Supplemental Information

Exposure to Per- and Polyfluoroalkyl Substances (PFAS) in North Carolina Homes: Results from the Indoor PFAS Assessment (IPA) Campaign

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Section S1: Targeted Ionic and Neutral Per- and Polyfluoroalkyl Substances (PFAS)

Table S1. Targeted ionic and neutral PFAS including the CAS#, formula, and paired mass-labelled standard used for quantification. Ionic PFAS were analyzed via ultra-high performance liquid chromatrography-electrospray ionization coupled to tandem mass spectrometry (UHPLC-ESI-MS/MS) operated in the negative mode with multiple reaction monitoring (MRM). Neutral PFAS were analyzed via gas chromatography mass spectrometry in electron ionization mode. Additional details regarding analyses via UHPLC-ESI-MS/MS[1,2] and GC-EI-MS[3] are provded elsewhere.

PFAS Acronym	PFAS	CAS#	Formula	Mass-Labelled PFAS Standard
Ionic PFAS – Analyzed by UHPLC-ESI-MS/MS				
PFBA	Perfluoro-n-butanoic acid	375-22-4	$C_4HF_7O_2$	$^{13}C_4$-PFBA
PFPeA	Perfluoro-n-pentanoic acid	2706-90-3	$C_5HF_9O_2$	$^{13}C_5$-PFPeA
PFBS	Perfluorobutane sulfonic acid	375-73-5	$C_4HF_9O_3S$	$^{13}C_3$-PFBS
PFHxA	Perfluoro-n-hexanoic acid	307-24-4	$C_6HF_{11}O_2$	$^{13}C_5$PFHxA
GenX	Hexafluoropropylene oxide-dimer acid (HFPO-DA)	13252-13-6	$C_6HF_{11}O_3$	$^{13}C_3$-PFPrOPrA
PFPeS	Perfluoropentane sulfonic acid	2706-91-4	$C_5HF_{11}O_3S$	$^{13}C_3$-PFBS
PFHpA	Perfluoro-n-heptanoic acid	375-85-9	$C_7HF_{13}O_2$	$^{13}C_4$-PFHpA
PFHxS	Perfluorohexane sulfonic acid	355-46-4	$C_6HF_{13}O_3S$	$^{13}C_3$-PFHxS
PFOA	Perfluoro-n-octanoic acid	335-67-1	$C_8HF_{15}O2$	$^{13}C_8$-PFOA
PFHpS	Perfluoroheptane sulfonic acid	375-92-8	$C_7HF_{15}O_3S$	$^{13}C_3$-PFHxS
PFNA	Perfluoro-n-nonanoic acid	375-95-1	$C_9HF_{17}O_2$	$^{13}C_9$-PFNA
PFOS	Perfluorooctane sulfonic acid	1763-23-1	$C_8HF_{17}O_3S$	$^{13}C_8$-PFOS
PFDA	Perfluoro-n-decanoic acid	335-76-2	$C_{10}HF_{19}O_2$	$^{13}C_6$-PFDA
PFNS	Perfluorononane sulfonic acid	68259-12-1	$C_9HF_{19}O_3S$	$^{13}C_8$-PFOS
PFUnA	Perfluoro-n-undecanoic acid	2058-94-8	$C_{11}HF_{21}O_2$	$^{13}C_7$-PFUdA
PFDS	Perfluorodecane sulfonic acid	335-77-3	$C_{10}HF_{21}O_3S$	$^{13}C_8$-PFOS
PFDoA	Perfluoro-n-dodecanoic acid	307-55-1	$C_{12}HF_{23}O_2$	$^{13}C_2$-PFDoA
PFTrA	Perfluoro-n-tridecanoic acid	72629-94-8	$C_{13}HF_{25}O_2$	$^{13}C_2$-PFDoA
PFDoS	Perfluorododecane sulfonic acid	79780-39-5	$C_{12}HF_{25}O_3S$	$^{13}C_8$-PFOS
PFTA	Perfluoro-n-tetradecanoic acid	376-06-7	$C_{14}HF_{27}O_2$	$^{13}C_2$-PFTeDA
PFHxDA	Perfluoro-n-hexadecanoic acid	67905-19-5	$C_{16}HF_{31}O_2$	$^{13}C_2$-PFTeDA
PFODA	Perfluoro-n-octadecanoic acid	16517-11-6	$C_{18}HF_{35}O_2$	$^{13}C_2$-PFTeDA
6:2 diPAP	Sodium bis(1H,1H,2H,2H-perfluorooctyl) phosphate	57677-95-9	$C_{16}H_8F_{26}O_4PNa$	$^{13}C_4$-$^{12}C_{12}H_8F_{26}O_4PNa$
8:2 diPAP	Sodium bis(1H,1H,2H,2H-perfluorodecyl) phosphate	114519-85-6	$C_{20}H_8F_{34}O_4PNa$	$^{13}C_4$-$^{12}C_{16}H_8F_{34}O_4PNa$
6:2 monoPAP	Sodium 1H,1H,2H,2H-perfluorooctyl phosphate	57678-01-0	$C_8H_4F_{13}O_4PNa_2$	$^{13}C_2$-$^{12}C_6H_4F_{17}O_4PNa_2$
8:2 monoPAP	Sodium 1H,1H,2H,2H-perfluorodecyl phosphate	57678-03-2	$C_{10}H_4F_{17}O_4PNa_2$	$^{13}C_2$-$^{12}C_8H_4F_{17}O_4PNa_2$
Neutral PFAS – Analyzed by GC-EI-MS				
6:2 FTOH	2-(Perfluorohexyl)ethanol	647-42-7	$C_8H_5F_{13}O$	^{13}C-6:2 FTOH
8:2 FTOH	2-(Perfluorooctyl)ethanol	678-39-7	$C_{10}H_5F_{17}O$	^{13}C-8:2 FTOH

10:2 FTOH	2-(Perfluorodecyl)ethanol	865-86-1	$C_{12}H_5F_{21}O$	^{13}C-10:2 FTOH
8:2 FTAC	2-(Perfluorooctyl)ethyl acrylate	27905-45-9	$C_{13}H_7F_{17}O_2$	^{13}C-8:2 FTOH
10:2 FTAC	2-(Perfluorodecyl)ethyl acrylate	17741-60-5	$C_{15}H_7F_{21}O_2$	^{13}C-10:2 FTOH
MeFOSA	N-Methylperfluorooctane sulfonamide	31506-32-8	$C_9H_4F_{17}NO_2S$	d-MeFOSA, d-EtFOSA
EtFOSA	N-Ethylperfluorooctane sulfonamide	4151-50-2	$C_{10}H_6F_{17}NO_2S$	d-EtFOSA
MeFOSE	N-Methyl-N-(2-hydroxyethyl)perfluorooctane sulfonamide	24448-09-7	$C_{11}H_8F_{17}NO_3S$	d^7-MeFOSE
EtFOSE	N-Ethyl-N-(2-hydroxyethyl)perfluorooctane sulfonamide	1691-99-2	$C_{12}H_{10}O_3NSF_{17}$	d^7-MeFOSE

Section S2: Sample and Blank Collection Details

Tap Water

Tap water samples and blanks were allowed to come to room temperature and then spiked with 1 ng of mass-labeled PFAS standards. Sample volumes were measured in a graduated cylinder, and then 10 mL of methanol was used to rinse the sample bottles before pouring the sample back into the sample bottle. The graduated cylinder was cleaned with methanol and MilliQ water three times each between each sample blank measurement. WAX SPE cartridges were conditioned with 5 mL of methanol and 10 mL of MilliQ water before loading the samples, a slight modification of EPA Method "Improved Method for Extraction and Analysis of Perfluorinated Compounds (PFCs) from Surface Waters and Well Water by Ultra-High Performance Liquid Chromatography (UPLC)-Tandem Mass Spectrometry (MS/MS) – (SOP ID: D-EMMD-PHCB-043-SOP-03).[4] All methanol and water were discarded to waste. The SPE cartridges were dried before passing 5 mL of 25 mM sodium acetate buffer solution through them that was also discarded to waste, as described in the EPA Method (D-EMMD-PHCB-043-SOP-03). The sodium acetate buffer solution was created by mixing 800 mL of 25 mM acetic acid, 1.4 mL of glacial acetic (99.7% purity, ThermoFisher, Waltham, MA) acid into 1 L of MilliQ water, with 200 mL of sodium acetate solution (3.4 g sodium acetate (ThermoFisher, Waltham, MA) into 1 L of MilliQ water). Methanol was passed through the cartridge and discarded to waste before 15 mL polypropylene centrifuge tubes were placed in the collection reservoir of the vacuum manifold. Targeted PFAS were eluted with 4 mL of a 0.1% basic methanol solution made by adding 28% ammonium hydroxide (Alfa Aesar, Ward Hill, MA) to methanol. A new solution of basic methanol was made the day of each sample run. Extracts were then evaporated under the gentle flow of nitrogen to ~25 µL. Around 75 µL of MilliQ water was added to the extract to match the intial mobile phase conditions and then samples were analyzed via LC-MS.

