Supplemental Material For: Does Using Corsi-Rosenthal Boxes to Mitigate COVID-19 Transmission Also Reduce Indoor Air Concentrations of PFAS and Phthalates?

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Supplemental Methods-Analytic Chemistry Methods

The PUF and XAD powder were extracted with three 10-mL (30 mL total) washes of acetonitrile. The acetonitrile supernatant was collected in a separate 50 mL glass centrifuge tube. A 1 mL volume of the supernatant was collected for analyses of PFAS and other SVOCs. The fraction used for PFAS analysis was transferred to a HDPE vial, while the fraction for other SVOC analysis was transferred to a glass vial. Each fraction was spiked with a surrogate solution containing isotopically labeled PFAS or phthalate standards. The fraction was then reduced to a final volume (300 µL for PFAS and 150 µL for SVOCs) using a Organomation 30 position Multivap Nitrogen Evaporator (Organomation Associates Inc.). The final extract was transferred to an amber autosampler vial containing a 250 µL glass insert and sealed with a cap. The extract used for gas-chromatography (GC) analysis was spiked with 10 µl of an internal standard solution containing 62.5 µg/L of phenanthrene D-10 and chrysene D-12 and retention time marker.

Certified reference standards used for quantitation of PFAS and corresponding isotope labeled standards were purchased from Wellington Laboratories (Overland Park, KS, USA) (all analytes listed in Table 1). Ammonium acetate solution (5 M, LC-MS grade) was purchased from Sigma-Aldrich (St. Louis, MO, USA). Ultrapure water (UHPLC-MS grade) and acetonitrile (UHPLC-MS grade) were purchased from Thermo Fisher Scientific (Waltham, MA, USA). Certified reference standards for SVOCs (purity ≥97%) were obtained from AccuStandard (New Haven, CT, USA), with the exception of Benzophenone, Tonalid, and Galaxolide, which were purchased from Millipore Sigma (St. Louis, MO). Surrogate standards (five isotope labeled phthalates, listed in Table 2), internal standard mix (Phenanthrene-d10 and Chrysene-d12), and Carbon Distribution Marker (retention time marker) were also purchased from AccuStandard.

PFAS were measured based on EPA Draft Method 1633 using a high resolution Thermo QExactive HF-X Orbitrap MS equipped with a Vanquish ultra-high-performance liquid chromatograph (UHPLC-Orbitrap-HRMS). A 20 µL volume of each sample was injected on the UHPLC instrument. Sample components were separated using Thermo Hypersil Gold Vanquish C18 column (50 mm X 2.1 mm x 1.9 µm) at 40^{o}C. The mobile phase A consisted of 2 mM ammonium acetate in 5% acetonitrile and the mobile phase B consisted of 2 mM ammonium acetate in 100% acetonitrile. The separation of analytes was achieved at a flow rate of 0.4 mL/min using the following solvent gradient program (Figure 1): 2% B for 0.2 min, increase to 30% B until 4 minutes using a gradient curve of 6, increase to 55% B until 7 minutes using a gradient curve of 8, increase to 55% B until 9 minutes using a gradient curve of 8, increase to 75% B until 9 minutes using a gradient curve of 8, increase to 98% B until 10 minutes using a gradient curve of 5, hold at 98% B until 11 minutes using a gradient curve of 6, and decrease over 1 minutes to the initial conditions for equilibration and hold for 3 minutes. The total run time was 15 minutes. The acquisitions were performed with Full MS-ddMS2 (stepped 20, 30, and 40 normalized collision energy) with an inclusion list for 63 PFAS and internal standards (Supplemental Table 3). The scan range used was 100-1500 m/z. Ionization was performed in negative mode with an ionization window of 1.0 m/z, sheath gas flow rate of 40, auxiliary gas flow rate of 10, sweep gas flow rate of 2, spray voltage of 2.7 kV, 310^{o} C capillary temperature, funnel RF level of 35, and 320^{o} C auxiliary gas heater temperature. For the full-scan, the Orbitrap was operated with a resolution of 120,000, automatic gain control (AGC) of 3x106, and maximum dwell time of 100ms. For dd-MS2, the Orbitrap was operated with a resolution of 15,000, AGC of 2 x 10^{5}, and maximum dwell time of 400ms. MS2 fragmentation was performed

in the HCD collision cell filled with N_2 gas (produced by a Peak Scientific Nitrogen Generator, Genius NM32LA).

Quantification was performed using one quantification ion and eight-point calibration curves. Compound confirmation was performed using retention time and two confirming ions when available. The LODs ranged between 0.024-3.91 ng (Supplemental Table 1) and were determined from seven injections of calibration standards and the equation:

LOD= (t*s)/m (Equation 1)

where t is the student's t value for a 99% confidence level with n-1 degrees freedom (t=3.14), s is the standard deviation of the mean, and m is the slope of the calibration curve.[29, 30]

Sample extracts were analyzed for other SVOC concentrations using a high-resolution Thermo Q Exactive Orbitrap MS equipped with a Thermo Trace 1300 GC and a TriPlus RSH Autosampler. Helium (99.9999% purity) and nitrogen (99.999% purity) were used as the carrier and c-trap gases, respectively. Sample extracts (2 µL) were injected into a 290ºC split/splitless inlet operated in split-less mode. Analytes were separated on a Restek Rxi-35Sil MS column (30 m x 0.25 mm inner diameter x 0.25 µm film thickness) column with a 1 mL/min carrier gas flow rate. The transfer line was maintained at 300ºC while the oven temperature ramp began at 40ºC for 0.5 min, increased 7ºC/min to 150ºC and held for 10 minutes, and finally 10oC/min increased to 350º C and held for 7 min, with a 53 min total run time. The source temperature was 230ºC and the MS scan range was 50 to 750 m/z. The MS instrument was operated in electron ionization (EI) mode (70 eV). Data were collected in full-scan mode (ranges listed below) with 60,000 resolution and 1 × 106 automatic gain control. The extracted ion chromatogram (XIC) was used for quantification using the most abundant peak in the mass spectrum. Analyte identity was confirmed using the two confirming ions ratios and retention time (Supplemental Table 4).

Quantification for both methods was performed using eight-point calibration curve prepared by serial dilution of calibration standards in hexane (0.061 to 4.07 ng).

Supplemental Table 1: Calculated equivalent air exchanges per hour provided by Corsi-Rosenthal boxes.

Room	Volume (ft^2)	Number of CR-Boxes	Equivalent ACH
200	1,800	1	17.0
241	7,870	2	7.8
245	10,080	3	9.1
247	8,760	2	7.0
251	4,720	1	6.5
259	3,400	1	9.0
331	7,920	2	7.7
347	2,190	1	14.0
374	3,000	1	10.2
375	10,840	3	8.5
408	5,490	1	5.6
431	2,450	1	12.5
504	2,840	1	10.8
625	2,950	1	10.4
636	2,820	1	10.9
700	2,760	1	11.1
754	1,570	1	19.5
821	3,810	1	8.0

Equivalent ACH = Number of Cubes x CADR x 60 / Volume of Room

Supplemental Table 2: Full names, abbreviations, and classes of environmental chemicals included in the present study

