Supplementary Information for:

Silicone wristbands for assessing personal chemical exposures: Impacts of movement on chemical uptake rates

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SI Text 1. Theoretical Two-Film Model of Passive Air Sampling

As demonstrated in Shoeib and Harner (2002)[1] the volumetric concentration C_s of a chemical in passive sampling media with time t can be described by the following, derived from the Whitman two-film theory[2]:

$$V_s\left(\frac{dC_s}{dt}\right) = k_T A_s\left(C_a - \frac{C_s}{K_{sa}}\right) \quad \text{(S1)}$$

where V_s is the volume of the passive sampler, A_s is the surface area of the sampler, C_a is the concentration of the chemical in air, K_{SA} is the sampler-air partition coefficient, and k_T is the total mass transfer coefficient. This total mass transfer coefficient can be calculated based on the combined resistance to mass transfer through the air side film and the sampler side film:

$$\frac{1}{k_T} = \frac{1}{k_a} + \frac{1}{k_s K_{SA}} \quad \text{(S2)}$$

where k_a is the air side mass transfer coefficient and k_s is the sampler side mass transfer coefficient. Passive sampling data are often reported in terms of mass fraction, x_s (ng g^{-1}) = C_s/ρ_s, where ρ_s is mass density of the sampler. Thus, Eq. S1 can be rewritten as:

$$V_s\rho_s\left(\frac{dx_s}{dt}\right) = k_T A_s\left(C_a - \frac{x_s\rho_s}{K_{SA}}\right) \quad \text{(S3)}$$

Rearranging yields:

$$\frac{dx_s}{dt} = \frac{k_T A_s}{V_s\rho_s} C_a - \frac{k_T A_s}{V_s K_{SA}} x_s \quad \text{(S4)}$$

Eq. S4 can be more clearly thought of as a balance between uptake into and elimination from the sampler[3]:

$$\frac{dx_s}{dt} = \frac{k_u C_a}{\rho_s} - k_e x_s \quad \text{(S5)}$$

where $k_u = k_T A_s/V_s$ is the uptake rate constant (in units of d^{-1}) and $k_e = k_T A_s/V_s K_{sa}$ is the elimination rate constant (d^{-1}), as described in the main text. With the initial condition that x_S is zero at t=0, the integration of Eq. (S5) yields:

$$x_s = \frac{k_u C_a}{k_e \rho_s}(1 - e^{-k_e t}) = x_{s,eq}(1 - e^{-k_e t}) \quad \text{(S6)}$$

where the sampler concentration at equilibrium, $x_{s,eq}$, is equal to:

$$x_{s,eq} = \frac{k_u C_a}{k_e \rho_s} \quad \text{(S7)}$$

Eqs. S5-S7 are also shown as Eqs. 1-4 in the main text.

SI Text 2: Microscope analysis

Microscope images were collected using a Celestron pro 5 megapixel digital microscope and "Plugable digital viewer" software. We imaged one replicate for each speed at the 28 day time point (i.e. one blank, one static, one that had been rotating at 5 rpm, one that had been rotating

at 50 rpm, and one that had been rotating at 85 rpm). An approximately 0.6 g section was cut from each wristband for imaging. We took three images per wristband section. First on the right side of the section, then in the middle, then on the left side by sliding the wristband across the lens. When the image was ready to be taken, the microscope was lowered so that it touched the wristband and pinned it flat against the stand. After the image was taken, the microscope was raised up again slightly before sliding the wristband into position for the next image. Scale bars were added by imaging a calibration ruler, importing the image to Fiji software, and then setting the scale.

Table S1. List of all targeted analytes and their detection frequency for all time points and all replicates. Chemicals notated in bold font were detected in all wristbands in the exposure experiment and were modeled using nonlinear regression as described in Section 2.3.