Sample Wipe Collection

At the first visit, each glass slab was cleaned by wiping three times with two methanol wetted Kimwipe in an established pattern (Figure S1). After each surface was wiped, both Kimwipes were placed in 50 mL polypropylene (PP) centrifuge tubes and stored at 4°C in a cooler for transport back to the laboratory. At lab, samples were stored at -20°C until extraction.

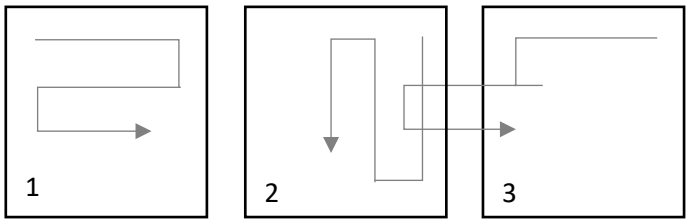

Figure S1. Wipe pattern for mounted glass slabs followed a systematic pattern. Each surface was wiped three times with methanol wetted Kimwipes (x2) from left to right, up and down, and then right to left.

Surface Wipe Field Blank Collection

At each visit where surface wipes were collected, two field blanks each were collected by waving methanol wetted Kimwipes in the air for 2 min.[5] Blanks were then placed in 50 mL PP centrifuge tubes and handled and stored the same as the other surface wipe samples.

Mounted Glass Slabs (GS)

In the lab, four Command strips (20 lb XL, 3M Company, Saint Paul, MN, USA) were adhered to the back of each GS before they were cleaned in the lab with MilliQ water, methanol, and hexane three times each the day prior to deployment in the field. GS were wrapped in pre-baked aluminum foil and stored in a PP bag for storage and transported to the field this way.

On the first visit to each home, except Home 78, clear tempered glass slabs (30.5 cm x 30.5 cm x 0.3 cm; Rice's Glass, Carrboro, NC, USA) were mounted using Command Strips onto the walls in the main living area in participants' homes. No slabs were mounted in Home 78 due to their walls being newly painted. To the extent possible, glass slabs were mounted away from direct sunlight to serve as a comparison to the windows.

Dust Collection and Sample Processing

Table S2. Home characteristics such as the year built, number of occupants, and flooring type in the main living area were recorded in the home survey conducted at the first visit. For each sampling interval, the dust loading (g m^{-2}) was calculated by dividing the mass of dust vacuumed by the area vacuumed. Air change rates (ACHs) were estimated using a CO_2 logger. More details regarding ACH estimates are provided in Eichler et al. (2023).[3] See also Eichler et al., (submitted).[6]

Home ID	Year Built	No. Occupants	Main Living Area Flooring Type	Sampling Interval	Mass of Dust Vacuumed (< 500 µm; g)	Area Vacuumed (m^2)	Dust Loading (g m^{-2})	ACH, estimate; mean ± std. dev. (h^{-1})
65	1987	3	Hardwood, rugs	t = 0 t = 6	0.42 0.36	21.9	0.019 0.016	0.25 ± 0.05
18	1993	2	Carpet, linoleum	t = 0 t = 6	0.34 0.55	32.4	0.01 0.017	0.47 ± 0.31
78	1945	2	Vinyl, rugs	t = 0 t = 6	1.39 1.04	12.9	0.11 0.081	0.40 ± 0.25
30	1962	2	Hardwood, rugs	t = 0 t = 6	1.79 4.92	21.8	0.082 0.225	0.44 ± 0.05
82	2017	1	Laminate, rugs	t = 0	0.43	32.8	0.013	0.77
50	1954	2	Hardwood, rugs	t = 0 t = 6	2.08 1.95	25.3	0.082 0.077	0.38 ± 0.04
43	1920	2	Laminate, rugs	t = 0 t = 6	1.35 1.38	13.5	0.1 0.102	0.19 ± 0.06
35	1920	2	Laminate, rugs	t = 0 t = 6	2.38 2.76	27.0	0.088 0.102	0.58 ± 0.25
10	1985	2	Bamboo, rugs	t = 0 t = 6	1.3 1.13	27.5	0.047 0.041	0.50 ± 0.15
59	2002	4	Hardwood, rugs	t = 0 t = 6	1.72 1.28	40.9	0.042 0.031	0.24 ± 0.04
01	1999	1	Hardwood, rugs	t = 0 t = 6	2.03 1.64	32.9	0.062 0.05	0.21 ± 0.02
Overall								
Mean	1971	2.1	-	-	1.48	26.3	0.06	0.4 ± 0.12

Section S3: Quality Assurance and Quality Control

Table S3. Analytical Detection Limits (ADLs) were calculated following EPA methodology and repeating the lowest calibration standard (0.2 ng mL^{-1} or 1 ng mL^{-1}) seven times. The standard deviation (σ) of the seven runs is then multiplied by the Student's t-value for a single-tailed 99th percentile *t* statistic. The ADL was converted from extract concentrations (ng mL^{-1}) to surface concentrations (pg of PFAS per cm^{-2} of surface) using the average of the GS wiped in homes (930.3 cm^2).

PFAS	ADL (ng mL^{-1})	Dust ADL (ng g^{-1})	Surface Wipes ADL (pg cm^{-2})	Tap Water ADL (ng L^{-1})
PFBA	0.03	0.02	3.2E-03	0.003
PFPeA	0.02	0.01	2.1E-03	0.002
PFHxA	0.02	0.01	2.1E-03	0.002
PFHpA	0.03	0.02	3.2E-03	0.003
PFOA	0.04	0.03	4.3E-03	0.004
PFNA	0.03	0.02	3.2E-03	0.003
PFDA	0.02	0.01	2.1E-03	0.002
PFUnA	0.04	0.03	4.3E-03	0.004
PFDoA	0.08	0.06	8.6E-03	0.008
PFTrA*	0.48	0.35	5.2E-02	0.048
PFTA*	0.3	0.22	3.2E-02	0.03
PFHxDA*	0.7	0.51	7.5E-02	0.07
PFODA*	0.51	0.37	5.5E-02	0.051
L-PFBS	0.04	0.03	4.3E-03	0.004
L-PFPeS	0.12	0.09	1.3E-02	0.012
L-PFHxS	0.07	0.05	7.5E-03	0.007
L-PFHpS	0.1	0.07	1.1E-02	0.01
L-PFOS	0.06	0.04	6.4E-03	0.006
L-PFNS	0.04	0.03	4.3E-03	0.004
L-PFDS	0.12	0.09	1.3E-02	0.012
L-PFDoS*	0.42	0.30	4.5E-02	0.042
GenX	0.47	0.34	5.1E-02	0.047
6:2 monoPAP*	0.59	0.43	6.3E-02	0.059
8:2 monoPAP*	0.7	0.51	7.5E-02	0.07
6:2 diPAP*	0.7	0.51	7.5E-02	0.07
8:2 diPAP*	0.74	0.54	8.0E-02	0.074

* indicates that the ADL was calculated using a 1 ng ml^{-1} calibration standard

Table S4. Analytical precision for ionic PFAS collected on Kimwipes (surface wipes), settled dust, and tap water is expressed as a pooled coefficient of variation (CV) of duplicate analyses (n = 17 duplicate pairs). For each PFAS compound, analytical precision was calculated by dividing the pooled standard deviation (σ_{pooled}) by the mean of all duplicate analyses. For paired data, $\sigma_{pooled} = \sqrt{\sum d_i^2 / 2n}$ where d is the difference between paired, *i*, values, and n is the number of pairs.

