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Supplement of

Analysis of Indoor Particles and Gases and their Evolution with Natural Ventilation during the Air Composition and Reactivity from Outdoor aNd Indoor Mixing (ACRONIM) Field Campaign

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Section S1: Field Site Description and Information

Figure S1. Map showing area in which test home is located (red box).[1] Major highways (I-44, I-55. US-30) are labeled for reference.

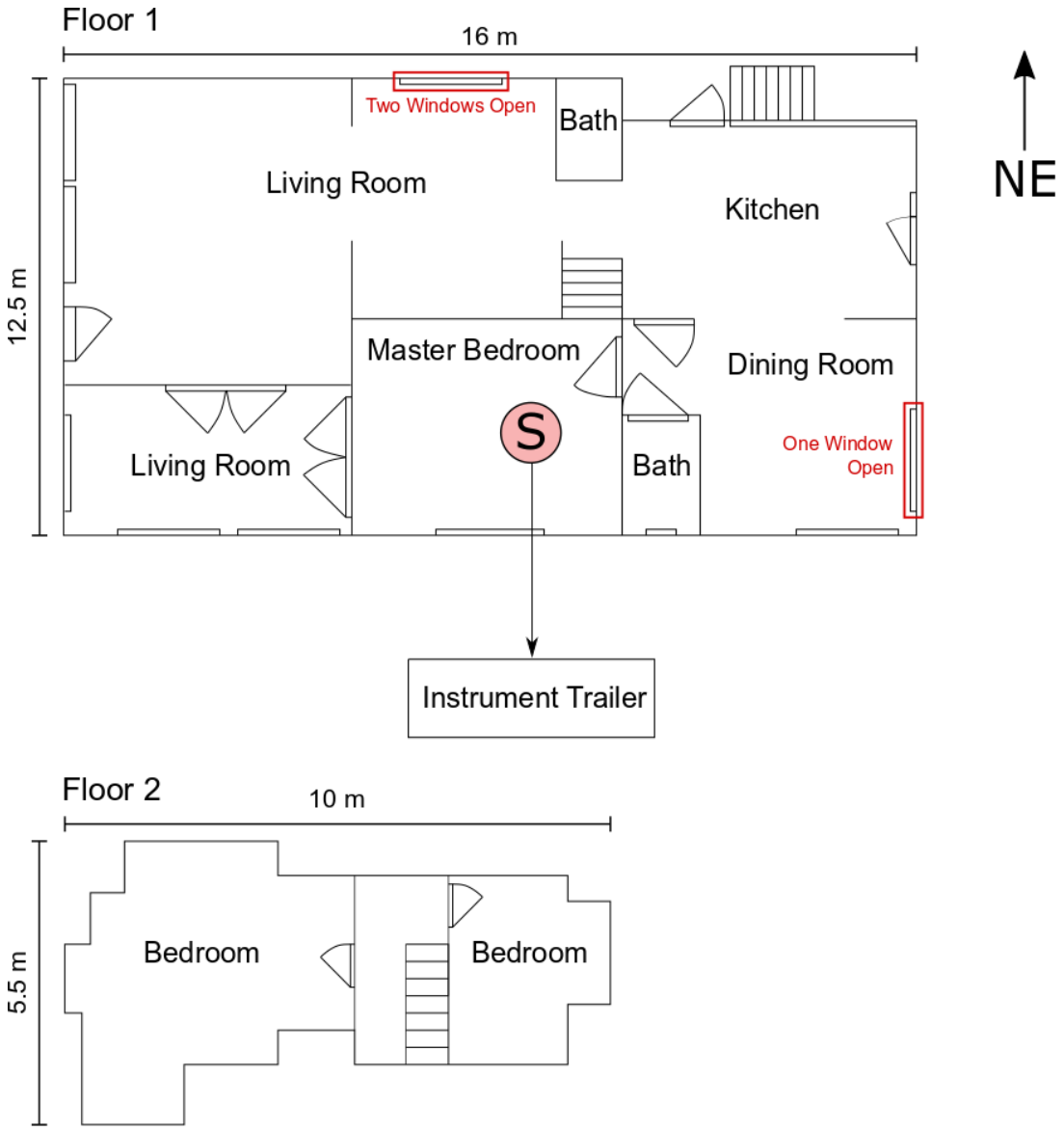

Figure S2. Approximate floor plan of the two floors composing the test home sample volume. The red circles denotes location of sample line inlets. Windows opened during window-opening periods are labeled with red boxes.

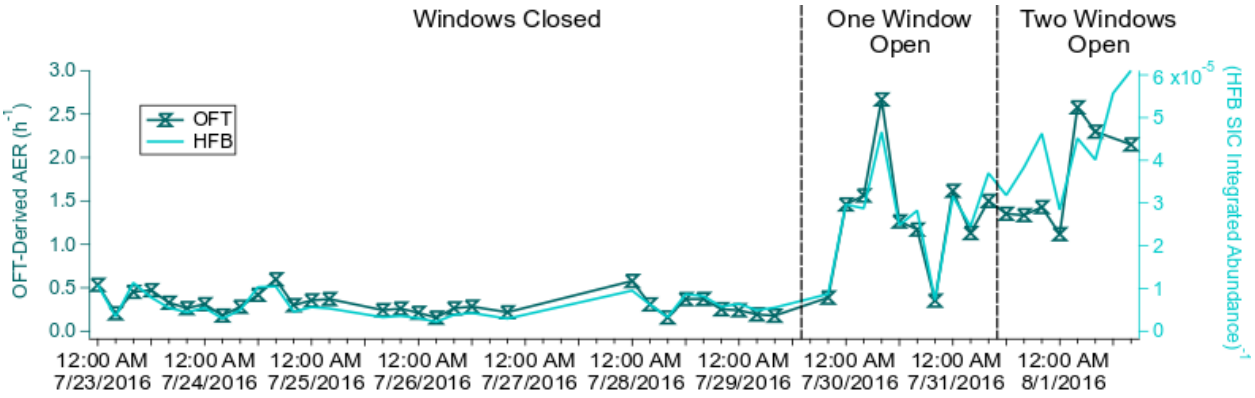

Figure S3. OFT-derived air exchange rates (AER, h^{-1}) for the test home across the unoccupied study period (Equation 1 in main text). HFB-derived AER values are not reliable due to a poor standard calibration and are not provided. However, because HFB integrated abundances are used to normalize gas-phase data in the manuscript due to improved signal-to-noise ratios (Figure 7), we provide the inverse of the integrated peak area (i.e., one divided by the peak area) at each point to demonstrate relative changes in HFB concentrations throughout the study period (right axis). For each point, the time axis corresponds to the midpoint of the VOC adsorbent tube collection period (4 hours total).

Section S2: Supplemental Measurements

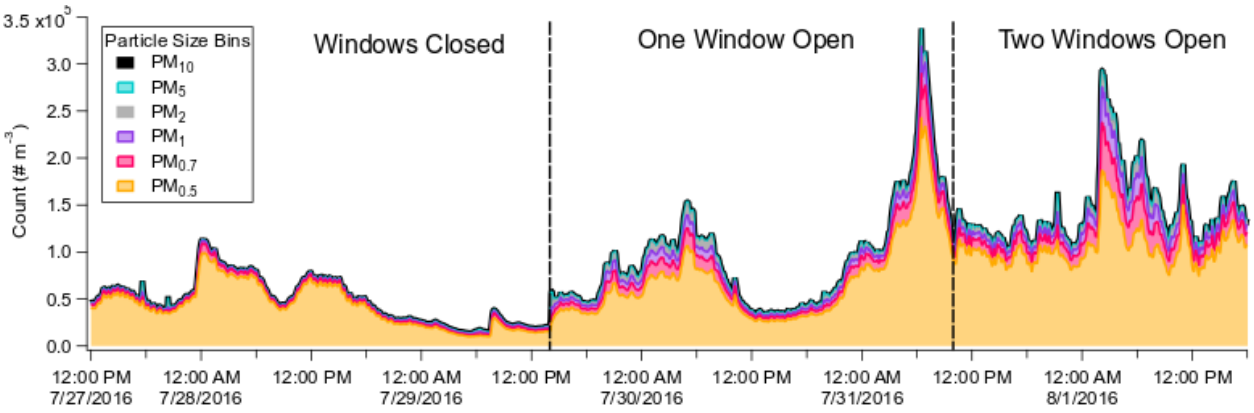

Figure S4. Particle number concentrations (# m^{-3}) for six different size bins measured indoors by the OPC.

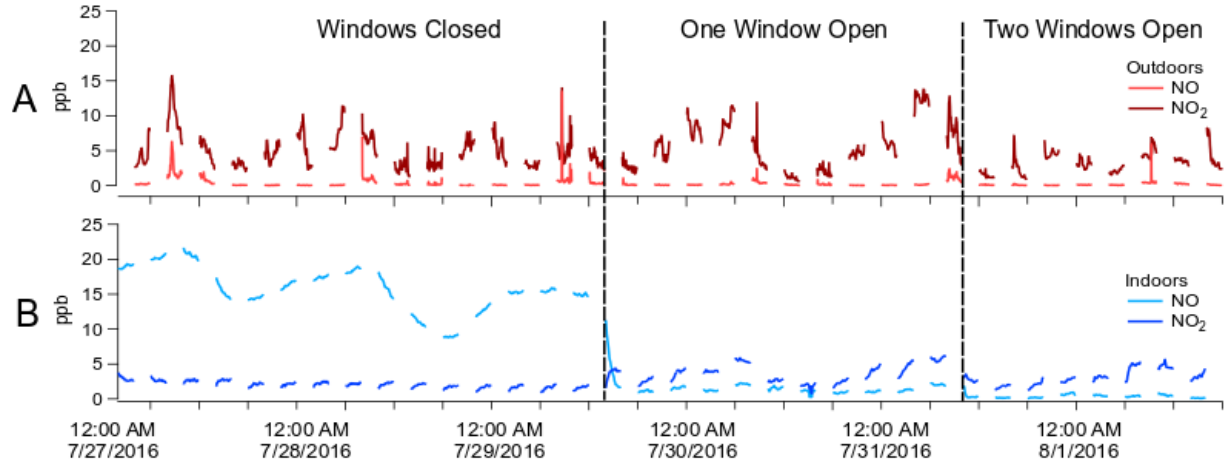

Figure S5. NO_x (NO and NO2) concentrations measured (A) outdoors and (B) indoors. The trace-level NO_x monitor was operated on the indoor/outdoor switching schedule (Table 1).

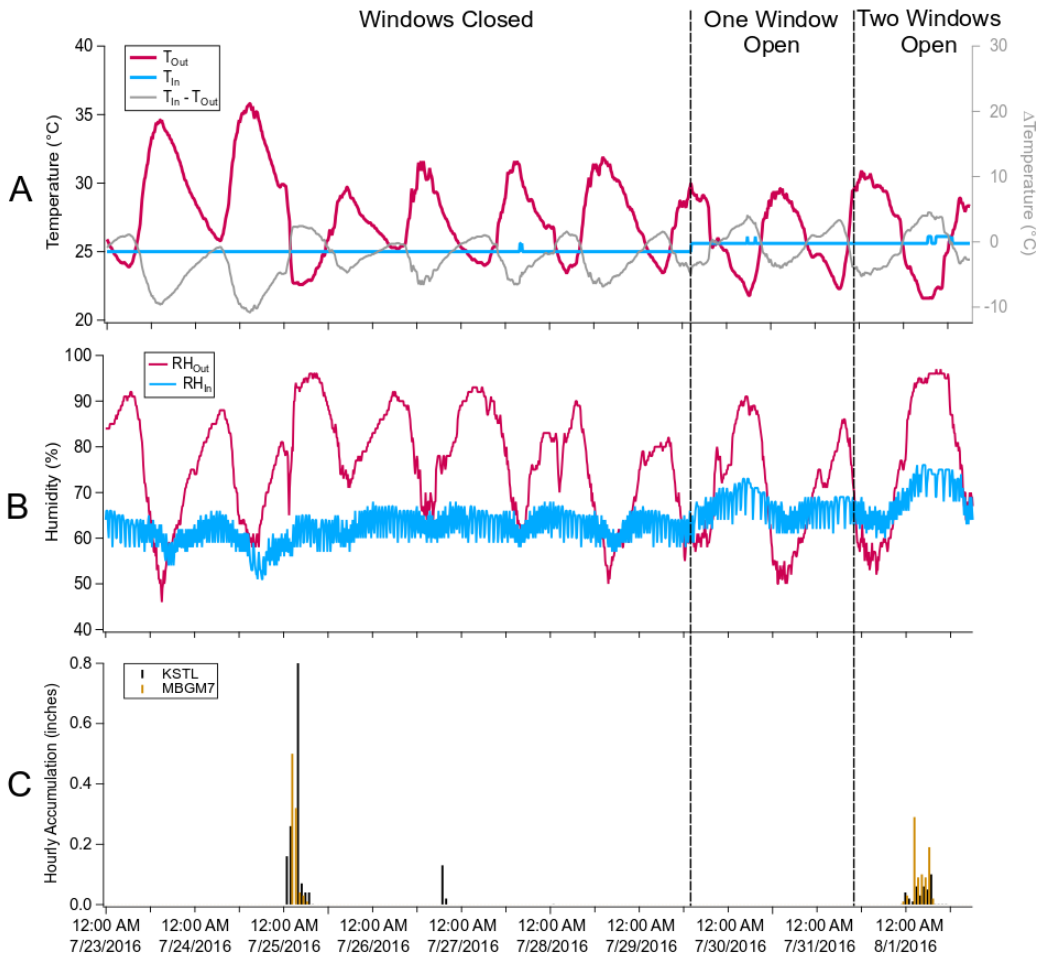

Figure S6. (A) Temperature data recorded outdoors and indoors for the unoccupied study period; (B) relative humidity (RH) recorded outdoors and indoors for the unoccupied study period; (C) rainfall, in units of inches accumulated per hour, recorded at two area weather stations: St. Louis Lambert International Airport (KSTL), located approximately 20 km northwest of the field site, and the Missouri Botanical Gardens/MBOT (MBGM7), located approximately 2.5 km west of the site. These publicly-available data are compiled in the MesoWest database and were accessed through the MesoWest website (mesowest.utah.edu).[2–4]

Section S3: Gas-Phase Sample Analysis and Mass Quantification Methods

Gas Chromatography-Mass Spectrometry Analysis

Following collection, VOC adsorbent tubes were analyzed using thermal desorption gas chromatography-mass spectrometry (GC-MS). A Markes Unity 1 was used for desorption, focusing and injection. Tubes were desorbed for 12 minutes at 260°C with 20 mL min^{-1} desorption flow (splitless). The trap was held at 10°C during desorption, then heated to 280°C for 3 minutes for injection onto the GC with an initial column flow of 1.3 ml/min and split flow of 20 mL min^{-1}. The flow path temperature was 150°C. An Agilent 6890N Gas Chromatograph with an Agilent 5973 Mass Selective Detector were used for separation, detection and quantification. An HP-5MS column (0.25mm × 30m × 0.25µm; Agilent Technologies) was operated in constant pressure mode with an initial flow rate of 1.3 mL min^{-1}. The initial temperature, 40°C, was held for 8 minutes followed by a 4°C min^{-1} ramp to 100°C, a 15°C min^{-1} ramp to 280°C and then held at that temperature for 5 minutes. The mass spectrometer was operated in scan mode from 50 to 550 *m/z*.

For each quantified compound, a 5-point calibration was performed by adding between 0 and 100 ng of analytes diluted in methanol to the sorbent. After adding solution, pure nitrogen flowing at 20 mL min^{-1} for 10 minutes was used to evaporate the methanol prior to analysis. The limit of quantification was defined as 3 times the standard deviation of three replicates of an injection of the lowest calibration mass.

High-Performance Liquid Chromatography Analysis

Dinitrophenylhydrazine (DNPH) samples of C1-C5 aldehydes, plus acetone, were prepared based on EPA method TO-11A (U.S.E.P.A., 1999). The samples were analyzed using an auto-sampler high performance liquid chromatograph (HPLC), equipped with a Phenomenex Gemini 5u C18 110A column. Solvent flow rate was 1 mL min-1 with a starting solution concentration ratio of 40% deionized water and 60% acetonitrile. This solution ratio was changed via a gradient method to 30%/70% over 20 minutes and to 0%/100% after 21 minutes, where it was maintained for five minutes before being returned to the original 40%/60% ratio after 32 minutes. The output wavelength detected was 360 µm. Mass calibration was performed by analyzing sequential acetonitrile dilutions of carbonyl-hydrazone (Supelco) standards.

Section S4: TAG Multicomponent Standard

Table S1. Compounds included in the multicomponent TAG standard. All compounds were purchased from Sigma Aldrich (St. Louis, MO).

Compound	Concentration (ng μL^{-1})
n-Tetracosane	2
n-Octacosane	2
n-Eicosane	2
Octacosane - d58	2
Dotriacontane - d66	2
1-tetradecanol	10
1-octadecanol	10
1-docosanol	10
1-hexacosanol	10
Dodecanoic acid	10
Hexadecanoic acid	10
Eicosanoic acid	10
Anthraquinone	10
Dimethyl glutaric acid	10
Ketoglutaric acid	10
Cis-pinonic acid	10
Benzophenone	10
Tridecanal	10
Phthalimide	10
Vanillin	10
Cholesterol	10
Glyceric acid	10
Beta-caryophyllene	10
Benzoic acid	10
4-methoxyphenol	10
Phthalic acid	10
2-pentadecanone	10
1,6-dioxaspiro[4,4]nonene-2,7	10
Myrcene	10
Squalene	10
EPA PAH Mix (1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b/e)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, pyrene)	2 (each component)

Section S5: TAG Compound Identifications

Table S2. Full compound list obtained using TAG data (both indoor and outdoor chromatograms) for this study. CAS identification numbers and common names (in bold font in parentheses within "Compound Name" column) are provided where available. Ions used to identify compounds in chromatograms are given in the "Ions" column, with the base peak (most abundant ion) in bold and the quantification ion underlined for compounds included in PMF analyses. Compounds were identified to varying degrees of certainty using retention times and according to the following criteria: A) the compound was positively identified using standard injections; B) the compound was identified with a match quality above 75% using mass spectral libraries; C) the compound was identified with a low-to-moderate match quality, between 25% and 75%, using mass spectral libraries. Other properties provided include compound molecular formula, molecular weight (MW), and subcooled liquid vapor pressures. Vapor pressures were predicted using the Advanced Chemistry Development (ACD/Labs) Software V11.02 (© 1994-2017 ACD/Labs) through the SciFinder website;[5] a cell marked "NF" denotes that no vapor pressure information was found for that compound.