Chemical Name	Abbreviation	Class
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	Ether Sulfonic Acid
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	Ether Sulfonic Acid
Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	Ether Sulfonic Acid
Perfluorooctanoic acid	3:3 FTCA	Fluorotelomer Carboxylic Acids
2H,2H,3H,3H-Perfluorooctanoic acid	5:3 FTCA	Fluorotelomer Carboxylic Acids
2H,2H,3H,3H-Perfluorodecanoic acid	7:3 FTCA	Fluorotelomer Carboxylic Acids
1H,1H, 2H, 2H-Perfluorohexane sulfonic acid	4:2-FTS	Fluorotelomer Sulfonic Acids
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid	6:2-FTS	Fluorotelomer Sulfonic Acids
1H,1H, 2H, 2H-Perfluorodecane sulfonic acid	8:2-FTS	Fluorotelomer Sulfonic Acids
4,8-Dioxa-3H-perfluorononanoic acid	ADONA	Per- and Polyfluoroether Carboxylic Acids
Hexafluoropropylene oxide-dimer acid	HFPODA-GenX	Per- and Polyfluoroether Carboxylic Acids
Perfluoro-3,6-dioxaheptanoic acid	NFDHA	Per- and Polyfluoroether Carboxylic Acids
Perfluoro-4-methoxybutanoic acid	PFMBA	Per- and Polyfluoroether Carboxylic Acids
Perfluoro-3-methoxypropanoic acid	PFMPA	Per- and Polyfluoroether Carboxylic Acids
Perfluorobutanesulfonamide	FBSA	Perfluoroalkane Sulfonamide
Perfluorohexanesulfonamide	FHxSA	Perfluoroalkane Sulfonamide
Perfluorobutanoic acid	PFBA	Perfluoroalkyl Carboxylic Acid
Perfluorodecanoic acid	PFDA	Perfluoroalkyl Carboxylic Acid
Perfluorododecanoic acid	PFDoA	Perfluoroalkyl Carboxylic Acid
Perfluoroheptanoic acid	PFHpA	Perfluoroalkyl Carboxylic Acid
Perfluorohexanoic acid	PFHxA	Perfluoroalkyl Carboxylic Acid
Perfluorononanoic acid	PFNA	Perfluoroalkyl Carboxylic Acid
Perfluorooctanoic acid	PFOA	Perfluoroalkyl Carboxylic Acid
Perfluoropentanoic acid	PFPeA	Perfluoroalkyl Carboxylic Acid
Perfluorotetradecanoic acid	PFTeDA	Perfluoroalkyl Carboxylic Acid
Perfluorotridecanoic acid	PFTrDA	Perfluoroalkyl Carboxylic Acid
Perfluoroundecanoic acid	PFUnA	Perfluoroalkyl Carboxylic Acid
Perfluorobutanesulfonic acid	PFBS	Perfluoroalkyl Sulfonic Acid
Perfluorododecanesulfonic acid	PFDoS	Perfluoroalkyl Sulfonic Acid
Perfluorodecanesulfonic acid	PFDS	Perfluoroalkyl Sulfonic Acid
Perfluoroheptanesulfonic acid	PFHpS	Perfluoroalkyl Sulfonic Acid
Perfluorohexanesulfonic acid	PFHxS	Perfluoroalkyl Sulfonic Acid
Perfluorononanesulfonic acid	PFNS	Perfluoroalkyl Sulfonic Acid

Chemical Name	Abbreviation	Class
Perfluorooctanesulfonic acid	PFOS	Perfluoroalkyl Sulfonic Acid
Perfluoropentanesulfonic acid	PFPeS	Perfluoroalkyl Sulfonic Acid
N-Ethylperfluorooctanesulfonamidoethanol	NEtFOSE	Perfluoroctane Sulfonamide Ethanols
N-Methylperfluorooctanesulfonamidoethanol	NMeFOSE	Perfluoroctane Sulfonamide Ethanols
N-Ethylperfluorooctanesulfonamide	NEtFOSA	Perfluoroctane Sulfonamides
N-Methylperfluorooctanesulfonamide	NMeFOSA	Perfluoroctane Sulfonamides
Perfluorooctanesulfonamide	PFOSA	Perfluoroctane Sulfonamides
N-Ethyl perfluorooctane sulfonamidoacetic acid	NEtFOSAA	Perfluorooctane Sulfonamidoacetic Acids
N-Methyl perfluorooctane sulfonamidoacetic acid	NMeFOSAA	Perfluorooctane Sulfonamidoacetic Acids
Brominated diphenyl ether 47	BDE 47	Brominated Flame Retardant
Brominated diphenyl ether 99	BDE 99	Brominated Flame Retardant
Brominated diphenyl ether 100	BDE 100	Brominated Flame Retardant
Benzophenone	BP	Phenol
Benzophenone-3	BP3	Phenol
Benzyl butyl phthalate	BBzP	Phthalate
Bis(2-ethylhexyl) adipate	DEHA	Phthalate
Bis(2-ethylhexyl) phthalate	DEHP	Phthalate
Dibutyl phthalate	DnBP	Phthalate
Dicyclohexyl phthalate	DCHP	Phthalate
Diethyl Phthalate	DEP	Phthalate
Dihexyl phthalate	DHP	Phthalate
Diisobutyl phthalate	DiBP	Phthalate
Diisononyl phthlate	DiNP	Phthalate
Dimethyl phthalate	DMP	Phthalate
Di-n-octyl phthalate	DnOP	Phthalate
Di-n-pentyl phthalate	DNPP	Phthalate
Galoxolide/Tonalid	Gal/Ton	Synthetic Musk
Polychlorinated biphenyl 52	PCB 52	PCB
Polychlorinated biphenyl 105	PCB 105	PCB
Polychlorinated biphenyl 153	PCB 153	PCB
Tri(2-chloroethyl) phosphate	TCEP	Organophosphate Ester
Triphenyl phosphate	TPP	Organophosphate Ester
Tris(1,3-Dichloro-2-propyl) phosphate	TDCPP	Organophosphate Ester
Tris(1-chloro-2-propyl)phosphate	TCPP	Organophosphate Ester

Supplemental Table 3: Retention time, quantification ion, and confirming ions used in targeted PFAS analysis.

PFAS	Internal Standard	Retention Time (min)	Quantification Ion m/z	Confirming Ion 1 m/z	Confirming Ion 2 m/z
11Cl-PF3OUdS	13C3-HFPO-	9.79	630.8892	450.9	452.9
3:3 FTCA	13C5-PFPeA	6.8	241.0105	177.0	117.0
4:2-FTS	13C2-4:2 FTS	5.37	326.9743	307.0	-
5:3 FTCA	13C5-PFHxA	8.22	341.0041	237.1	217.0
6:2-FTS	13C2-6:2 FTS	7.42	426.9679	407.0	-
7:3 FTCA	13C5-PFHxA	9.33	440.9977	316.9	336.9
8:2-FTS	13C2-8:2 FTS	8.16	526.9615	507.0	-
9Cl-PF3ONS	13C3-HFPO-	8.91	530.8956	351.0	353.0
ADONA	13C3-HFPO-	7.28	376.9689	250.9	-
FBSA	-	7.42	297.959	-	-
FHxSA	-	8.45	397.9526	-	-
HFPODA-GenX	13C3-HFPO-	6.11	284.9783	168.9	184.9
NEtFOSA	D5-NEtFOSA	10.07	525.9774	219.0	169.0
NEtFOSAA	D5-	9.88	583.983	419.1	526.0
NEtFOSE	D9-NEtFOSE	10.01	630.0249	-	-
NFDHA	13C5-PFHxA	5.58	294.9658	201.0	-
NMeFOSA	D3-NMeFOSA	9.92	511.9619	219.0	169.0
NMeFOSAA	D3-	9.71	569.9673	419.0	483.0
NMeFOSE	D7-NMeFOSE	10.01	616.0092	-	-
PFBA	13C4-PFBA	0.49	212.9792	168.9	-
PFBS	13C3-PFBS	5.67	298.943	-	-
PFDA	13C6-PFDA	8.38	512.96	469.0	219.0
PFDoA	13C2-PFDoA	9.4	612.9537	569.0	319.0
PFDoS	13C8-PFOS	10.05	698.9174	-	-
PFDS	13C8-PFOS	9.58	598.9238	-	-
PFEESA	13C5-PFHxA	6.29	314.9379	134.9	-
PFHpA	13C4-PFHpA	6.92	362.9696	319.0	169.0
PFHpS	13C8-PFOS	8.1	448.9334	-	-
PFHxA	13C3-PFHxS	5.71	312.9728	269.0	118.9
PFHxS	13C5-PFHxA	7.72	398.9366	-	-
PFMBA	13C5-PFPeA	5.02	278.9709	-	-
PFMPA	13C5-PFPeA	4.02	228.9741	-	-
PFNA	13C9-PFNA	7.98	462.9632	419.0	219.0
PFNS	13C8-PFOS	9.09	548.927	-	-
PFOA	13C8-PFOA	7.63	412.9664	369.0	169.0
PFOS	13C8-PFOS	8.55	498.9302	-	-
PFOSA	13C8-PFOSA	9.53	497.9462	-	478.0
PFPeA	13C5-PFPeA	4.77	262.976	219.0	-
PFPeS	13C3-PFHxS	7.02	348.9398	-	-
PFTeDA	13C2-PFTeDA	9.99	712.9473	669.0	168.9
PFTrDA	average of	9.76	662.9505	619.0	168.9
PFUnA	13C7-PFUnA	8.88	562.9568	519.0	269.1
Internal Standards					