PFAS	Analytical Precision (CV) [%]		
	Surface Wipes	Dust	Tap Water
PFBA	0.3	13.0	11.5
PFPeA	7.5	13.6	4.2
PFBS	0.1	13.1	2.9
PFHxA	12.5	14.9	1.5
GenX	0.1	24.0	17.5
PFPeS	-	18.7	9.4
PFHpA	8.8	11.8	1.6
PFHxS	20.5	13.1	8.8
PFOA	6.0	14.5	2.4
PFHpS	1.5	21.2	26.2
PFNA	1.9	11.4	10.0
PFOS	5.4	9.6	21.3
PFDA	4.2	21.2	10.2
PFNS	-	18.8	6.6
PFUnA	5.0	12.4	28.8
PFDS	4.3	12.0	19.2
PFDoA	6.5	14.9	20.6
PFTrA	2.0	15.0	13.1
PFDoS	-	11.5	41.0
PFTA	-	30.3	33.2
PFHxDA	-	21.3	15.8
PFODA	-	11.2	6.7
6:2 diPAP	43.2	69.8	-*
8:2 diPAP	76.4	46.4	-*
6:2 monoPAP	2.5	13.2	-*
8:2 monoPAP	37.9	11.0	-*

*Analytical precision for 6:2 and 8:2 mono- and diPAP s were not calculated for tap water due to poor recovery.

Table S5. Average recovery for dust samples (n = 6) was determined by spiking residential dust sieved to < 500 um with 45 ng of mass-labeled PFAS (i.e., PFAS internal standard). Not all targeted PFAS have matching internal standards (IS). The standard deviation for PFAS marked with "*" were greater than 25% and results should be interpreted carefully.

PFAS	Mean (%)	SD (%)
PFBA IS	73.8	12.2
PFPeA IS	84.3	16.9
PFBS IS	87.3	21.6
PFHxA IS	71.2	15.0
GenX IS	85.0	15.8
PFHpA IS	70.0	13.4
PFHxS IS*	125.4	39.8
PFOA IS	76.3	13.0
PFNA IS	63.1	15.4
PFOS IS	65.4	16.0
PFDA IS	52.2	17.8
PFUnA IS	65.9	9.1
PFDoA IS	71.6	15.8
PFTA IS	68.9	16.0
6:2 diPAP IS	68.7	24.6
8:2 diPAP IS*	172.3	84.4
6:2 monoPAP IS*	96.8	34.8
8:2 monoPAP IS*	149.6	61.2

Table S6. Average recovery and storage recovery for tap water samples. Average recovery was determined by spiking 1 L of MilliQ water with 1 ng of PFAS standards. Three storage blanks were also extracted to assess the effect of storage time on PFAS recovery. Three 1 L bottles of MilliQ water were spiked with 1 ng of analyte PFAS and stored at -80°C with the field collected samples in March 2022. The four PAPs (6:2 monoPAP, 8:2 monoPAP, 6:2 diPAP, and 8:2 diPAP) were excluded from analysis due to poor recoveries, which are provided below for reference.

PFAS	Recovery (%)	Storage Recovery (%)
PFBA	85.8	57.2
PFPeA	91.6	72.9
PFBS	96.5	79.8
PFHxA	88.2	64.9
GenX	87.8	68.2
PFPeS	82.0	83.1
PFHpA	64.7	83.2
PFHxS	99.4	85.1
PFOA	89.5	69.7
PFHpS	88.5	56.9
PFNA	85.0	60.7
PFOS	57.2	44.4
PFDA	75.9	40.1
PFNS	56.5	10.1
PFUnA	48.6	9.2
PFDS	45.6	3.8
PFDoA	48.1	3.3
PFTrA	42.8	4.3
PFDoS	48.7	30.6
PFTA	64.3	15.1
PFHxDA	75.8	45.8
PFODA	37.6	28.0
6:2 diPAP	173.5	6.6
8:2 diPAP	1065.7	77.9
6:2 monoPAP	115.9	91.3
8:2 monoPAP	-	16.3

Table S7. Kimwipe extraction efficiencies (N = 8) for the 26 targeted ionic PFAS were calculated by spiking each Kimwipe with 10 µL of 100 ng mL^{-1} analyte standard. Kimwipes were extracted following the same method for samples and blanks. Recovery was calculated by dividing the calculated concentration from each Kimwipe by the expected concentration (10 ng mL^{-1}).

Analyte	Recovery (%)	SD (%)
PFBA	85.7	15.0
PFPeA	62.5	7.1
PFBS	64.3	9.0
PFHxA	63.0	6.8
GenX	69.7	2.6
PFPeS	67.0	11.3
PFHpA	56.2	9.5
PFHxS	64.3	13.6
PFOA	45.4	6.8
PFHpS	76.6	8.1
PFNA	41.0	6.7
PFOS	37.8	5.7
PFDA	29.0	3.7
PFNS	18.8	4.0
PFUnA	14.9	4.2
PFDS	13.7	3.1
PFDoA	16.2	2.5
PFTrA	6.5	1.8
PFDoS	14.1	4.3
PFTA	22.4	1.8
PFHxDA	53.9	7.9
PFODA	66.4	8.5
6:2 diPAP	26.2	2.0
8:2 diPAP	222	31.7
6:2 monoPAP	38.3	8.4
8:2 monoPAP	10.1	12.6

Section S4: Exposure Assessment Parameters

Table S8. Exposure parameters and equations used to calculate intake. Dust loading was calculated for the homes that participated in the IPA Campaign by dividing the average mass of dust vacuumed by the floor area that was vacuumed.

Exposure Route	Sample Media	Daily Intake (DI) Equation (ng day^{-1} kg^{-1})	Parameters	Adult	2-yr old	Units	References for Parameters
Fine PM & Gas-Phase Inhalation[7]	QFFs; PUF-XAD2-PUF	$DI = C_{air} * IR * AF / BW$	Body Weight (BW)	70.8	13.2	kg	Table 8-10 EFH Chapter 8[7]
			Inhalation Rate (IR)	15.7	8	m^3 d^{-1}	Table 6-1 - EFH Chapter 6[7]
			Absorption Fraction (AF)	0.5	0.5	-	East et al., 2021[8]
Air to Skin Dermal Uptake[9,10]		$DI = C_{air} * k_{p\_g} * SA_{body} * T / BW$	Air Concentration (C_{air})	Measured		ng m^{-3}	IPA Campaign
			k_{p_g} - FOSA/FOSE	0.18	0.18	m h^{-1}	Kissel et al., 2023[10]
			k_{p_g} - PFAAs	4.4E-7	4.4E-7	m h^{-1}	Franko et al., 2012[11]
			SA_{Body}	1.93	0.53	m^2	Table 7-9; EFH Chapter 7[7]
			Duration of Exposure (T)	12	12	h d^{-1}	Estimate
Water Ingestion[7]	Tap Water	$DI = C_{water} * IR * AF / BW$	Water Concentration (C_{water})	Measured		ng L^{-1}	IPA Campaign
			Ingestion Rate (IR)	1.277	0.245	L d^{-1}	Table 3-1 - EFH Chapter 3[7]
			Absorption Fraction (AF)	0.9	0.9	-	East et al., 2021[8]
Dietary Ingestion[7]	Literature	$DI = IR / BW$	Intake Rate (IR)	250	250	ng d^{-1}	Tittlemier et al., 2007[12]
			Dust Concentration (C_{dust})	Measured		ng g^{-1}	IPA Campaign
Dust Ingestion[7]	Settled Dust	$DI = C_{dust} * IR * AF / BW$	Ingestion Rate (IR)	0.02	0.05	gd^{-1}	Table 5-1 - EFH Chapter 5[7]
			Absorption Fraction (AF)	0.9	0.9	-	East et al., 2021[8]
Dust Direct Contact Absorption[8]		$DI = C_{dust} * DL * TC * T * AF / BW$	Dust Load (DL)	0.066	0.066	g m^{-2}	IPA Campaign
			Transfer coefficient (TC)	0.06	0.06	m^2 h^{-1}	Hubal Cohen et al., 2006[13]
			Time doing activity (T)	8	10	h d^{-1}	Estimate
			Absorption Fraction (AF)	0.048	0.048	%	Fasano et al., 2005[14]
Surface Direct Contact Absorption[15]	Glass Slabs	$DI = C_{Surface} * F_t * \%Hand * TC * ET * AF / BW$	Surface Film Conc. ($C_{Surface}$)	Measured		ng cm^{-2}	IPA Campaign
			% of SA_{Skin} that is Hand (%Hand)	5.2	5.7	%	Table 7-6; EFH Chapter 7[7]
			Fraction Transferred (F_t)	0.08	0.08	-	US EPA 2012[15]
			Transfer coefficient (TC)	600	600	cm^2 h^{-1}	Cohen Hubal et al., 2006[13]
			Exposure Time (ET)	8	12	h d^{-1}	Estimate
Surface Hand to Mouth Ingestion[7]		$DI = C_{Surface} * CR * EV * T * DT * F_{hand} * AF / BW / 60$	Absorption Fraction (AF)	0.048	0.048	%	Fasano et al., 2005[14]
			Contact Rate (CR)	-	302.1	cm^2 $event^{-1}$	Calculated (SA_skin * % Hand)
			Event Frequency (EV)	-	20	event h^{-1}	Adults - Nicas and Best 2008[16]; 2-yr old -Table 4-1 EFH Chapter 4[7]
			Time doing activity (T)	-	12	h d^{-1}	Estimate
			Absorption Fraction (AF)	-	0.9	-	East et al., 2021[8]
			Duration of Activity (DT)	-	7	min h^{-1}	Table 4-1; EFH Chapter 4[7]