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Linear Alkanes							
1	Dodecane	112-40-3	**57**; 43; 71; 85; 170	A	C12H26	170	2.09E-01
2	Tridecane	211-093-4	**57**; 43; 71; 85; 184	B	C13H28	184	8.07E-02
3	Tetradecane	629-59-4	**57;** 43; 71; 85; 198	A	C14H30	198	2.85E-02
4	Pentadecane[D,ND]	629-62-9	**<u>57</u>;** 43; 71; 85; 212	B	C15H32	212	1.12E-02
5	Hexadecane[D,ND]	544-76-3	**57;** 43; 71; 85; 226	A	C16H34	226	4.52E-03
6	Heptadecane[D,ND]	629-78-7	**<u>57</u>;** 43; 71; 85; 240	B	C17H36	240	1.85E-03
7	Octadecane[D,ND]	593-45-3	**<u>57</u>;** 43; 71; 85; 254	A	C18H38	254	7.69E-04
8	Nonadecane[D,ND]	629-92-5	**<u>57</u>;** 43; 71; 85; 268	B	C19H40	268	3.25E-04
9	Eicosane[D,ND]	112-95-8	**<u>57</u>;** 43; 71; 85; 282	A	C20H42	282	1.40E-04
10	Heneicosane[D,ND]	629-94-7	**<u>57</u>;** 43; 71; 85; 296	B	C21H44	296	6.14E-05
11	Docosane[D,ND]	629-97-0	**<u>57</u>;** 43; 71; 85; 310	A	C22H46	310	2.73E-05
12	Tricosane[D,ND]	638-67-5	**<u>57</u>;** 43; 71; 85; 324	B	C23H48	324	1.24E-05
13	Tetracosane[D,ND]	646-31-1	**<u>57</u>;** 43; 71; 85; 338	A	C24H50	338	5.69E-06
14	Pentacosane[ND]	629-99-2	**57;** 43; 71; 85; 352	B	C25H52	352	2.66E-06
15	Hexacosane	630-01-3	**57;** 43; 71; 85; 366	A	C26H54	366	1.26E-06
Branched Alkanes							
16	Pentadecane, 5-methyl-	25117-33-3	**57;** 71; 85; 168	C	C16H34	226	6.32E-03
17	Pentadecane, 3-methyl-[D,ND]	2882-96-4	**<u>57</u>;** 71; 85; 197	C	C16H34	226	5.64E-03
18	Pentadecane, 2,6,10-trimethyl-	3892-00-0	**57;** 71; 169; 183; 225; 239	C	C18H38	254	2.28E-03

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Branched Alkanes, cont'd.							
19	Hexadecane, 4-methyl-	25117-26-4	**43;** 57; 71; 85; 197	B	C17H36	240	2.55E-03
20	Hexadecane, 3-methyl-	6418-43-5	**57;** 43; 71; 85; 211	C	C17H36	240	2.42E-03
21	Pentadecane, 2,6,10,14-tetramethyl- (norphytane)	1921-70-6	**57;** 71; 113; 183	B	C19H40	268	2.60E-03
22	Heptadecane, 4-methyl-	26429-11-8	**71;** 43; 57; 85; 210; 211	C	C18H38	254	9.61E-04
23	Hexadecane, 2,6,10,14-tetramethyl- (phytane) [D,ND]	638-36-8	**57;** 183; 197	B	C20H42	282	5.26E-04
Alkenes							
24	1-Dodecene	112-41-4	**83;** 41; 55; 69; 97; 168	C	C12H24	168	2.34E-01
25	1-Tridecene	2437-56-1	**83;** 41; 55; 69; 97; 182	B	C13H26	182	8.56E-02
26	1-Tetradecene[D,ND]	1120-36-1	**55;** 41; 69; 83; 97; 196	B	C14H28	196	3.23E-02
27	1-Pentadecene	13360-61-7	**83;** 41; 55; 69; 97; 210	C	C15H30	210	1.25E-02
28	1-Heptadecene	6765-39-5	**83;** 41; 55; 69; 97; 238	C	C16H32	238	2.05E-03
PAHs, Branched PAHs, and Oxy-PAHs							
29	Naphthalene	91-20-3	**128;** 64; 102	C	C10H8	128	1.59E-01
30-31	Methylnaphthalenes (2), individual configurations unknown		**142;** 115; 141	C	C11H10	142	6.05E-02
32	2-Naphthalenol	135-19-3	**144;** 89; 115; 116	C	C10H8O	144	1.63E-03
33-34	Dimethylnaphthalenes (2), individual configurations unknown		**156;** 141; 155	C	C12H12	156	(1.24-1.59)E-02
35	Biphenylene	259-79-0	**152;** 76; 126; 151	C	C12H8	152	1.78E-02
36-37	Trimethylnaphthalenes (2), individual configurations unknown		**170;** 155	C	C13H14	170	1.67E-02-3.16E-03
38	4,6,8-Trimethylazulene	941-81-1	**170;** 155	C	C13H14	170	5.05E-03
39	Fluorene	86-73-7	**166;** 115; 139; 165	C	C13H10	166	3.00E-03
40	1-Methyl-9-methoxyfluorene		**195;** 165; 210	C	C15H14O	210	1.82E-04
41	9H-Fluoren-9-one[D,ND]	486-25-9	**180;** 76; 126; 152	C	C13H8O	180	8.01E-05
42	Phenanthrene[D,ND]	85-01-8	**178;** 76; 89; 152	A	C14H10	178	2.06E-04
43	Anthracene	120-12-7	**178;** 76; 89; 152	A	C14H10	178	2.06E-04

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
PAHs, Branched PAHs, and Oxy-PAHs, cont'd.							
44	Anthracene, dimethyl, configuration unknown[D,ND]		**206;** 69; 81; 83; 205	C	C16H14	206	2.76E-05
45-49	Methylphenanthrenes and Methylanthracenes (5), individual configurations unknown		**192;** 165	B	C15H12	192	7.27E-05
50	9,10-Anthracenedione (anthraquinone)	84-65-1	**208;** 76; 152; 180	B	C14H8O2	208	6.97E-06
51	Fluoranthene[D,ND]	205-912-4	**202;** 101; 102	C	C16H10	202	1.73E-05
52	9,10-Anthracenedione, 1,4-dimethyl-	1519-36-4	**236;** 165; 178; 193	C	C16H12O2	236	2.69E-07
53	Pyrene[D,ND]	129-00-0	**202;** 101; 102	B	C16H10	202	2.28E-06
54-56	Methylpyrenes (3), individual configurations unknown		**216;** 108; 215	C	C17H12	216	(1.48-7.38)E-06
57	Retene	483-65-8	**219;** 205; 206; 234	C	C18H18	234	5.34E-06
58	11H-Benzo[b]fluorene	243-17-4	**216;** 108; 215	C	C17H12	216	3.43E-06
59	11H-Benzo[a]fluorene	238-84-6	**216;** 108; 215	C	C17H12	216	3.43E-06
60	2,2'-Binaphthalene	612-78-2	**254;** 126; 228; 253; 255	C	C20H14	254	3.67E-07
61	9H-Fluorene, 9-(phenylmethylene)-	1836-87-9	**254;** 252; 253; 255	C	C20H14	254	5.01E-06
62	Benzo[c]phenanthrene[D,ND]	195-19-7	**228;** 101; 113; 226	C	C18H12	228	2.02E-07
63	Chrysene[D,ND]	218-01-9	**228;** 113; 114	A	C18H12	228	8.50E-08
Alkylcyclohexanes							
64	1,2-Dimethylenecyclohexane	2819-48-9	**93;** 79; 108	C	C8H12	108	9.92E+00
65	Cyclohexane, heptyl-	5617-41-4	**83;** 55; 82; 182	C	C13H26	182	4.51E-02
66	Cyclohexane, octyl-	1795-15-9	**83;** 55; 67; 82; 196	C	C14H28	196	1.58E-02
Alkylbenzenes							
67	Benzene, heptyl-[D,ND]	1078-71-3	**91;** 92; 176	B	C13H20	176	4.43E-02
68	Benzene, octyl-	2189-60-8	**91;** 92; 190	C	C14H22	190	1.58E-02
69	Benzene, nonyl-	1081-77-2	**91;** 92; 204	C	C15H24	204	5.74E-03
70	Benzene, (1-propyloctyl)-	4536-86-1	**91;** 105; 133; 189; 232	C	C17H28	232	1.39E-03
71	Benzene, decyl-	104-72-3	**91;** 92; 184	C	C16H26	218	2.12E-03
72	Benzene, (1-pentylheptyl)- [D,ND]	2719-62-2	**91;** 105; 161; 175; 246	C	C18H30	246	5.00E-04
73	Benzene, (1-butyloctyl)- [D,ND]	2719-63-3	**91;** 105; 147; 189	C	C18H30	246	5.00E-04

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Alkylbenzenes, cont'd.							
74	Benzene, (1-propylnonyl)-	2719-64-4	**91;** 133; 203	C	C18H30	246	5.00E-04
75	Benzene, (1-ethyldecyl)-	2400-00-2	**91;** 119; 217; 246	C	C18H30	246	5.00E-04
76	Benzene, undecyl-	6742-54-7	**91;** 92; 232	C	C17H28	232	7.91E-04
77	Benzene, (1-pentyloctyl)-	4534-49-0	**91;** 105; 161; 260	C	C19H32	260	1.79E-04
78	Benzene, (1-butylnonyl)-	4534-50-3	**91;** 92; 147	C	C19H32	260	1.79E-04
79	Benzene, (1-propyldecyl)-	4534-51-4	**91;** 92; 133	C	C19H32	260	1.79E-04
80	Benzene, (1-ethylundecyl)-	4534-52-5	**91;** 119; 231; 260	C	C19H32	260	1.79E-04
81	Benzene, (1-methyldodecyl)-	4534-53-6	**105;** 91; 260	C	C19H32	260	1.79E-04
82	Benzene, dicyclohexyl	1087-02-1	**242;** 91; 117; 159	C	C18H26	242	3.23E-05
83	Benzene, (1-methyltridecyl)- [D,ND]	4534-59-2	**105;** 91; 274	C	C20H34	274	6.43E-05
Other Phenyls							
84	Benzene, (1-methylethenyl)- (alpha methylstyrene)	98-83-9	**118;** 78; 91; 103	C	C9H10	118	2.82E+01
85	p-Cymene	99-87-6	**119;** 134	C	C10H14	134	1.65E+01
86	Trimethylbenzaldehyde, configuration unknown		**120;** 77; 91; 105	C	C9H12	120	(2.08-3.57)E-02
87-88	Dimethylstyrenes (2), configurations unknown		**117;** 91; 92; 116; 132	C	C10H12	132	(5.54-6.59)E-01
89	Benzene, (2-ethylbutyl)-	19219-85-3	**92;** 91; 162	C	C12H18	162	1.89E-01
90	Benzene, 1,4-bis-1-methylethenyl-	1605-18-1	**158;** 115; 117; 128; 143	C	C12H14	158	6.06E-02
91	Benzene, trimethyl(1-methylethyl)-	33991-29-6	**147;** 162	C	C12H18	162	NF
92	Biphenyl	92-52-4	**154;** 76; 152; 153	B	C12H10	154	2.27E-02
93	1,1'-Biphenyl, 4-methyl-	644-08-6	**168;** 152; 153; 167	B	C13H12	168	1.32E-02
94	Benzene, [1-(2,4-cyclopentadien-1-ylidene)ethyl]-	2320-32-3	**153;** 152; 166; 167; 168	C	C13H12	168	3.70E-03
95	2-(p-Tolylmethyl)-p-xylene	721-45-9	**195;** 210	C	C16H18	210	8.34E-04
96	1,1'-Biphenyl, 2,2'-diethyl-	13049-35-9	**181;** 165; 195; 210	C	C16H18	210	2.26E-04
97	Benzene, 1,1'-cyclohexylidenebis- [D,ND]	21113-55-3	**236;** 167; 168; 178; 180	C	C18H20	236	1.28E-04
98	1-(o-Biphenylyl)-2-phenylethyne	10271-65-5	**253;** 252; 254	C	C20H14	254	4.04E-07

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Other Phenyls, cont'd.							
99	1H-Indene, 2,3-dihydro-1,1,3-trimethyl-3-phenyl-[D,ND]	3910-35-8	**221;** 91; 143; 235; 236	C	C18H20	236	1.23E-03
Other Hydrocarbons							
100	Naphthalene, 1,2,3,4-tetrahydro-1,1,6-trimethyl- (alpha ionene)	475-03-6	**159;** 105; 115; 129; 131; 174	C	C13H18	174	5.33E-02
101	Sandaracopimaradiene[D,ND]	1686-56-2	**137;** 136; 257; 272	C	C20H32	272	2.11E-04
102	15-Isobutyl-(13αH)-isocopalane	87953-47-7	**191;** 55; 69; 95; 109; 332	C	C24H44	332	8.21E-06
Acids							
103	Hexanoic acid	142-62-1	**60;** 73; 87	C	C6H12O2	116	1.58E-01
104	Hexanoic acid, 2-ethyl-	149-57-5	**88;** 73; 101; 116	C	C8H16O2	144	2.70E-02
105	Octanoic acid[D,ND]	124-07-2	**60;** 41; 43; 73; 85; 101; 115	B	C8H16O2	144	2.20E-02
106	Nonanoic acid	112-05-0	**60;** 57; 73; 115	B	C9H18O2	158	8.67E-03
Aldehydes							
107	Benzaldehyde	100-52-7	**77;** 105; 106	B	C7H6O	106	9.74E-01
108	Nonanal[D,ND]	124-19-6	**57;** 70; 82; 98; 114	B	C9H18O	142	5.32E-01
109	Dodecanal[D,ND]	112-54-9	**82;** 57; 68; 96; 110; 140	C	C12H24O	184	3.44E-02
110	Benzeneethanal, 4-[1,1-dimethylethyl]-.alpha.-methyl-	61307-73-1	**147;** 117; 175; 190	C	C13H18O	190	7.30E-03
111	Tridecanal	10486-19-8	**82;** 57; 68; 96; 110; 154; 170	A	C13H26O	198	1.46E-02
112	Heptanal, 2-(phenylmethylene)-	122-40-7	**117;** 115; 129; 202	C	C14H18O	202	2.33E-03
113	Octanal, 2-(phenylmethylene)- (Hexyl cinnamic aldehyde) [D,ND]	101-86-0	**129;** 91; 115; 117; 145; 216	B	C15H20O	216	6.97E-04
Phthalates							
114	Phthalic Acid[D,ND]	85-44-9	**104;** 76; 148	A	C8H6O4	166	2.14E-06
115	Dimethyl phthalate[D,ND]	131-11-3	**163;** 77; 92; 133; 135; 194	B	C10H10O4	194	3.31E-03
116	Diethyl phthalate[D,ND]	84-66-2	**149;** 150; 177; 221; 222	B	C12H14O4	222	1.67E-03

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Phthalates, cont'd.							
117	Diisobutyl Phthalate[D,ND]	84-69-5	**149;** 167; 205; 223	C	C19H28O4	320	1.54E-03
118	Dibutyl Phthalate[D,ND]	84-74-2	**149;** 205; 223	C	C16H22O4	278	1.08E-04
119	Bis-(2-ethylhexyl)phthalate (DEHP)[ND]	117-81-7	**149;** 104; 113; 167; 279	C	C24H38O4	390	3.95E-06
Other Esters							
120	Nonanoic acid, methyl ester	1731-84-6	**74;** 87; 101; 129; 141; 143	C	C9H12O3	168	1.93E-01
121	Benzoic acid, butyl ester	136-60-7	**105;** 77; 123	B	C11H14O2	178	2.17E-02
122	Dodecanoic acid, methyl ester[D,ND]	111-82-0	**74;** 57; 41; 43; 87; 74;	B	C13H26O2	214	1.05E-02
123	Propanoic acid, 2-methyl-, 1-(1,1-dimethylethyl)-2-methyl-1,3-propanediyl ester (TXIB)[D,ND]	74381-40-1	**71;** 111; 143; 159; 243	B	C16H30O4	286	3.88E-03
124	Dodecanoic acid, 1-methylethyl ester (isopropyl laurate)	10233-13-3	**43;** 242; 60; 102; 129; 201; 202	C	C15H30O2	242	3.58E-03
125	Benzoic acid, 2-ethylhexyl ester[D,ND]	5444-75-7	**105**; 70; 77; 112; 123	B	C15H22O2	234	5.07E-04
126	Benzeneacetic acid, 2-phenylethyl ester	102-20-5	**104;** 77; 91; 105	C	C16H16O2	240	2.30E-05
127	Benzyl Benzoate[D,ND]	120-51-4	**105;** 77; 91; 194; 212	B	C14H12O2	212	2.50E-04
128	Isopropyl myristate[D,ND]	110-27-0	**102;** 43; 60; 129; 211; 228; 229	B	C17H34O2	270	3.29E-04
129	Hexadecanoic acid, methyl ester (methyl palmitate)[ND,D]	112-39-0	**74;** 43; 55; 87; 143; 227; 239; 270	B	C17H34O2	270	1.49E-04
130	Isopropyl palmitate[D,ND]	142-91-6	**43**; 102; 60; 129; 256; 298	C	C19H38O2	298	8.44E-05
131	Hexadecanoic acid, 14-methyl-, methyl ester	2490-49-5	**74;** 87; 143; 241; 284	C	C18H36O2	284	2.15E-04
Ketones							
132	2-Nonanone	821-55-6	**58;** 43; 71; 142	C	C9H18O	142	6.45E-01
133	Ethanone, 1-(4-methylphenyl)-[D,ND]	577-16-2	**119;** 91; 134	C	C9H10O	134	1.87E-01
134	2-Decanone[D,ND]	693-54-9	**58;** 43; 71; 85; 156	C	C10H20O	156	2.48E-01
135	2-Undecanone	112-12-9	**58;** 43; 71; 170	C	C11H22O	170	9.78E-02
136	Bicyclo[3.2.0]heptan-2-one, 1,4,4-trimethyl-	52171-52-1	**82;** 95; 109; 152	C	C10H16O	152	2.88E-01
137	Ethanone, 1-[4-(1-methylethenyl)phenyl]-	645-13-6	**145;** 91; 115; 160	C	C11H12O	160	8.64E-03

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Other Ketones, cont'd.							
138	1(2H)-Naphthalenone, 3,4-dihydro- (alpha tetralone)[D,ND]	529-34-0	**118;** 146	C	C10H10O	146	1.60E-02
139	5,9-Undecadien-2-one, 6,10-dimethyl- (geranyl lactone) [D,ND]	3796-70-1	**43;** 69; 107; 125; 136; 151	C	C13H22O	194	1.57E-02
140	2,5-Cyclohexadiene-1,4-dione, 2,6-bis(1,1-dimethylethyl)- (2,6-Di-tert-butylbenzoquinone)	719-22-2	**177;** 135; 149; 163; 192; 205; 220	B	C14H20O2	220	2.81E-03
141	2,6-di-t-butyl-4-methylene-2,5-cyclohexadiene-1-one (BHT-quinone)	2607-52-5	**161;** 175; 189; 203; 218	B	C15H24	218	7.89E-04
142	6-methyl-.gamma.-ionone	27417-37-4	**135;** 107; 123; 150; 191; 206	B	C14H22O	206	4.05E-03
143	2-Pentadecanone	2345-28-0	**58;** 168; 226	A	C15H30O	226	3.04E-03
144	Benzophenone[D,ND]	119-61-9	**105;** 77; 182	A	C13H10O	182	8.23E-04
145	1-Penten-3-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)- (beta methyl ionone)	127-43-5	**191;** 109; 119; 121; 135; 191	C	C14H22O	206	1.08E-03
146	Ethanone, 1-(5,6,7,8-tetrahydro-3,5,5,6,8,8-hexamethyl-2-naphthalenyl)- (tonalid) [D,ND]	21145-77-7	**243;** 159; 187; 201; 258	B	C18H26O	258	2.86E-05
Multifunctional/Other Oxidized Compounds							
147	Phenol	108-95-2	**94;** 39; 66	C	C6H6O	94	6.14E+01
148	1-Hexanol, 2-ethyl-	104-76-7	**57;** 41; 70; 83; 98; 112	B	C8H18O	130	2.07E-01
149	Benzenemethanol	100-51-6	**79;** 77; 107; 108	C	C7H8O	108	1.58E-01
150	Phenol, 2-(1-methylethyl)-	88-69-7	**121;** 103; 136	C	C9H12O	136	1.12E-01
151	Levoglucosenone[ND]	37112-31-5	**98;** 39; 53; 68; 96	B	C6H6O3	126	1.73E-02
152	Benzoic acid, 2-hydroxy-, methyl ester	119-36-8	**120;** 65; 92; 93; 121; 152	C	C8H8O3	152	7.00E-02
153	Benzene, 1-methoxy-4-(1-propenyl)- (anethole)	104-46-1	**148;** 117; 121; 133; 147	C	C10H12O	148	6.87E-02
154	Ethanol, 2-phenoxy-[D,ND]	122-99-6	**94;** 77; 138	B	C8H10O2	138	1.55E-02
155	(2Z,4Z)-3-Methylhexa-2,4-dien-1,6-diol		**97;** 71; 81; 95; 98; 110	C	C7H12O2	128	NF
156	2-Propanol, 1,1'-oxybis- (dipropylene glycol)	25265-71-8	**59;** 31; 41; 45; 103	C	C6H14O3	134	NF