Compound Class	Compound Name	Abbreviation	CAS #	Detection frequency (if >0%)
Brominated Diphenyl Ether	2,4,4'-tribromodiphenyl ether	BDE 28	41318-75-6	
	2,2',4,4'-tetrabromodiphenyl ether	BDE 47	5436-43-1	
	2,3',4,4'-tetrabromodiphenyl ether	BDE 66	189084-61-5	
	2,2',3,4,4'-pentabromodiphenyl ether	BDE 85	182346-21-0	
	2,2',4,4',5-pentabromodiphenyl ether	BDE 99	60348-60-9	
	2,2',4,4',6-pentabromodiphenyl ether	BDE 100	189084-64-8	
	2,2',4,4',5,5'-hexabromodiphenyl ether	BDE 153	68631-49-2	
	2,2',4,4',5,5'-hexabromodiphenyl ether	BDE 154	207122-15-4	
	2,2',3,4,4',5',6-heptabromodiphenyl ether	BDE 183	207122-16-5	
Brominated Flame Retardants	2-ethyl hexyl-2,3,4,5-tetrabromobenzoate	EHTBB	183658-27-7	
	Bistribromophenoxyethane	BTBPE	37853-59-1	
Organophosphates	**Triethyl phosphate**	**TEP**	**78-40-0**	**100%**
	Tri-iso-butyl-phosphate	**TiBP**	**126-71-6**	**100%**
	Triisopropyl phosphate	TiPP	513-02-0	
	Tri-m-cresyl phosphate	TmCP	563-04-2	
	Tri-n-butyl-phosphate	TnBP	126-73-8	100%
	Tri-o-cresyl phosphate	ToCP	78-30-8	
	Tri-p-cresyl phosphate	TpCP	78-32-0	
	Tripentyl phosphate	TpeP	2528-38-3	
	Triphenyl phosphate	**TPHP**	**115-86-6**	**86%**
	Tripropyl phosphate	TPrP	513-08-06	
	2-Ethylhexyl diphenyl phosphate	EHDPP	1241-94-7	69%
	Tris(2-ethylhexyl) phosphate	TEHP	78-42-2	
	Isodecyl diphenyl phosphate	isodecylPP	29761-21-5	
	Tri-(2-butoxyethyl)-phosphate	TBOEP	78-51-3	
	Tris (2-chloro-ethyl) phosphate	TCEP	115-96-8	67%
	Tris(2-chloroisopropyl)phosphate	**TCPP1**	**13674-84-5**	**100%**
	Bis(2-chloro-1-methylethyl) 2-chloropropyl phosphate	**TCPP2**	**76025-08-6**	**100%**
	Bis(2-chloropropyl)(2-chloro-1-methylethyl) phosphate	TCPP3	76649-15-5	42%
	Tris (2,4-dichloro-isopropyl) phosphate	TDCPP	13674-87-8	
	Tris(3,5-dimethyl phenyl) phosphate	TDMPP	9006-37-5	
	2-Isopropylphenyl diphenyl phosphate	2IPPDPP	64532-94-4	28%
	3-Isopropylphenyl diphenyl phosphate	3IPPDPP	69515-46-4	
	4-Isopropylphenyl dipheynyl phosphate	4IPPDPP	55864-04-5	
	Bis(2-isopropylphenyl) phenyl phosphate	B2IPPPP	69500-29-4	
	Bis (3-isopropylphenyl) phenyl phosphate	B3IPPPP	69500-30-7	
	Bis (4-isopopylphenyl) phenyl phosphate	B4IPPPP	55864-07-8	
	2,4-Diisopropylphenyl diphenyl phosphate	24DIPPDPP	n.a.	
	Tris(3-isopropylphenyl) phosphate	T3IPPP	72668-27-0	
	Tris(4-isopropylphenyl) phosphate	T4IPPP	26967-76-0	
	Bis (2,4-diisopropylphenyl) phenyl phosphate	B24DIPPPP	n.a.	
	2-tert-butylphenyl diphenyl phosphate	2tBPDPP	83242-23-3	

Compound Class	Compound Name	Abbreviation	CAS #	Detection frequency (if >0%)
	4-tert-butylphenyl diphenyl phosphate	4tBPDPP	981-40-8	
	bis(2-tert-butylphenyl) phenyl phosphate	B2tBPPP	65652-41-7	
	bis(4-tert-butylphenyl) phenyl phosphate	B4tBPPP	115-87-7	
	Tris(4-tert-butylphenyl) phosphate	T4tBPP	78-33-1	
Polycyclic Aromatic Hydrocarbons (PAH)	3-Methylcholanthrene	3-Methylcholanthrene	56-49-5	
	7,12-Dimethylbenz(a)anthracene	7,12-Dimethylbenz(a)anthracene	57-97-6	
	Acenaphthylene	Acenaphthylene	208-96-8	72%
	Acenapthene	Acenapthene	83-32-9	22%
	Anthracene	**Anthracene**	**120-12-7**	**97%**
	1,2 Benzanthracene (Benz[a]anthracene)	Benz[a]anthracene	56-55-3	
	BenzoIphenanthrene	BenzoIphenanthrene	195-19-7	
	Benzo(g,h,i)perylene	Benzo(g,h,i)perylene	191-24-2	
	Benzo(j)fluoranthene	Benzo(j)fluoranthene	205-82-3	
	Benzo[a]pyrene	Benzo[a]pyrene	50-32-8	
	Benzo[b]fluoranthene	Benzo[b]fluoranthene	205-99-2	
	Benzo[e]pyrene	Benzo[e]pyrene	192-97-2	
	Benzo[k]fluoranthene	Benzo[k]fluoranthene	207-08-9	
	Chrysene	Chrysene	218-01-9	
	Dibenz(a,h)anthracene	Dibenz(a,h)anthracene	53-70-3	
	Dibenz[a,h]pyrene	Dibenz[a,h]pyrene	189-64-0	
	Dibenz[a,i]pyrene	Dibenz[a,i]pyrene	189-55-9	
	Dibenz[a,l]pyrene	Dibenz[a,l]pyrene	191-30-0	
	Fluoranthene	Fluoranthene	206-44-0	81%
	Fluorene	Fluorene	86-73-7	
	Indeno(1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyrene	193-39-5	
	Naphthalene	Naphthalene	91-20-3	
	Perylene	Perylene	198-55-0	
	Phenanthrene	Phenanthrene	85-01-8	72%
	Pyrene	Pyrene	129-00-0	64%
Polychlorinated Biphenyls	3,3'-Dichlorobiphenyl	PCB11	2050-67-1	22%
	2,4,4'-Trichlorobiphenyl	PCB28	7012-37-5	
	2,2',4,4'-Tetrachlorobiphenyl	PCB47	2437-79-8	
	2,2',4,6'-Tetrachlorobiphenyl	PCB51	68491-04-7	
	2,2',5,5'-Tetrachlorobiphenyl	PCB52	35693-99-3	
	2,3',4,5'-Tetrachlorobiphenyl	PCB68	73575-52-7	
	2,2',4,5,5'-Pentachlorobiphenyl	PCB101	37680-73-2	
	2,3',4,4',5-Pentachlorobiphenyl	PCB118	31508-00-6	
	2,2',3,4,4',5'-Hexachlorobiphenyl	PCB138	35065-28-2	
	2,2',4,4',5,5'-Hexachlorobiphenyl	PCB153	35065-27-1	
	2,2',3,4,4',5,5'-Heptachlorobiphenyl	PCB180	35065-29-3	
	2,2',3,4,4',5',6-Heptachlorobiphenyl	PCB183	52663-69-1	
Pesticide	Atrazine	Atrazine	1912-24-9	
	Azoxystrobin	Azoxystrobin	131860-33-8	
	Captan	Captan	133-06-2	
	chlorfenapyr	chlorfenapyr	122453-73-0	
	Chlorpyrifos	Chlorpyrifos	2921-88-2	
	cis-Chlordane	cis-Chlordane	5103-71-9	