Ingestion by Mouthing Clothing[17]	Clothing	$DI = C_{Cloth} * A_{mouth} * n * f_{Hand} * AF * Ext_{Saliva} / BW$	Fraction of hand mouthed (F_{hand})	-	0.13	-	
			Clothing Concentration (C_{Cloth})	Measured		ng cm^{-2}	IPA Campaign
			Area of mouth (A_{Mouth})	-	10	cm^2	Gennings et al., 2014[18]
			Number of times mouthed (n)	-	124	d^{-1}	Morrison et al., 2015[17]
			Fraction of surface mass transferred to hand (f_{hand})	-	0.058	-	Morrison et al., 2015[17]
			Absorption Fraction (AF)	-	0.9	-	East et al., 2021[8]
			Extraction by Saliva (Ext_{Saliva})	-	0.48	-	US EPA, 2012[15]
			Biotransformation				
			8:2 FTOH to PFOA	0.5	0.5	%	Himmelstein et al., 2012[19]

EFH refers to the EPA Exposure Factors Handbok (EFH).

Section S5. Results

Table S9. Summary statistics for tap water samples, which were mean field blank-subtracted and corrected for recoveries. PFAS concentrations noted with "n.d." indicate a non-detect and values with a "<" in front indicate that the PFAS was detected at concentrations below the MDL.

PFAS	Mean (ng L^{-1})	Median (ng L^{-1})	Min (ng L^{-1})	Max (ng L^{-1})	DF (%)	MDL (ng L^{-1})
GenX	< 0.047	n.d.	n.d.	0.06	20	0.047
PFBA	1.53	1.31	< 0.694	2.93	100	0.694
PFBS	2.72	2.66	< 0.715	4.80	100	0.715
PFDA	0.11	0.06	n.d.	0.26	90	0.002
PFDoA	< 0.048	n.d.	n.d.	< 0.048	30	0.048
PFDoS	n.d.	n.d.	n.d.	n.d.	n.d.	0.042
PFDS	n.d.	n.d.	n.d.	n.d.	n.d.	0.012
PFHpA	1.57	1.65	< 0.003	3.58	100	0.003
PFHpS	0.08	0.07	0.07	0.14	100	0.068
PFHxA	1.41	0.62	n.d.	4.29	90	0.004
PFHxDA	n.d.	n.d.	n.d.	n.d.	n.d.	0.051
PFHxS	0.32	0.23	n.d.	0.82	90	0.181
PFNA	0.15	0.18	n.d.	0.26	90	0.011
PFNS	n.d.	n.d.	n.d.	n.d.	n.d.	0.004
PFOA	3.60	3.76	< 0.075	8.19	100	0.075
PFODA	n.d.	n.d.	n.d.	n.d.	n.d.	0.004
PFOS	2.95	2.75	n.d.	6.51	80	0.008
PFPeA	1.26	0.11	n.d.	6.51	60	0.002
PFPeS	0.18	n.d.	n.d.	0.99	20	0.007
PFTA	0.08	0.07	n.d.	0.15	90	0.07
PFTrA	n.d.	n.d.	n.d.	n.d.	n.d.	0.03
PFUnA	0.02	0.02	n.d.	0.07	60	0.008

Table S10. Summary statistics, method detection limit (MDL), mean field blank, and detection frequencies (DF) for mean field blank subtracted and recovery corrected targeted ionic PFAS on 6-month glass slab wipes. PFAS concentrations noted with "n.d." indicate a non-detect and values with a "<" in front indicate that the PFAS was detected at concentrations below the MDL.

PFAS	Mean	Median	Min	Max	MDL	Mean Field Blank	DF
				(pg cm^{-2})			%
PFBA	0.63	<0.48	n.d.	2.0	0.48	8.9E-02	78
PFPeA	2.3E-02	<2.1E-3	n.d.	9.8E-02	2.1E-03	n.d.	44
PFBS	<4.3E-3	<4.3E-3	n.d.	2.4E-02	4.3E-03	1.3E-04	11
PFHxA	0.49	0.14	2.70E-02	2.6	1.8E-02	3.9E-03	100
GenX	<5.1E-2	<5.1E-2	n.d.	<5.1E-02	5.1E-02	3.6E-03	n.d.
PFPeS	n.d.	n.d.	n.d.	n.d.	1.3E-02	n.d.	n.d.
PFHpA	0.25	0.15	1.90E-02	0.94	6.5E-03	1.3E-03	100
PFHxS	n.d.	n.d.	n.d.	n.d.	0.59	3.9E-03	n.d.
PFOA	0.78	0.63	3.10E-02	1.7	1.6E-02	2.0E-03	100
PFHpS	9.3E-02	<7.1E-2	<7.1E-2	0.25	7.1E-02	1.1E-02	100
PFNA	0.15	0.14	n.d.	0.45	6.6E-03	n.d.	67
PFOS	0.14	0.15	n.d.	0.26	5.6E-02	1.1E-02	89
PFDA	0.14	0.15	1.90E-02	0.37	7.1E-03	1.3E-03	100
PFNS	n.d.	n.d.	n.d.	n.d.	6.7E-03	n.d.	n.d.
PFUnA	2.0E-02	<7.8E-3	n.d.	5.5E-02	7.8E-03	6.6E-04	67
PFDS	n.d.	n.d.	n.d.	n.d.	2.2E-02	6.2E-03	n.d.
PFDoA	<6.3E-2	<6.3E-2	n.d.	0.12	6.3E-02	9.8E-04	56
PFTrA	n.d.	n.d.	n.d.	n.d.	5.2E-2	3.3E-05	n.d.
PFDoS	n.d.	n.d.	n.d.	n.d.	4.5E-02	n.d.	n.d.
PFTA	<5.6E-2	<5.6E-2	n.d.	0.13	5.6E-02	4.6E-03	22
PFHxDA	n.d.	n.d.	n.d.	n.d.	8.9E-02	4.5E-03	n.d.
PFODA	n.d.	n.d.	n.d.	n.d.	5.5E-2	n.d.	n.d.
6:2 diPAP	1.7	<0.85	n.d.	9.4	0.85	8.7E-02	67
8:2 diPAP	<0.14	<0.14	n.d.	<0.14	0.14	3.9E-03	67
6:2 monoPAP	0.1	<6.3E-2	n.d.	0.71	6.3E-02	3.3E-03	22
8:2 monoPAP	0.14	<7.5E-2	n.d.	1.0	7.5E-2	3.5E-03	33