PFAS	Internal Standard	Retention Time (min)	Quantification Ion m/z	Confirming Ion 1 m/z	Confirming Ion 2 m/z
13C4-PFBA	-	0.49	216.9928	172.0	-
13C5-PFPeA	-	4.77	267.9927	-	-
13C5-PFHxA	-	5.71	317.9891	270.0	119.4
13C4-PFHpA	-	6.92	366.9827	-	-
13C8-PFOA	-	7.84	420.993	172.0	-
13C9-PFNA	-	7.98	471.9932	423.0	-
13C6-PFDA	-	8.38	518.98	427.0	-
13C7-PFUnA	-	8.86	569.9805	474.1	-
13C2-PFDoA	-	9.4	614.9607	570.0	-
13C2-PFTeDA	-	9.99	714.9546	670.0	-
13C3-PFBS	-	5.67	301.9522	-	-
13C3-PFHxS	-	7.72	401.9458	-	-
13C8-PFOS	-	8.55	506.9568	-	-
13C2-4:2 FTS	-	5.37	328.9813	-	309.0
13C2-6:2 FTS	-	7.42	428.9749	-	409.0
13C2-8:2 FTS	-	8.16	528.9617	-	509.0
13C8-PFOSA	-	9.54	505.9731	-	-
D3-NMeFOSAA	-	9.71	572.9862	419.0	-
D5-NEtFOSAA	-	9.88	589.0148	419.0	-
D3-NMeFOSA	-	9.92	514.9806	219.0	-
D5-NEtFOSA	-	10.07	531.009	219.0	-
D7-NMeFOSE	-	10.01	623.0016	-	-
D9-NEtFOSE	-	10.01	638.7986	-	-
13C3-HFPO-DA	-	6.11	284.9782	-	-

Supplemental Table 4: Retention time, Quantification ion, and confirming ions used in targeted SVOC analysis.

SVOC	Retention Time (min)	Quantification Ion m/z	Confirming Ion 1 m/z	Confirming Ion 2 m/z
BDE 100	42.42	403.7868	201.9	405.8
BDE 47	40.31	325.8761	323.9	327.9
BDE 99	41.95	403.7868	405.8	202.9
Benzophenone	28.04	105.0336	182.1	77.0
Benzophenone-3	31.55	227.0702	228.1	151.0
Benzyl butyl phthalate	38.47	149.0232	91.1	150.0
Bis(2-ethylhexyl) adipate	37.13	111.0442	129.1	101.1
Bis(2-ethylhexyl) phthalate	39.84	149.0232	167.0	150.0
Dibutyl phthalate	33.79	149.0232	150.0	121.0
Dicyclohexyl phthalate	38.91	149.0232	167.0	150.0
Diethyl Phthalate	25.43	149.0232	150.0	177.0
Dihexyl phthalate	37.54	149.0232	150.0	151.0
Diisobutyl phthalate	32.28	149.0232	150.0	151.0
Diisononyl phthlate	42.74	149.0233	150.0	293.0
Dimethyl phthalate	20.04	163.0391	150.0	194.0
Di-n-octyl phthalate	40.52	149.0232	150.0	279.0
Di-n-pentyl phthalate	35.84	149.0233	150.0	151.0
Galoxolide/Tonalid	31.57	243.1746	159.1	187.1
PCB 105	38.14	325.8800	327.9	323.9
PCB 153	37.65	359.8413	289.9	361.8
PCB 52	33.83	219.9841	289.9	291.9
Tri(2-chloroethyl) phosphate (TCEP)	32.02	142.9661	99.0	117.0
Triphenyl phosphate (TPP)	39.25	325.0626	169.1	326.1
Tris(1,3-Dichloro-2-propyl) phosphate (TDCPP, TDCP)	38.22	98.9843	190.9	75.0
Tris(1-chloro-2-propyl)phosphate (TCPP)	31.66	125.0000	117.0	99.0
Internal Standards				
Diethyl Phthalate-3,4,5,6-d4	25.3	153.0484	-	-
Diisobutyl Phthalate-3,4,5,6-d4	32.23	153.0484	-	-
Di-n-pentyl phthalate-3,4,5,6-d4	35.8	153.0484	-	-
Di-n-hexyl Phthalate-3,4,5,6-d4	37.51	153.0484	-	-
Di-n-octyl Phthalate-3,4,5,6-d4	40.5	153.0484	-	-

Supplemental Table 5: PFAS analytes, their method limit of detection (LOD), blank concentrations, and technical replicate concentrations (ng/L).[a]

PFAS	LOD	Solvent Blank 1	Solvent Blank 2	Field Blank 1	Field Blank 2	Technical Replicate 1	Technical Replicate 2	Technical Replicate 3	Mean[b]	CV[c]
11Cl-PF3OUdS	31.33	0.06	<LOD	<LOD	<LOD	3.14	3.45	3.98	3.52	12.0
3:3 FTCA	8.42	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD		
4:2-FTS	13.39	0.04	<LOD	<LOD	<LOD	1.26	<LOD	<LOD		
5:3 FTCA	7.47	0.18	0.17	8.96	7.22	361.17	359.22	286.76	335.72	12.6
6:2-FTS	6.51	<LOD	<LOD	<LOD	0.08	7.74	6.59	5.43	6.59	17.6
7:3 FTCA	8.95	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD		
8:2-FTS	5.22	<LOD	<LOD	0.03	<LOD	2.25	3.09	<LOD		
9Cl-PF3ONS	7.43	<LOD	0.08	<LOD	<LOD	8.97	<LOD	<LOD		
ADONA	25.06	0.01	<LOD	<LOD	0.40	6.08	<LOD	1.54		
FBSA	27.64	0.01	<LOD	0.61	0.19	1.11	1.70	1.15	1.32	25.2
FHxSA	27.08	0.02	0.05	0.21	<LOD	8.34	8.39	7.63	8.12	5.2
HFPODA-GenX	22.11	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD		
NEtFOSA	33.03	0.08	<LOD	0.12	<LOD	433.91	749.03	809.97	664.31	30.4
NEtFOSAA	28.87	0.04	0.09	<LOD	<LOD	1.46	1.52	<LOD		
NEtFOSE	39.01	1.64	1.04	20.40	22.20	<LOD	<LOD	<LOD		
NFDHA	7.46	<LOD	0.05	<LOD	<LOD	<LOD	<LOD	<LOD		
NMeFOSA	20.15	<LOD	<LOD	0.62	0.09	154.01	136.90	141.89	144.27	6.1
NMeFOSAA	5.32	6.01	9.95	8.46	7.09	956.40	1042.78	1048.83	1016.00	5.1
NMeFOSE	8.59	0.41	0.07	0.19	0.82	3.37	4.39	<LOD		
PFBA	38.49	0.09	0.01	0.93	0.55	63.18	64.50	58.39	62.02	5.2
PFBS	11.34	0.06	0.06	0.26	<LOD	21.63	25.34	22.17	23.05	8.7
PFDA	24.88	0.44	<LOD	<LOD	<LOD	41.76	66.03	46.16	51.31	25.2
PFDoA	16.82	<LOD	<LOD	<LOD	<LOD	5.00	<LOD	2.85		
PFDoS	59.70	0.15	0.26	0.90	0.75	32.54	36.39	18.36	29.10	32.6
PFDS	7.74	0.04	0.09	<LOD	<LOD	1.19	0.58	1.07	0.95	34.2
PFEESA	7.36	<LOD	<LOD	<LOD	<LOD	0.57	0.22	0.07	0.29	89.3
PFHpA	434.85	0.02	<LOD	0.06	0.05	8.99	4.86	2.08	5.31	65.6
PFHpS	188.72	<LOD	<LOD	<LOD	<LOD	9.49	2.89	4.00	5.46	64.7
PFHxA	104.93	0.51	0.82	0.78	0.44	44.96	20.11	37.89	34.32	37.3
PFHxS	10.97	0.22	0.21	0.43	0.82	32.78	28.28	34.00	31.69	9.5
PFMBA	4.74	<LOD	<LOD	<LOD	<LOD	4.73	4.93	4.94	4.86	2.4
PFMPA	12.52	<LOD	<LOD	<LOD	0.38	8.33	2.17	1.42	3.97	95.5