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Multifunctional/Other Oxidized Compounds, cont'd.							
157	2-Propanol, 1-[1-methyl-2-(2-propenyloxy)ethoxy]-	55956-25-7	**59;** 45; 57; 103	C	C9H18O3	192	7.31E-03
158	Benzaldehyde, 4-methoxy- (anisaldehyde)	123-11-5	**135;** 77; 92; 136	C	C8H8O2	136	2.49E-02
159	2(3H)-Furanone, 5-butyldihydro- (gamma octanolactone)	104-50-7	**85;** 100; 141	C	C8H14O2	142	4.08E-02
160	Benzene, 1-methoxy-4-(2-propenyl)- (allylanisole)	140-67-0	**148;** 77; 91; 115; 117; 121; 133	B	C10H12O	148	2.10E-01
161	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy-1-methylethyl)propyl ester[ND]	74367-33-2	**71;** 43; 56; 83; 89; 98; 143; 173	B	C12H24O3	216	1.09E-03
162	2[3H]-Furanone, dihydro-5-pentyl- (gamma nonalactone) [D,ND]	108-29-2	**85;** 100; 114; 128; 138	B	C9H16O2	156	8.58E-03
163	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester	74367-34-3	**71;** 43; 56; 89; 143; 173	B	C12H24O3	216	3.78E-03
164	Benzene, 1,1'-oxybis-	101-84-8	**170;** 141; 142	B	C12H10O	170	2.23E-02
165	Benzaldehyde, 3,4-dimethoxy- (vanillin methyl ether)	120-14-9	**166;** 165	C	C9H10O3	166	3.66E-03
166	2H-1-Benzopyran-2-one (coumarin)[D,ND]	91-64-5	**146;** 89; 90; 118; 119	B	C9H6O2	146	1.30E-03
167	2(3H)-Furanone, 5-hexyldihydro- (gamma decalactone)	706-14-9	**85;** 128	C	C10H18O2	170	8.52E-03
168	Isobutanoic acid, phenoxyethanol ester[D,ND]	103-60-6	**115;** 77; 94; 105	C	C12H16O3	208	5.62E-03
169	Benzoic acid, 4-ethoxy-, ethyl ester	23676-09-7	**121;** 138; 149; 166; 194	C	C11H14O3	194	5.23E-03
170	Dibenzofuran[D,ND]	132-64-9	**168;** 84; 139	B	C12H8O	168	4.40E-03
171	Phenol, 4-(1,1,3,3-tetramethylbutyl)-	140-66-9	**135;** 107; 136	C	C14H22O	206	1.98E-03
172	Cyclopentaneacetic acid, 3-oxo-2-pentyl-, methyl ester[D,ND]	24851-98-7	**153;** 55; 83; 96; 156	B	C13H22O3	226	7.10E-04
173	Octane, 1,1'-oxybis-	629-82-3	**57;** 71; 83; 84; 112; 113	C	C16H34O	242	4.53E-03
174	n-Hexyl salicylate	6259-76-3	**120;** 138; 222	C	C13H18O3	222	4.91E-04
175	2-Ethylhexyl salicylate	118-60-5	**120;** 71; 112; 121; 138; 250	C	C15H22O3	250	8.07E-05

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
Multifunctional/Other Oxidized Compounds, cont'd.							
176	Cyclopenta[g]-2-benzopyran, 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethyl (galaxolide) [D,ND]	1222-05-5	**243;** 213; 258	B	C18H26O	258	4.14E-04
Terpenes, Oxidized Terpenes, and Terpenoids							
177	Limonene[D,ND]	138-86-3	**68;** 93; 107; 121; 136	B	C10H16	136	1.54E+00
178	beta-Ocimene	3779-61-1	**93;** 136	C	C10H16	136	1.56E+00
179	Cyclohexanol, 3,3,5-trimethyl- (homomenthol)	116-02-9	**109;** 83; 124	C	C9H18O	142	1.73E-01
180	7-Octen-2-ol, 2,6-dimethyl- (dihydromyrcenol)	18479-58-8	**59;** 67; 81; 123	C	C10H20O	156	1.66E-01
181	Linalool	78-70-6	**71;** 93; 121	C	C10H18O	154	9.05E-02
182	2-Cyclohexen-1-one, 3,5,5-trimethyl- (isophorone) [ND]	78-59-1	**82;** 39; 95; 138	C	C8H10O2	138	1.50E-01
183	Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl- (camphor)	76-22-2	**95;** 69; 81; 108; 152	C	C10H16O	152	2.25E-01
184	Cyclohexanone, 5-methyl-2-(1-methylethyl)- (isomenthone)	1196-31-2	**112;** 69; 97; 139; 154	C	C10H18O	154	2.56E-01
185	Menthol	15356-70-4	**71;** 81; 95; 123; 138	B	C10H20O	156	3.23E-02
186	α-Terpineol	10482-56-1	**59;** 93; 121; 136	C	C10H18O	154	2.83E-02
187	2-Cyclohexen-1-one, 2-methyl-5-(1-methylethenyl)- (carvone)[ND]	99-49-0	**82;** 108; 150	C	C10H14O	150	6.56E-02
188	α-Cedrene[D,ND]	469-61-4	**119;** 93; 105; 161	B	C15H24	204	1.77E-02
189	β-Cedrene[D,ND]	546-28-1	**161;** 93; 120; 204	B	C15H24	204	1.71E-02
N- and S-Containing Compounds							
190	1,2-Benzisothiazole[D,ND]	272-16-2	**135;** 85; 108; 136	B	C7H5NS	135	5.87E+00
191	2-methyl-3-oxime-1-cyclohexen-3-one	NA	**125;** 67; 79; 81	C	C7H11NO	154	NF
192	2-Pentanone, 3-(phenylthio)-	62870-22-8	**177;** 194	C	C11H14OS	194	3.87E-03
193	Benzamide, N-propyl-	10546-70-0	**105;** 77; 163	C	C10H13NO	163	1.92E-04
194	Diethyltoluamide (DEET) [D,ND]	134-62-3	**119;** 65; 91; 190; 191	B	C12H17NO	191	1.35E-03
195	2,3-Dihydro-1H-1-methylcyclopenta[b]quinoxaline	26629-21-0	**169;** 184	C	C12H12N2	184	6.10E-04

#	Compound Name	CAS	Ions	Confidence	Molec. Formula	MW (g mol^{-1})	Predicted $p_L°$ (torr)
N- and S-Containing Compounds, cont'd.							
196	1-Azachrysene	218-08-6	**229;** 200; 201	C	C17H11N	229	7.47E-08
Siloxanes							
197	Cyclotrisiloxane, hexamethyl-[C]	541-05-9	**207;** 133; 191	B	C6H18O3Si3	222	1.16E+02
198	Cyclotetrasiloxane, octamethyl-[C]	556-67-2	**281;** 73	B	C8H24O4Si4	296	1.57E+01
199	Cyclopentasiloxane, decamethyl	541-02-6	**73;** 267; 355	B	C10H30O5Si5	370	2.85E-01
200	Pentasiloxane, dodecamethyl-	141-63-9	**281;** 73; 147; 207; 369	C	C12H36O4Si5	384	5.12E-03
201	Cyclohexasiloxane, dodecamethyl-	540-97-6	**73;** 325; 342; 429	B	C12H36O6Si6	444	4.60E-02
202	Hexasiloxane, tetradecamethyl-[D,ND]	107-52-8	**73;** 147; 221; 281	B	C14H42O5Si6	458	4.48E-02
203	Cycloheptasiloxane, tetradecamethyl-[D,ND]	107-50-6	**73;** 147; 281; 327	B	C14H42O7Si7	519	2.17E-04
204	Heptasiloxane, hexadecamethyl-	541-01-5	**221;** 73; 147; 207	C	C16H48O6Si7	533	1.16E-02
205	Cyclooctasiloxane, hexadecamethyl-[D,ND]	556-68-3	**73;** 147; 221; 281; 355	B	C16H48O8Si8	593	3.70E-03
206	Cyclononasiloxane, octadecamethyl-	556-71-8	**73**; 147; 221; 355; 429	B	C18H54O9Si9	667	9.77E-07

[D] Compound was included in denuded PMF calculations (Figure 4; Section S6, Figure S6A, Figure S7, Table S3).
[ND] Compound was included in non-denuded PMF calculations (Figure 5; Section S6, Figure S6B, Figure S8, Table S3).
[C] Compound loadings in this study have partial or full contribution from system contamination.

Section S6: Positive Matrix Factorization (PMF) Analysis

Description of pre-processing techniques

The PMF2 algorithm is fully described in Paatero (1997)[6] and Ulbrich et al. (2009).[7] For our analysis, a matrix with input integrated compound abundances is split into a factor profile matrix and a time series matrix:

$$X = GF + E \tag{S1}$$

Here, X is the input data matrix with dimensions m compounds × n chromatograms, where each element x_{ij} of the matrix represents the integrated abundance of the j^{th} compound within the i^{th} chromatogram. PMF calculations split X into G, the time series matrix with dimensions $n \times p$, and F, the factor profile matrix with dimensions $p \times m$, according to a user-specified number of factors p. An input error matrix E ($m \times n$) is determined using known instrument precision values. For this analysis, we determine the error matrix according to methods described in Williams et al. (2010b).[8] To obtain error matrix element e_{ij} for the j^{th} compound in the i^{th} chromatogram with corresponding data element x_{ij}, we calculate:

$$e_{ij} \equiv 2 \times IP, x_{ij} \leq IP \tag{S2A}$$

$$e_{ij} \equiv \sqrt{\left(z \times x_{ij}\right)^2 + (IP)^2}, x_{ij} > IP \tag{S2B}$$

Here, z is the instrument uncertainty, determined based on observed instrument reproducibility, and IP is the instrument precision. For TAG measurements, z is assumed to be 10% based on previous work,[9,10] and for VOC adsorbent tube data, z is determined to be 39% based on a bromofluorobenzene internal standard. In all analyses, for each compound, we define IP as the limit of detection (LOD ≡ 3 × standard deviation of the baseline abundance) for the integrated ion.

To ensure that PMF results are not driven primarily by compounds with the highest abundances, integrated abundances for each compound were normalized to the highest measured abundance across all chromatograms. Thus, each column of the input data matrices contained values ranging from 0 to 1. Corresponding error matrices were calculated following this normalization.

PMF Results: Q/Q_{exp}, fPeak, and factor loadings

The objective function Q is defined as the sum of weighed squared residuals: [7,11]

$$Q = \sum_{n}^{i=1} \sum_{m}^{j=1} \frac{e_{ij}^2}{\sigma_{ij}^2} \tag{S3}$$

where σ_{ij} is the estimated precision of data point x_{ij}. If the residuals are normally distributed, Q is expected to equal the number of degrees of freedom for the solution, and Q/Q_{exp} equals 1.[7,11] If errors are underestimated, Q/Q_{exp} will exceed 1, and if overestimated, Q/Q_{exp} is less than 1. This guideline is often used to justify choosing a number of factors (p) for a given solution,[7,8] though a Q/Q_{exp} not equal to 1 does not necessarily mean that calculated results are not meaningful, as long as overall Q/Q_{exp} does not exceed 10. [8,12] Q/Q_{exp} values are provided for each analysis in **Figure S6**, and summed residuals are plotted in **Figures S7, S8, and S9**.

The fPeak parameter allows exploration of solutions taking rotational ambiguity into account during calculations.[7] In this work, fPeak was varied between -1 and 1 in increments of 0.2. Although in previous work, TAG data has not been sensitive to variation in fPeak,[8,13] some effect is observed for VOC adsorbent tube results. PMF solutions presented here were selected to obtain Q/Q_{exp} values closest to 1 (Table S5).

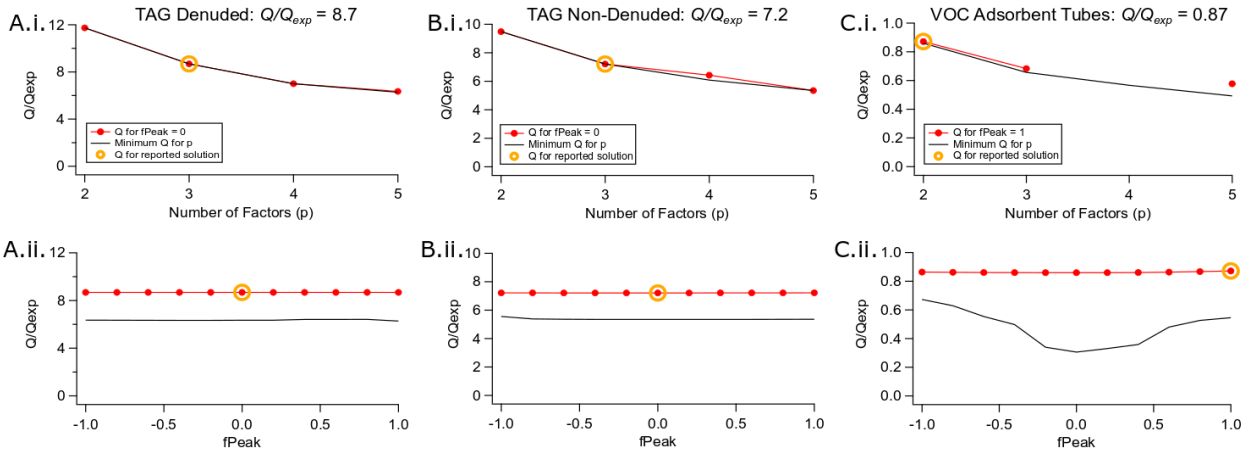

Figure S7. Q/Q_{exp} with varied p (panel i) and fPeak (panel ii) for (A) TAG denuded, (B) TAG non-denuded, and (C) VOC adsorbent tube PMF results.

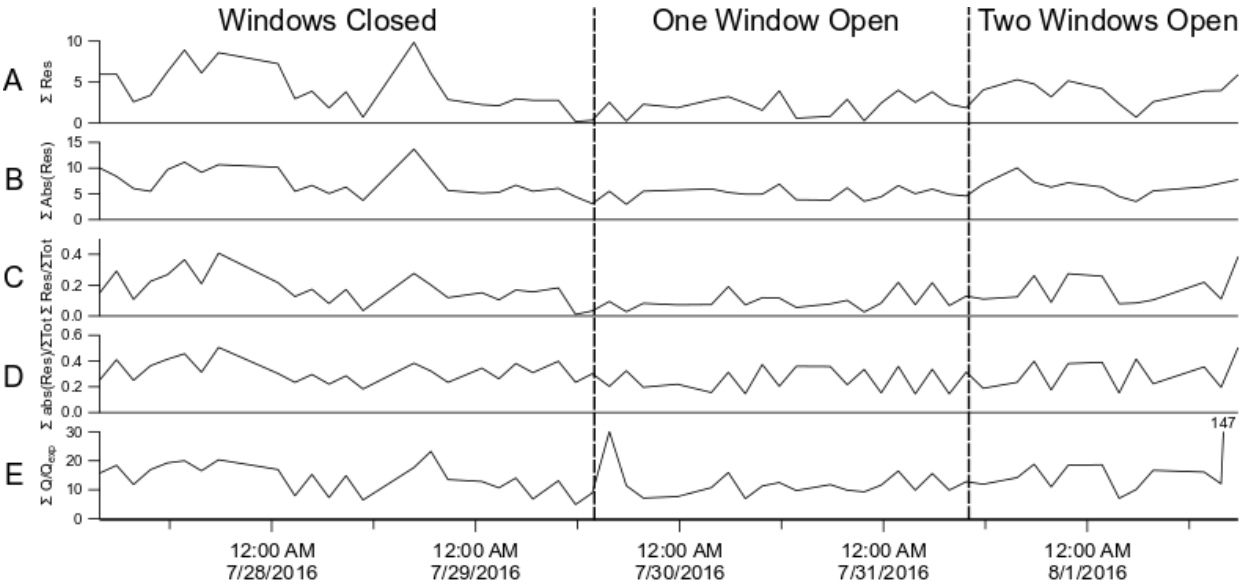

Figure S8. Residual plots for TAG denuded PMF results: (A) summed residuals, (B) sum of the absolute value of residuals, (C) residuals scaled by total signal, (D) sum of the absolute value of residuals scaled by total signal, and (E) Q/Q_{exp} for individual chromatograms.

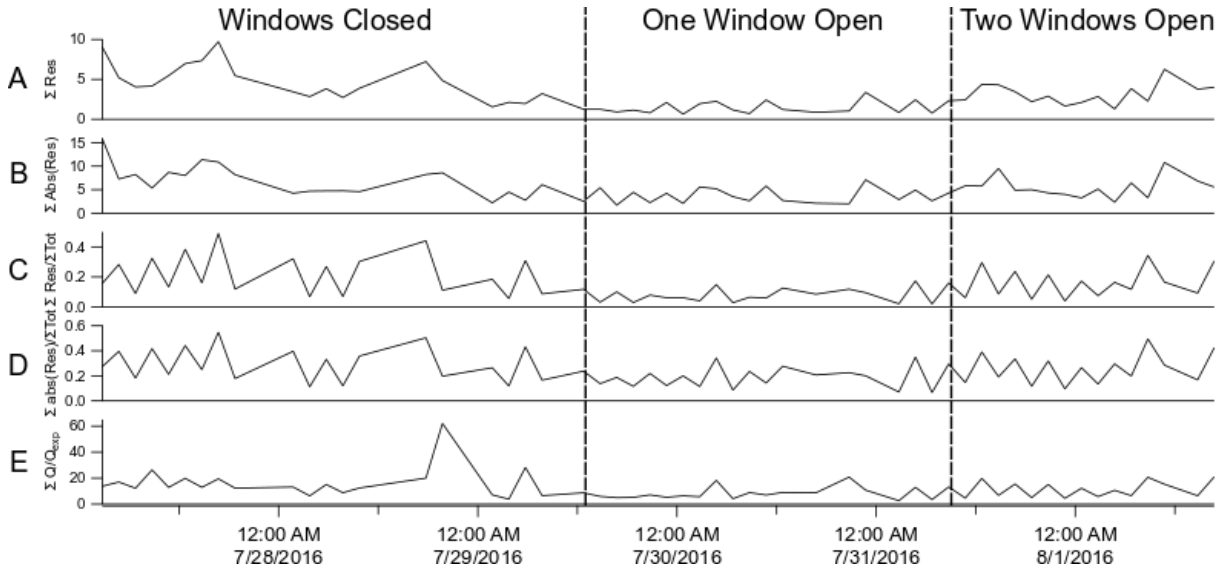

Figure S9. Residual plots for TAG non-denuded PMF results: (A) Summed residuals, (B) sum of the absolute value of residuals, (C) residuals scaled by total signal, (D) sum of the absolute value of residuals scaled by total signal, and (E) Q/Q_{exp} for individual chromatograms.

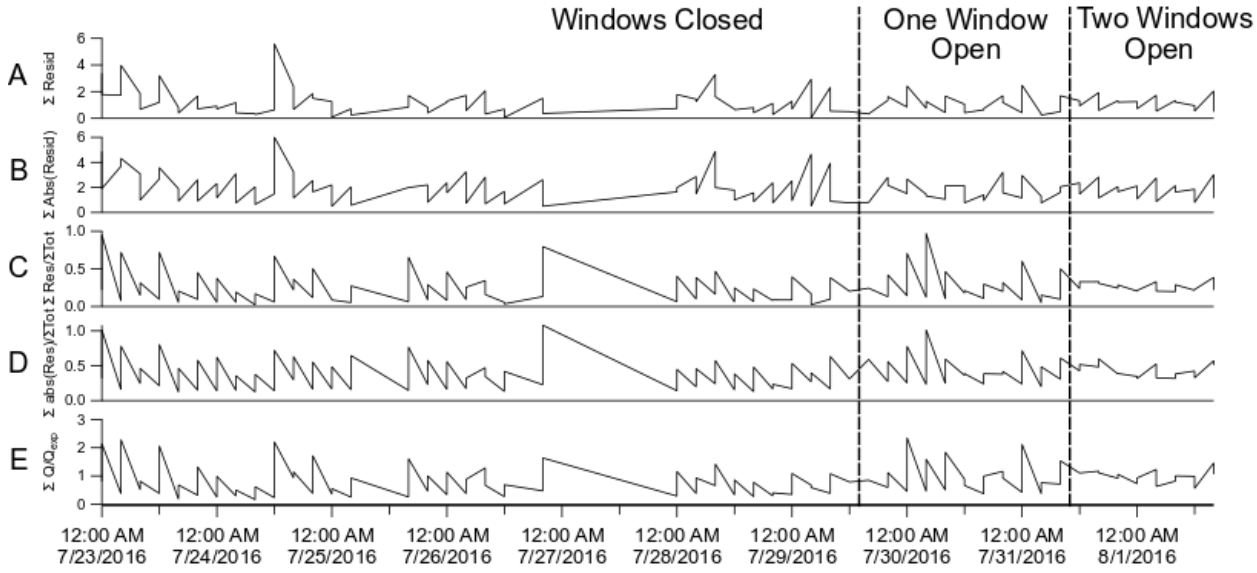

Figure S10. Residual plots for VOC adsorbent tube results: (A) summed residuals, (B) sum of the absolute value of residuals, (C) residuals scaled by total signal, (D) sum of the absolute value of residuals scaled by total signal, and (E) Q/Q_{exp} for individual chromatograms.

Table S3. Compound factor loadings for TAG denuded PMF results (fPeak=0).