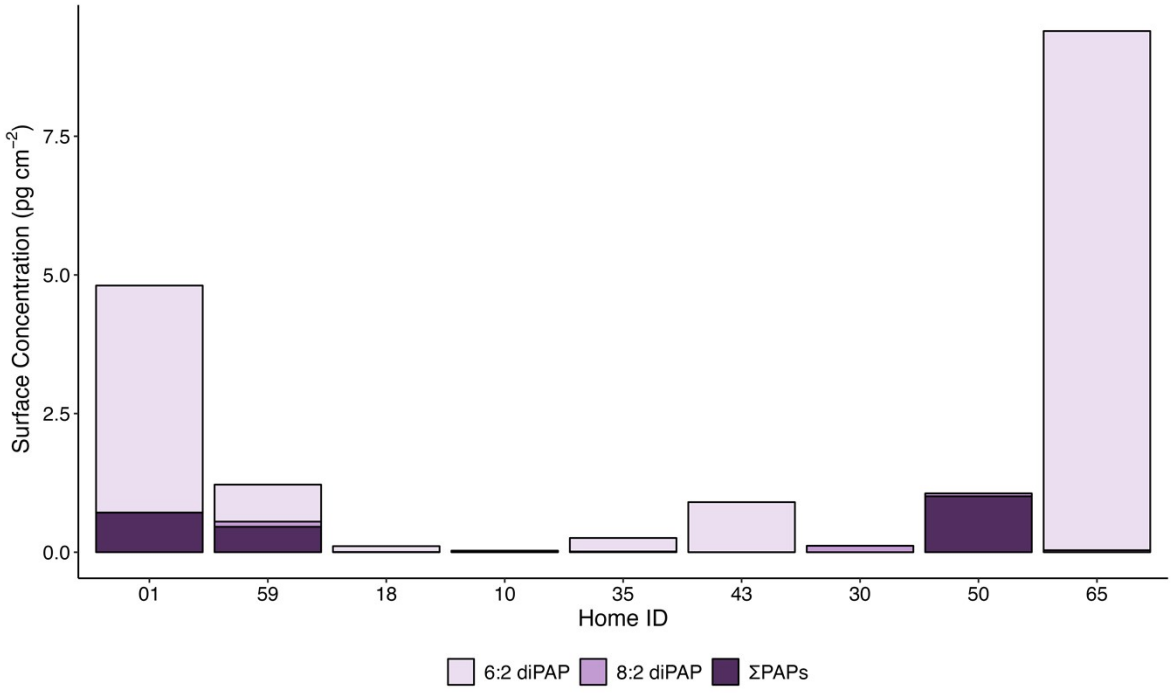

Figure S2. PAP profiles and concentrations on glass slabs collected at 6-months.

Table S11. Overall summary statistics for recovery corrected dust samples. Values are median blank subtracted and the MDL was taken as the 95th percentile concentration following UC Davis' IMPROVE methodology.[20] PFAS concentrations noted with "n.d." indicate a non-detect and values with a "<" in front indicate that the PFAS was detected at concentrations below the MDL.

PFAS	Mean (ng g^{-1})	Median (ng g^{-1})	Min (ng g^{-1})	Max (ng g^{-1})	F.Blk (ng g^{-1})	DF (%)	MDL (ng g^{-1})
PFBA	28.0	9.2	n.d.	284	n.d.	76	4.6
PFPeA	0.6	n.d.	n.d.	3.6	n.d.	43	0.25
PFBS	<4.8	<4.8	n.d.	22.5	3.4	10	4.8
PFHxA	9.0	7.2	<3.6	30.3	n.d.	62	3.6
GenX	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.39
PFPeS	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.06
PFHpA	1.6	<1.1	n.d.	9.7	n.d.	38	1.1
PFHxS	1.4	n.d.	n.d.	19.9	n.d.	10	0.06
PFOA	8.0	8.3	n.d.	31.4	n.d.	81	0.04
PFHpS	<0.66	n.d.	n.d.	1.6	n.d.	5	0.66
PFNA	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.03
PFOS	129	80.8	<37.1	402	0.9	76	37.1
PFDA	0.5	n.d.	n.d.	2.6	n.d.	38	0.03
PFNS	0.1	n.d.	n.d.	1.7	n.d.	5	0.04
PFUnA	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.09
PFDS	<11.1	n.d.	n.d.	76.0	n.d.	10	11.1
PFDoA	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.48
PFTrA	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.64
PFDoS	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.46
PFTA	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.73
PFHxDA	<0.53	n.d.	n.d.	8.4	n.d.	5	0.53
PFODA	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.04
6:2 diPAP	<293	<293	n.d.	735	0.5	24	293
8:2 diPAP	<79.3	<79.3	n.d.	112	1.7	10	79.3
6:2 monoPAP	<69	<69	n.d.	201	n.d.	10	69
8:2 monoPAP	1.0	n.d.	n.d.	8.0	n.d.	19	0.33

Table S12. Ionic PFAS concentrations in dust from studies in indoor environments in the US, Canada, Finland, and Ireland. PFAS marked with "-" indicate that the compound was not targeted. Values provided with "<" were detected at concentrations below quantification limits for other studies and below the MDL for IPA Campaign homes. *Eriksson and Kärrman (2015)[21] reported "n.a." values for PFAS with detection frequencies below 50%.

Study	Year	Location	Size (µm)		PFOA	PFOS	PFBS	PFNA	PFHxA	PFHpA	PFHxS	PFDA	6:2 diPAP	8:2 diPAP
IPA Campaign	2021 - 2022	Homes (n = 11); North Carolina	500	Median (ng g^{-1})	8.3	80.8	<4.8	n.d.	7.2	<1.1	n.d.	n.d.	<293	<79.3
Zheng et al., 2019[22]	Not reported	Daycares (n = 20); WA, IN	500	Median (ng g^{-1})	2.0	1.2		1.7	1.4	0.61	0.25	0.59	-	-
Harrad et al., 2019[23]	2016 - 2017	Homes (n = 34); Ireland	500	Median (ng g^{-1})	0.42	0.96	10	<0.05	-	-	<0.1	-	-	-
Schildroth et al., 2022[24]	2016	University spaces (n = 43); New England, USA	150	Median (ng g^{-1})	100	41	-	79	38	<LOQ	<LOQ	53	-	-
Hall et al., 2020[25]	2014 - 2016	Homes (n = 184); North Carolina	500	Median (ng g^{-1})	7.9	4 .4	-	3	9	9	2	6	113	<0.48
Winkens et al., 2018[26]	2014 - 2016	Homes (n = 65); Kuopio, Finland	500	Median (ng g^{-1})	741	1890	20.5	85.1	336	374	1430	63.8	687	225
Weiss et al., 2021[32]	2013 - 2014	Homes (n = 17); Stockholm and Uppsala regions, Sweden	1000	Median (ng g^{-1})	9.0	13	< LOQ	3.4	6..4	2.2	< LOQ	3.2	65	49
Eriksson and Kärrman (2015)[21]	2013 – 2014; Spain - 2009	Homes; Australia (n = 10)	150	Median (ng g^{-1})	13.5	9.72	1.29	2.97	4.77	2.18	4.32	5.18	83.5	48.5
		Homes; Canada (n = 10)			21	7.29	3.44	13.5	7.44	4.75	3.75	7.07	164	27.1
		Homes; Faroe Island (n = 10)			15.3	5.75	1.88	2.39	7.96	2.26	0.37	4.81	106	46.9
		Homes; Greece (n = 7)			12.8	7.21	1.2	3.55	3.85	n.a.*	0.41	5.4	5.26	3.6
		Homes; Japan (n = 5)			25.5	3.91	1.33	35.8	12.0	6.54	0.76	10.5	119	80.8
		Homes; Nepal (n = 10)			n.a.*	n.a.*	n.a.*	n.a.*	n.a.*	n.a.*	n.a.*	n.a.*	1.16	0.72
		Homes; Spain (n = 10)			8.81	5.29	1.44	1.72	3.39	0.90	0.39	3.72	2.08	5.96
		Homes; Sweden (n = 10)			14.4	2.77	1.24	1.96	7.05	2.61	0.15	3.72	15.4	9.53
Fraser et al., 2013[27]	2009	Offices (n = 31); MA	500	GM (ng g^{-1})	32	14.6	-	63	10.8	27.6	-	46.5	-	-
		Homes (n = 30); MA			23.7	26.9	-	10.9	8.65	12	-	-	-	-
		Cars (n = 13); MA			11.4	15.8	-	14.7	5.92	8.48	-	8.4	-	-
Goosey and Harrad, 2011[28]	2007 - 2009	Homes (n = 10); CO	500	Median (ng g^{-1})	240	310	-	-	-	-	240	-	-	-
Knobeloch et al., 2012[29]	2008	Homes (n = 39); WI	1000	Median (ng g^{-1})	44	47	1.8	12	0	17	16	5.7	-	-

