%	75%	90%	
Naphthalene	99%	70.8	56.9	0.0444	16.9	31.8	56.9	156	333	13300
Acenaphthylene	96%	6.41	7.42	0.0322	2.62	4.28	7.42	12.5	25.3	70.2
Acenaphthene	100%	14.8	13.8	3.17	7.22	10.3	13.8	20.3	30.0	90.2
Fluorene	100%	30.6	27.2	6.56	15.3	19.2	27.2	46.0	76.0	189
Phenanthrene	100%	84.7	79.0	17.1	35.0	49.1	79.0	135	203	1090
Anthracene	100%	9.84	9.99	2.09	4.23	5.64	9.99	16.0	26.6	47.9
Fluoranthene	100%	6.96	6.74	2.05	2.52	4.18	6.74	11.4	17.2	69.2
Pyrene	99%	4.18	4.50	0.0200	2.19	2.60	4.50	6.73	10.1	26.6
Σ_8PAHs	100%	294	254	44.2	137	178	254	429	664	13500
Benz[a]anthracene	24%	0.0346	0.0100	0.00999	0.0100	0.0100	0.0100	0.00100	2.48	7.77
Chrysene	36%	0.0619	0.00920	0.00923	0.00920	0.00920	0.00920	2.24	2.67	7.17
Benzo[b]fluoranthene	18%	0.0479	0.0215	0.0215	0.0215	0.0215	0.0215	0.0215	2.45	12.7
Benzo[k]fluoranthene	17%	0.0576	0.0280	0.0280	0.0280	0.0280	0.0280	0.0280	2.41	9.53
Benzo[a]pyrene	8%	0.0721	0.0542	0.0542	0.0542	0.0542	0.0542	0.0542	0.0542	4.20
indeno[123-cd]pyrene	18%	0.0435	0.0231	0.0231	0.0231	0.0231	0.0231	0.0231	2.37	9.18
Dibenz[ah]anthracene	43%	0.163	0.0221	0.0221	0.0221	0.0221	0.0221	2.28	2.58	13.1
Benao[ghi]perylene	16%	0.0448	0.0227	0.0227	0.0227	0.0227	0.0227	0.0227	2.20	13.2
Σ_{16}PAHs	100%	299	256	44.4	144	184	256	432	698	13500