Compound	**Factor 1**	**Factor 2**	**Factor 3**
DEET	4.18×10^{-2}	7.11×10^{-9}	1.55×10^{-3}
Phthalic acid, diisobutyl ester	4.16×10^{-2}	6.32×10^{-4}	1.94×10^{-9}
Dimethyl Anthracene	3.28×10^{-2}	6.10×10^{-3}	2.91×10^{-2}
Benzene, 1,1'-cyclohexylidenebis-	3.22×10^{-2}	1.65×10^{-2}	2.66×10^{-2}
Isopropyl Myristate	3.21×10^{-2}	3.58×10^{-3}	1.35×10^{-8}
Galaxolide	2.98×10^{-2}	1.18×10^{-2}	9.69×10^{-9}
Dodecanal	2.88×10^{-2}	6.21×10^{-3}	9.90×10^{-3}
Octanal, 2-phenylmethylene-	2.88×10^{-2}	1.84×10^{-2}	3.35×10^{-3}
Octanoic Acid	2.87×10^{-2}	1.12×10^{-8}	1.00×10^{-3}
Dibutyl Phthalate	2.82×10^{-2}	1.48×10^{-9}	4.49×10^{-6}
Nonadecane	2.81×10^{-2}	1.70×10^{-2}	1.54×10^{-2}
Benzene, (1-methyltridecyl)-	2.74×10^{-2}	9.34×10^{-3}	2.24×10^{-2}
Tonalid	2.71×10^{-2}	1.27×10^{-2}	1.05×10^{-3}
Hexadecanoic acid, methyl ester	2.66×10^{-2}	1.77×10^{-9}	2.30×10^{-3}
Diethyl Phthalate	2.53×10^{-2}	1.61×10^{-2}	1.21×10^{-3}
Sandaracopimaradiene	2.50×10^{-2}	1.32×10^{-2}	2.41×10^{-2}
Nonanal	2.46×10^{-2}	1.70×10^{-3}	1.67×10^{-2}
Coumarin	1.60×10^{-2}	1.79×10^{-9}	1.95×10^{-3}
Isopropyl Palmitate	1.13×10^{-2}	5.29×10^{-9}	6.29×10^{-3}
Levoglucosenone	9.09×10^{-3}	5.01×10^{-10}	2.50×10^{-9}
Benzyl Benzoate	8.77×10^{-3}	9.23×10^{-9}	2.90×10^{-9}
1,2-Benzisothiazole	7.35×10^{-3}	6.59×10^{-9}	4.15×10^{-9}
Tricosane	4.87×10^{-4}	1.41×10^{-9}	2.05×10^{-8}
Chrysene	4.02×10^{-4}	1.96×10^{-9}	1.71×10^{-4}
Tetracosane	1.59×10^{-4}	1.65×10^{-9}	1.11×10^{-4}
9,10-Anthracenedione	7.32×10^{-5}	3.22×10^{-9}	4.64×10^{-5}
Benzene, (1-butyloctyl)-	3.95×10^{-3}	5.03×10^{-2}	8.53×10^{-3}
Benzene, (1-pentylheptyl)-	4.34×10^{-3}	4.85×10^{-2}	6.30×10^{-3}
alpha cedrene	1.33×10^{-3}	4.67×10^{-2}	1.10×10^{-2}
Heptadecane	7.12×10^{-3}	4.52×10^{-2}	6.44×10^{-3}
Pentadecane	3.90×10^{-7}	4.51×10^{-2}	1.40×10^{-2}
beta cedrene	1.47×10^{-2}	4.24×10^{-2}	1.05×10^{-2}
Phytane	1.51×10^{-2}	3.78×10^{-2}	7.21×10^{-3}
Benzoic acid, 2-ethylhexyl ester	2.18×10^{-2}	3.64×10^{-2}	1.99×10^{-3}
Pentadecane, 3-methyl-	5.63×10^{-8}	3.45×10^{-2}	4.69×10^{-3}
Hexasiloxane, tetradecamethyl-	5.55×10^{-4}	3.28×10^{-2}	2.44×10^{-3}
Octadecane	1.53×10^{-2}	2.92×10^{-2}	5.44×10^{-3}
Benzophenone	2.73×10^{-2}	2.90×10^{-2}	1.82×10^{-2}
Cycloheptasiloxane, tetradecamethyl-	1.68×10^{-2}	2.89×10^{-2}	1.28×10^{-2}
Dimethyl Phthalate	2.29×10^{-2}	2.35×10^{-2}	6.91×10^{-9}
Limonene	1.35×10^{-8}	2.25×10^{-2}	7.46×10^{-8}

Compound	Factor 1	Factor 2	Factor 3
Isobutanoic acid, phenoxyethanol ester	1.71×10^{-2}	1.98×10^{-2}	1.77×10^{-8}
Dodecanoic acid, methyl ester	1.34×10^{-2}	1.92×10^{-2}	8.43×10^{-4}
TXIB	1.07×10^{-2}	1.12×10^{-2}	4.02×10^{-4}
Phthalic Acid	1.43×10^{-2}	2.52×10^{-2}	6.14×10^{-2}
Fluoranthene	8.84×10^{-3}	2.26×10^{-2}	5.76×10^{-2}
Dibenzofuran	1.13×10^{-2}	3.46×10^{-2}	5.71×10^{-2}
9H-Fluoren-9-one	1.60×10^{-2}	2.41×10^{-2}	5.60×10^{-2}
Heptylbenzene	1.40×10^{-2}	2.25×10^{-2}	5.45×10^{-2}
Phenanthrene	2.31×10^{-2}	3.22×10^{-2}	4.73×10^{-2}
1-Tetradecene	1.73×10^{-2}	1.58×10^{-2}	4.51×10^{-2}
1(2H)-Naphthalenone, 3,4-dihydro-	1.29×10^{-2}	6.02×10^{-4}	4.36×10^{-2}
Pyrene	1.19×10^{-2}	9.76×10^{-3}	4.20×10^{-2}
gamma-nonalactone	5.10×10^{-3}	1.30×10^{-2}	3.61×10^{-2}
Ethanone, 1-(4-methylphenyl)-	1.33×10^{-2}	9.06×10^{-3}	3.57×10^{-2}
Eicosane	2.00×10^{-2}	8.20×10^{-3}	3.17×10^{-2}
1H-Indene, 2,3-dihydro-1,1,3-trimethyl-3-phenyl-	5.33×10^{-3}	6.66×10^{-3}	2.99×10^{-2}
2-Decanone	2.40×10^{-2}	1.28×10^{-2}	2.94×10^{-2}
Heneicosane	1.67×10^{-2}	5.62×10^{-3}	2.81×10^{-2}
Docosane	1.68×10^{-2}	5.60×10^{-9}	2.64×10^{-2}
Biphenylene	5.64×10^{-3}	8.38×10^{-3}	2.61×10^{-2}
Cyclooctasiloxane, hexadecamethyl-	7.97×10^{-3}	1.29×10^{-2}	1.36×10^{-2}
Benzo[c]phenanthrene	5.31×10^{-4}	1.88×10^{-8}	4.28×10^{-3}

Table S4. Compound factor loadings for TAG non-denuded PMF results (fPeak=0).

Compound	**Factor 1**	**Factor 2**	**Factor 3**
1,2-Benzisothiazole	3.93×10^{-2}	8.04×10^{-4}	7.49×10^{-5}
Benzyl Benzoate	2.79×10^{-2}	6.38×10^{-3}	2.31×10^{-9}
Hexadecanoic acid, methyl ester	2.79×10^{-2}	8.55×10^{-3}	6.33×10^{-3}
Isopropyl Myristate	2.57×10^{-2}	1.33×10^{-2}	2.29×10^{-3}
Nonanal	2.55×10^{-2}	5.81×10^{-3}	5.12×10^{-3}
Phthalic acid, diisobutyl ester	2.52×10^{-2}	1.12×10^{-2}	8.42×10^{-3}
Dimethyl Anthracene	2.26×10^{-2}	1.47×10^{-2}	1.93×10^{-2}
Dibutyl Phthalate	2.00×10^{-2}	5.59×10^{-3}	1.28×10^{-2}
Tricosane	1.98×10^{-2}	9.40×10^{-4}	5.08×10^{-3}
Hedione	1.97×10^{-2}	4.72×10^{-9}	2.80×10^{-9}
DEET	1.87×10^{-2}	1.72×10^{-2}	4.61×10^{-3}
9,10-Anthracenedione	1.86×10^{-2}	1.38×10^{-9}	2.99×10^{-4}
Isopropyl Palmitate	1.74×10^{-2}	2.64×10^{-3}	7.31×10^{-3}
2,2,4-Trimethyl-3,3-pentanediol monoisobutyrate	1.68×10^{-2}	1.45×10^{-9}	6.63×10^{-10}
Octanoic Acid	1.65×10^{-2}	1.13×10^{-3}	3.60×10^{-3}
Tetracosane	1.48×10^{-2}	1.04×10^{-9}	2.90×10^{-9}
5,9-Undecadien-2-one, 6,10-dimethyl-	1.48×10^{-2}	1.34×10^{-2}	1.35×10^{-3}
Benzo[c]phenanthrene	1.01×10^{-2}	3.87×10^{-9}	3.40×10^{-3}
2-Propanol, 1-[1-methyl-2-(2-propenyloxy)ethoxy]-	9.40×10^{-3}	2.96×10^{-3}	1.45×10^{-8}
Di-(2-ethylhexyl)phthalate	8.13×10^{-3}	1.11×10^{-9}	3.58×10^{-4}
Pentacosane	2.36×10^{-4}	2.32×10^{-9}	7.05×10^{-5}
Benzophenone	1.67×10^{-2}	2.84×10^{-2}	7.83×10^{-3}
Benzoic acid, 2-ethylhexyl ester	1.50×10^{-2}	2.80×10^{-2}	2.16×10^{-3}
alpha cedrene	5.04×10^{-3}	2.78×10^{-2}	3.91×10^{-3}
Benzene, (1-butyloctyl)-	4.05×10^{-3}	2.64×10^{-2}	3.64×10^{-3}
Phytane	5.18×10^{-3}	2.59×10^{-2}	7.28×10^{-3}
Benzene, (1-pentylheptyl)-	4.56×10^{-3}	2.56×10^{-2}	3.66×10^{-3}
Dimethyl Phthalate	1.74×10^{-2}	2.56×10^{-2}	1.11×10^{-3}
Octanal, 2-phenylmethylene-	1.66×10^{-2}	2.56×10^{-2}	2.02×10^{-3}
Heptadecane	3.31×10^{-3}	2.51×10^{-2}	4.90×10^{-3}
Diethyl Phthalate	2.02×10^{-2}	2.42×10^{-2}	1.07×10^{-3}
Pentadecane	3.25×10^{-7}	2.37×10^{-2}	6.97×10^{-3}
Octadecane	4.54×10^{-3}	2.37×10^{-2}	5.89×10^{-3}
TXIB	1.40×10^{-2}	2.36×10^{-2}	4.68×10^{-4}
Pentadecane, 3-methyl-	9.70×10^{-8}	2.28×10^{-2}	2.24×10^{-3}
Tonalid	1.84×10^{-2}	2.21×10^{-2}	5.52×10^{-3}
beta cedrene	1.31×10^{-2}	2.13×10^{-2}	3.00×10^{-3}
Carvone	5.58×10^{-3}	2.13×10^{-2}	9.50×10^{-4}
Cycloheptasiloxane, tetradecamethyl-	7.97×10^{-3}	2.09×10^{-2}	1.71×10^{-2}

Compound	Factor 1	Factor 2	Factor 3
Nonadecane	9.10×10^{-3}	2.04×10^{-2}	1.17×10^{-2}
2-Decanone	1.05×10^{-2}	2.02×10^{-2}	1.53×10^{-2}
Sandaracopimaradiene	9.62×10^{-3}	1.95×10^{-2}	1.92×10^{-2}
Dodecanoic acid, methyl ester	8.90×10^{-3}	1.90×10^{-2}	3.79×10^{-4}
Isobutanoic acid, phenoxyethanol ester	1.72×10^{-2}	1.90×10^{-2}	4.54×10^{-9}
Dodecanal	1.17×10^{-2}	1.89×10^{-2}	5.60×10^{-3}
Hexasiloxane, tetradecamethyl-	3.34×10^{-8}	1.83×10^{-2}	1.02×10^{-3}
Isophorone	7.25×10^{-3}	1.63×10^{-2}	2.79×10^{-8}
Galaxolide	1.35×10^{-2}	1.60×10^{-2}	8.98×10^{-4}
Limonene	4.25×10^{-9}	1.44×10^{-2}	4.52×10^{-4}
Ethanol, 2-phenoxy-	1.04×10^{-2}	1.37×10^{-2}	4.87×10^{-10}
1(2H)-Naphthalenone, 3,4-dihydro-	2.35×10^{-2}	6.44×10^{-4}	6.75×10^{-2}
Fluoranthene	2.13×10^{-2}	9.78×10^{-3}	6.67×10^{-2}
1-Tetradecene	1.86×10^{-2}	1.93×10^{-2}	5.45×10^{-2}
Pyrene	1.62×10^{-2}	8.39×10^{-3}	5.27×10^{-2}
Coumarin	2.36×10^{-2}	1.05×10^{-2}	4.94×10^{-2}
9H-Fluoren-9-one	2.32×10^{-2}	1.89×10^{-2}	4.74×10^{-2}
Heptylbenzene	1.27×10^{-2}	1.74×10^{-2}	4.67×10^{-2}
Dibenzofuran	1.39×10^{-2}	1.88×10^{-2}	4.58×10^{-2}
1H-Indene, 2,3-dihydro-1,1,3-trimethyl-3-phenyl-	1.23×10^{-2}	9.17×10^{-3}	3.97×10^{-2}
Heneicosane	1.47×10^{-2}	8.95×10^{-3}	3.71×10^{-2}
Phenanthrene	2.11×10^{-2}	2.20×10^{-2}	3.61×10^{-2}
gamma-nonalactone	1.91×10^{-2}	1.23×10^{-2}	3.53×10^{-2}
Ethanone, 1-(4-methylphenyl)-	1.67×10^{-2}	2.08×10^{-2}	3.23×10^{-2}
Phthalic Acid	4.35×10^{-3}	1.42×10^{-2}	3.09×10^{-2}
Benzene, 1,1'-cyclohexylidenebis-	1.93×10^{-2}	2.13×10^{-2}	2.90×10^{-2}
Docosane	2.39×10^{-2}	8.58×10^{-5}	2.86×10^{-2}
Biphenylene	8.84×10^{-3}	5.02×10^{-3}	2.58×10^{-2}
Cyclooctasiloxane, hexadecamethyl-	8.40×10^{-3}	1.89×10^{-2}	2.58×10^{-2}
Benzene, (1-methyltridecyl)-	1.74×10^{-2}	1.78×10^{-2}	2.03×10^{-2}
Chrysene	1.04×10^{-2}	1.92×10^{-3}	1.08×10^{-2}
Eicosane	1.30×10^{-3}	1.51×10^{-3}	3.04×10^{-3}
Levoglucosenone	9.04×10^{-9}	4.10×10^{-10}	1.42×10^{-4}

Table S5. Compound factor loadings for VOC adsorbent tube PMF results (fPeak=1).

Compound	**Factor 1**	**Factor 2**
Furfuryl Alcohol	1.59×10^{-7}	5.51×10^{-2}
Phenol	1.19×10^{-1}	1.13×10^{-6}
Menthol	9.10×10^{-3}	6.31×10^{-2}
Hexanal	1.63×10^{-2}	5.36×10^{-2}
Heptanal	4.28×10^{-2}	4.15×10^{-2}
Benzaldehyde	9.25×10^{-2}	1.69×10^{-2}
Octanal	5.53×10^{-2}	3.36×10^{-2}
Nonanal	5.34×10^{-2}	1.46×10^{-2}
Decanal	9.48×10^{-2}	2.89×10^{-7}
Methycyclohexane	1.53×10^{-2}	1.88×10^{-2}
Ethylcyclohexane	2.84×10^{-3}	4.39×10^{-2}
p-Xylene	8.19×10^{-2}	9.12×10^{-3}
o-Xylene	6.51×10^{-2}	9.85×10^{-3}
Styrene	1.19×10^{-2}	5.60×10^{-2}
Trimethylbenzene	7.74×10^{-2}	4.31×10^{-7}
Naphthalene	2.58×10^{-2}	4.52×10^{-2}
Tetrachloroethylene	7.11×10^{-4}	2.24×10^{-2}
Acetophenone	7.32×10^{-2}	3.20×10^{-4}
a-Pinene	8.24×10^{-3}	4.66×10^{-2}
3-Carene	5.87×10^{-7}	5.55×10^{-2}
a-Phellandrene	9.94×10^{-3}	4.96×10^{-2}
Limonene	8.71×10^{-3}	5.97×10^{-2}
g-Terpinene	1.71×10^{-6}	4.84×10^{-2}
Fenchol	4.93×10^{-7}	5.73×10^{-2}
Camphor	6.49×10^{-7}	7.00×10^{-2}
a-Terpineol	2.11×10^{-2}	1.09×10^{-2}
Cyclotrisiloxane, hexamethyl-	3.67×10^{-2}	6.74×10^{-8}
Cyclotetrasiloxane, octamethyl-	4.24×10^{-2}	1.67×10^{-2}
Cyclopentasiloxane, decamethyl-	3.22×10^{-3}	2.84×10^{-2}
Cyclohexasiloxane, dodecamethyl-	3.22×10^{-2}	4.01×10^{-2}
Hexafluorobenzene	1.41×10^{-8}	3.28×10^{-2}

Section S7: TAG and VOC Adsorbent Tube Integrated Time Series

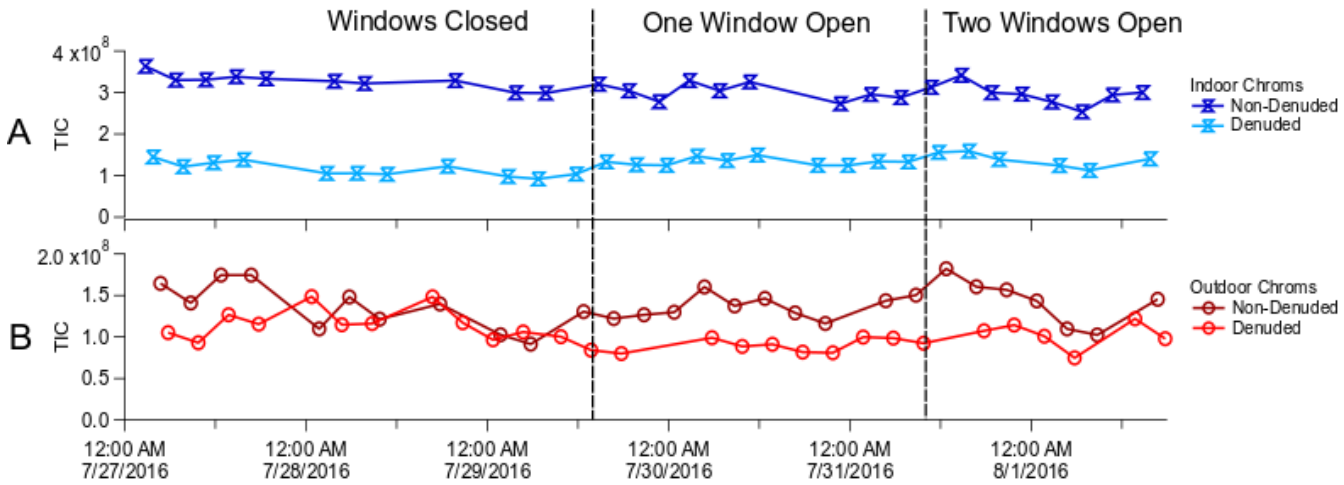

Figure S11. Total ion counts (TICs) summed across the compound period (20-40 minutes of chromatogram) for (A) indoor chromatograms and (B) outdoor chromatograms. Ions were summed from 29-450 *m/z*.