De Silva et al., 2012[30]	2007 - 2008	Homes (n = 102); Vancouver, Canada	150	Median (ng g^{-1})	-	-	-	-	-	-	-	-	460	535
Strynar and Lindstrom, 2008[31]	2000-2001	Homes (n = 102) and daycare centers (n = 10); NC and OH	150	Median (ng g^{-1})	142	201	9.11	142	54.2	50.2	45.5	6.65	-	-

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Section S6: Exposure Assessment Estimates

Table S13. Summary statistics for air, water, dust, glass slab, and clothing neutral and/or ionic PFAS concentrations used in estimating exposure for adults and children. Note that '-' indicates the environmental media was not sampled for that specific PFAS and 'n.d.' indicates it was not detected.

Statistic	PFAS	Air (ng m^{-3})	Water (ng L^{-1})	Dust (ng g^{-1})	GS (ng cm^{-2})	Clothing (ng cm^{-2})
Mean	Total PFAS	27.8	16.0	824.5	4.2E-03	0.25
Median		18.5	14.3	732.4	2.7E-03	0.13
Min		7.52	1.4	303.4	4.1E-04	3.95E-02
Max		108	34.1	1638.7	1.7E-02	0.92
Mean	Total Ionic PFAS	2.3E-02	16.0	549.8	4.2E-03	-
Median		1.6E-02	14.3	496.5	2.7E-03	-
Min		1.3E-03	1.4	201.7	4.1E-04	-
Max		1.4E-01	34.1	1036.2	1.7E-02	-
Mean	Total Neutral PFAS	27.8	-	274.8	-	0.25
Median		18.5	-	235.9	-	0.13
Min		7.52	-	101.6	-	3.95E-02
Max		108	-	602.4	-	0.92
Mean	Total PAPs	3.6E-03	-	361.2	1.8E-03	-
Median		1.7E-03	-	311.9	4.8E-04	-
Min		n.d.	-	104.9	n.d.	-
Max		2.4E-02	-	991.2	1.1E-02	-
Mean	Total PFCAs	1.6E-02	9.7	48.1	2.3E-03	-
Median		9.2E-03	8.6	30.1	1.8E-03	-
Min		n.d.	0.7	2.5	1.2E-04	-
Max		0.12	22.0	346.5	7.9E-03	-
Mean	Total PFSAs	1.8E-03	6.3	140.5	1.9E-04	-
Median		8.7E-04	5.7	105.6	1.9E-04	-
Min		n.d.	0.7	29.7	5.4E-05	-
Max		6.3E-03	12.1	405.8	3.9E-04	-
Mean	Total FTOHs	26.7	-	207.4	-	0.19
Median		17.2	-	173.0	-	0.11
Min		5.76	-	74.7	-	2.3E-03
Max		107	-	529.8	-	0.84
Mean	Total FOSAs/FOSEs	0.78	-	64.2	-	6.6E-02
Median		0.71	-	46.3	-	4.5E-02
Min		0.2	-	n.d.	-	2.5E-03
Max		1.26	-	208.2	-	0.22

Table S14. Daily intake rates (ng kg^{-1} d^{-1}) for each exposure route and total exposure for inhalation, ingestion, and dermal exposure routes as well as percent contribution of each route for a simulated adult. Note that '-' indicates the environmental media was not sampled for that specific PFAS and 'n.d.' indicates it was not detected.

		Exposure (ng kg^{-1} d^{-1})							Percent Contribution (%)			
		Inhalation	Ingestion - Water	Ingestion - Dust	Dermal - Dust	Dermal - Surface	Air to Skin	ΣExposure	Inhalation	Ingestion Water	Ingestion Dust	Dermal Dust/Surfaces
Mean	Total PFAS	3.1	0.26	0.21	8.9E-05	5.7E-7	5.3E-3	3.56	86.7	7.3	5.9	1.5E-01
Median		2.1	0.23	0.19	7.9E-05	3.6E-7	4.8E-3	2.47	82.9	9.4	7.5	2.0E-01
Min		0.83	0.02	7.7E-02	3.3E-05	5.5E-8	1.3E-3	0.94	89.1	2.5	8.2	1.5E-01
Max		12.0	0.55	0.42	1.8E-04	2.2E-6	8.5E-3	12.9	92.4	4.3	3.2	< 0.05
Mean	Total Ionic PFAS	2.5E-3	0.26	0.14	5.9E-05	5.7E-7	-	0.4	0.6	64.6	34.8	< 0.05
Median		1.8E-3	0.23	0.13	5.3E-05	3.6E-7	-	0.36	0.5	64.4	35.1	< 0.05
Min		1.4E-4	0.02	5.1E-02	2.2E-05	5.5E-8	-	7.4E-02	0.2	31.0	68.8	< 0.05
Max		1.5E-2	0.55	0.26	1.1E-04	2.2E-6	-	0.83	1.8	66.5	31.6	< 0.05
Mean	Total Neutral PFAS	3.1	-	7.0E-02	3.0E-05	-	5.3E-3	3.2	97.6	-	2.2	1.7E-01
Median		2.0	-	6.0E-02	2.5E-05	-	4.8E-3	2.1	96.9	-	2.8	2.3E-01
Min		0.83	-	2.6E-02	1.1E-05	-	1.3E-3	0.86	96.8	-	3.0	1.6E-01
Max		12.0	-	0.15	6.5E-05	-	8.5E-3	12.1	98.7	-	1.3	< 0.05
Mean	Total PAPs	4.E-4	-	9.2E-02	3.9E-05	2.4E-7	-	9.23E-02	0.4	-	99.5	< 0.05
Median		1.8E-4	-	7.9E-02	3.3E-05	6.5E-8	-	7.95E-02	0.2	-	99.7	< 0.05
Min		n.d.	-	2.7E-02	1.1E-05	n.d.	-	2.67E-02	n.d.	-	100	< 0.05
Max		2.7E-3	-	0.25	1.1E-04	1.4E-6	-	0.26	1.1	-	98.9	< 0.05
Mean	Total PFCAs	1.8E-3	0.16	1.2E-02	5.2E-06	3.0E-7	-	0.17	1.0	91.9	7.1	< 0.05
Median		1.E-3	0.14	7.6E-03	3.2E-06	2.4E-7	-	0.15	0.7	94.2	5.2	< 0.05
Min		n.d.	0.01	6.5E-04	2.7E-07	1.6E-8	-	1.26E-02	n.d.	94.9	5.1	< 0.05
Max		1.3E-2	0.36	8.8E-02	3.7E-05	1.1E-6	-	0.46	2.9	77.9	19.2	< 0.05
Mean	Total PFSAs	1.9E-4	0.10	3.6E-02	1.5E-05	2.5E-8	-	0.14	0.1	73.9	25.9	< 0.05
Median		9.7E-5	0.09	2.7E-02	1.1E-05	2.6E-8	-	0.12	0.1	77.3	22.6	< 0.05
Min		n.d.	0.01	7.5E-03	3.2E-06	7.3E-9	-	1.87E-02	n.d.	59.6	40.3	< 0.05
Max		7.0E-4	0.20	0.1	4.4E-05	5.3E-8	-	0.3	0.2	65.4	34.4	< 0.05
Mean	Total FTOHs	3.0	-	5.3E-02	2.2E-05	-	-	3.01	98.2	-	1.8	< 0.05
Median		1.9	-	4.4E-02	1.9E-05	-	-	1.95	97.7	-	2.3	< 0.05
Min		0.64	-	1.9E-02	8.0E-06	-	-	0.66	97.1	-	2.9	< 0.05
Max		12.0	-	0.13	5.7E-05	-	-	12.0	98.9	-	1.1	< 0.05
Mean	Total FOSAs/FOSEs	8.7E-2	-	1.6E-02	6.9E-06	-	5.3E-3	0.11	80.0	-	15.0	4.9
Median		7.9E-2	-	1.2E-02	5.0E-06	-	4.8E-3	9.53E-02	82.6	-	12.4	5.1
Min		2.2E-2	-	n.d.	n.d.	-	1.3E-3	2.33E-02	94.2	-	n.d.	5.8
Max		0.14	-	5.3E-02	2.2E-05	-	8.5E-3	0.2	69.4	-	26.4	4.3