PFAS	LOD	Solvent Blank 1	Solvent Blank 2	Field Blank 1	Field Blank 2	Technical Replicate 1	Technical Replicate 2	Technical Replicate 3	Mean[b]	CV[c]
PFNA	14.02	0.18	0.49	0.17	0.36	18.64	17.19	16.95	17.59	5.2
PFNS	44.62	<LOD	<LOD	<LOD	<LOD	0.94	0.97	1.67	1.19	34.6
PFOA	26.12	0.30	0.16	0.99	0.33	120.66	146.84	154.23	140.58	12.5
PFOS	16.38	0.10	0.06	0.72	0.63	161.00	128.81	149.45	146.42	11.1
PFOSA	8.87	<LOD	0.01	0.05	1.94	110.14	83.11	83.64	92.30	16.7
PFPeA	12.03	0.75	0.36	1.03	0.03	44.13	26.75	26.04	32.31	31.7
PFPeS	2.72	0.06	0.26	0.10	<LOD	27.86	21.04	20.65	23.18	17.5
PFTeDA	12.77	0.38	0.40	0.52	0.16	18.39	18.50	19.00	18.63	1.7
PFTrDA	4.10	<LOD	<LOD	<LOD	<LOD	3.03	<LOD	<LOD		
PFUnA	5.55	<LOD	<LOD	<LOD	<LOD	1.51	<LOD	<LOD		

a- We present the field/solvent blanks and technical replicates on the ng/L scale because the field and solvent blanks did not have air passed over them like the technical replicates.

b-Arithmetic average when three detectable values were available.

c-Coefficient of variation calculated as standard deviation / arithmetic average x 100, when three detectable values are available.

Supplemental Table 6: SVOC analytes, their method limit of detection (LOD), blank concentrations, and technical replicate concentrations (μg/L)[a]

SVOC	LOD	Solvent Blank 1	Solvent Blank 2	Field Blank 1	Field Blank 2	Technical Replicate 1	Technical Replicate 2	Technical Replicate 3	Mean[b]	CV[c]
Brominated diphenyl ether 47	0.027	0.01	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD		
Brominated diphenyl ether 99	0.024	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD		
Brominated diphenyl ether 100	0.042	<LOD	<LOD	<LOD	0.053	<LOD	<LOD	<LOD		
Benzophenone	0.086	0.174	0.224	0.79	0.024	5.201	4.479	4.856	4.67	5.7
Benzophenone-3	0.182	0.479	<LOD	0.554	<LOD	<LOD	<LOD	<LOD		
Benzyl butyl phthalate	0.050	<LOD	<LOD	<LOD	0.053	<LOD	<LOD	<LOD		
Bis(2-ethylhexyl) adipate	0.064	0.194	0.096	0.345	0.661	5.2	4.666	4.634	4.65	0.5
Bis(2-ethylhexyl) phthalate	0.054	0.038	0.071	<LOD	0.025	1.905	1.128	0.99	1.06	9.2
Dibutyl phthalate	0.473	9.321	5.503	10.04	9.777	150.544	149.759	164.903	157.33	6.8
Dicyclohexyl phthalate	0.748	17.712	13.976	37.643	35.584	153.378	126.722	140.085	133.40	7.1
Diethyl Phthalate	0.620	13.113	13.182	22.842	33.066	298.445	237.29	226.823	232.06	3.2
Dihexyl phthalate	0.073	0.015	0.091	0.071	0.078	0.323	0.104	0.204	0.15	45.9
Diisobutyl phthalate	0.103	5.185	3.657	6.503	14.714	282.942	267.169	257.919	262.54	2.5
Diisononyl phthlate	0.094	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD		
Dimethyl phthalate	0.217	1.235	2.69	0.505	<LOD	17.51	15.441	14.408	14.92	4.9
Di-n-octyl phthalate	0.539	<LOD	<LOD	<LOD	<LOD	30.95	25.6	28.7	27.15	8.1
Di-n-pentyl phthalate	0.570	12.235	10.519	19.875	12.546	193.179	153.676	174.437	164.06	8.9
Galoxolide/Tonalid	0.516	0.023	0.045	0.079	0.033	0.974	1.171	1.092	1.13	4.9
Polychlorinated biphenyl 52	0.014	0.003	0.022	<LOD	<LOD	2.106	2.178	1.848	2.01	11.6
Polychlorinated biphenyl 105	0.403	0.006	<LOD	<LOD	0.006	<LOD	0.016	0.021	0.02	19.1
Polychlorinated biphenyl 153	0.016	0.08	0.036	<LOD	<LOD	0.029	0.056	<LOD		
Tri(2-chloroethyl) phosphate	0.028	<LOD	<LOD	0.016	0.036	0.211	0.146	0.216	0.18	27.3
Triphenyl phosphate	0.016	0.041	0.026	0.056	0.032	0.071	<LOD	0.037		
Tris(1,3-Dichloro-2-propyl) phosphate	0.904	<LOD	<LOD	0.69	0.289	6.564	6.138	5.47	5.80	8.1
Tris(1-chloro-2-propyl)phosphate	0.206	<LOD	<LOD	0.288	0.078	1.828	1.799	1.516	1.66	12.1

a- We present the field/solvent blanks and technical replicates on the μg/L scale because the field and solvent blanks did not have air passed over them like the technical replicates.

b-Arithmetic average when three detectable values were available.

c-Coefficient of variation calculated as standard deviation / arithmetic average x 100, when three detectable values are available.

Supplemental Table 7: Recovery of SVOCs analytes from standards spiked into an XAD and PUF sample (n=5).