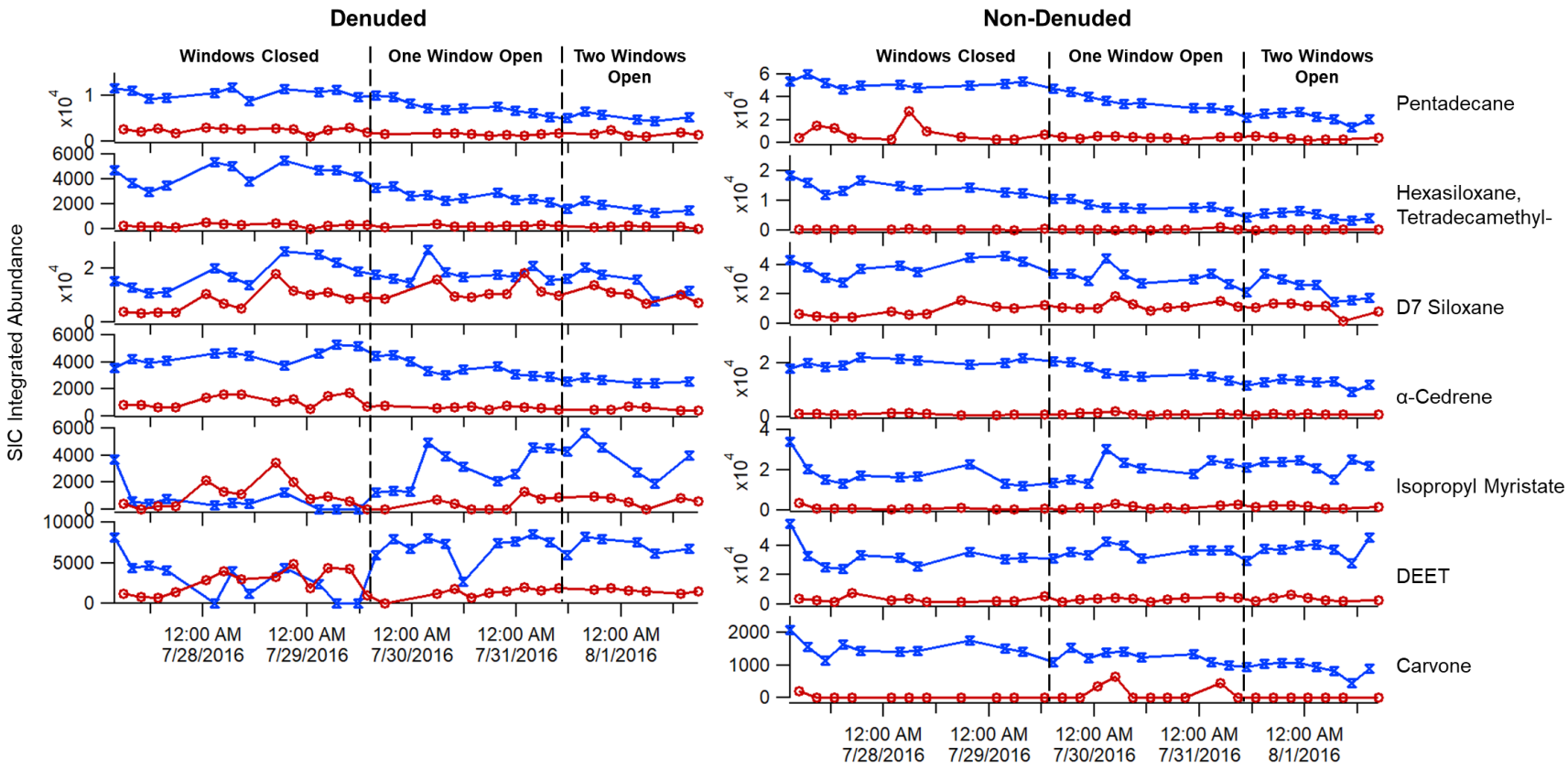

Figure S12. Raw single ion count (SIC) integrated time series for compounds displayed in Figure 7. Red circles denote outdoor abundances, and blue hourglasses denote indoor abundances.

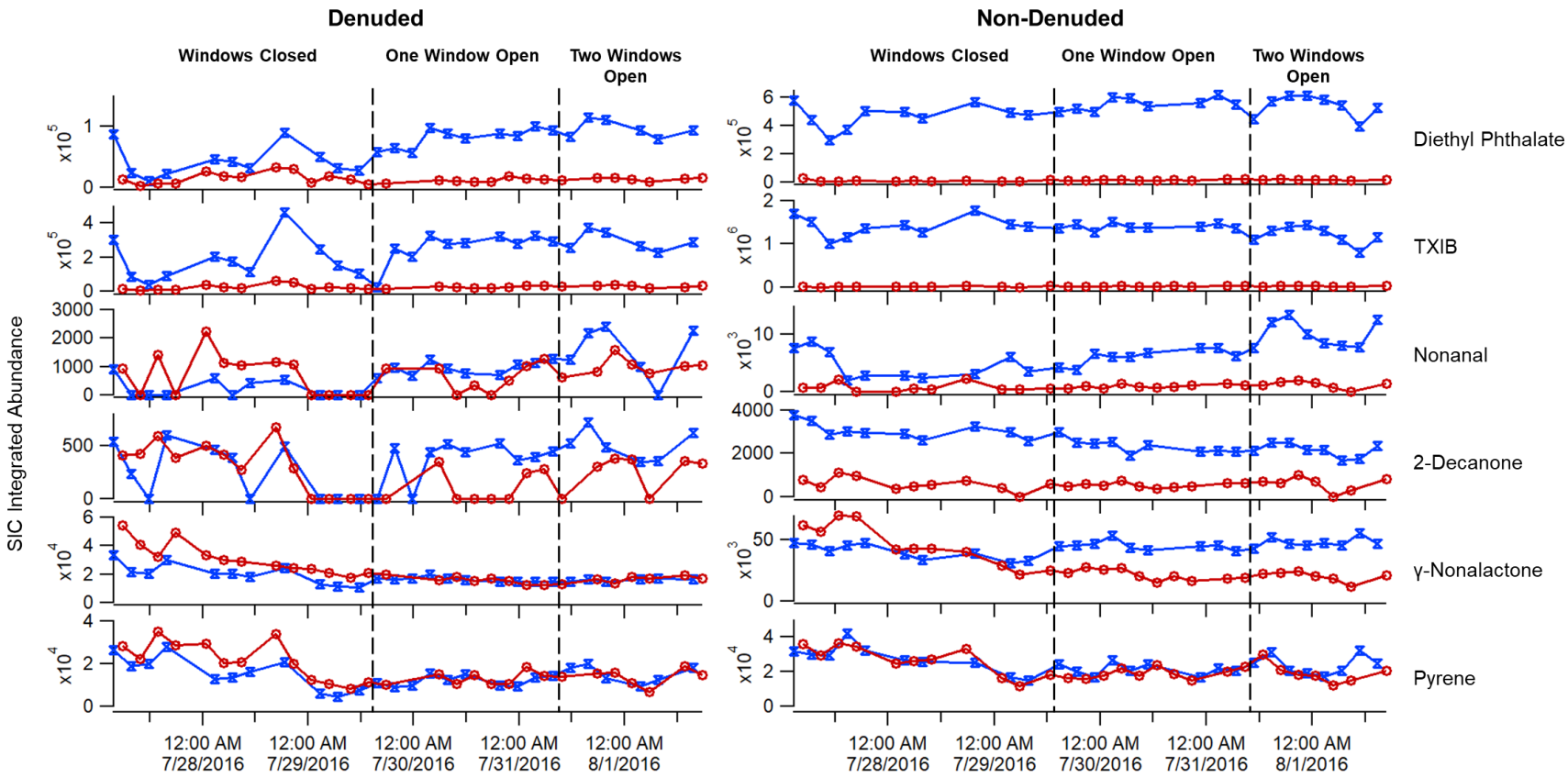

Figure S12, cont'd.

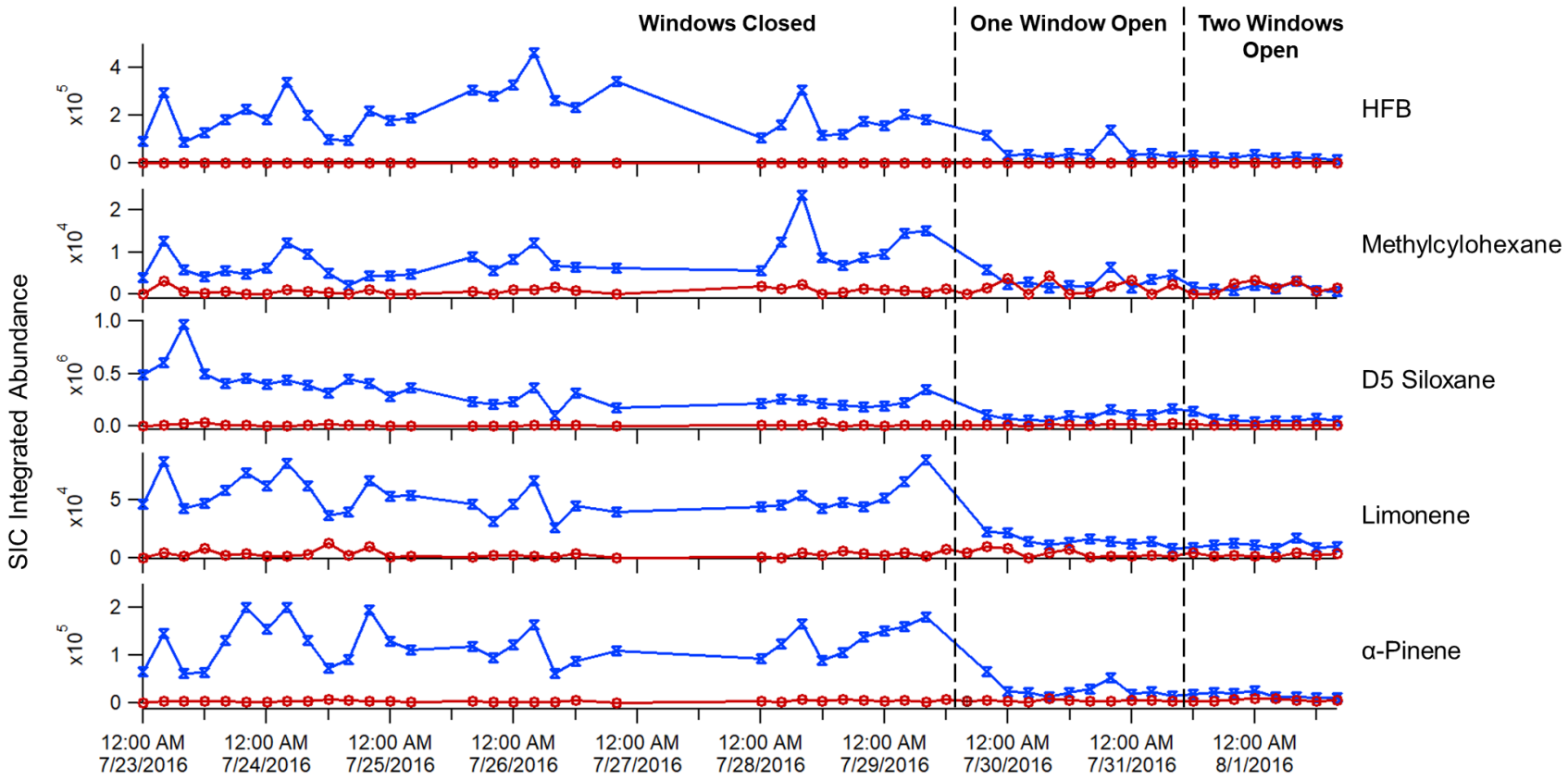

Figure S13. Raw SIC integrated time series for VOC adsorbent tube-measured compounds displayed in Figure 7. Red circles denote outdoor abundances, and blue hourglasses denote indoor abundances.

Section S8: VOC Adsorbent Tube Mass Concentrations

In this section, we provide indoor concentrations for key VOCs over each of the three main natural ventilation conditions (WC, 1WO, 2WO). Quantified concentrations (ppb) were obtained, integrated, and calibrated for mass using total ion count (TIC) chromatographic peaks. Subsequent integrations, used in PMF and additional analysis presented in the main document, were performed on single ion chromatograms (SICs) using the TAG ExploRer and iNtegration package software (TERN, version 2.1.10), which allows for improved identification of retention time shift and therefore a more accurate representation of compound trends over time. We correlate TERN-integrated peak areas to previously quantified mass concentrations and provide a corresponding R^2 to indicate the quality of the mass calibration (Table S6).

Table S6. Compounds quantified in indoor air VOC adsorbent tubes with average concentrations (ppb ± 1 standard deviation) across the three natural ventilation conditions (WC, 1WO, 2WO). R^2 values for correlated TERN integrations and mass concentrations are also provided.

Compound	Average Conc., WC (ppb)	Average Conc., 1WO (ppb)	Average Conc., 2WO (ppb)	R^2
Hexafluorobenzene[a]	27.6 ± 12	8.77 ± 6	5.20 ± 2	0.92
Octafluorotoluene[a]	7.38 ± 3	2.19 ± 2	1.25 ± 0.4	1
Furfuryl alcohol	0.08 ± 0.03	0.04 ± 0.01	0.03 ± 0.01	0.81
Phenol	2.95 ± 1	2.08 ± 0.9	2.81 ± 0.8	0.95
Menthol	3.45 ± 1	1.69 ± 0.7	1.12 ± 0.4	0.91
Formaldehyde	10.4 ± 2	13.3 ± 4	11.8 ± 1	NA[b]
Acetaldehyde	11.7 ± 4	11.2 ± 5	14.5 ± 10	NA[b]
Hexanal	13.9 ± 5	4.38 ± 1	5.31 ± 2	0.82
Heptanal	4.90 ± 2	2.25 ± 0.8	3.93 ± 2	0.43
Octanal	6.35 ± 2	2.92 ± 0.7	4.35 ± 1	0.68
Nonanal	17.3 ± 5	12.2 ± 3	22.6 ± 11	0.41
Decanal	3.52 ± 1	2.86 ± 0.8	5.12 ± 2	0.47
Benzaldehyde	8.49 ± 3	4.26 ± 0.7	3.86 ± 0.9	0.73
Methylcyclohexane	3.16 ± 2	1.67 ± 1	0.561 ± 0.6	0.92
Toluene	5.01 ± 2	2.21 ± 0.9	1.81 ± 0.3	0.99
p-Xylene	2.49 ± 0.8	1.11 ± 0.3	0.902 ± 0.2	0.97
o-Xylene	0.963 ± 0.4	0.332 ± 0.07	0.217 ± 0.1	0.89
Styrene	0.960 ± 0.4	0.310 ± 0.09	0.292 ± 0.1	0.94
Naphthalene	1.78 ± 0.5	0.992 ± 0.3	0.826 ± 0.1	0.94
Tetrachloroethylene	1.30 ± 0.8	0.591 ± 0.7	0.0509 ± 0.01	0.86
Acetone	78.5 ± 20	32.4 ± 20	25.0 ± 20	NA[b]
Acetophenone	1.39 ± 0.4	0.742 ± 0.4	0.626 ± 0.3	0.60
α-Pinene	17.0 ± 6	3.72 ± 2	2.15 ± 0.7	1
β-Pinene	2.97 ± 1	0.608 ± 0.4	0.400 ± 0.1	0.98
Limonene	7.37 ± 2	1.94 ± 0.6	1.26 ± 0.6	1
α-terpineol	8.64 ± 5	5.78 ± 2	7.07 ± 3	0.88
Cyclotetrasiloxane, octamethyl-	2.58 ± 1	0.866 ± 0.2	0.992 ± 0.5	0.96
Cyclopentasiloxane, decamethyl- (D5 Siloxane)	16.0 ± 6	4.69 ± 2	3.16 ± 1	1
Cyclohexasiloxane, dodecamethyl-	2.30 ± 0.6	1.56 ± 0.4	1.40 ± 0.3	0.50

[a] Gas-phase tracers used to determine AER (Figure S3).
[b] Concentrations were quantified using HPLC and were therefore not re-integrated using TERN

Section S9: Processed Integrated Abundances (I/I_{WC} and I/O)

Table S7. I/I_{WC} and estimated particle-phase fractions for 70 selected TAG compounds. For each point, error is reported as ± one standard deviation of normalized integrated abundances across the time period as a percent of the average value. Compounds marked with an asterisk designate those included in figures 7 and 8 within main text. Cells marked "ND" (no data) indicate that the value was not computed for reasons described in the table footnotes.

	I/I_{wc}						f_p		
	Denuded			Non-Denuded					
Compound Name	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**
1,2-Benzisothiazole	ND[a]	ND[a]	ND[a]	1 ± 7%	0.95 ± 7%	0.92 ± 16%	0 ± 0%	0.02 ± 77%	0.03 ± 34%
Benzyl Benzoate	1 ± 469%	7.66 ± 348%	17.88 ± 336%	1 ± 109%	1.31 ± 88%	1.91 ± 82%	0.01 ± 340%	0.05 ± 113%	0.09 ± 60%
Hexadecanoic acid, methyl ester	1 ± 284%	3.94 ± 210%	7.02 ± 206%	1 ± 64%	1.11 ± 61%	1.52 ± 55%	0.05 ± 206%	0.17 ± 74%	0.22 ± 56%
Isopropyl Myristate*	1 ± 209%	4.18 ± 156%	5.41 ± 152%	1 ± 50%	1.12 ± 45%	1.22 ± 38%	0.04 ± 152%	0.15 ± 56%	0.17 ± 38%
Nonanal*	1 ± 209%	4.19 ± 150%	6.80 ± 160%	1 ± 77%	1.34 ± 59%	2.19 ± 59%	0.05 ± 157%	0.15 ± 34%	0.15 ± 67%
Phthalic Acid, diisobutyl ester	1 ± 243%	7.24 ± 178%	10.89 ± 173%	1 ± 36%	1.41 ± 37%	1.86 ± 30%	0.05 ± 173%	0.24 ± 53%	0.28 ± 26%
Dimethyl Anthracene	1 ± 150%	3.11 ± 108%	2.93 ± 110%	1 ± 23%	1.12 ± 27%	1.29 ± 24%	0.14 ± 107%	0.38 ± 28%	0.32 ± 35%
Dibutyl Phthalate	1 ± 256%	7.64 ± 190%	14.52 ± 186%	1 ± 42%	1.50 ± 49%	2.23 ± 44%	0.06 ± 184%	0.30 ± 68%	0.38 ± 53%
Tricosane	1 ± 209%	0.72 ± 189%	1.59 ± 157%	1 ± 102%	0.62 ± 79%	1.00 ± 85%	0.20 ± 165%	0.23 ± 122%	0.32 ± 68%
Hedione	ND[a]	ND[a]	ND[a]	1 ± 447%	2.63 ± 327%	4.21 ± 319%	0 ± 0%	0.03 ± 227%	0.10 ± 75%
DEET*	1 ± 120%	2.31 ± 88%	2.35 ± 86%	1 ± 38%	1.11 ± 29%	1.13 ± 31%	0.09 ± 89%	0.19 ± 26%	0.19 ± 20%
9,10-Anthracenedione	1 ± 344%	1.23 ± 294%	2.81 ± 258%	1 ± 136%	1.33 ± 151%	2.15 ± 116%	0.39 ± 262%	0.36 ± 202%	0.52 ± 108%
Isopropyl Palmitate	1 ± 330%	5.10 ± 251%	15.53 ± 244%	1 ± 111%	1.22 ± 91%	2.06 ± 97%	0.03 ± 246%	0.15 ± 105%	0.26 ± 93%
2,2,4-Trimethyl-3,3-pentanediol monoisobutyrate	ND[a,b]	ND[a,b]	ND[a,b]	1 ± 360%	1.85 ± 268%	3.60 ± 259%	0 ± 0%	0 ± 0%	0 ± 0%
Octanoic Acid	1 ± 329%	7.85 ± 237%	13.96 ± 235%	1 ± 83%	3.07 ± 67%	4.88 ± 63%	0.04 ± 240%	0.10 ± 55%	0.12 ± 35%
Tetracosane	1 ± 271%	0.27 ± 299%	1.72 ± 220%	1 ± 150%	0.39 ± 152%	1.16 ± 123%	0.12 ± 219%	0.08 ± 254%	0.18 ± 126%
5,9-Undecadien-2-one, 6,10-dimethyl-	ND[a]	ND[a]	ND[a]	1 ± 49%	1.09 ± 42%	1.14 ± 59%	0 ± 0%	0.05 ± 113%	0.15 ± 68%
Benzo[c]phenanthrene	1 ± 207%	0.03 ± 348%	0.17 ± 285%	1 ± 138%	0.29 ± 137%	0.52 ± 108%	0.51 ± 176%	0.06 ± 331%	0.16 ± 249%
2-Propanol, 1-[1-methyl-2-(2-propenyloxy)ethoxy]-	ND[a,b]	ND[a,b]	ND[a,b]	1 ± 209%	1.14 ± 152%	1.17 ± 156%	0 ± 0%	0 ± 0%	0 ± 0%