Table S15. Daily intake rates (ng kg^{-1} d^{-1}) for each exposure route and total exposure for inhalation, ingestion, and dermal exposure routes as well as percent contribution of each route for a simulated 2-year old child. Note that '-' indicates the environmental media was not sampled for that specific PFAS and 'n.d.' indicates it was not detected.

		Exposure (ng kg^{-1} d^{-1})									Percent Contribution (%)				
		Inhalation	Ingestion Water	Ingestion Dust	Dermal Dust	Dermal Surfaces	Ingestion Surfaces	Mouthing	Air to Skin	ΣExposure	Inhalation	Ingestion Water	Ingestion Dust/Surfaces	Mouthing	Dermal
Mean	Total PFAS	8.4	0.27	2.81	9.5E-04	5.0E-6	0.32	0.59	8.5E-4	12.4	67.9	2.2	25.2	4.8	< 0.05
Median		5.6	0.24	2.5	8.4E-04	3.2E-6	0.2	0.32	5.8E-4	8.9	63.3	2.7	30.5	3.6	< 0.05
Min		2.3	0.02	1.03	3.5E-04	4.9E-7	3.1E-2	0.09	3.2E-5	3.5	65.9	0.7	30.8	2.7	< 0.05
Max		32.6	0.57	5.59	1.9E-03	2.0E-5	1.24	2.16	2.9E-3	42.2	77.3	1.4	16.2	5.1	< 0.05
Mean	Total Ionic PFAS	6.9E-3	0.27	1.87	6.3E-04	5.0E-6	0.32	-	-	2.5	0.3	10.8	88.9	-	< 0.05
Median		4.8E-3	0.24	1.69	5.7E-04	3.2E-6	0.2	-	-	2.1	0.2	11.1	88.6	-	< 0.05
Min		3.8E-4	0.02	0.69	2.3E-04	4.9E-7	3.6E-2	-	-	0.7	< 0.05	3.2	96.8	-	< 0.05
Max		4.1E-2	0.57	3.53	1.2E-03	2.0E-5	1.24	-	-	5.4	0.8	10.6	88.6	-	< 0.05
Mean	Total Neutral PFAS	8.43	-	0.94	3.2E-04	-	-	0.59	8.5E-4	10.0	84.6	-	9.4	6.0	< 0.05
Median		5.6	-	0.8	2.7E-04	-	-	0.32	5.8E-4	6.7	83.3	-	12.0	4.7	< 0.05
Min		2.28	-	0.35	1.2E-04	-	-	0.09	3.2E-5	2.7	83.8	-	12.7	3.4	< 0.05
Max		32.6	-	2.05	6.9E-04	-	-	2.16	2.9E-3	36.8	88.6	-	5.6	5.9	< 0.05
Mean	Total PAPs	1.1E-3	-	1.23	4.2E-04	2.1E-6	0.13	-	-	1.4	0.1	-	99.9	-	< 0.05
Median		5.3E-4	-	1.06	3.6E-04	5.8E-7	3.6E-2	-	-	1.1	4.6E-02	-	99.9	-	< 0.05
Min		n.d.	-	0.36	1.2E-04	n.d.	n.d.	-	-	0.4	n.d.	-	100.0	-	< 0.05
Max		7.4E-3	-	3.38	1.1E-03	1.3E05	0.79	-	-	4.2	0.2	-	99.8	-	< 0.05
Mean	Total PFCAs	4.8E-3	0.16	0.16	5.6E-05	2.7E-6	0.17	-	-	0.5	1.0	32.5	66.5	-	< 0.05
Median		2.8E-3	0.14	0.1	3.5E-05	2.1E-6	0.13	-	-	0.4	0.7	37.7	61.6	-	< 0.05
Min		n.d.	0.01	8.68E-03	2.9E-06	1.4E-7	9.0E-3	-	-	3.0E-2	n.d.	41.1	58.9	-	< 0.05
Max		3.6E-2	0.37	1.18	4.0E-04	9.4E-6	0.59	-	-	2.2	1.7	16.9	81.4	-	< 0.05
Mean	Total PFSAs	5.3E-4	0.10	0.48	1.6E-04	2.3E-7	1.4E-2	-	-	0.6	0.1	17.5	82.4	-	< 0.05
Median		2.7E-4	0.09	0.36	1.2E-04	2.3E-7	1.4E-2	-	-	0.5	0.1	20.2	79.7	-	< 0.05
Min		n.d.	0.01	0.10	3.4E-05	6.5E-8	4.1E-3	-	-	0.1	n.d.	9.8	90.1	-	< 0.05
Max		1.9E-3	0.20	1.38	4.7E-04	4.7E-7	2.9E-2	-	-	1.6	0.1	12.5	87.4	-	< 0.05
Mean	Total FTOHs	8.09	-	0.71	2.4E-04	-	-	0.44	-	9.2	87.6	-	7.7	4.8	< 0.05
Median		5.22	-	0.59	2.0E-04	-	-	0.26	-	6.1	86.0	-	9.7	4.3	< 0.05
Min		1.75	-	0.25	8.6E-05	-	-	0.01	-	2.0	87.0	-	12.7	0.3	< 0.05
Max		32.5	-	1.81	6.1E-04	-	-	1.97	-	36.2	89.6	-	5.0	5.4	< 0.05
Mean	Total FOSAs/ FOSEs	0.24	-	0.22	7.4E-05	-	-	0.16	8.5E-4	0.6	38.7	-	35.7	25.4	0.15
Median		0.22	-	0.16	5.3E-05	-	-	0.11	5.8E-4	0.5	44.9	-	33.0	22.0	0.13
Min		6.0E-2	-	n.d.	n.d.	-	-	0.01	3.2E-5	0.1	91.1	-	n.d.	8.9	< 0.05
Max		0.38	-	0.71	2.4E-04	-	-	0.53	2.9E-3	1.6	23.5	-	43.8	32.5	0.19

Table S16. Percent contribution to ΣPFAS, Σ(Ionic PFAS), and Σ(Neutral PFAS) exposure via inhalation, ingestion of water, ingestion of dust/surfaces (and mouthing of clothing for a simulated 2-year old), and dermal uptake with and without estimated dietary exposure. The intake rate of dietary exposure was 250 ng d^{-1}, which was determined by Tittlemier et al. (2007)[12] for Canadians over 12 years of age for seven PFCAs and PFOS. As such, percent contribution including diet should be interpreted with caution.