SI8: Room Temperatures

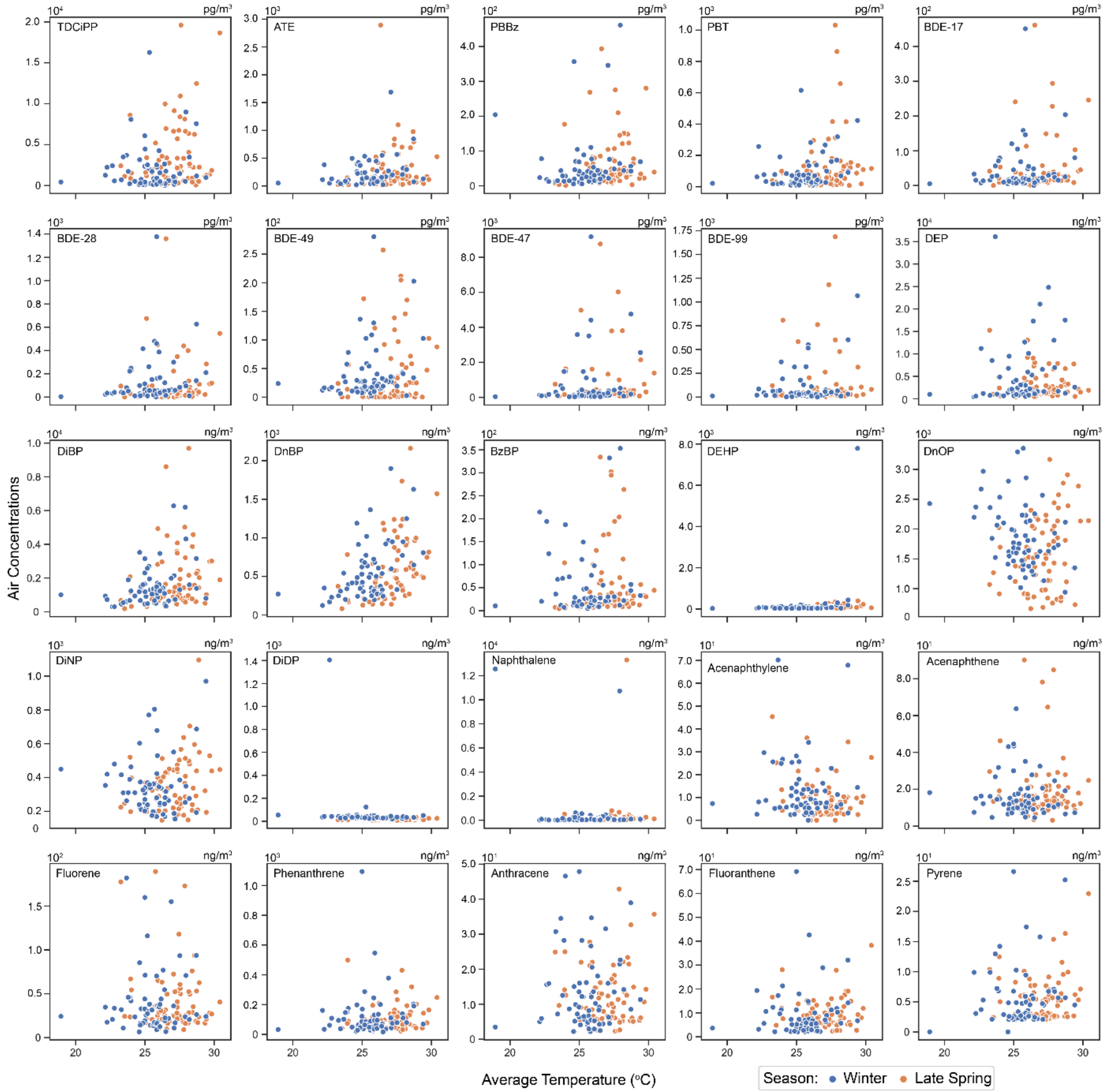

Figure S2. Relationship between SVOC concentrations (FRs in pg/m^3, phthalates in ng/m^3 and PAHs in ng/m^3) in indoor air and the corresponding indoor room temperatures (weekly average during sampling) in °C in social housing MURB apartments in late spring and winter.

SI9: Smoking Impacts

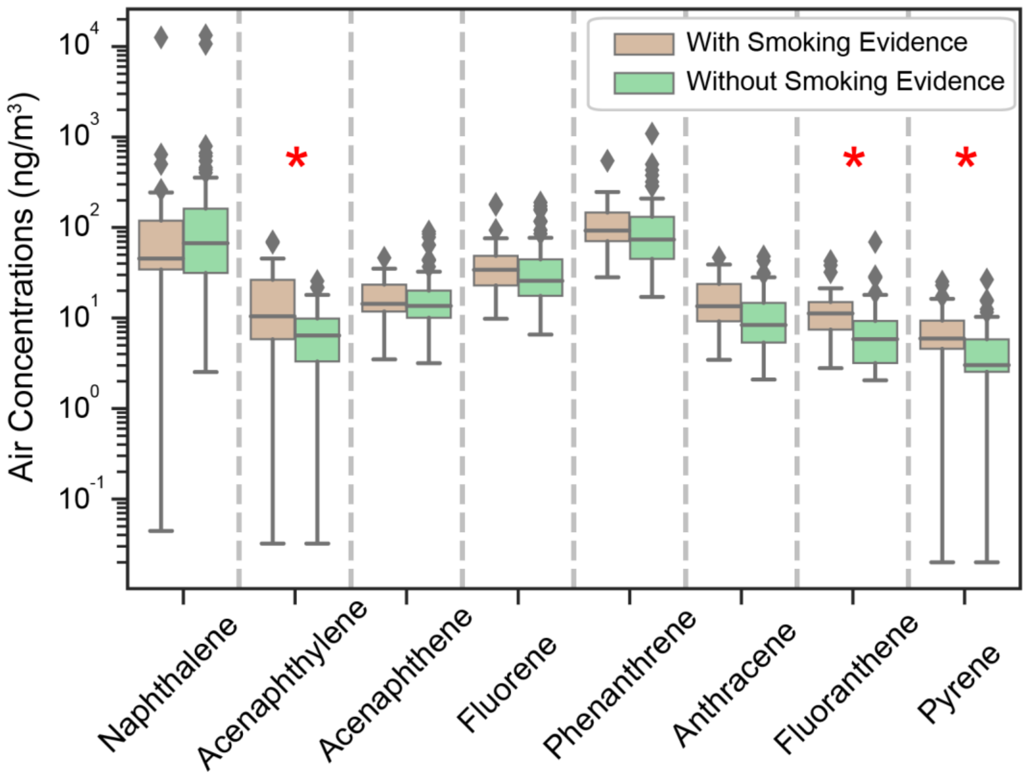

Figure S3. Concentrations of PAHs (ng/m^3) in social housing MURB apartments in relationship to evidence of smoking (e.g.: cigarettes, ashtrays, smoking items visible, odour of smoke, active smoking occurring during the visit). * refers to a statistically significant difference ($p<0.05$) using a Mann-Whitney U test.