		Detected Concentrations			Percent Recovery		
SVOC	Expected concentration (µg/L)	Mean detected concentration (µg/L)	Minimum detected concentration (µg/L)	Maximum detected concentration (µg/L)	Average Recovery (n=5) (%)	Standard Deviation (n=5)	Confidence Interval (α=0.05) (n=5)
BDE 100	6.31	5.92	4.87	6.81	93.8	11.1	13.8
BDE 47	6.31	5.41	4.01	7.29	85.7	21.1	26.2
BDE 99	6.31	5.83	5.30	6.53	92.3	9.38	11.7
Benzophenone	6.31	5.63	4.16	6.91	89.2	17.9	22.2
Benzophenone-3	6.31	5.64	3.81	7.21	89.3	19.3	23.9
Benzyl butyl phthalate	12.63	10.40	5.67	12.86	82.4	23.6	29.3
Bis(2-ethylhexyl) adipate	12.63	11.04	8.28	12.78	87.5	15.5	19.3
Bis(2-ethylhexyl) phthalate	2.53	2.51	1.65	3.44	99.4	28.6	35.5
Dibutyl phthalate	6.31	5.63	4.39	6.61	89.2	14.3	17.8
Dicyclohexyl phthalate	12.63	10.83	7.08	13.02	85.7	19.8	24.6
Diethyl Phthalate	12.63	10.10	4.37	13.05	80.0	27.6	34.2
Dihexyl phthalate	2.53	2.35	1.81	2.92	93.2	19.3	23.9
Diisobutyl phthalate	30.30	26.78	21.05	30.90	88.4	15.2	18.9
Diisononyl phthlate	12.63	12.02	10.88	13.04	95.2	6.35	7.89
Dimethyl phthalate	6.31	5.90	3.62	7.25	93.5	22.5	27.9
Di-n-octyl phthalate	2.53	2.75	2.10	3.96	109	28.5	35.4
Di-n-pentyl phthalate	12.63	11.81	8.80	13.52	93.6	14.9	18.5
Galoxolide/Tonalid	12.63	11.51	8.03	12.94	91.2	15.9	19.8
PCB 105	6.63	6.30	5.20	7.02	95.1	10.1	12.5
PCB 153	6.63	6.30	4.58	7.14	95.1	15.6	19.4
PCB 52	6.63	6.42	5.82	6.80	96.8	5.43	6.75
TCEP	6.31	5.63	3.83	6.36	89.2	16.2	20.1
TPP	6.31	5.71	4.65	6.35	90.4	10.2	12.6
TDCPP	6.31	5.55	4.34	7.15	87.9	17.7	21.9
TCPP	6.31	6.00	4.72	7.05	95	13.6	16.8

Supplemental Table 8: Recovery of PFAS analytes from standards spiked into an XAD and PUF sample (n=5).

		Detected Concentrations			Percent Recovery		
PFAS	Expected concentration (ppb)	Mean detected concentration (ppb)	Minimum detected concentration (ppb)	Maximum detected concentration (ppb)	Average Recovery (n=5) (%)	Standard Deviation (n=5)	Confidence Interval (α=0.05) (n=5)
11Cl-PF3OUdS	10.00	9.85	8.83	10.90	101.	10.0	12.5
3:3 FTCA	10.00	7.15	6.62	8.83	72.8	9.49	11.8
4:2-FTS	10.00	8.44	7.55	10.14	86.2	11.4	14.2
5:3 FTCA	10.00	7.15	6.02	9.88	70.8	16.3	20.2
6:2-FTS	10.00	7.56	6.14	8.19	74.1	9.17	11.4
7:3 FTCA	10.00	8.55	7.35	9.03	85.1	6.86	8.52
8:2-FTS	10.00	9.20	6.47	10.82	90.1	16.8	20.9
9Cl-PF3ONS	10.00	8.16	6.64	9.81	77.5	15.4	19.1
ADONA	10.00	7.80	5.19	10.27	71.8	23.8	29.5
FBSA	10.00	8.21	6.07	9.87	87.4	19.6	24.3
FHxSA	10.00	7.58	4.52	9.54	70.9	21.3	26.5
HFPODA-GenX	10.00	7.29	5.81	8.07	71.6	9.29	11.5
NEtFOSA	10.00	7.10	6.54	8.19	71.6	6.35	7.89
NEtFOSAA	10.00	10.51	8.59	13.11	110	21.4	26.6
NEtFOSE	10.00	10.03	9.17	10.98	100	6.81	8.46
NFDHA	10.00	7.28	5.43	8.51	74.5	14.4	17.8
NMeFOSA	10.00	7.43	6.13	8.10	74.0	7.65	9.50
NMeFOSAA	10.00	9.93	7.55	12.90	105	26.0	32.3
NMeFOSE	10.00	8.85	7.16	9.94	85.8	12.0	15.0
PFBA	10.00	9.10	7.10	9.81	89.7	11.3	14.0
PFBS	10.00	8.42	7.93	10.00	85.4	8.92	11.1
PFDA	10.00	8.82	7.39	10.14	89.2	11.9	14.8
PFDoA	10.00	8.15	6.95	11.00	81.9	16.4	20.4
PFDoS	10.00	8.24	6.68	9.03	82.9	9.47	11.8
PFDS	10.00	9.65	8.71	10.93	98.5	9.06	11.2
PFHpA	10.00	9.53	7.02	11.35	90.7	18.4	22.9
PFHpS	10.00	9.19	8.17	10.57	91.1	10.3	12.8
PFHxA	10.00	9.51	8.44	10.69	97.5	10.7	13.3
PFHxS	10.00	9.52	8.77	9.83	94.4	4.55	5.65
PFMBA	10.00	7.60	6.56	8.54	75.7	7.17	8.90
PFMPA	10.00	8.04	7.75	8.29	81.1	2.73	3.39

PFNA	10.00	9.38	8.19	10.00	92.9	7.39	9.18
PFNS	10.00	9.95	8.87	11.74	102	12.0	14.9
PFOA	10.00	9.07	7.92	9.79	90.1	7.01	8.70
PFOS	10.00	9.30	8.21	10.38	95.7	10.2	12.6
PFOSA	10.00	7.61	5.36	10.56	75.1	20.4	25.3
PFPeA	10.00	9.19	7.97	10.94	95.0	13.3	16.5
PFPeS	10.00	9.26	7.33	11.44	87.2	18.0	22.3
PFTeDA	10.00	8.81	7.59	9.59	91.1	7.86	9.76
PFTrDA	10.00	8.42	7.08	10.38	85.3	12.3	15.3
PFUnA	10.00	9.10	8.01	9.82	89.3	9.59	11.9

Supplemental Table 9: PFAS concentrations (ng PFAS/g of filter) on unused and used box air filter pieces (location of piece from filter noted).[a]

	Unused (Top)	Unused (Middle)	Unused (Bottom)	Average	Used (Right)	Used (Front)	Used (Left)	Average[b]
11Cl-PF3OUdS	<LOD	<LOD	<LOD		0.022	<LOD	<LOD	
3:3 FTCA	17.948	21.790	21.574	20.437	333.839	219.353	212.830	255.34
4:2-FTS	0.022	0.025	0.026	0.025	0.029	0.023	<LOD	
5:3 FTCA	47.503	45.671	46.985	46.72	51.033	35.153	44.247	43.478
6:2-FTS	0.221	<LOD	<LOD		<LOD	<LOD	0.238	
7:3 FTCA	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
8:2-FTS	0.754	0.902	1.039	0.898	<LOD	<LOD	0.246	
9Cl-PF3ONS	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
ADONA	0.037	0.088	<LOD		0.033	0.117	<LOD	
FBSA	96.102	117.239	122.759	112.033	134.697	88.636	99.568	107.634
FHxSA	<LOD	0.004	<LOD		0.049	<LOD	<LOD	
HFPODA-GenX	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
NEtFOSA	0.086	0.187	<LOD		<LOD	<LOD	0.026	
NEtFOSAA	<LOD	0.027	<LOD		<LOD	<LOD	0.059	
NEtFOSE	51.045	35.110	35.074	40.41	34.029	18.460	33.352	28.613
NFDHA	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
NMeFOSA	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
NMeFOSAA	12.547	15.980	17.667	15.398	53.805	19.956	30.164	34.642
NMeFOSE	8.772	0.456	8.048	5.759	1.100	0.787	0.540	0.809
PFBA	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
PFBS	0.015	0.013	0.018	0.015	257.099	224.410	175.895	219.135
PFDA	<LOD	<LOD	0.282		<LOD	0.249	0.166	
PFDoA	0.017	<LOD	<LOD		<LOD	<LOD	<LOD	
PFDoS	0.037	<LOD	<LOD		0.009	0.035	0.095	0.046
PFDS	<LOD	<LOD	<LOD		<LOD	<LOD	0.048	
PFEESA	<LOD	0.003	<LOD		<LOD	<LOD	<LOD	
PFHpA	0.076	0.065	0.028	0.056	0.067	0.057	0.039	0.054
PFHpS	<LOD	<LOD	0.025		<LOD	<LOD	0.013	
PFHxA	0.318	0.593	0.450	0.454	3.757	2.017	3.593	3.122
PFHxS	0.890	1.067	1.714	1.224	2.059	1.055	2.085	1.733
PFMBA	0.038	<LOD	<LOD		20.049	10.403	11.878	14.11
PFMPA	<LOD	<LOD	<LOD		27.356	11.417	11.153	16.642