Compound Class	Compound Name	Abbreviation	CAS #	Detection frequency (if >0%)
	cis-Permethrin	cis-Permethrin	61949-76-6	
	cypermethrin*	cypermethrin	52315-07-8	
	Cyprodinil	Cyprodinil	121552-61-2	
	Fipronil	Fipronil	120068-37-3	
	Fluoxastrobin	Fluoxastrobin	193740-76-0	
	Lindane	Lindane	58-89-9	
	Malathion	Malathion	121-75-5	
	p,p'-DDE	p,p'-DDE	72-55-9	
	Propiconazole	Pzole	60207-90-1	
	pyraclostrobin	pyraclostrobin	175013-18-0	
	trans-Chlordane	trans-Chlordane	5103-74-2	
	trans-Permethrin	trans-Permethrin	61949-77-7	
	Trifloxystrobin	Trifloxystrobin	141517-21-7	
Phthalates	**benzyl butyl phthalate**	**BBP**	**85-68-7**	**94%**
	dibutyl phthalate	**DBP**	**84-74-2**	**100%**
	Bis (2-ethylhexyl) adipate	DEHA	103-23-1	50%
	Bis(2-ethylhexyl) phthalate	DEHP	117-81-7	75%
	Bis (2-ethylhexyl) terephthalate	DEHT	6422-86-2	
	di-ethyl phthalate	**DEP**	**84-66-2**	**100%**
	di-isobutyl phthalate	**DiBP**	**84-69-5**	**97%**
	di-isononyl phthalate	DINP	68515-48-0	81%
	di-methyl phthalate	DMP	131-11-3	
	trioctylmetallitate	TOTM	3319-31-1	
Other substituted aromatics	**N,N-Diethyl-meta-toluamide**	**DEET**	**134-62-3**	**100%**
	3-(4-(tert-Butyl)phenyl)-2-methylpropanal	**Lilial**	**80-54-6**	**97%**
	Nonylphenol	**NP**	**84852-15-3**	**100%**
	4-tert-Octylphenol	**4tOP**	**140-66-9**	**100%**
Per- and poly-fluoroalkyl substances	2-(Perfluorohexyl)ethanol	6:2FTOH	647-42-7	42%
	[a]2-(Perfluorooctyl)ethanol	**8:2FTOH**	**678-39-7**	**100%**
	[a]2-(Perfluorodecyl)ethanol	**10:2FTOH**	**865-86-1**	**100%**
	(Perfluorohexyl)ethyl acrylate	6:2FTAC	17527-29-6	
	2-(Perfluorooctyl)ethyl acrylate	8:2FTAC	27905-45-9	
	2-(Perfluorodecyl)ethyl acrylate	10:2FTAC	17741-60-5	
	2-(Perfluorohexyl)ethyl methacrylate	6:2FTMAC	2144-53-8	
	2-(Perfluorooctyl)ethyl methacrylate	8:2FTMAC	1996-88-9	
	N-Ethyl-N-(2-hydroxyethyl)perfluorooctane sulfonamide	**EtFOSE**	**1691-99-2**	**100%**
	N-Methyl-N-(2-hydroxyethyl)perfluorooctanesulfonamide	**MeFOSE**	**24448-09-7**	**100%**
	N-Ethylperfluorooctanesulfonamide	EtFOSA	4151-50-2	
	N-Methylperfluorooctanesulfonamide	MeFOSA	31506-32-8	

[a]Chemicals excluded because of poor model fit due to due to low silicone sorption affinity

Table S2. Chemical composition of two internal standard and two recovery standard mixtures.