SI10: Occupant Density

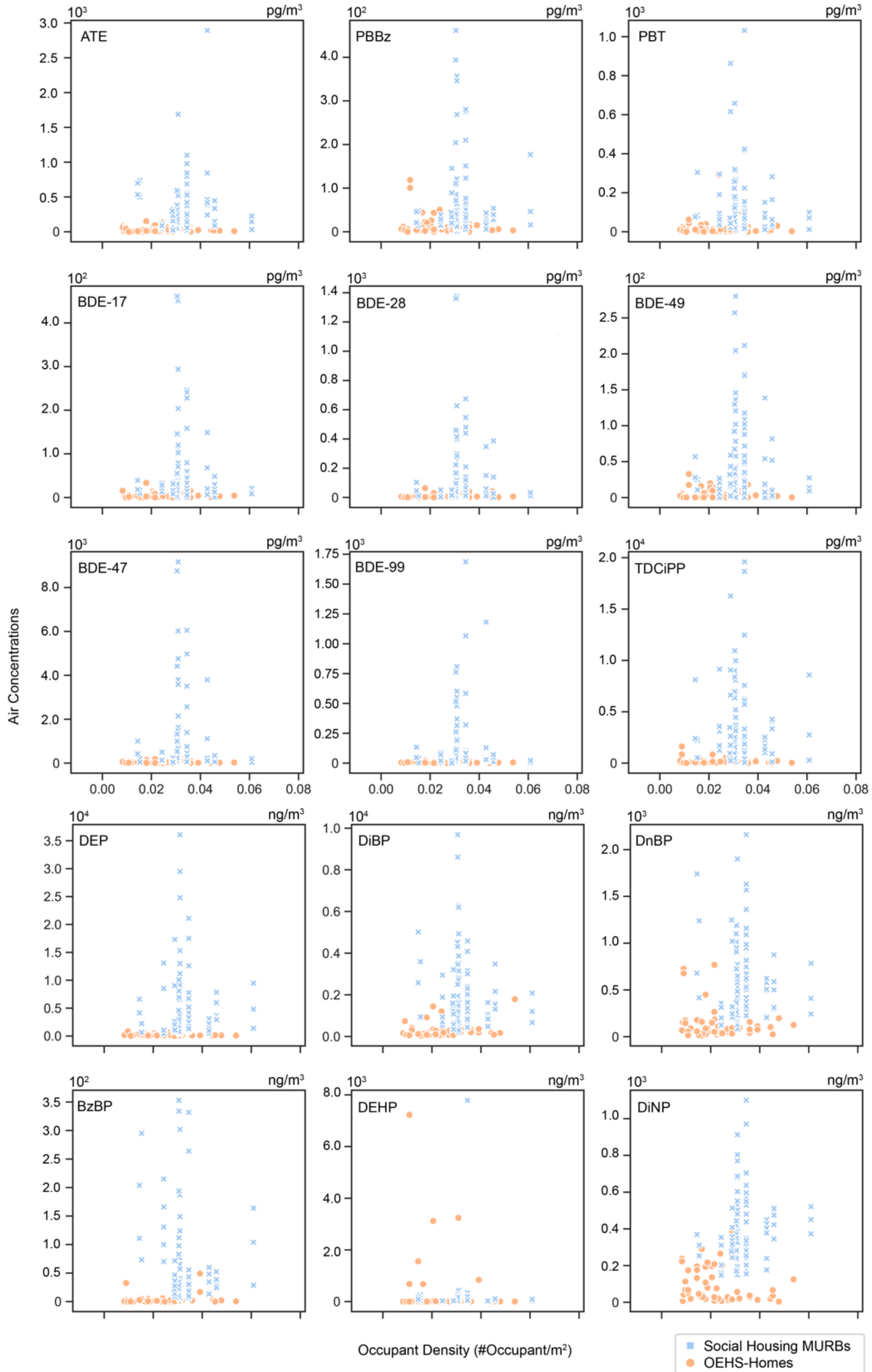

Figure S4. The relationship between occupant densities and concentrations of flame retardants (pg/m^3) and phthalates (ng/m^3) in social housing MURBs and in the Ontario Environmental Health Study-Homes (OEHS-Homes) (Most Used Rooms).