	Unused (Top)	Unused (Middle)	Unused (Bottom)	Average	Used (Right)	Used (Front)	Used (Left)	Average[b]
PFNA	<LOD	<LOD	0.006		0.004	0.005	0.434	0.148
PFNS	<LOD	0.015	0.007		<LOD	<LOD	<LOD	
PFOA	0.346	0.308	0.156	0.27	1.422	0.753	1.261	1.145
PFOS	0.127	0.157	0.124	0.136	1.412	1.218	1.298	1.309
PFOSA	<LOD	0.024	0.108		<LOD	0.033	0.033	
PFPeA	1.906	<LOD	3.221		669.649	361.338	489.647	506.878
PFPeS	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
PFTeDA	<LOD	<LOD	<LOD		<LOD	<LOD	0.008	
PFTrDA	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
PFUnA	<LOD	0.189	<LOD		0.273	<LOD	<LOD	

a-Unused concentrations are from a single filter. Used concentrations are from three filters that were part of one CR Box.
b-Average only calculated when PFAS was detected on all three filter samples.

Supplemental Table 10: SVOC concentrations (ng chemical/g of filter) on unused and used box air filter pieces (location of piece from filter noted).[a]

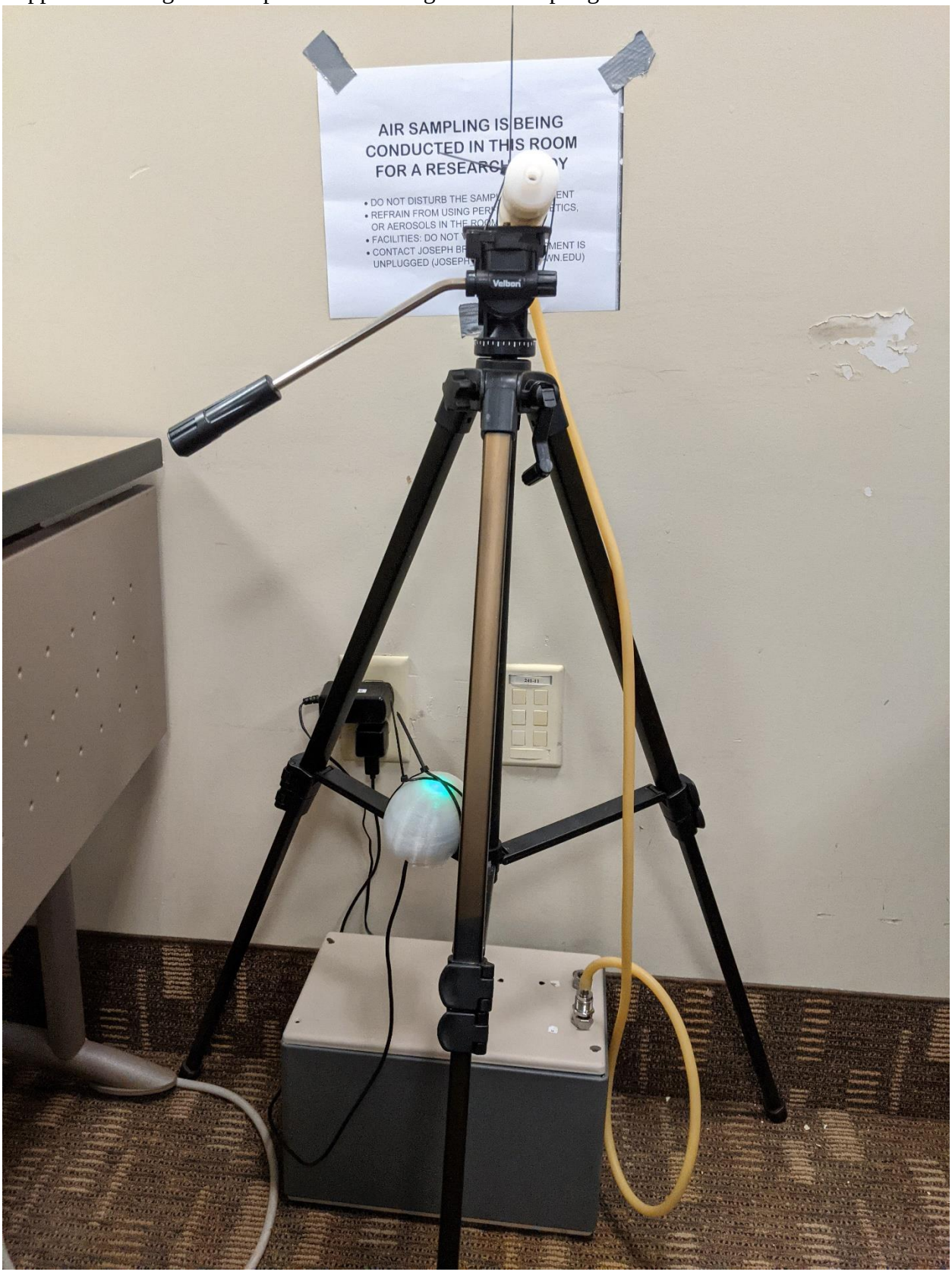
Chemical	Unused (Top)	Unused (Middle)	Unused (Bottom)	Average	Used (Right)	Used (Front)	Used (Left)	Average[b]
BDE 47	<LOD	0.16	<LOD		63.03	32.59	39.06	44.89
BDE 99	<LOD	<LOD	<LOD		1.49	0.62	1.03	1.05
BDE 100	<LOD	<LOD	<LOD		11.06	6.18	7.10	8.11
BP	0.00	1.23	0.72	0.65	2.14	1.88	1.87	1.97
BP3	18.74	16.65	22.84	19.41	45.36	23.62	30.26	33.08
BBzP	2.70	<LOD	<LOD		276.00	124.61	200.24	200.28
DEHA	5.56	12.59	9.29	9.15	436.97	222.59	305.56	321.71
DEHP	12.35	9.54	5.60	9.17	11984.97	7298.55	8977.48	9420.33
DnBP	40.76	83.89	65.22	63.29	1011.48	761.17	700.58	824.41
DCHP	101.08	78.21	43.66	74.32	1456.55	711.60	992.30	1053.48
DEP	113.94	234.04	143.03	163.67	908.80	392.17	525.80	608.92
DHP	<LOD	<LOD	<LOD		1.30	3.47	3.43	2.73
DiBP	145.76	239.54	189.17	191.49	1893.91	1390.16	1312.55	1532.21
DiNP	4.25	<LOD	<LOD		<LOD	<LOD	<LOD	
DMP	3.23	6.53	6.58	5.44	17.57	12.14	15.45	15.05
DnOP	25.01	27.09	18.15	23.41	333.05	199.91	116.83	216.60
DNPP	40.76	83.89	65.22	63.29	1330.91	761.17	1220.91	1104.33
Gal/Ton	0.43	0.92	0.58	0.64	3.27	2.22	2.76	2.75
PCB 52	0.24	0.04	<LOD		0.47	0.27	0.03	0.26
PCB 105	<LOD	<LOD	<LOD		<LOD	<LOD	<LOD	
PCB 153	0.06	0.18	<LOD		<LOD	<LOD	<LOD	
TCEP	1.58	3.71	1.90	2.40	13.72	13.84	10.88	12.81
TPP	0.84	2.20	0.26	1.10	435.81	304.10	392.76	377.56
TDCPP	3.34	9.17	2.73	5.08	159.40	111.89	126.06	132.45
TCPP	24.26	49.14	38.10	37.17	252.82	177.11	175.39	201.77