Mixtures name	Chemical compound		mass spike (ng)
EI Internal Standards	d10-Chlorpyrifos	Chlorpyrifos (Diethyl-D10)	200
	13C-cis-Permethrin	Cis-permethrin (Phenoxy-13c6)	100
	dTnBP	Tri-n-butyl phosphate-d27	100
	13cTBoEP	Tris(2-butoxy-[13c2]-ethyl) phosphate	100
	13cTPHP	13c18-Triphenyl phosphate	100
	dTCEP	Tris(2-chloroethyl) phosphate-d12	100
	dTDCPP	Tris(1,3-dichloro-2-propyl) phosphate-d15	100
	FBDE 69	4'-Fluoro-2,3',4,6-tetrabromodiphenyl ether	100
	13c-EHTBB	2-Ethylhexyl-d17 2,3,4,5-tetrabromo[13c6]benzoate	100
	13c-BEHTBP	Bis(2-ethylhexyl-d17) tetrabromo[13c6]phthalate	100
	13cPCB52	2,2',5,5-Tetrachloro(13c12)biphenyl	100
	13cPCB153	2,2',4,4'5,5'-Hexachloro(13c12)biphenyl	100
	dDMP	Dimethyl Phthalate (ring-D4)	200
	dDEP	Diethyl Phthalate (ring-D4)	200
	dBBP	Benzyl Butyl Phthalate (ring-D4)	200
	dDEHP	Bis(2-Ethylhexyl)Phthalate (ring-D4)	200
	D8-naphthalene	Naphthalene (D8)	200
	D10-phenanthrene	Phenanthrene (D10)	200
	D10-acenaphthene	Acenaphthene (D10)	200
	D10-pyrene	Pyrene (D10)	200
	D12-benzo(a)pyrene	Benzo[A]pyrene (D12)	200
	D14-dibenzo(a,i)pyrene	Dibenzo[A,I]pyrene (D14)	200
	dDEET	N,N-Diethyl-M-Toluamide (Dimethyl-D6)	200
	13c-BDE-209	Decabromo(13c12)diphenyl ether	50
GC PFAS Internal Standards	dMeFOSE	2-(N-methyl-d3-perfluoro-1-octanesulfonamido)ethan-d4-ol	100
	dMEFOSA	D3 Methyl-perfluorooctane sulfonamide	100
	13C 6:2 FTOH	2-Perfluorohexyl-[1,1-2H2]-[1,2-13c2]-ethanol	100
	13C 8:2 FTOH	2-Perfluorooctyl-[1,1-2H2]-[1,2-13c2]-ethanol	100
EI Recovery Standards	13cCDE141	2,2',3,4,5,5'-Hexachloro[13c12]diphenyl ether	100
	D10-2-methylnaphthalene	2-Methylnaphthalene (D10)	200
	D10-fluorene	Fluorene (D10)	200
	D10-fluoranthene	Fluoranthene (D10)	200
	D12-perylene	Perylene (D12)	200
	D12-indeno(1,2,3-c,d)pyrene	Indeno[1,2,3-CD]pyrene (D12)	200
	13cDCPH	Dicyclohexyl Phthalate (Ring-1,2-13c2, Dicarboxyl-13c2)	200
	dTPP	Triphenyl Phosphate-D15	100
	FBDE 208	4'-Fluoro-2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl Ether	100
	dTCPP	Tris(1-Chloro-2-Propyl)phosphate (D18)	200
GC PFAS Recovery Standards	M2 13C 6:2 FTOH	2-Perfluorooctyl-[1,2-13c2]-ethanol	100
	M2 13C 8:2 FTOH	2-Perfluorohexyl-[1,2-13c2]-ethanol	100
	dEthFOSE	2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)ethan-d4-ol	100
	dEthFOSA	D6 Ethyl-perfluorooctane sulfonamide	100

Table S3. QA/QC standard recoveries

Labelled Standard	Abbreviation	Amount Spiked (ng)	Recoveries	Analytes Quantified
13C-2,2',5,5'-Tetrachlorobiphenyl	13c-PCB52	100	89 ± 9%	PCBs 11, 28, 47, 51, 52, 68, 101, 118
13C-2,2',4,4',5,5'-Hexachlorobiphenyl	13c-PCB153	100	81 ± 7%	PCBs 153, 138, 183
13C-cis-Permethrin	-	200	94 ± 8%	cis/trans-Permethrin, cypermethrin, Azoxystrobin, Atrazine, Malathion, p,p'-DDE, Trifloxystrobin
d10-Chlorpyrifos	-	200	93 ± 15%	Lindane, Chlorpyrifos, cis\trans-Chlordane, Chlorfenapyr, Fipronil
deuterated-benzyl butyl phthalate	dBBP	200	106 ± 10%	BBP
deuterated-Bis(2-ethylhexyl) phthalate	dDEHP	200	92 ± 8%	TOTM, DEHA, DEHP, DEHT, DiNP
deuterated-di-ethyl phthalate	dDEP	200	109 ± 12%	DEP, DiBP, DnBP
deuterated-di-methyl phthalate	dDMP	200	90 ± 11%	DMP
deuterated-Tris (2-chloro-ethyl) phosphate	dTCEP	100	102 ± 17%	TCEP, TCIPP
deuterated-Tris (2,4-dichloro-isopropyl) phosphate	dTDCPP	100	87 ± 14%	TDCIPP
deuterated-Tri-n-butyl-phosphate	dTnBP	100	87 ± 11%	TnBP, TEP, TiPP, TPrP, TiBP,TPeP
13C-Triphenyl phosphate	13C-TPHP	100	92 ± 8%	TPHP, EHDPP, TEHP, ToCP, TmCP, TpCP, TDMPP, All ITP and TBPP Isomers
4'fluoro-2,3',4,6-tetrabromodiphenyl ether	FBDE 69	100	97 ± 8%	All BDE Congeners
D8-naphthalene	-	200	80 ± 8%	Naphthalene, Acenaphthylene, Acenaphthene
D10-phenanthrene	-	200	73 ± 8%	Fluorene, Phenanthrene, Anthracene
D10-pyrene	-	200	76 ± 7%	Flouranthene, Pyrene
D12-benzo(a)pyrene	-	200	81 ± 10%	Benzo(c)phenanthrene,Benzo(a)phenanthrene, Crysene, 7,12-Dimethylbenz(a)anthracene, Benzo(j,b,k)fluoranthene, Benzo[e]pyrene, Benzo[a]pyrene, Perylene, 3-Methylcholanthrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(g,h,i)perylene
2-Perfluorooctyl-[1,2-13c2]-ethanol	13c (M+2) 6:2 FTOH	100	87 ± 3%	6:2FTOH, 6:2FTAC, 6:2FTMAC
2-Perfluorohexyl-[1,2-13c2]-ethanol	13c (M+2) 8:2 FTOH	100	88 ± 6%	8:2FTOH, 10:2FTOH, 8:2FTAC, 10:2FTAC, 8:2FTMAC
2-(N-methyl-d3-perfluoro-1-octanesulfonamido)ethan-d4-ol	dMeFOSE	100	259 ± 59%	MeFOSE, MeFOSA
2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)ethan-d4-ol	dEthFOSE	100	298 ± 97%	EtFOSE, EtFOSA