Compound Name	I/I_{wc}						f_p		
	Denuded			Non-Denuded					
	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO
Bis-(2-ethylhexyl)-phthalate	ND[a]	ND[a]	ND[a]	1 ± 447%	1.64 ± 337%	7.93 ± 326%	0 ± 0%	0 ± 0%	0.18 ± 154%
Pentacosane	1 ± 317%	0 ± 0%	2.01 ± 280%	1 ± 179%	0.21 ± 216%	0.93 ± 163%	0.08 ± 257%	0 ± 0%	0.17 ± 197%
Benzophenone	1 ± 25%	1.38 ± 19%	1.51 ± 21%	1 ± 100%	1.97 ± 73%	2.06 ± 76%	1.44 ± 73%	1.01 ± 20%	1.05 ± 29%
Benzoic acid, 2-ethylhexyl ester	1 ± 40%	1.36 ± 29%	1.34 ± 31%	1 ± 14%	0.97 ± 10%	0.85 ± 17%	0.15 ± 30%	0.21 ± 9%	0.24 ± 20%
alpha cedrene*	1 ± 18%	0.81 ± 21%	0.59 ± 14%	1 ± 10%	0.83 ± 17%	0.62 ± 14%	0.22 ± 14%	0.21 ± 23%	0.21 ± 13%
Benzene, (1-butyloctyl)-	1 ± 8%	0.81 ± 15%	0.65 ± 9%	1 ± 12%	0.78 ± 14%	0.57 ± 15%	0.26 ± 10%	0.27 ± 18%	0.30 ± 14%
Phytane	1 ± 39%	1.19 ± 28%	0.86 ± 29%	1 ± 15%	0.80 ± 14%	0.62 ± 14%	0.26 ± 29%	0.38 ± 12%	0.36 ± 12%
Benzene, (1-pentylheptyl)-	1 ± 14%	0.81 ± 15%	0.64 ± 10%	1 ± 14%	0.77 ± 15%	0.56 ± 17%	0.24 ± 14%	0.25 ± 16%	0.28 ± 15%
Dimethyl Phthalate	1 ± 55%	1.58 ± 41%	1.88 ± 41%	1 ± 19%	1.13 ± 16%	1.12 ± 23%	0.11 ± 41%	0.15 ± 16%	0.18 ± 24%
Octanal, 2-phenylmethylene-	1 ± 61%	2.00 ± 49%	2.06 ± 47%	1 ± 17%	1.00 ± 17%	0.91 ± 16%	0.07 ± 45%	0.14 ± 26%	0.16 ± 23%
Heptadecane	1 ± 18%	0.93 ± 16%	0.73 ± 16%	1 ± 11%	0.76 ± 14%	0.53 ± 14%	0.21 ± 15%	0.25 ± 16%	0.29 ± 15%
Diethyl Phthalate*	1 ± 86%	1.94 ± 64%	2.28 ± 63%	1 ± 26%	1.18 ± 20%	1.15 ± 23%	0.09 ± 63%	0.15 ± 21%	0.18 ± 21%
Pentadecane*	1 ± 14%	0.71 ± 22%	0.50 ± 18%	1 ± 10%	0.70 ± 20%	0.43 ± 21%	0.20 ± 12%	0.21 ± 27%	0.24 ± 25%
Octadecane	1 ± 54%	1.24 ± 39%	0.96 ± 39%	1 ± 14%	0.74 ± 14%	0.57 ± 13%	0.16 ± 40%	0.27 ± 12%	0.27 ± 13%
TXIB*	1 ± 96%	1.44 ± 77%	1.63 ± 71%	1 ± 23%	0.99 ± 17%	0.85 ± 23%	0.13 ± 70%	0.18 ± 36%	0.24 ± 26%
Pentadecane, 3-methyl-	1 ± 22%	0.58 ± 27%	0.43 ± 29%	1 ± 12%	0.65 ± 25%	0.41 ± 27%	0.21 ± 18%	0.18 ± 32%	0.22 ± 36%
Tonalid	1 ± 83%	2.45 ± 61%	2.55 ± 65%	1 ± 21%	0.98 ± 18%	0.93 ± 16%	0.12 ± 60%	0.29 ± 19%	0.32 ± 28%
beta cedrene	1 ± 25%	1.09 ± 18%	1.02 ± 20%	1 ± 29%	0.91 ± 25%	0.77 ± 27%	0.16 ± 27%	0.19 ± 16%	0.20 ± 20%
Carvone*	ND[a,b]	ND[a,b]	ND[a,b]	1 ± 23%	0.82 ± 22%	0.59 ± 28%	0 ± 0%	0 ± 0%	0 ± 0%
Cycloheptasiloxane, tetradecamethyl-*	1 ± 44%	1.04 ± 37%	0.85 ± 43%	1 ± 22%	0.84 ± 22%	0.61 ± 34%	0.46 ± 35%	0.56 ± 25%	0.65 ± 43%
Nonadecane	1 ± 75%	1.54 ± 55%	1.34 ± 55%	1 ± 21%	0.78 ± 18%	0.71 ± 18%	0.18 ± 55%	0.35 ± 18%	0.33 ± 18%
2-Decanone*	1 ± 145%	1.45 ± 116%	2.05 ± 106%	1 ± 17%	0.77 ± 19%	0.71 ± 19%	0.08 ± 103%	0.15 ± 56%	0.23 ± 32%
Sandaracopimaradiene	1 ± 66%	2.10 ± 53%	1.94 ± 51%	1 ± 14%	0.85 ± 24%	0.76 ± 24%	0.20 ± 47%	0.50 ± 33%	0.52 ± 29%

Compound Name	I/I_{wc}						f_p		
	Denuded			Non-Denuded					
	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO
Dodecanoic acid, methyl ester	1 ± 75%	0.91 ± 55%	1.05 ± 59%	1 ± 27%	0.82 ± 22%	0.70 ± 34%	0.11 ± 56%	0.12 ± 18%	0.16 ± 39%
Isobutanoic acid, phenoxyethanol ester	1 ± 108%	1.61 ± 80%	2.10 ± 81%	1 ± 54%	1.06 ± 40%	1.01 ± 45%	0.08 ± 85%	0.13 ± 28%	0.17 ± 37%
Dodecanal	1 ± 259%	2.93 ± 185%	3.56 ± 184%	1 ± 30%	0.80 ± 23%	0.74 ± 24%	0.03 ± 184%	0.12 ± 30%	0.16 ± 22%
Hexasiloxane, tetradecamethyl-*	1 ± 26%	0.61 ± 25%	0.39 ± 28%	1 ± 20%	0.56 ± 23%	0.34 ± 28%	0.30 ± 24%	0.33 ± 25%	0.35 ± 32%
Isophorone	ND[a,b]	ND[a,b]	ND[a,b]	1 ± 52%	0.91 ± 39%	0.60 ± 61%	0 ± 0%	0 ± 0%	0 ± 0%
Galaxolide	1 ± 117%	2.54 ± 88%	2.55 ± 87%	1 ± 37%	0.86 ± 33%	0.80 ± 31%	0.06 ± 87%	0.19 ± 35%	0.21 ± 30%
Limonene	1 ± 59%	0.46 ± 48%	0.40 ± 63%	1 ± 19%	0.49 ± 34%	0.21 ± 54%	0.19 ± 44%	0.18 ± 40%	0.36 ± 71%
Ethanol, 2-phenoxy-	ND[a,b]	ND[a,b]	ND[a,b]	1 ± 45%	1.29 ± 37%	1.62 ± 43%	0 ± 0%	0 ± 0%	0 ± 0%
1(2H)-Naphthalenone, 3,4-dihydro-	1 ± 84%	1.53 ± 62%	1.91 ± 65%	1 ± 26%	1.24 ± 20%	1.68 ± 29%	0.55 ± 62%	0.68 ± 19%	0.62 ± 35%
Fluoranthene	1 ± 29%	0.73 ± 22%	0.83 ± 26%	1 ± 27%	0.90 ± 24%	1.03 ± 30%	0.66 ± 28%	0.54 ± 17%	0.53 ± 29%
1-Tetradecene	1 ± 33%	1.15 ± 26%	1.37 ± 34%	1 ± 6%	0.89 ± 8%	0.87 ± 15%	0.30 ± 24%	0.38 ± 14%	0.46 ± 29%
Pyrene*	1 ± 70%	0.76 ± 54%	0.96 ± 57%	1 ± 40%	0.78 ± 32%	0.87 ± 37%	0.58 ± 57%	0.56 ± 26%	0.64 ± 36%
Coumarin	1 ± 469%	5.86 ± 348%	11.83 ± 335%	1 ± 19%	1.04 ± 15%	1.26 ± 21%	0.02 ± 332%	0.13 ± 106%	0.22 ± 53%
9H-Fluoren-9-one	1 ± 25%	1.01 ± 20%	1.06 ± 26%	1 ± 9%	0.98 ± 10%	1.00 ± 12%	0.33 ± 19%	0.34 ± 12%	0.35 ± 22%
Heptylbenzene	1 ± 38%	1.10 ± 29%	1.10 ± 31%	1 ± 22%	0.84 ± 23%	0.78 ± 21%	0.36 ± 31%	0.47 ± 21%	0.51 ± 21%
Dibenzofuran	1 ± 19%	0.93 ± 17%	0.89 ± 21%	1 ± 6%	0.89 ± 8%	0.80 ± 16%	0.29 ± 14%	0.31 ± 12%	0.33 ± 22%
1H-Indene, 2,3-dihydro-1,1,3-trimethyl-3-phenyl-	1 ± 141%	0.55 ± 123%	0.93 ± 100%	1 ± 52%	0.68 ± 41%	0.87 ± 44%	0.30 ± 106%	0.24 ± 74%	0.32 ± 27%
Heneicosane	1 ± 87%	1.33 ± 67%	1.88 ± 76%	1 ± 48%	0.92 ± 43%	1.03 ± 52%	0.25 ± 71%	0.36 ± 37%	0.45 ± 60%
Phenanthrene	1 ± 25%	1.12 ± 20%	1.12 ± 19%	1 ± 11%	1.04 ± 10%	0.99 ± 12%	0.22 ± 20%	0.23 ± 10%	0.25 ± 12%
gamma-nonalactone*	1 ± 50%	0.80 ± 37%	0.79 ± 36%	1 ± 22%	1.13 ± 17%	1.19 ± 18%	0.51 ± 39%	0.36 ± 13%	0.33 ± 10%
Ethanone, 1-(4-methylphenyl)-	1 ± 31%	1.29 ± 34%	1.45 ± 26%	1 ± 15%	0.90 ± 15%	0.83 ± 13%	0.20 ± 25%	0.29 ± 28%	0.35 ± 16%
Phthalic Acid	1 ± 25%	1.14 ± 22%	1.08 ± 25%	1 ± 41%	0.63 ± 39%	0.61 ± 37%	0.27 ± 34%	0.50 ± 29%	0.49 ± 29%
Benzene, 1,1'-cyclohexylidenebis-	1 ± 72%	1.51 ± 53%	1.61 ± 51%	1 ± 12%	0.92 ± 12%	1.01 ± 11%	0.36 ± 51%	0.60 ± 17%	0.58 ± 10%

Compound Name	I/I_{wc}						f_p		
	Denuded			Non-Denuded					
	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO
Docosane	1 ± 125%	1.39 ± 91%	2.07 ± 97%	1 ± 78%	1.00 ± 58%	1.31 ± 67%	0.24 ± 104%	0.33 ± 29%	0.37 ± 55%
Biphenylene	1 ± 20%	0.93 ± 22%	0.95 ± 26%	1 ± 22%	1.18 ± 66%	1.11 ± 58%	0.87 ± 21%	0.69 ± 66%	0.75 ± 59%
Cyclooctasiloxane, hexadecamethyl-	1 ± 29%	1.15 ± 26%	0.95 ± 29%	1 ± 28%	0.82 ± 24%	0.64 ± 27%	0.23 ± 29%	0.33 ± 21%	0.35 ± 27%
Benzene, (1-methyltridecyl)-	1 ± 75%	1.98 ± 59%	2.21 ± 58%	1 ± 22%	0.94 ± 26%	1.04 ± 23%	0.21 ± 56%	0.44 ± 32%	0.44 ± 29%
Chrysene	1 ± 99%	0.35 ± 123%	0.69 ± 87%	1 ± 101%	0.47 ± 78%	0.57 ± 83%	0.40 ± 100%	0.30 ± 106%	0.49 ± 67%
Eicosane	1 ± 68%	1.55 ± 59%	1.76 ± 63%	1 ± 31%	0.89 ± 39%	2.38 ± 189%	0.22 ± 53%	0.38 ± 46%	0.16 ± 192%
Levoglucosenone	1 ± 469%	7.82 ± 336%	10.14 ± 334%	ND[a,b]	ND[a,b]	ND[a,b]	ND[c]	1.20 ± 141%	1.56 ± 151%

[a] I/I_{WC} was not calculated for this condition because $I_{WC} = 0$.
[b] I/I_{WC} was not calculated for this condition because $I_{WC} = 0$ and $I = 0$.
[c] f_p was not calculated for this condition because $I_{ND} = 0$.

Table S8. Indoor-to-outdoor ratios (*I/O*) and TAG-sulfate normalized indoor-to-outdoor ratios ($[I/O]_{i/m/z\ 64}$) for 70 selected TAG compounds. For each point, error is reported as ± one standard deviation as a percent of the average value. Compounds marked with an asterisk designate those included in figures 8 and 9 within main text. Cells marked "ND" (no data) indicate that the value was not computed for reasons described in the table footnotes.

	I/O						$[I/O]_{i/m/z64}$					
	Denuded			**Non-Denuded**			**Denuded**			**Non-Denuded**		
Compound Name	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**
1,2-Benzisothiazole	0 ± 0	20.35 ± 310%	7.64 ± 207%	207.91 ± 138%	59.59 ± 64%	99.85 ± 127%	0 ± 0	34.05 ± 315%	10.97 ± 225%	990.71 ± 152%	99.73 ± 87%	143.38 ± 153%
Benzyl Benzoate	0.54 ± 411%	ND[a]	45.07 ± 270%	42.40 ± 176%	40.25 ± 146%	23.09 ± 74%	2.59 ± 415%	ND[a]	64.72 ± 283%	202.02 ± 187%	67.36 ± 157%	33.16 ± 114%
Hexadecanoic acid, methyl ester	0.30 ± 218%	2.41 ± 120%	2.63 ± 60%	5.54 ± 102%	4.89 ± 79%	5.94 ± 55%	1.42 ± 227%	4.04 ± 134%	3.77 ± 105%	26.38 ± 120%	8.18 ± 99%	8.53 ± 102%
Isopropyl Myristate*	0.65 ± 174%	8.34 ± 142%	5.88 ± 61%	18.41 ± 98%	12.74 ± 65%	13.95 ± 45%	3.08 ± 185%	13.95 ± 154%	8.45 ± 106%	87.71 ± 116%	21.32 ± 88%	20.02 ± 98%
Nonanal*	0.30 ± 178%	1.67 ± 93%	1.53 ± 70%	6.18 ± 114%	6.37 ± 39%	8.35 ± 61%	1.42 ± 188%	2.80 ± 110%	2.20 ± 111%	29.44 ± 130%	10.66 ± 71%	11.99 ± 106%
Phthalic Acid, diisobutyl ester	0.32 ± 187%	2.08 ± 75%	2.41 ± 27%	5.01 ± 88%	2.53 ± 54%	2.83 ± 23%	1.53 ± 197%	3.49 ± 96%	3.47 ± 91%	23.86 ± 108%	4.24 ± 80%	4.06 ± 89%
Dimethyl Anthracene	0.42 ± 114%	2.00 ± 40%	1.91 ± 59%	3.66 ± 45%	3.06 ± 32%	4.07 ± 34%	1.99 ± 130%	3.35 ± 71%	2.74 ± 105%	17.45 ± 78%	5.12 ± 68%	5.84 ± 93%
Dibutyl Phthalate	0.22 ± 199%	1.14 ± 75%	1.32 ± 49%	2.34 ± 68%	1.52 ± 59%	1.45 ± 40%	1.03 ± 209%	1.91 ± 96%	1.90 ± 99%	11.14 ± 93%	2.54 ± 84%	2.08 ± 95%
Tricosane	0.30 ± 171%	1.39 ± 179%	1.08 ± 78%	1.25 ± 112%	2.25 ± 76%	1.66 ± 69%	1.41 ± 183%	2.33 ± 189%	1.55 ± 116%	5.94 ± 128%	3.77 ± 96%	2.39 ± 111%
Hedione	ND[a,b]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a,b]	ND[a]	ND[a]	ND[a]	ND[a]	ND[a]
DEET*	1.12 ± 101%	5.71 ± 55%	4.43 ± 20%	10.07 ± 62%	10.07 ± 31%	10.15 ± 51%	5.31 ± 119%	9.56 ± 81%	6.36 ± 89%	48.01 ± 88%	16.85 ± 67%	14.57 ± 100%
9,10-Anthracenedione	0.25 ± 283%	0.53 ± 234%	0.78 ± 99%	0.70 ± 139%	1.71 ± 154%	1.66 ± 97%	1.17 ± 290%	0.89 ± 242%	1.12 ± 131%	3.34 ± 152%	2.85 ± 165%	2.38 ± 130%
Isopropyl Palmitate	0.14 ± 273%	1.56 ± 154%	1.58 ± 90%	2.45 ± 115%	2.62 ± 73%	2.19 ± 91%	0.66 ± 280%	2.61 ± 165%	2.27 ± 125%	11.69 ± 132%	4.38 ± 94%	3.14 ± 125%
2,2,4-Trimethyl-3,3-pentanediol monoisobutyrate	ND[a,b]	ND[a,b]	ND[a,b]	ND[a]	ND[a]	ND[a]	ND[a,b]	ND[a,b]	ND[a,b]	ND[a]	ND[a]	ND[a]
Octanoic Acid	0.10 ± 245%	1.08 ± 93%	0.90 ± 54%	0.64 ± 236%	6.19 ± 41%	4.58 ± 91%	0.46 ± 253%	1.80 ± 111%	1.30 ± 102%	3.05 ± 244%	10.36 ± 72%	6.58 ± 125%
Tetracosane	0.16 ± 220%	0.55 ± 280%	1.07 ± 139%	1.22 ± 152%	4.42 ± 206%	3.19 ± 105%	0.77 ± 229%	0.93 ± 286%	1.54 ± 164%	5.80 ± 165%	7.40 ± 215%	4.59 ± 136%

Compound Name	*I/O*						$[I/O]_{i/m/z64}$					
	Denuded			Non-Denuded			Denuded			Non-Denuded		
	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO
5,9-Undecadien-2-one, 6,10-dimethyl-	ND[a,b]	ND[a]	ND[a]	8.45 ± 175%	ND[a]	ND[a]	ND[a,b]	ND[a]	ND[a]	40.28 ± 186%	ND[a]	ND[a]
Benzo[c]phenanthrene	0.49 ± 171%	0.27 ± 351%	0.75 ± 299%	0.92 ± 125%	2.24 ± 188%	1.34 ± 85%	2.33 ± 182%	0.46 ± 356%	1.08 ± 311%	4.38 ± 140%	3.76 ± 198%	1.92 ± 121%
2-Propanol, 1-[1-methyl-2-(2-propenyloxy)ethoxy]-	ND[a,b]	ND[a,b]	ND[a,b]	ND[a]	ND[a]	ND[a]	ND[a,b]	ND[a,b]	ND[a,b]	ND[a]	ND[a]	ND[a]
Di-(2-ethylhexyl)-phthalate	0 ± 0	ND[a,b]	1.62 ± 159%	5.43 ± 458%	10.65 ± 256%	4.77 ± 114%	0 ± 0	ND[a,b]	2.33 ± 181%	25.87 ± 463%	17.82 ± 263%	6.85 ± 143%
Pentacosane	0.10 ± 266%	ND[a,b]	1.25 ± 226%	1.29 ± 195%	8.79 ± 361%	7.24 ± 157%	0.48 ± 273%	ND[a,b]	1.79 ± 242%	6.13 ± 205%	14.71 ± 366%	10.39 ± 179%
Benzophenone	1.32 ± 52%	3.24 ± 39%	3.23 ± 22%	1.04 ± 80%	2.19 ± 24%	2.39 ± 33%	6.30 ± 82%	5.42 ± 71%	4.64 ± 89%	4.98 ± 102%	3.67 ± 64%	3.44 ± 93%
Benzoic acid, 2-ethylhexyl ester	3.72 ± 64%	8.18 ± 21%	6.79 ± 19%	36.83 ± 33%	22.02 ± 19%	21.02 ± 20%	17.71 ± 90%	13.69 ± 63%	9.75 ± 88%	175.51 ± 71%	36.85 ± 62%	30.19 ± 89%
alpha cedrene*	3.89 ± 39%	5.40 ± 22%	5.00 ± 21%	19.32 ± 29%	15.04 ± 38%	13.54 ± 27%	18.55 ± 74%	9.03 ± 63%	7.18 ± 89%	92.04 ± 69%	25.17 ± 71%	19.44 ± 90%
Benzene, (1-butyloctyl)-	5.01 ± 46%	7.31 ± 30%	5.75 ± 33%	21.58 ± 28%	14.83 ± 21%	15.46 ± 21%	23.86 ± 78%	12.23 ± 66%	8.26 ± 93%	102.81 ± 69%	24.82 ± 63%	22.20 ± 89%
Phytane	1.97 ± 65%	3.99 ± 104%	5.75 ± 10%	10.71 ± 37%	7.78 ± 16%	9.20 ± 15%	9.39 ± 90%	6.68 ± 120%	8.26 ± 87%	51.01 ± 73%	13.03 ± 61%	13.21 ± 88%
Benzene, (1-pentylheptyl)-	5.44 ± 53%	8.54 ± 25%	7.19 ± 16%	21.33 ± 37%	14.70 ± 31%	15.45 ± 21%	25.91 ± 82%	14.30 ± 64%	10.32 ± 88%	101.65 ± 73%	24.61 ± 67%	22.18 ± 89%
Dimethyl Phthalate	3.53 ± 96%	16.93 ± 122%	7.09 ± 36%	49.82 ± 37%	35.05 ± 23%	29.81 ± 29%	16.82 ± 115%	28.34 ± 136%	10.18 ± 94%	237.39 ± 73%	58.66 ± 64%	42.81 ± 91%
Octanal, 2-phenylmethylene-	1.53 ± 66%	6.72 ± 48%	6.29 ± 28%	32.45 ± 47%	21.83 ± 33%	4.59 ± 217%	7.29 ± 91%	11.24 ± 76%	9.03 ± 91%	154.63 ± 79%	36.53 ± 68%	6.58 ± 233%
Heptadecane	4.64 ± 39%	8.22 ± 15%	6.49 ± 27%	10.78 ± 52%	11.57 ± 20%	10.47 ± 37%	22.12 ± 74%	13.76 ± 61%	9.31 ± 90%	51.38 ± 82%	19.37 ± 63%	15.04 ± 94%
Diethyl Phthalate*	2.61 ± 86%	7.38 ± 43%	6.95 ± 22%	45.31 ± 63%	35.96 ± 24%	31.67 ± 27%	12.46 ± 106%	12.35 ± 73%	9.98 ± 89%	215.91 ± 89%	60.18 ± 64%	45.48 ± 90%
Pentadecane*	4.24 ± 25%	4.75 ± 25%	3.17 ± 33%	6.06 ± 87%	7.88 ± 29%	6.03 ± 39%	20.19 ± 68%	7.95 ± 64%	4.55 ± 92%	28.86 ± 107%	13.18 ± 66%	8.66 ± 95%
Octadecane	1.91 ± 66%	6.92 ± 20%	5.96 ± 22%	12.51 ± 37%	9.29 ± 16%	10.16 ± 18%	9.10 ± 91%	11.59 ± 63%	8.56 ± 89%	59.61 ± 73%	15.55 ± 61%	14.60 ± 88%