a-Unused concentrations are from a single filter. Used concentrations are from three filters that were part of one CR Box.
b-Average only calculated when PFAS was detected on all three filter samples.

Supplemental Figure 1: Representative image of an assembled Corsi-Rosenthal box used in the intervention study.

Supplemental Figure 2: Representative image of disassembled (Left) and assembled (Right) SVOC sampling devices.

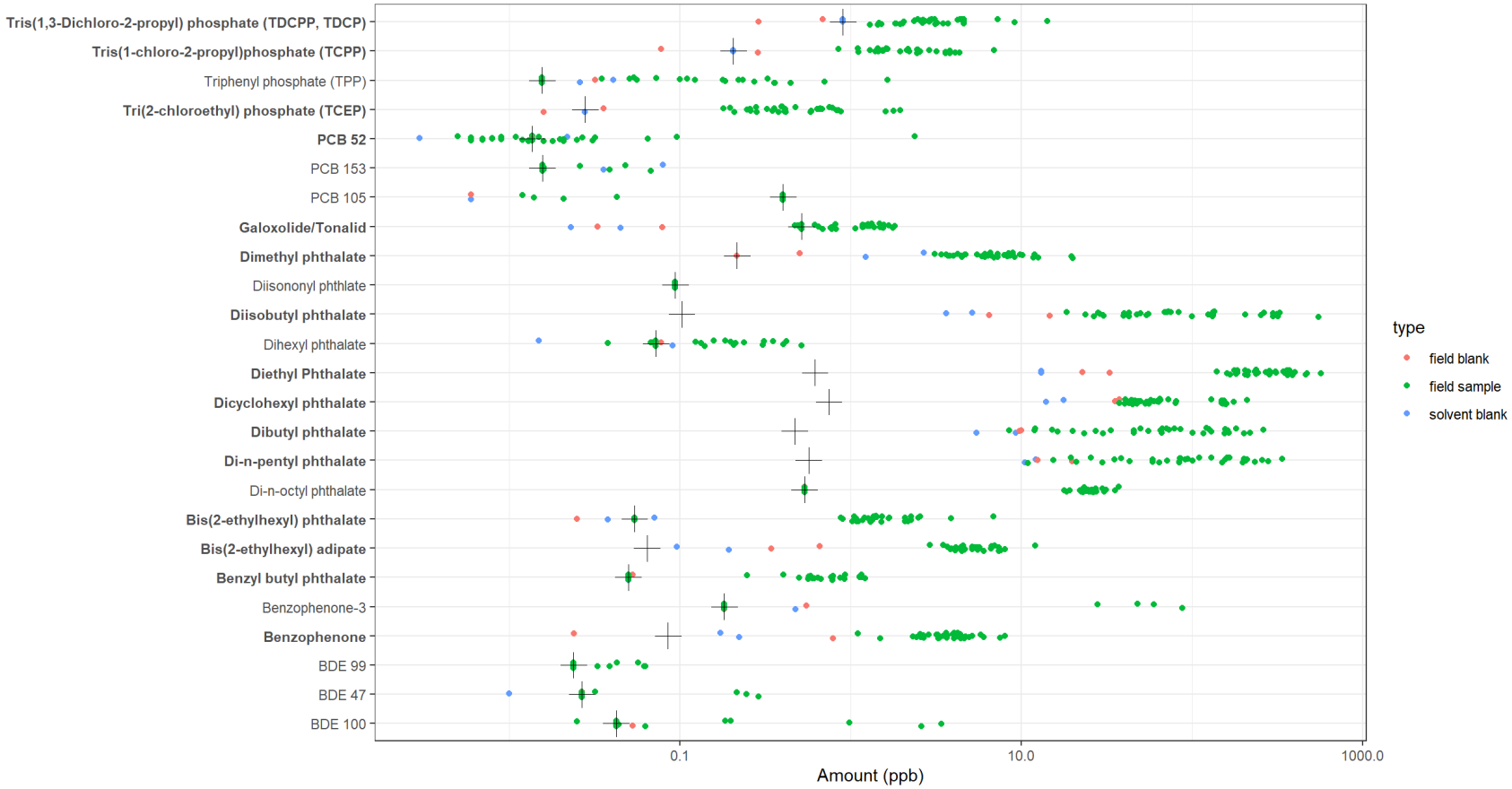
Supplemental Figure 3: Representative image of air sampling device.



Supplemental Figure 4: PFAS concentrations (ng/L or ppt) in solvent extracts, field blanks, and field sample extracts.

Limits of Detection represented by black plus sign. Compounds in bold had >80% detection frequency and included in primary analysis of the intervention.

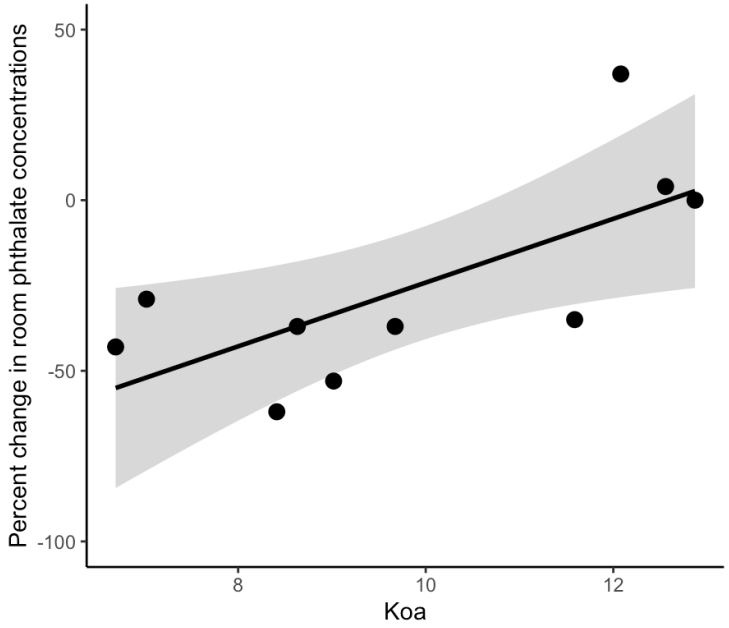
Supplemental Figure 5: SVOC concentrations (µg/L or ppb) in solvent extracts, field blanks, and field sample extracts.