SI11: Literature Comparisons

Table S9. Concentrations (pg/m^3) of selected flame retardants measured in indoor air in residential dwellings worldwide in literature.

Reference	Sampling Year	Sampling Technique	Building Type	Statistical Parameters	Compounds					
					TDCiPP	ATE	PBBz	PBT	BDE-47	BDE-99
This study Canada N = 134	2017	PAS PDMS	SH-MURB	Median Mean Range	1640 2780 9.03-19600	141 243 9.53-2890	33.6 59.1 1.35-461	56.0 106 8.38-1030	187 736 18.9-9170	32.0 112 0.210-1690
France[6] N = 6	2011-2012	AAS XAD-2	MURB	Median Range					3.4 2.6-4.2	9.9
Canada[4] N = 51	2015	PAS PDMS	SFD	Median Range	137 n.d.-1916	20.3 0.17-141	6.85 0.04-140	11.0 0.08-114	29.1 n.d.-330	6.11 n.d.-42.7
USA[7] N = 50	2006	AAS XAD-2	LI-SFD	Median Rane					n.d. n.d.-2.3	
USA[8] N = 88	2008-2009	PAS PUF	SFD	Median 95th					370 1800	100 550
USA[8] N = 48	2008-2009	PAS PUF	SFD	Median 95th					770 5000	120 1100
Sweden[9] N = 10	<2011	AAS SPE	SFD	Median Range	n.d. n.d.-17					
Sweden[10] N = 13	2012	AAS PUF	SFD	Median Range				11 2.6-29	n.d. n.d.-51	n.d. n.d.-34
Australia[11] N = 5	2007-2008	PAS PUF	SFD	Median Range					25	32

Abbreviations: Listed in Table S2;
AAS: Active air sampler;
LI: Low-income;
MURB: Multi-unit residential building;
n.d.: As non-detect suggesting that concentrations of the contaminants were lower than instrumental detection limits;
PAS: Passive air sampler;
PDMS: Polydimethylsiloxane, also known as silicone rubber;
PUF: Polyurethane foam;
SFD: Single family dwellings;
SH: Social housing;
SPE: Solid-phase extraction cartridges.

Table S10. Concentrations (ng/m^3) of phthalates measured in indoor air in residential dwellings worldwide in literature.

Reference	Sampling Year	Sampling Technique	Building Type	Statistical Parameters	Compounds						
					DEP	DiBP	DnBP	BzBP	DEHP	DnOP	DiNP
This study Canada N = 134	2017	PAS PDMS	SH-MURB	Median Mean Range	1840 3990 393-36100	1270 1670 187-1520	486 578 83.1-2160	22.3 51.6 4.37-353	73.1 153 15.4-7790	1640 1710 665-3350	323 354 147-1100
China[12] N = 13	2010-2011	Modelling	MURB	Mean Range	54.5		573	0.586	71.7	0.122	
Sweden[13] N = 16	<2010	AAS SPE	MURB	Median Range	160 n.d.-410	180 86-460	140 80-760	11 3.2-110	380 223-520		
Sweden[14] N = 169	2006-2007	AAS SPE	MURB	Median Range	210 38-2200	230 n.d.-11000	190 15-1600	9 n.d.-300	220 42-890	0.92 n.d.-17	
France[6] N = 6	2011-2012	AAS XAD-2	MURB	Median Range	104 15-418	162 29-661	65 11-136	2.0 0.38-19.4	14 1.0-54	0.18 0.09-0.36	
Canada[4] N = 51	2015	PAS PDMS	SFD	Median Range	148 25.0-1160	184 25.6-1700	79.7 19.7-856	1.39 0.020-58.0	4.58 1.10-8530		43.6 7.16-280
USA[7] N = 50	2006	AAS XAD-2	SFD	Median Range	330 110-2500	130 17-1700	140 28-1100	6.8 n.d.-80	68 n.d.-200	n.d. n.d.-0.80	
Sweden[9] N = 10	<2011	AAS SPE	SFD	Median Range	1300 680-3900	270 140-560	850 300-2300	21 6.6-97	200 92-530		
France[15] N =150	2012-2013	AAS PUF	SFD	Median Range	182 40.3-2900	354 97.5-8560	86.0 n.d.-527	1.8 n.d.-145	27.9 n.d.-189		11.2 n.d.-257
France[16] N = 30	2011	AAS PUF	SFD	Median Range	157 39.4-711	326 42.5-2690	82.9 n.d.-234	n.d. n.d.-6.5	n.d. n.d.-20.2		n.d. n.d.-35.6
Japan[17] N = 40	2006-2007	AAS C18-Disks	SFD	Median Range	60.7 22.3-203	75 13.2-321	200 79.6-740	n.d. n.d.-26.6	147 11.8-1660		n.d. n.d.-192