Compound Name	*I/O*						$[I/O]_{i/m/z64}$					
	Denuded			Non-Denuded			Denuded			Non-Denuded		
	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO
TXIB*	7.45 ± 99%	11.05 ± 48%	9.80 ± 26%	81.55 ± 47%	48.20 ± 29%	39.03 ± 31%	35.48 ± 117%	18.50 ± 76%	14.07 ± 90%	388.57 ± 79%	80.67 ± 66%	56.04 ± 92%
Pentadecane, 3-methyl-	8.34 ± 33%	9.45 ± 50%	10.10 ± 76%	17.69 ± 91%	15.59 ± 75%	21.15 ± 62%	39.72 ± 71%	15.82 ± 77%	14.50 ± 115%	84.28 ± 111%	26.09 ± 96%	30.37 ± 106%
Tonalid	1.25 ± 86%	6.21 ± 37%	6.60 ± 32%	15.92 ± 46%	8.99 ± 23%	9.49 ± 19%	5.95 ± 106%	10.39 ± 70%	9.48 ± 92%	75.87 ± 78%	15.05 ± 64%	13.62 ± 88%
beta cedrene	2.62 ± 34%	8.09 ± 32%	4.97 ± 25%	26.40 ± 47%	16.10 ± 34%	13.75 ± 38%	12.48 ± 72%	13.54 ± 67%	7.14 ± 90%	125.78 ± 79%	26.95 ± 68%	19.74 ± 94%
Carvone*	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	90.56 ± 332%	8.77 ± 169%	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	431.51 ± 338%	14.68 ± 180%	$ND^{a,b}$
Cycloheptasiloxane, tetradecamethyl-*	2.18 ± 64%	1.58 ± 35%	1.50 ± 38%	4.61 ± 48%	2.69 ± 29%	2.26 ± 50%	10.41 ± 90%	2.65 ± 69%	2.15 ± 94%	21.97 ± 79%	4.50 ± 66%	3.25 ± 100%
Nonadecane	0.94 ± 67%	3.52 ± 32%	3.58 ± 27%	6.14 ± 42%	4.74 ± 24%	6.22 ± 18%	4.46 ± 92%	5.88 ± 67%	5.15 ± 91%	29.26 ± 76%	7.94 ± 64%	8.93 ± 88%
2-Decanone*	0.75 ± 124%	3.70 ± 162%	2.04 ± 75%	5.16 ± 54%	4.33 ± 24%	3.61 ± 58%	3.56 ± 139%	6.20 ± 172%	2.93 ± 114%	24.61 ± 83%	7.25 ± 64%	5.18 ± 104%
Sandaracopimaradiene	0.73 ± 61%	2.09 ± 37%	2.80 ± 61%	4.28 ± 38%	2.84 ± 38%	4.22 ± 55%	3.50 ± 88%	3.49 ± 70%	4.02 ± 106%	20.40 ± 74%	4.76 ± 71%	6.06 ± 103%
Dodecanoic acid, methyl ester	4.66 ± 140%	15.22 ± 200%	ND^{a}	87.23 ± 147%	ND^{a}	91.22 ± 174%	22.22 ± 153%	25.47 ± 209%	ND^{a}	415.66 ± 160%	ND^{a}	130.99 ± 194%
Isobutanoic acid, phenoxyethanol ester	16.59 ± 355%	ND^{a}	ND^{a}	4.78 ± 226%	ND^{a}	ND^{a}	79.06 ± 360%	ND^{a}	ND^{a}	22.79 ± 235%	ND^{a}	ND^{a}
Dodecanal	0.58 ± 204%	5.03 ± 124%	3.91 ± 172%	12.25 ± 69%	9.63 ± 29%	7.61 ± 80%	2.78 ± 214%	8.42 ± 137%	5.61 ± 193%	58.38 ± 93%	16.12 ± 66%	10.93 ± 118%
Hexasiloxane, tetradecamethyl-*	15.56 ± 56%	10.49 ± 36%	10.03 ± 54%	46.82 ± 46%	27.66 ± 110%	29.30 ± 39%	74.13 ± 84%	17.56 ± 70%	14.40 ± 102%	223.12 ± 78%	46.28 ± 125%	42.08 ± 95%
Isophorone	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$
Galaxolide	1.42 ± 119%	9.27 ± 89%	11.51 ± 64%	55.07 ± 78%	6.73 ± 222%	29.74 ± 50%	6.77 ± 135%	15.51 ± 107%	16.53 ± 107%	262.43 ± 100%	11.26 ± 230%	42.70 ± 100%
Limonene	ND^{a}	ND^{a}	14.21 ± 269%	ND^{a}	60.20 ± 318%	5.00 ± 111%	ND^{a}	ND^{a}	20.40 ± 282%	ND^{a}	100.75 ± 323%	7.18 ± 141%
Ethanol, 2-phenoxy-	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	ND^{a}	ND^{a}	ND^{a}	$ND^{a,b}$	$ND^{a,b}$	$ND^{a,b}$	ND^{a}	ND^{a}	ND^{a}
1(2H)-Naphthalenone, 3,4-dihydro-	0.34 ± 70%	0.67 ± 25%	0.63 ± 38%	0.54 ± 32%	0.78 ± 14%	0.90 ± 50%	1.60 ± 94%	1.13 ± 64%	0.90 ± 94%	2.58 ± 71%	1.31 ± 61%	1.30 ± 100%

Compound Name	*I/O*						$[I/O]_{i/m/z64}$					
	Denuded			Non-Denuded			Denuded			Non-Denuded		
	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO	WC	1WO	2WO
Fluoranthene	0.91 ± 32%	0.94 ± 15%	1.09 ± 24%	0.99 ± 29%	1.06 ± 23%	1.31 ± 29%	4.33 ± 71%	1.58 ± 61%	1.57 ± 90%	4.71 ± 70%	1.77 ± 63%	1.88 ± 91%
1-Tetradecene	0.73 ± 37%	1.15 ± 24%	1.25 ± 30%	1.67 ± 26%	1.66 ± 13%	1.75 ± 33%	3.49 ± 73%	1.92 ± 64%	1.79 ± 91%	7.97 ± 68%	2.78 ± 61%	2.51 ± 92%
Pyrene*	0.71 ± 63%	0.94 ± 31%	1.10 ± 40%	1.03 ± 42%	1.12 ± 23%	1.24 ± 37%	3.37 ± 89%	1.57 ± 67%	1.58 ± 95%	4.89 ± 76%	1.88 ± 63%	1.78 ± 94%
Coumarin	0.07 ± 335%	0.64 ± 116%	0.73 ± 58%	1.22 ± 30%	1.31 ± 26%	1.55 ± 44%	0.35 ± 341%	1.08 ± 130%	1.05 ± 104%	5.82 ± 70%	2.20 ± 65%	2.22 ± 97%
9H-Fluoren-9-one	0.87 ± 28%	1.19 ± 16%	1.15 ± 33%	1.81 ± 24%	1.92 ± 18%	2.15 ± 40%	4.17 ± 69%	1.99 ± 61%	1.65 ± 93%	8.61 ± 68%	3.21 ± 62%	3.08 ± 95%
Heptylbenzene	0.78 ± 33%	1.30 ± 18%	1.29 ± 25%	1.68 ± 32%	1.67 ± 23%	1.73 ± 31%	3.71 ± 71%	2.18 ± 62%	1.86 ± 90%	7.98 ± 71%	2.79 ± 64%	2.49 ± 92%
Dibenzofuran	1.13 ± 23%	1.28 ± 21%	1.28 ± 24%	1.74 ± 25%	1.39 ± 40%	1.85 ± 39%	5.39 ± 67%	2.15 ± 63%	1.84 ± 90%	8.27 ± 68%	2.33 ± 72%	2.65 ± 95%
1H-Indene, 2,3-dihydro-1,1,3-trimethyl-3-phenyl-	0.54 ± 120%	1.62 ± 140%	1.09 ± 51%	1.14 ± 61%	1.44 ± 37%	1.32 ± 45%	2.56 ± 135%	2.71 ± 152%	1.56 ± 100%	5.45 ± 88%	2.41 ± 70%	1.89 ± 97%
Heneicosane	0.58 ± 81%	1.08 ± 33%	1.56 ± 76%	1.42 ± 65%	1.39 ± 38%	1.35 ± 61%	2.74 ± 103%	1.80 ± 68%	2.24 ± 115%	6.77 ± 91%	2.32 ± 71%	1.94 ± 106%
Phenanthrene	1.05 ± 29%	1.66 ± 29%	1.76 ± 16%	2.30 ± 30%	2.06 ± 33%	2.70 ± 33%	5.02 ± 70%	2.77 ± 66%	2.53 ± 88%	10.95 ± 70%	3.44 ± 68%	3.87 ± 93%
gamma-nonalactone*	0.64 ± 50%	0.99 ± 21%	0.98 ± 14%	0.88 ± 40%	2.12 ± 22%	2.35 ± 22%	3.05 ± 81%	1.66 ± 63%	1.41 ± 88%	4.18 ± 75%	3.54 ± 63%	3.38 ± 89%
Ethanone, 1-(4-methylphenyl)-	0.55 ± 43%	1.00 ± 51%	1.00 ± 27%	ND[a]	ND[a]	ND[a]	2.61 ± 76%	1.68 ± 78%	1.44 ± 90%	ND[a]	ND[a]	ND[a]
Phthalic Acid	0.77 ± 28%	1.06 ± 23%	1.01 ± 30%	2.20 ± 49%	1.64 ± 34%	1.40 ± 28%	3.68 ± 69%	1.78 ± 64%	1.45 ± 91%	10.50 ± 80%	2.75 ± 69%	2.01 ± 91%
Benzene, 1,1'-cyclohexylidenebis-	0.86 ± 62%	2.55 ± 31%	2.63 ± 25%	3.27 ± 19%	2.61 ± 15%	2.74 ± 20%	4.10 ± 88%	4.27 ± 67%	3.78 ± 90%	15.60 ± 66%	4.37 ± 61%	3.94 ± 89%
Docosane	0.40 ± 104%	1.11 ± 36%	1.13 ± 56%	1.33 ± 81%	1.60 ± 33%	1.45 ± 65%	1.92 ± 122%	1.86 ± 69%	1.62 ± 103%	6.32 ± 103%	2.69 ± 68%	2.09 ± 108%
Biphenylene	0.73 ± 62%	0.69 ± 49%	0.86 ± 25%	0.98 ± 41%	1.41 ± 72%	1.68 ± 59%	3.46 ± 89%	1.16 ± 77%	1.23 ± 90%	4.66 ± 76%	2.36 ± 93%	2.41 ± 104%
Cyclooctasiloxane, hexadecamethyl-	1.05 ± 90%	1.90 ± 24%	1.83 ± 26%	3.27 ± 34%	2.38 ± 24%	2.47 ± 28%	5.02 ± 110%	3.18 ± 64%	2.63 ± 90%	15.56 ± 72%	3.99 ± 64%	3.55 ± 91%

	I/O						$[I/O]_{i/m/z64}$					
	Denuded			**Non-Denuded**			**Denuded**			**Non-Denuded**		
	WC	**1WO**	**2WO**	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**
Benzene, (1-methyltridecyl)-	0.77 ± 63%	2.06 ± 34%	2.46 ± 27%	3.95 ± 46%	2.99 ± 33%	3.54 ± 19%	3.67 ± 89%	3.45 ± 68%	3.53 ± 90%	18.80 ± 78%	5.01 ± 68%	5.08 ± 88%
Chrysene	0.53 ± 96%	0.87 ± 140%	1.05 ± 72%	1.15 ± 91%	1.77 ± 56%	1.79 ± 73%	2.54 ± 115%	1.45 ± 152%	1.51 ± 113%	5.49 ± 111%	2.96 ± 81%	2.57 ± 113%
Eicosane	0.70 ± 55%	1.52 ± 39%	1.89 ± 45%	2.39 ± 54%	2.01 ± 39%	6.50 ± 188%	3.31 ± 84%	2.54 ± 71%	2.72 ± 97%	11.37 ± 83%	3.36 ± 71%	9.33 ± 207%
Levoglucosenone	0.07 ± 345%	0.53 ± 125%	0.59 ± 89%	0 ± 0%	0.36 ± 159%	0.46 ± 156%	0.34 ± 351%	0.89 ± 138%	0.84 ± 124%	0 ± 0%	0.59 ± 169%	0.66 ± 179%

[a] *I/O and* $[I/O]_i/[I/O]_{m/z64}$ values were not calculated for this condition because $O = 0$.
[b] *I/O and* $[I/O]_i/[I/O]_{m/z64}$ values were not calculated for this condition because $O = 0$ and $I = 0$.

Table S9. I/I_{WC} and indoor-to-outdoor ratios (I/O) averaged over the three natural ventilation conditions for VOCs measured in adsorbent tubes. For each point, error is reported as ± one standard deviation as a percent of the average value. Compounds marked with an asterisk designate those included in figures 8 and 9 within main text. Cells marked "ND" (no data) indicate that the value was not computed for reasons described in the table footnotes.

	***I*/*I*WC**			***I*/*O***		
Compound	**WC**	**1WO**	**2WO**	**WC**	**1WO**	**2WO**
Furfuryl Alcohol	1 ± 57%	0.45 ± 76%	0.26 ± 56%	ND[a]	ND[a]	ND[a]
Phenol	1 ± 54%	0.81 ± 48%	0.85 ± 43%	2.66 ± 84%	1.66 ± 53%	1.31 ± 35%
Menthol	1 ± 35%	0.50 ± 41%	0.33 ± 30%	71.91 ± 266%	81.22 ± 333%	7.36 ± 113%
Hexanal	1 ± 45%	0.38 ± 48%	0.33 ± 42%	7.37 ± 189%	8.61 ± 92%	5.34 ± 67%
Heptanal	1 ± 45%	0.54 ± 45%	0.68 ± 37%	5.02 ± 152%	4.93 ± 86%	6.11 ± 70%
Benzaldehyde	1 ± 44%	0.53 ± 44%	0.64 ± 35%	3.67 ± 117%	4.30 ± 83%	2.97 ± 60%
Octanal	1 ± 43%	0.75 ± 42%	1.11 ± 38%	2.12 ± 116%	3.76 ± 54%	3.19 ± 47%
Nonanal	1 ± 57%	0.78 ± 49%	1.15 ± 47%	1.45 ± 85%	2.32 ± 51%	1.57 ± 68%
Decanal	1 ± 41%	0.58 ± 38%	0.48 ± 36%	3.52 ± 76%	1.88 ± 47%	1.41 ± 31%
Methycyclohexane	1 ± 77%	0.39 ± 78%	0.18 ± 77%	10.72 ± 113%	2.04 ± 118%	0.93 ± 101%
Ethylcyclohexane	1 ± 51%	0.30 ± 89%	0.13 ± 93%	42.50 ± 380%	4.46 ± 193%	1.43 ± 155%
p-Xylene	1 ± 43%	0.41 ± 36%	0.32 ± 37%	2.92 ± 79%	0.84 ± 55%	0.77 ± 46%
o-Xylene	1 ± 48%	0.38 ± 39%	0.30 ± 40%	3.20 ± 88%	0.92 ± 54%	0.81 ± 41%
Styrene	1 ± 41%	0.37 ± 39%	0.28 ± 40%	18.88 ± 148%	5.05 ± 113%	4.29 ± 123%
Trimethylbenzene	1 ± 38%	0.57 ± 31%	0.42 ± 35%	1.79 ± 101%	0.70 ± 61%	0.63 ± 52%
Naphthalene	1 ± 38%	0.65 ± 38%	0.49 ± 31%	9.94 ± 61%	3.63 ± 64%	4.12 ± 43%
Tetrachloroethylene	1 ± 89%	0.29 ± 82%	0.02 ± 206%	52.10 ± 339%	10.10 ± 230%	0.32 ± 250%
Acetophenone	1 ± 40%	0.48 ± 62%	0.33 ± 106%	2.09 ± 137%	0.53 ± 87%	0.55 ± 128%
a-Pinene	1 ± 48%	0.23 ± 69%	0.13 ± 47%	35.08 ± 67%	5.96 ± 74%	2.67 ± 49%
3-Carene	1 ± 47%	0.28 ± 67%	0.14 ± 113%	55.49 ± 558%	ND[a]	ND[a]
a-Phellandrene	1 ± 48%	0.30 ± 48%	0.21 ± 43%	63.09 ± 261%	7.74 ± 191%	2.74 ± 71%
Limonene	1 ± 39%	0.28 ± 41%	0.21 ± 38%	16.76 ± 100%	4.03 ± 95%	4.26 ± 59%
g-Terpinene	1 ± 65%	0 ± 0%	0.04 ± 287%	59.11 ± 559%	ND[a]	0.58 ± 400%
Fenchol	1 ± 48%	0.40 ± 72%	0.19 ± 73%	ND[a]	ND[a]	ND[a]
Camphor	1 ± 47%	0.41 ± 56%	0.28 ± 38%	ND[a]	ND[a]	ND[a]
a-Terpineol	1 ± 105%	0.74 ± 83%	0.98 ± 89%	2.85 ± 129%	1.76 ± 84%	1.27 ± 71%

Compound	I/I_{WC}			I/O		
	WC	**1WO**	**2WO**	**WC**	**1WO**	**2WO**
Cyclotrisiloxane	1 ± 132%	0.54 ± 101%	0.77 ± 99%	1.69 ± 165%	0.46 ± 120%	1.04 ± 66%
Cyclotetrasiloxane	1 ± 62%	0.41 ± 51%	0.47 ± 56%	3.95 ± 100%	1.01 ± 97%	1.31 ± 59%
Cyclopentasiloxane	1 ± 70%	0.29 ± 63%	0.20 ± 69%	44.45 ± 112%	10.04 ± 78%	6.92 ± 52%
Cyclohexasiloxane	1 ± 48%	0.45 ± 40%	0.37 ± 41%	6.54 ± 60%	4.03 ± 82%	3.01 ± 32%
Hexafluorobenzene	1 ± 62%	0.25 ± 89%	0.12 ± 51%	1236.94 ± 180%	189.18 ± 146%	133.33 ± 191%

[a] *I/O* values were not calculated for this condition because $O = 0$.