Table S4. Physicochemical properties for detected chemicals.

Chemical	MW (g mol^{-1})	Boiling point (℃)	Vapor pressure (mmHg)	log K_{OA}	Molar Volume (mL mol^{-1})	Diffusivity (cm^2 s^{-1})
2IPPDPP	368.4	422	6.61×10^{-8}	11.7	308	0.052
TEP	182.2	215	3.89×10^{-1}	5.79	171	0.072
TiBP	266.3	264	8.91×10^{-3}	7.38	271	0.056
TnBP	266.3	289	1.15×10^{-3}	7.88	270	0.056
TCEP	285.5	330	6.03×10^{-2}	8.41	205	0.064
TCPP1	327.6	283	3.72×10^{-3}	8.85	256	0.057
TCPP2	327.6	283	3.63×10^{-3}	8.85	256	0.057
TCPP3	327.6	283	3.55×10^{-3}	8.85	256	0.057
TPHP	326.3	404	6.31×10^{-6}	10.8	258	0.057
EHDPP	362.4	375	5.00×10^{-5}	11.7	328	0.050
Lilial	204.3	278	1.95×10^{-1}	6.9	220	0.063
Acenaphthylene	152.2	280	6.61×10^{-3}	6.56	128	0.084
Acenapthene	154.2	279	2.13×10^{-3}	6.31	135	0.081
Phenanthrene	178.2	340	1.21×10^{-4}	7.55	158	0.075
Anthracene	178.2	340	7.08×10^{-6}	7.55	158	0.075
Fluoranthene	202.3	394	9.12×10^{-6}	8.85	162	0.073
Pyrene	202.3	394	4.47×10^{-6}	8.85	162	0.073
PCB11	223.1	318	6.46×10^{-5}	7.42	179	0.069
DEET	191.3	290	2.00×10^{-3}	7.25	194	0.067
4tOP	206.3	263	4.90×10^{-4}	8.69	221	0.063
NP	220.4	269	1.86×10^{-3}	9.36	236	0.061
DMP	194.2	285	3.09×10^{-3}	5.72	165	0.073
DEP	222.2	300	2.09×10^{-3}	6.75	198	0.066
DBP	278.3	340	2.00×10^{-5}	8.84	264	0.057
DiBP	278.3	296	3.72×10^{-5}	8.21	265	0.057
BBP	312.4	370	8.13×10^{-6}	9.83	275	0.055
DEHA	370.6	417	8.51×10^{-7}	10.8	399	0.045
DEHP	390.6	384	1.41×10^{-7}	11.7	397	0.046
6:2 FTOH	364.1	122	6.03×10^{-1}	4.1	229	0.060
8:2 FTOH	464.1	154	2.09×10^{-1}	4.22	284	0.054
10:2 FTOH	564.1	179	5.50×10^{-2}	4.76	339	0.049
EtFOSE	571.3	193	8.71×10^{-4}	7.5	345	0.048
MeFOSE	557.2	186	1.00×10^{-5}	6.71	329	0.050

Table S5. Linear regression statistics for SEF vs $v^{1/2}$ (Regression lines shown in Figure 3B).

SVOC	R^2	p-value
4tOP	0.992	0.057
Anthracene	1.000	0.004
BBP	0.855	0.249
DBP	0.999	0.020
DEET	0.996	0.040
DEP	0.998	0.026
DiBP	0.975	0.100
EtFOSE	0.987	0.072
Lilial	0.971	0.109
MeFOSE	0.987	0.072
NP	0.953	0.139
TCPP1	0.993	0.051
TCPP2	0.997	0.035
TEP	0.906	0.199
TiBP	0.993	0.055
TnBP	0.971	0.110
TPHP	0.997	0.037