Abbreviations: Listed in Table S2;
AAS: Active air sampler;
Modelling: Estimated based on particle-phase concentrations;
MURB: Multi-unit residential building;
n.d.: As non-detect suggesting that concentrations of the contaminants were lower than instrumental detection limits;
PAS: Passive air sampler;
PDMS: Polydimethylsiloxane, also known as silicone rubber;
PUF: Polyurethane foam;
SFD: Single family dwellings;
SH: Social housing;
SPE: Solid-phase extraction cartridges.

Table S11. Concentrations (ng/m^3) of PAHs measured in indoor air in residential dwellings worldwide in literature. (The second half of this table is on next page.)

Reference	Sampling Year	Sampling Technique	Building Type	Statistical Parameters	Compounds			
					Nap	**Acy**	**Ace**	**Fle**
This study Canada N = 134	2017	PAS PDMS	SH-MURB	Median Mean Range	56.9 392 0.044-13300	7.42 10.5 0.032-70.2	13.8 18.1 3.17-90.2	27.15 40.0 6.56-189
France[16] N = 6	2011	AAS PUF	MURB	Median Range		0.26 n.d.-0.83		1.9 0.27-3.7
Czech Republic[18] N = 1	2013	PAS PUF	SFD	Median Range		0.258	2.02	4.25
USA[7] N = 50	2006	AAS XAD-2	LI-SFD	Median Range		n.d. n.d.-220	5.3 1.5-29	6.7 2.0-28
France[16] N = 30	2011	AAS PUF	SFD	Median Range			0.8 n.d.-22.9	3.7 n.d.-33.5
UK[19] N = 17	2006	PAS PUF	SFD	Median Range				
Sweden[19] N = 5	2006	PAS PUF	SFD	Median Range				
Mexico[19] N = 13	2006	PAS PUF	SFD	Median Range				

Abbreviations: Listed in Table S2;
AAS: Active air sampler;
LI: Low-income;
MURB: Multi-unit residential building;
n.d.: As non-detect suggesting that concentrations of the contaminants were lower than instrumental detection limits;
PAS: Passive air sampler;
PDMS: Polydimethylsiloxane, also known as silicone rubber;
PUF: Polyurethane foam;
SFD: Single family dwellings;
SH: Social housing.

Table S12. Concentrations (ng/m^3) of PAHs measured in indoor air in residential dwellings worldwide in literature. (The continuation of previous table.)

Reference	Sampling Year	Sampling Technique	Building Type	Statistical Parameters	Compound				
					PH	An	Fla	Py	PAH_{16}
This study Canada N = 134	2017	PAS PDMS	SH-MURB	Median Mean Range	79 114 17.1-1090	9.985 12.7 2.09-47.9	6.74 9.28 2.05-69.2	4.495 5.55 0.02-26.6	256 606 44.4-13500
France[16] N = 6	2011	AAS PUF	MURB	Median Range	2.6 0.15-4.5	0.0012 n.d.-0.0028	0.12 0.029-0.33	0.084 0.021-0.31	
Czech Republic[18] N = 1	2013	PAS PUF	SFD	Median Range	23.6	n.d.	1.83	0.976	45
USA[7] N = 50	2006	AAS XAD-2	LI-SFD	Median Range	11 6.1-44	n.d. n.d.-5.0	0.9 0.55-12	0.81 0.36-27	
France[16] N = 30	2011	AAS PUF	SFD	Median Range	7.2 4.4-65.6	n.d. n.d.-5.5	n.d. n.d.-2.7	n.d. n.d.-1.8	
UK[19] N = 17	2006	PAS PUF	SFD	Median Range					28 8.5-60
Sweden[19] N = 5	2006	PAS PUF	SFD	Median Range					37 14-180
Mexico[19] N = 13	2006	PAS PUF	SFD	Median Range					28 6.1-92

Abbreviations: Listed in Table S2;
AAS: Active air sampler;
LI: Low-income;
MURB: Multi-unit residential building;
n.d.: As non-detect suggesting that concentrations of the contaminants were lower than instrumental detection limits;
PAS: Passive air sampler;
PDMS: Polydimethylsiloxane, also known as silicone rubber;
PUF: Polyurethane foam;
SFD: Single family dwellings;
SH: Social housing.

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