Section S10: TAG Thermal Decomposition Analysis

The TAG thermal decomposition period (Figure 3) was used to evaluate two outdoor-originating species: sulfates (*m/z* 64) and isoprene epoxydiols (IEPOX; *m/z* 82). For certain ions in the decomposition period, including *m/z* 64 and *m/z* 82, we occasionally observed a detector artifact wherein signals abruptly dropped from above the detector threshold to zero before recovering to values above threshold in subsequent scans. To correct individual single ion chromatograms (SIC) for this effect, we took the average of the nearest five non-zero intensities on the left and on the right of the observed signal drop, then linearly interpolated between the left and right averages. If the interpolated value exceeded the detection limit for the ion, the value was substituted in place of the zero signal in the chromatogram; if not, the zero value was retained. Signals plotted in Figures S14 and S15 were obtained by integrating each SIC from minute 6-16 of TAG chromatographic analysis.

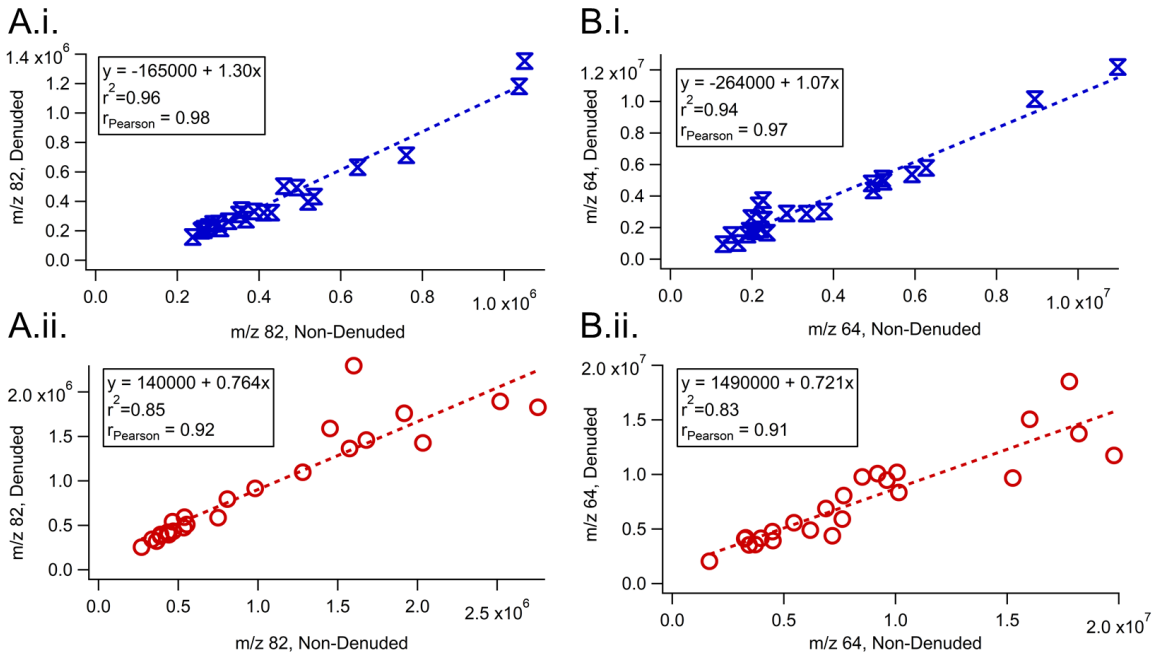

Figure S14. Integrated non-denuded vs denuded SICs for (A) *m/z* 82 and (B) *m/z* 64 across (i) indoor and (ii) outdoor chromatograms. The plotted signals were obtained by integrating each single ion chromatogram from minute 6-16 of TAG chromatographic analysis. To determine these correlations, denuded and non-denuded signals were paired such that collections took place one hour apart.

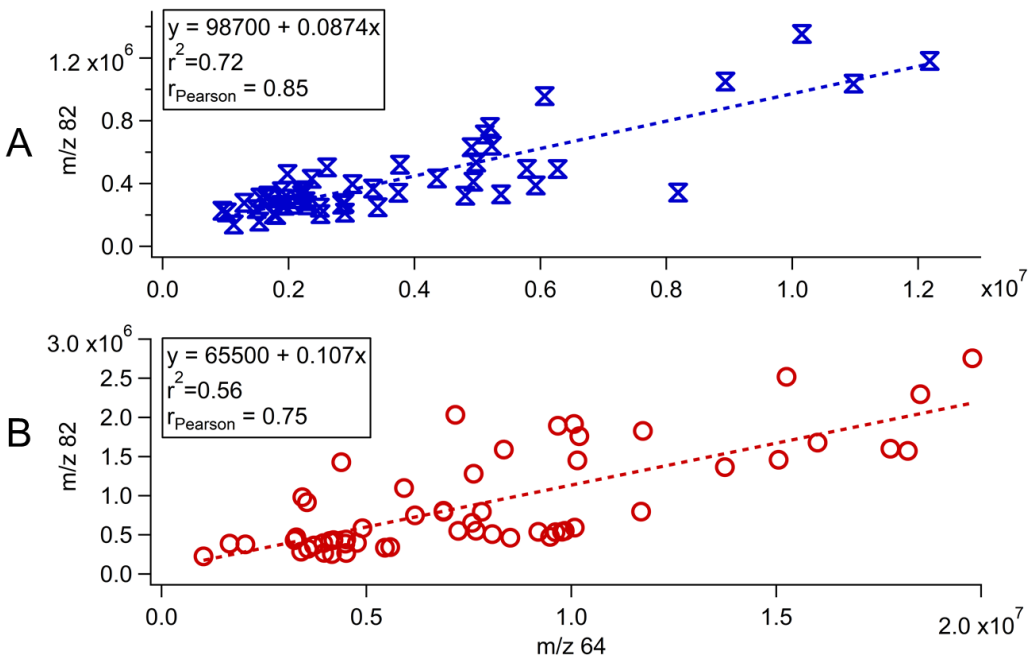

Figure S15. Integrated *m/z* 82 (IEPOX tracer) vs *m/z* 64 (sulfate tracer) signals across the TAG thermal decomposition period for (A) indoor and (B) outdoor chromatograms. The plotted signals were obtained by integrating each single ion chromatogram from minute 6-16 of TAG chromatographic analysis. Each point was obtained using one chromatogram. Because we found little difference between non-denuded and denuded decomposition signals for these ions (Figure S13), we assume negligible contribution from gas-phase IEPOX and sulfate species, and non-denuded and denuded signals are included together in each panel.

Section S11: Evaluation of Temperature- and Particle Concentration-Driven Phase Partitioning

As windows are opened, gas-to-particle phase partitioning of many S/IVOCs increases, potentially because particles infiltrating indoors from outdoor air act as a condensational sink. However, temperature gradients between the outdoor and indoor environment will also influence phase partitioning of S/IVOCs. In this section, we predict the relative contributions of increased particle concentrations and temperature gradients to overall observed phase partitioning within our simplified system.

The partitioning constant for a species i ($K_{p,i}$, m^3 μg^{-1}) relates the concentration of i in the gas and particle phases ($C_{g,i}$ and $C_{p,i}$, respectively, ng m^{-3}):

$$K_{p,i} = \frac{C_{p,i}/PM}{C_{g,i}} = \frac{\left(\frac{C_{OM}}{C_{Tot}}\right)760RT}{MW_{OM}\zeta_i P^{\circ}_{L,i}10^6} \quad \text{(S4)}$$

Here, PM is the concentration of total particulate matter (μg m^{-3}), C_{OM}/C_{Tot} is the ratio of concentration of organic matter to total aerosol concentration, R is the ideal gas constant (m^3 atm mol^{-1} K^{-1}), T is temperature (K), MW_{OM} is the average molecular weight of organic compounds within the aerosol (g mol^{-1}), ζ_i is the activity coefficient of compound i, which is inversely proportional to the compound's affinity for the particle phase, and $P_{L,i}°$ is the subcooled liquid vapor pressure at temperature T (torr).

The fraction of species i in the particle phase is defined in terms of $K_{p,i}$:

$$f_{p,i} = \frac{C_{p,i}}{C_{p,i}+C_{g,i}} = \frac{K_{p,i}PM}{K_{p,i}PM+1} \quad \text{(S5)}$$

In the following phase partitioning approximations, we choose four phthalates (dimethyl phthalate, diethyl phthalate, dibutyl phthalate, and bis(2-ethylhexyl)phthalate) as model compounds to assess partitioning for a range of relevant volatilities. Calculations are performed using particle concentration and temperature data from 00:00 7/31/2016-00:00 8/1/2016 (Figures 10C and S6A for concentration and temperature, respectively). This time frame was chosen because the second window was opened at 10:00 7/31/2016, driving the most significant changes in indoor particle concentrations. Furthermore, assessing a 24-hour period allows for evaluation of temperature gradient effects for a typical diurnal temperature cycle.

Several assumptions are made to simplify these phase partitioning calculations. First, we assume that changes in particle concentration and temperature gradients occur independently from one another; thus, when assessing particle concentration effects, we assume that temperature remains constant, and when assessing temperature effects, we assume a constant particle mass concentration. Second, when calculating $K_{p,i}$, we assume $P_{L,i}°$ to be the predicted subcooled liquid vapor pressure for the model compound (Table S2), MW_{OM} to be the molar mass of octadecane (in the middle of the volatility range measured by the TAG during this study, 254 g mol^{-1}), and ζ_i to be constant at 1. Based on $PM_{2.5}$ total mass and total organic carbon measurements measured during July 2016 at the St. Louis Blair Street EPA monitoring site,[14] C_{OM}/C_{Tot} is assumed to be 0.27, which constitutes a theoretical minimum value, since the fraction of organic matter will increase as indoor gas-phase S/IVOCs partition to the particle phase with window opening. As stated in the main text, spherical particles with a density of 1.2 g cm^{-3} are assumed to obtain mass concentrations from SMPS-measured number concentrations. Finally, for each case, we assume that at the final condition defined for the system, steady state is reached. Although several of these assumptions may not be fully accurate for the system, this simplified approach is sufficient to illustrate the relative magnitudes of particle concentration and temperature-driven phase partitioning effects.

Particle Concentration Effects

During the unoccupied study, indoor particle concentrations increase with window opening as outdoor particles infiltrate indoors. Therefore, we define the relevant change in $f_{p,i}$ ($\Delta f_{p,i}$) with respect to $f_{p,i}$ calculated using the first PM data point of the day obtained by the SMPS at 2:09 7/31/2016 ($f_{p,i,t0}$):

$$\Delta f_{p,i} \equiv f_{p,i,t} - f_{p,i,t0} \quad \text{(S6)}$$

In these calculations, $\Delta f_{p,i}$ is determined for each of the four model compounds for each indoor mass concentration measured by the SMPS at an assumed constant temperature of 25°C (Figure S16).

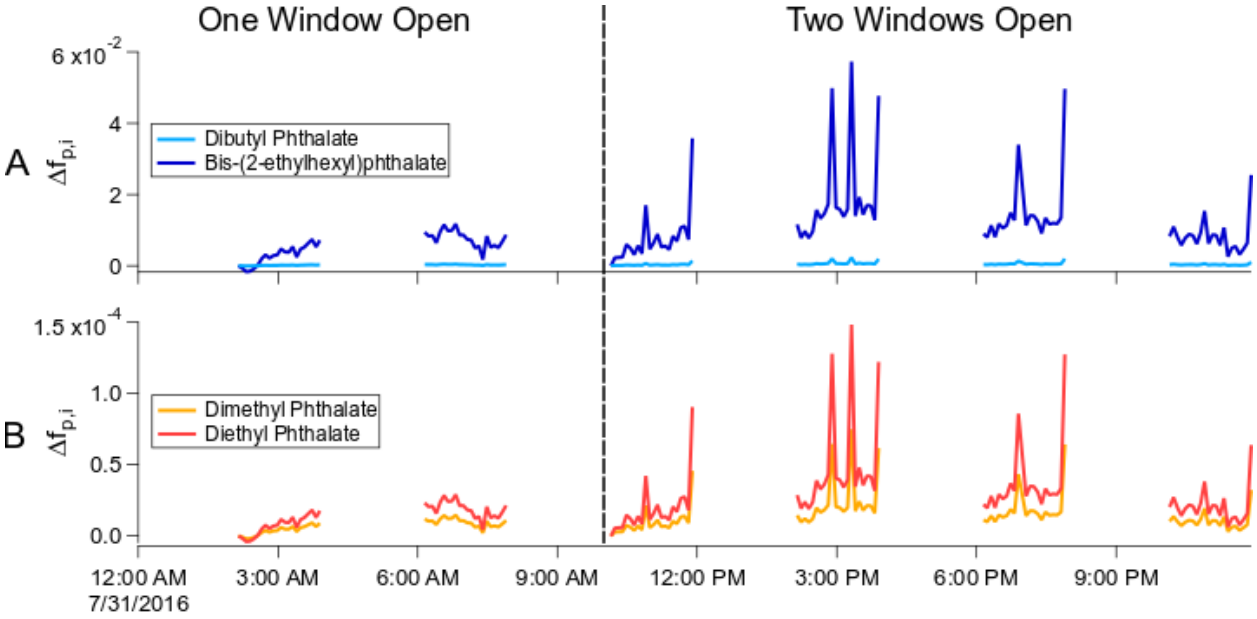

Figure S16. $\Delta f_{p,i}$ calculated for selected model compounds using indoor particle mass concentrations for 7/31/2016 (Figure 10C): (A) dibutyl phthalate and bis-(2-ethylhexyl)phthalate, and (B) dimethyl phthalate and diethyl phthalate.

Temperature Effects

To evaluate temperature gradient impacts, we define $\Delta f_{p,i}$ as:

$$\Delta f_{p,i} \equiv f_{p,i,Tin} - f_{p,i,Tout} \tag{S7}$$

where $f_{p,i,Tin}$ is the approximate $f_{p,i}$ at the indoor temperature and $f_{p,i,Tout}$ is the approximate $f_{p,i}$ at the corresponding outdoor temperature. A constant particle mass concentration of 5 µg m^{-3}, the average indoor mass concentration for 7/31/2016, is assumed for these calculations.

Figure S17 displays $\Delta f_{p,i}$ for the four phthalates under varied temperature gradient conditions for 7/31/2016. Notably, when compared with $\Delta f_{p,i}$ evaluated under varied PM conditions, typical $\Delta f_{p,i}$ values under observed temperature gradients are generally lower by two orders of magnitude. Thus, we conclude that the influx of infiltrating particles acting as a condensational sink is the primary mechanism for the increased S/IVOC gas-to-particle phase partitioning observed with window opening.

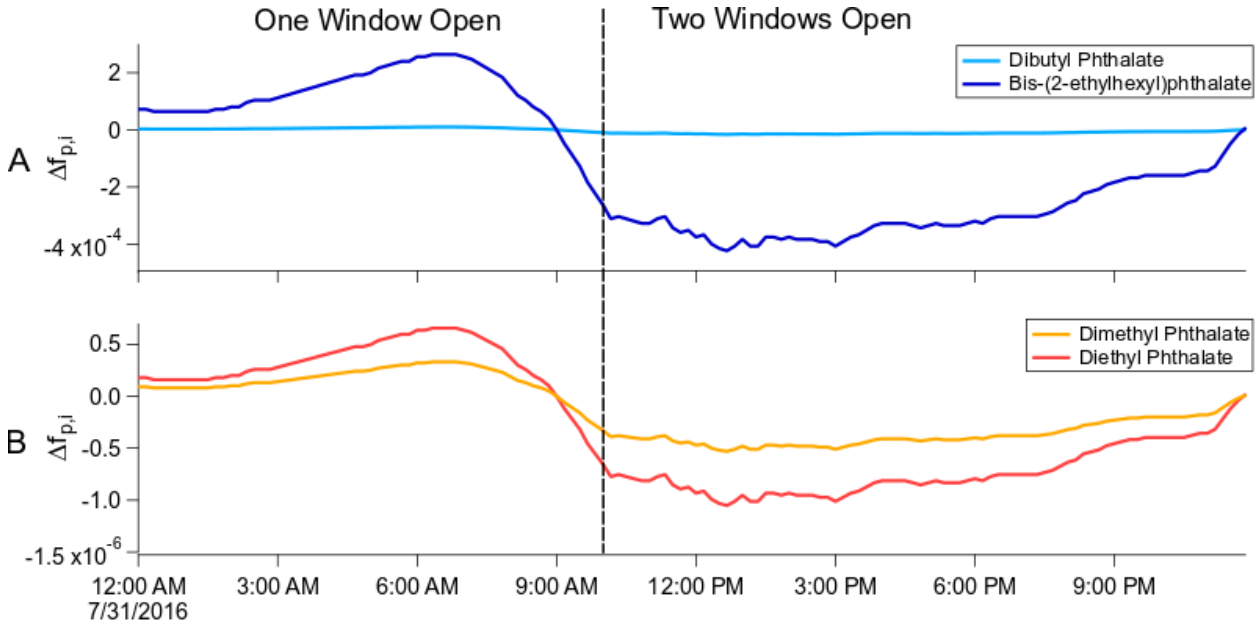

Figure S17. $\Delta f_{p,i}$ calculated for selected model compounds using temperature gradients ($\Delta T = T_{in} - T_{out}$) measured for 7/31/2016 (Figure S6A): (A) dibutyl phthalate and bis-(2-ethylhexyl)phthalate, and (B) dimethyl phthalate and diethyl phthalate.

Section S12: Evaluation of Particle-Phase Enhancements Relative to Outdoor Particle Infiltration

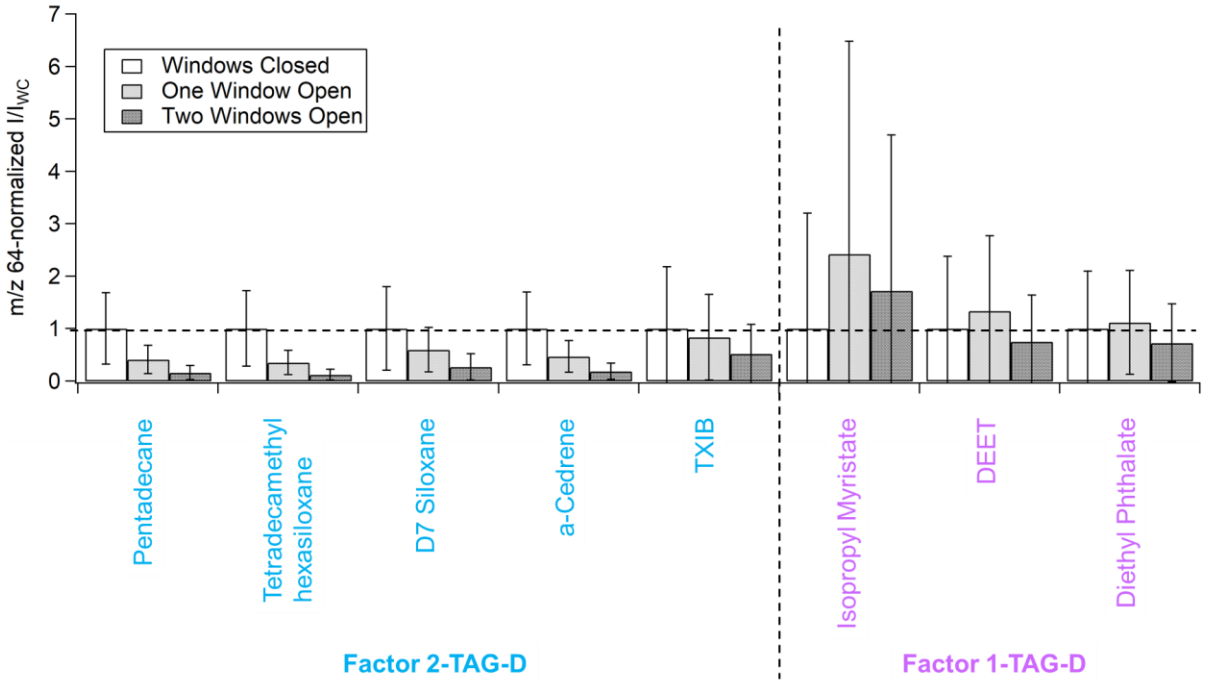

Figure S18. I/I$_{WC}$ for selected TAG denuded (particle only) compounds loading into PMF factors 1-TAG-D and 2-TAG-D, normalized to I/I$_{WC}$ for TAG decomposition sulfate (*m/z* 64). Compounds with purple text load primarily into factor 1-TAG-D, and compounds with blue text load primarily into factor 2-TAG-D.

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