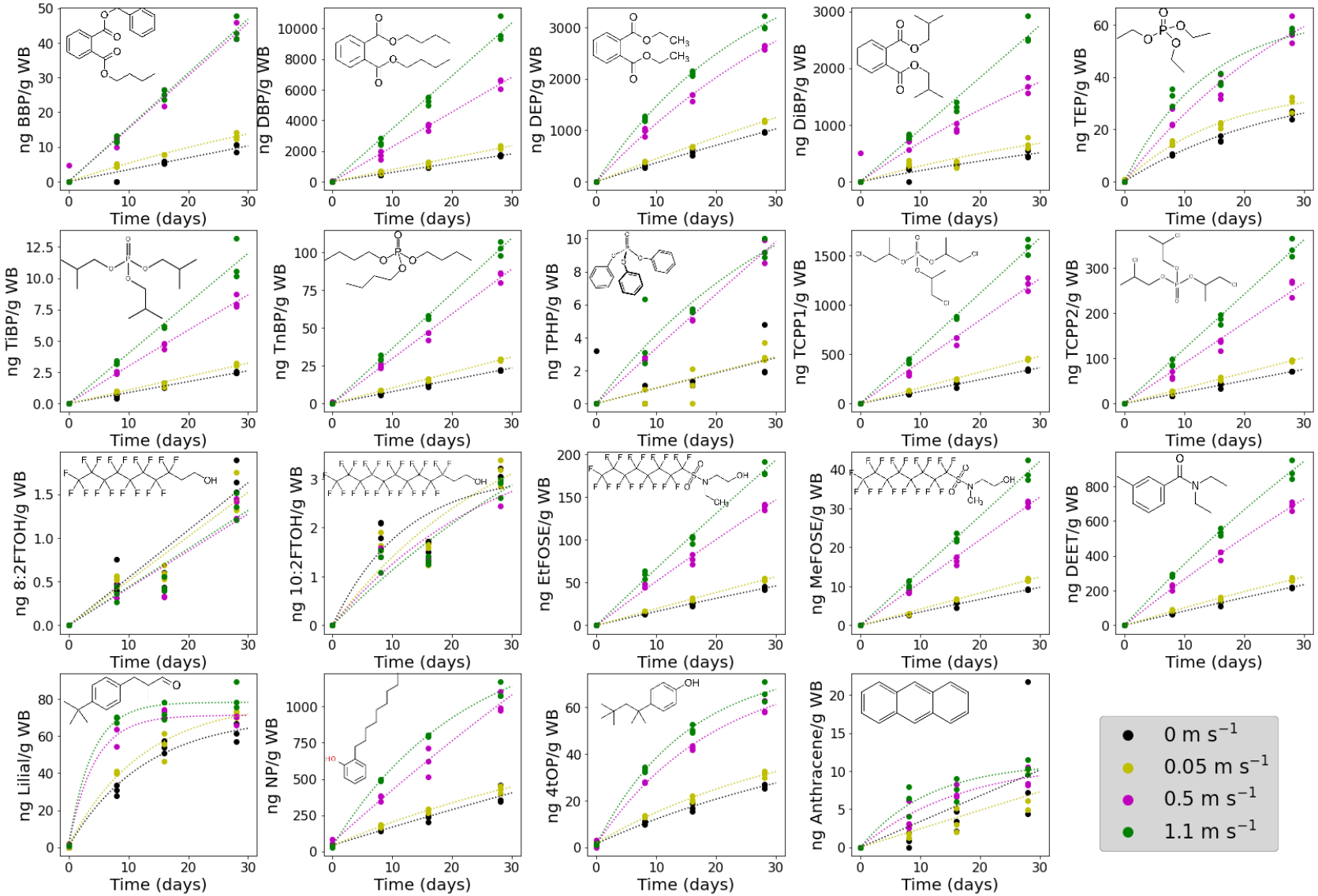

Figure S1. Concentration of detected SVOCs in wristbands held static or rotating at different velocities. Lines correspond to regression fit of Eq. 4 to data points.