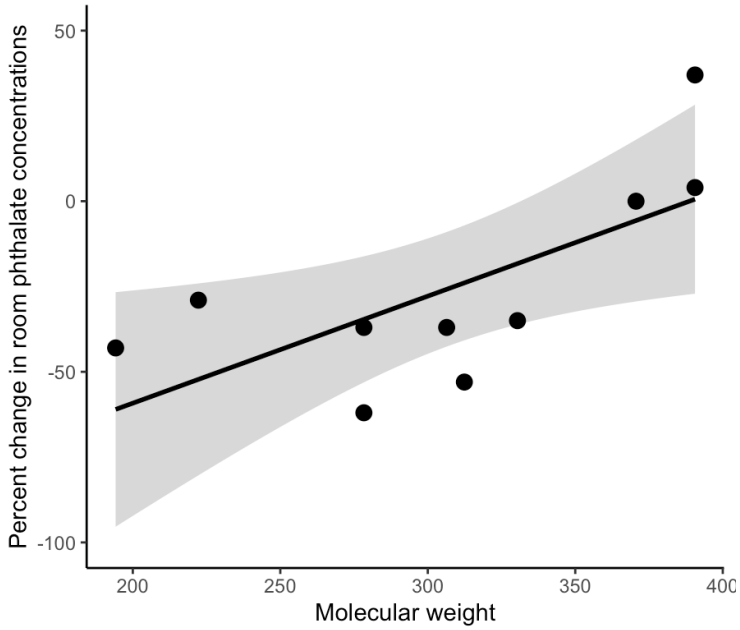
Limits of Detection represented by black plus sign. Compounds in bold had >80% detection frequency and included in primary analysis of the intervention.

Supplemental Figure 6. Associations of log-K_{oa} and molecular weight with change in room phthalate and PFAS air concentrations before vs. during the intervention[a]

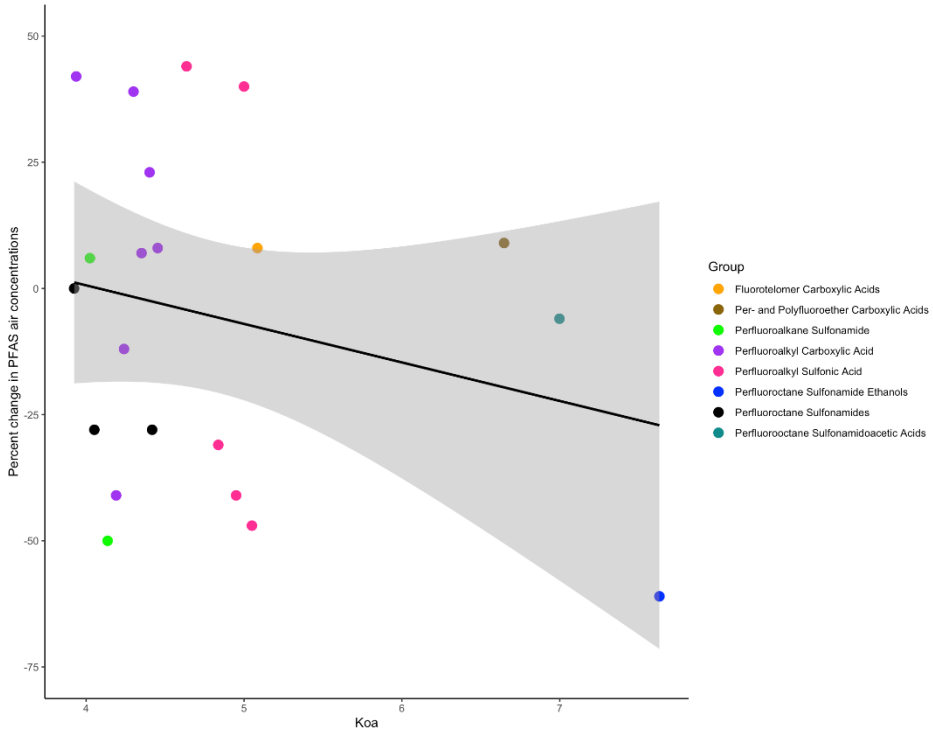
A) Phthalate & log-K_{oa}



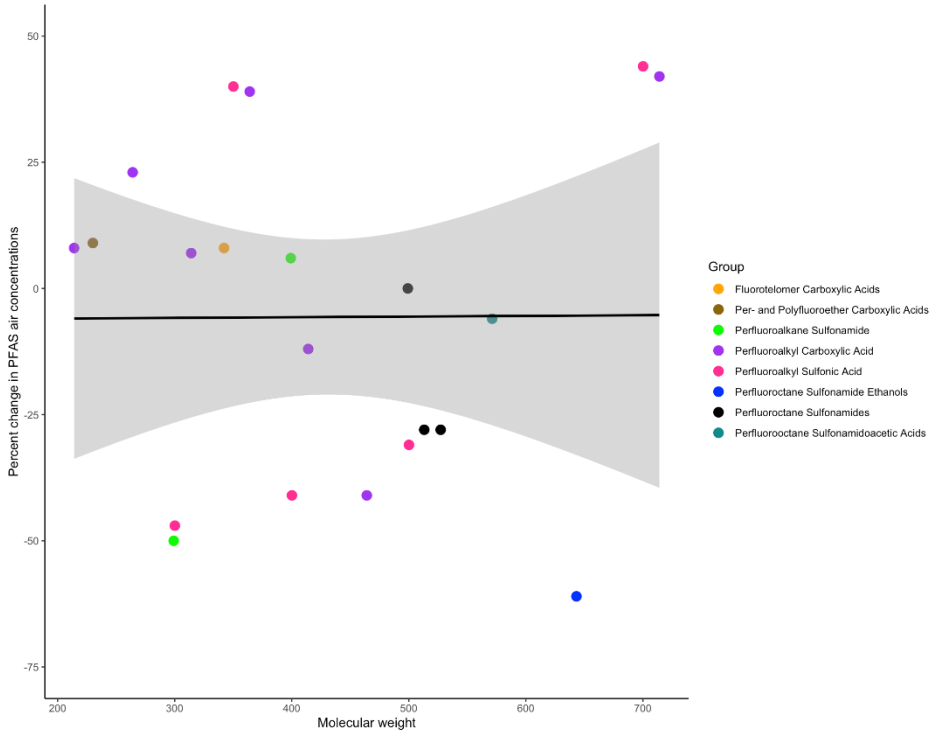
B) Phthalate & Molecular Weight



C) PFAS & log-K_{oa}



D) PFAS & Molecular Weight



a-The estimate (y-axis) is the percent change in air PFAS or SVOC concentrations during vs. before the intervention.

Instructions for Supplemental Files – Interactive Plots

Each of the four Supplemental Files shows room-specific changes in each SVOC presented as a ratio on the y-axis where the ratio is the during intervention concentration divided by the before intervention concentration. Ratios <1 indicate that the chemical concentration declined during the intervention. The rooms are sorted from smallest to largest area (left to right).

Four files are provided to ease interpretation. Supplemental Files 1 and 4 show these for individual PFAS and phthalates, respectively. Supplemental Files 2 and 3 show all the chemicals, with labels for each individual chemical or classes of chemicals, respectively.

To open a file, **double click** on the .html file below to open it in a web browser. Individual chemicals (or classes) can be displayed by double-clicking on the name of the chemical (or class) in the legend. Additional chemicals (or classes) can be displayed by single-clicking another chemical or class in the legend. Individual chemicals (or classes) can be suppressed by single-clicking on their name in the legend. The red line is the reference line, with

Hovering over an individual data point provides additional information in a pop-up box. This includes the room number, room-specific changes in SVOC concentrations, chemical name, number of occupants, number of electronics, number of windows, room area, and chemical class. Zoom, pan, axis rescaling, and image exporting functions are available in the upper right corner.

Figure Footnotes

a-For full names of chemicals, see Supplemental Table 2.
b-Room-specific change presented as a ratio on the y-axis with the during intervention concentration divided by the before intervention concentration. Ratios <1 indicate that the chemical concentration declined during the intervention. The red line indicates a ratio of 1.