	Adult						2 - Yr Old					
	Total Exposure ng kg^{-1} d^{-1}	% Contribution w/ Diet					Total Exposure ng kg^{-1} d^{-1}	% Contribution w/ Diet				
		Inhalation	Ingestion - Water	Ingestion – Dust/Surfaces	Dermal	Diet		Inhalation	Ingestion - Water	Ingestion – Dust/Surfaces/Cloth	Dermal	Diet
Total PFAS	7.1	43.7	3.7	3.0	8.E-02	49.6	31.3	26.9	0.9	11.9	5.8E-03	60.3
Total Ionic	3.9	0.1	6.7	3.6	2.E-03	89.7	21.4	3.2E-02	1.3	10.3	3.0E-03	88.5
Total Neutral	3.2	97.6		2.2	2.E-01		10.0	84.6	-	15.4	1.2E-02	-
	Total Exposure w/o Diet ng kg^{-1} d^{-1}	% Contribution w/o Diet					Total Exposure w/o Diet ng kg^{-1} d^{-1}	% Contribution w/o Diet				
		Inhalation	Ingestion - Water	Ingestion – Dust/Surfaces	Dermal			Inhalation	Ingestion - Water	Ingestion – Dust/Surfaces/Cloth	Dermal	
Total PFAS	3.6	86.7	7.3	5.9	0.2		12.4	67.9	2.2	30.0	1.5E-02	
Total Ionic	0.4	0.6	64.6	34.8	1.5E-02		2.5	0.3	10.8	88.9	2.6E-02	
Total Neutral	3.2	97.6	-	2.2	0.2		10.0	84.6	-	15.4	1.2E-02	

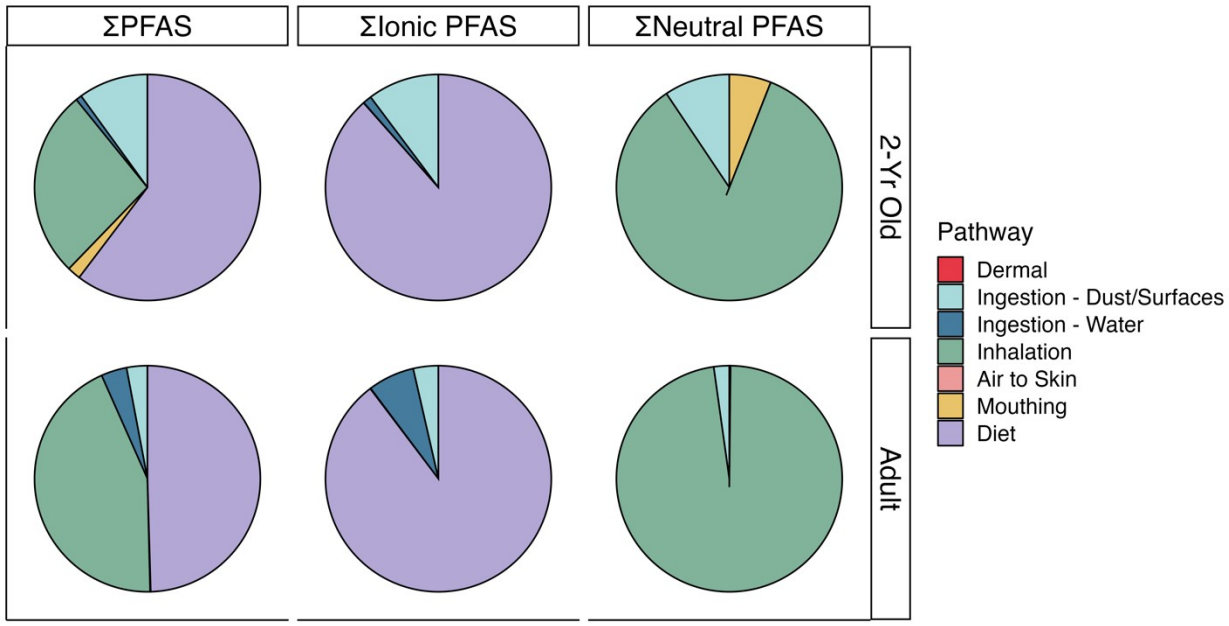

Figure S3. Relative contributions to daily exposure to ΣPFAS, Σ(Ionic PFAS), and Σ(Neutral PFAS) for a simulated adult and 2-year-old child from diet, inhalation, ingestion of dust, hand-to-mouth behavior after surface contact, ingestion of tap water, dermal uptake from direct contact with dust and surfaces, as well as air-to-skin uptake for the FOSE/FOSAs only.

Table S17. Estimate of 8:2FTOH biotransformed PFOA contributions to PFOA and Σ(Ionic PFAS) using a biotransformation rate of 0.5%.[19]

	Adult					
	8:2 FTOH ($ng\ kg^{-1}\ d^{-1}$)	**8:2 FTOH -> PFOA ($ng\ kg^{-1}\ d^{-1}$)**	**PFOA ($ng\ kg^{-1}\ d^{-1}$)**	**Σ(Ionic PFAS) ($ng\ kg^{-1}\ d^{-1}$)**	**(8:2 FTOH -> PFOA) / PFOA (%)**	**(8:2 FTOH -> PFOA) / Σ(Ionic PFAS) (%)**
Inhalation	1.7	8.4E-3	1.2E-5	2.5E-3	68727	331
Dermal	5.2E-6	2.6E-08	9.6E-7	6.0E-5	2.7	4.3E-2
Ingestion	1.2E-2	6.1E-5	6.1E-2	4.0E-1	1.0E-1	1.5E-2
	2 - Yr Old					
	8:2 FTOH ($ng\ kg^{-1}\ d^{-1}$)	**8:2 FTOH -> PFOA ($ng\ kg^{-1}\ d^{-1}$)**	**PFOA ($ng\ kg^{-1}\ d^{-1}$)**	**Σ(Ionic PFAS) ($ng\ kg^{-1}\ d^{-1}$)**	**(8:2 FTOH -> PFOA) / PFOA (%)**	**(8:2 FTOH -> PFOA) / Σ(Ionic PFAS) (%)**
Inhalation	4.6	2.3E-2	3.3E-5	6.9E-3	68727	331
Dermal	5.5E-5	2.8E-7	2.2E-5	6.4E-4	1.3	4.3E-2
Ingestion	3.2E-1	1.6E-3	1.5E-1	2.5	1.1	6.5E-2

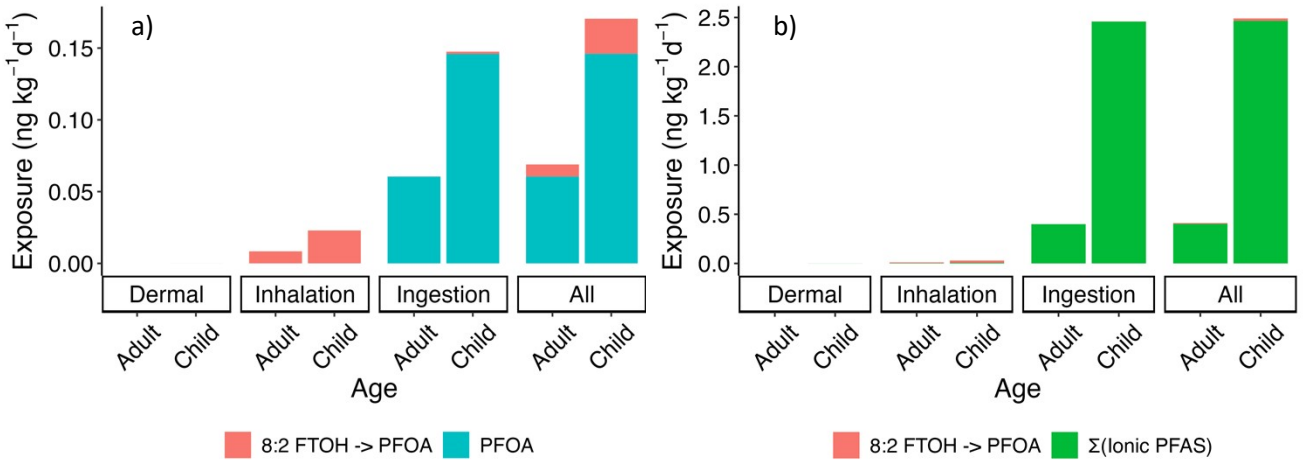

Figure S4. Contribution of biotransformed 8:2 FTOH to PFOA to estimated PFOA body burden (a) and Σ(Ionic PFAS) body burden (b) for a simulated adult and child.

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