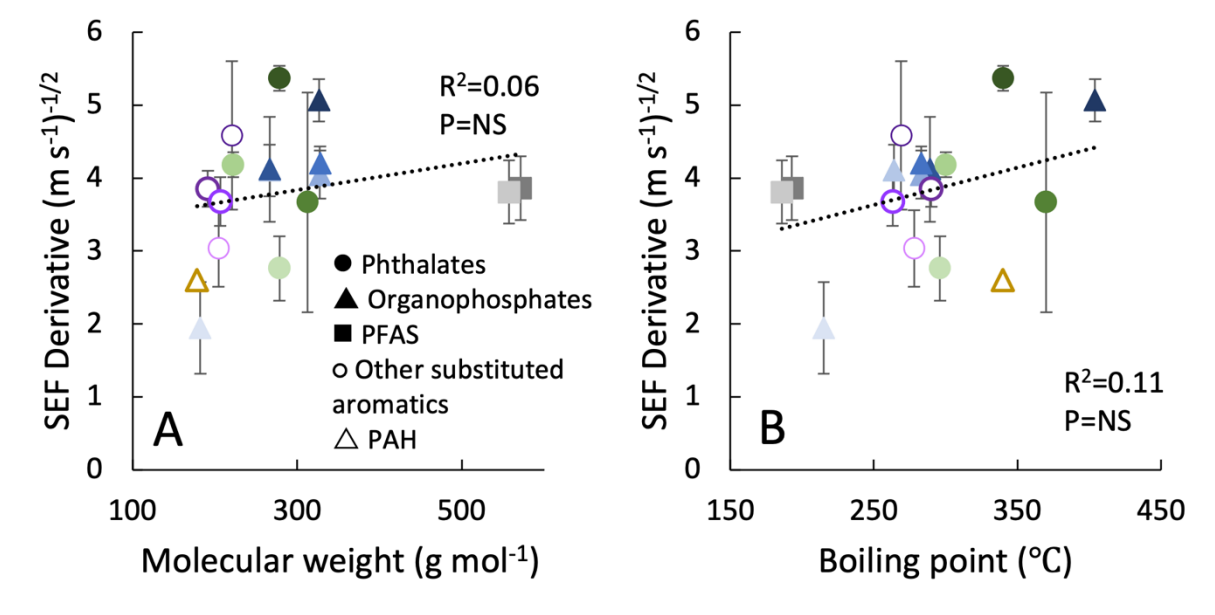

Figure S2. SEF Derivative as a function of SVOC physicochemical properties: (A) Molecular weight (MW); (B) Boiling point

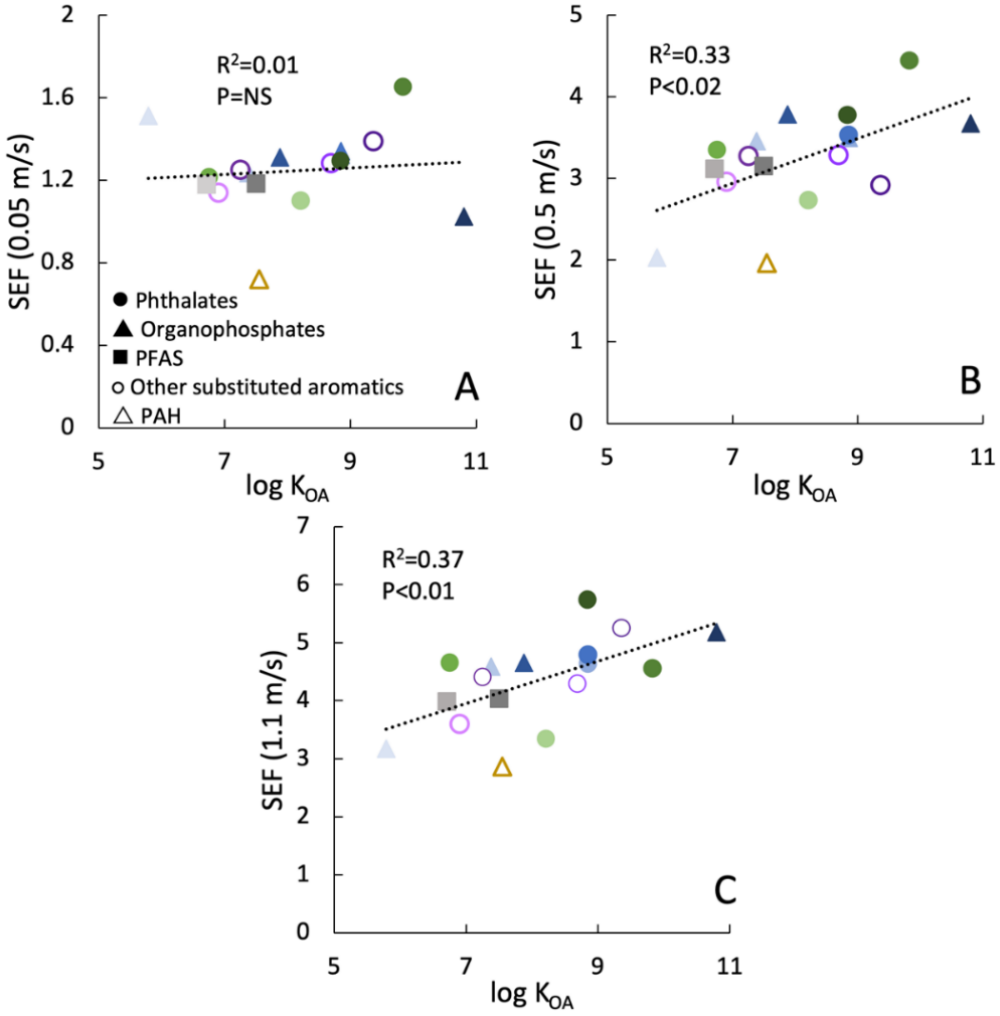

Figure S3. Speed Enhancement Factor (SEF) values of SOVC uptake in wristbands plotted as a function of log K_{OA}; for wristbands rotating at (A) 0.5 m s^{-1}; (B) 0.5 m s^{-1}; and (C) 1.1 m s^{-1}.

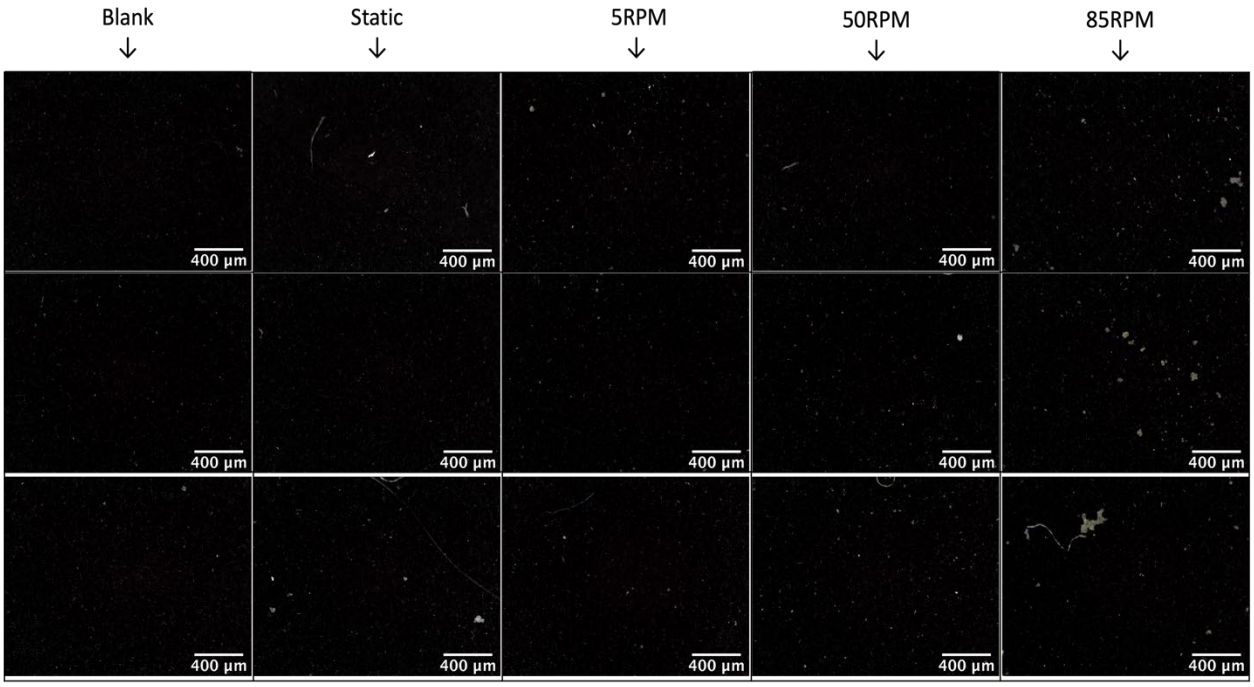

Figure S4: Digital microscope images of wristbands exposed for t=28 days. Triplicate images taken from one replicate wristband at each speed.

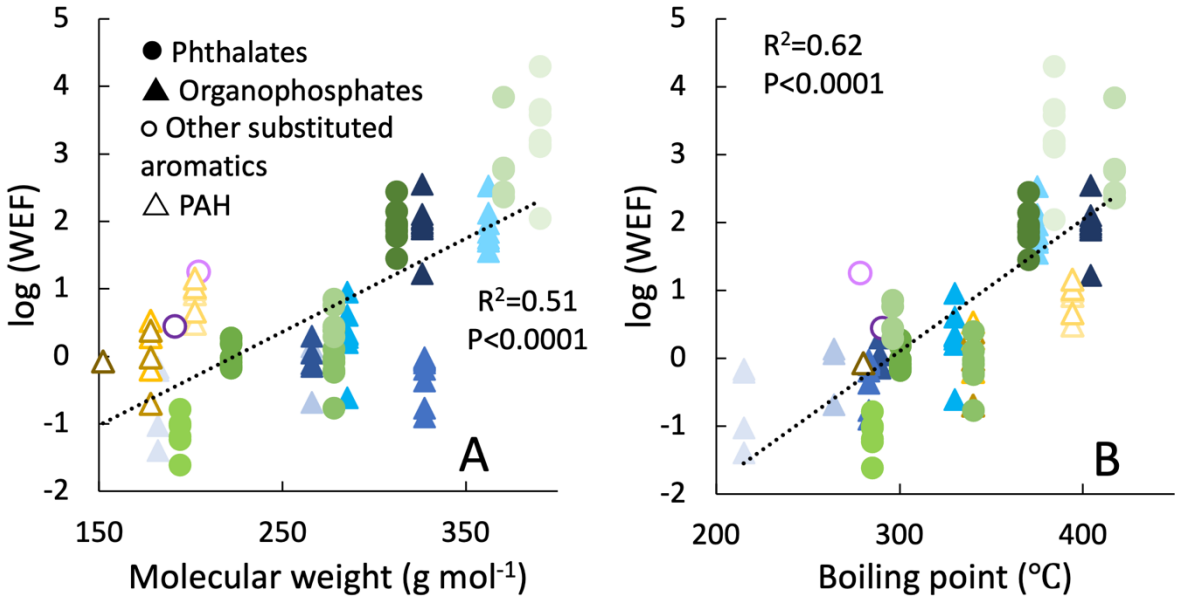

Figure S5. Worn Enhancement Factor (WEF) values as a function of SVOC physicochemical parameters: (A) Molecular weight, (B) Boiling point

Supporting Information References

(1) Shoeib, M.; Harner, T. Characterization and comparison of three passive air samplers for persistent organic pollutants. *Environ Sci Technol* **2002**, *36* (19), 4142-4151. DOI: 10.1021/es020635t.

(2) Whitman, W. The two-film theory of gas absorption. *Chem. Metal. Engng* **1923**, *29*, 146-148.

(3) Bartkow, M. E.; Booij, K.; Kennedy, K. E.; Muller, J. F.; Hawker, D. W. Passive air sampling theory for semivolatile organic compounds. *Chemosphere* **2005**, *60* (2), 170-176. DOI: 10.1016/j.chemosphere.2004.12.033.