

Supporting Information

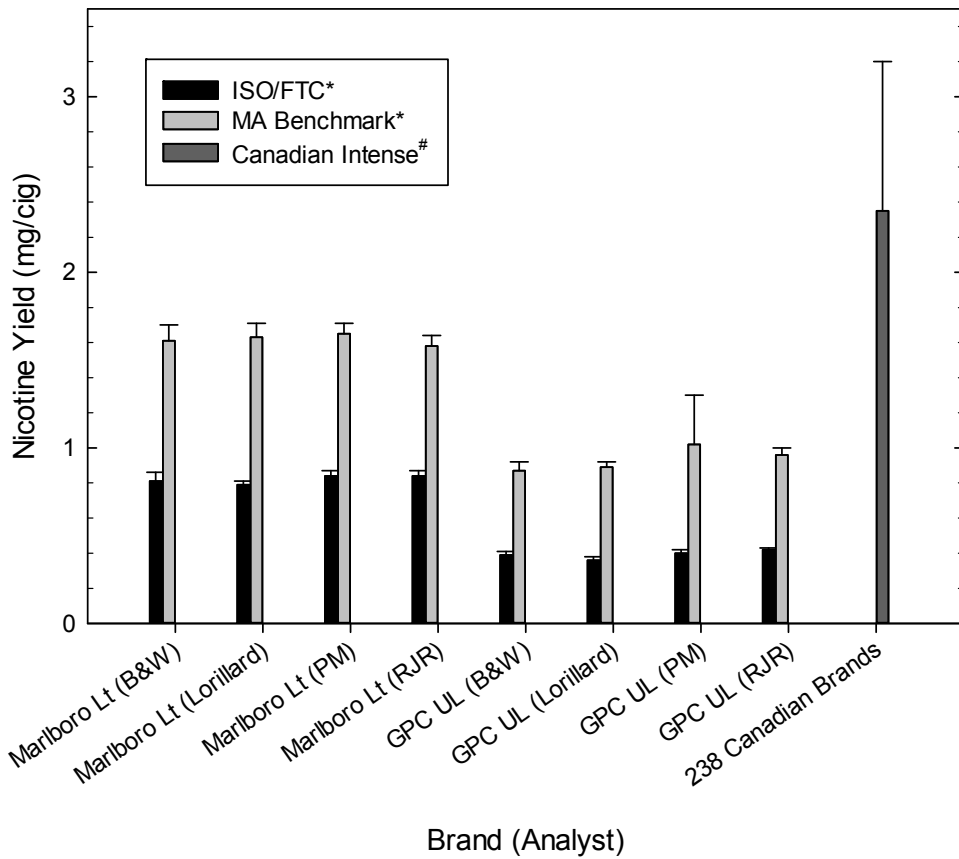
Comparison of True and Smoothed Puff Profile Replication on Smoking Behavior and Mainstream Smoke Emissions

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* n=20 replicates per brand. 1999 Massachusetts Benchmark Study, Final Report. Borgerding et al., July 24, 2000.
Estimated mean; standard deviation bar represents reported range. Hammond et al., Tob. Control 16: 8-14 (2007).

Figure S1. Comparison of nicotine yields generated using the ISO/FTC, 1999 Massachusetts Benchmark, and Canadian Intense smoking regimes.

Table S1. Characteristics of puff profiles sampled with wide range of puff volumes.

Cigarette Type*	Number of Puff Profiles Selected		Total
	Low Tertile	High Tertile	
GPC Full Flavor (FF)	6	6	12
GPC Ultralight (UL)	6	6	12
Total	12	12	24

* Machine-smoked data: FF = 15.2 mg “tar”, 0.97 mg nicotine, filter ventilation 0%;
UL = 5.8 mg “tar”, 0.51 mg nicotine, filter ventilation 51.5%.

Table S2. Geometric Mean (95% CI)^a: Topography Measures for Behavioral Outcomes.

Description	Sample Size ^b	Geometric Mean (95% CI)		Geo. Mean Ratio (TP/SM)	p-value
		TP	SM		
Puff Volume (mL)	All profiles	55.57 (53.71, 57.49)	55.62 (53.75, 57.56)	1.00	0.677
	FF profiles only	51.87 (49.42, 54.45)	51.68 (49.20, 54.29)	1.00	0.254
	UL profiles only	59.60 (56.94, 62.37)	59.94 (57.28, 62.71)	0.99	0.125
	High tertiles only	68.01 (65.64, 70.46)	68.09 (65.69, 70.57)	1.00	0.752
	Low tertiles only	45.35 (43.59, 47.19)	45.39 (43.60, 47.25)	1.00	0.788
Total Volume Inhaled (mL)	All profiles	643.80 (627.17, 660.87)	644.44 (627.75, 661.58)	1.00	0.786
	FF profiles only	598.50 (579.84, 617.77)	596.33 (577.73, 615.53)	1.00	0.574
	UL profiles only	693.39 (666.79, 721.06)	697.37 (670.75, 725.04)	0.99	0.125
	High tertiles only	804.92 (790.17, 819.94)	805.87 (790.68, 821.35)	1.00	0.752
	Low tertiles only	514.28 (507.13, 521.53)	514.70 (507.68, 521.82)	1.00	0.899
Puff Duration (s)	All profiles	2.12 (2.04, 2.20)	2.10 (2.02, 2.18)	1.01	<0.0001*
	FF profiles only	2.01 (1.90, 2.13)	2.00 (1.88, 2.12)	1.01	0.012*
	UL profiles only	2.24 (2.14, 2.34)	2.21 (2.12, 2.31)	1.01	0.004*
	High tertiles only	2.16 (2.05, 2.26)	2.15 (2.05, 2.26)	1.00	0.124
	Low tertiles only	2.08 (1.97, 2.20)	2.05 (1.94, 2.17)	1.01	<0.0001*
Interpuff Interval (s)	All profiles	19.29 (18.48, 20.14)	18.93 (18.10, 19.80)	1.02	<0.0001*
	FF profiles only	21.00 (19.87, 22.20)	20.74 (19.67, 21.87)	1.01	<0.0001*
	UL profiles only	17.69 (16.59, 18.86)	17.26 (16.09, 18.51)	1.03	<0.0001*
	High tertiles only	15.32 (14.66, 16.01)	14.94 (14.20, 15.72)	1.03	<0.0001*
	Low tertiles only	24.32 (22.99, 25.73)	24.02 (22.74, 25.37)	1.01	<0.0001*
Total Puff Duration (s)	All profiles	24.55 (23.77, 25.35)	24.34 (23.55, 25.15)	1.01	0.010*
	FF profiles only	23.17 (22.05, 24.35)	23.02 (21.89, 24.21)	1.01	0.286
	UL profiles only	26.03 (25.03, 27.08)	25.76 (24.72, 26.83)	1.01	<0.0001*
	High tertiles only	25.50 (24.38, 26.67)	25.42 (24.30, 26.59)	1.00	0.124
	Low tertiles only	23.62 (22.57, 24.72)	23.30 (22.21, 24.43)	1.01	0.032*

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Puff Profile Comparisons: Brinkman, Kim, Chuang, Kroeger, Deojay, Clark, Gordon

Average Flow (mL/s)	All profiles	27.20 (26.22, 28.21)	26.94 (25.98, 27.94)	1.01	0.002*
	FF profiles only	26.69 (25.40, 28.04)	26.33 (25.04, 27.69)	1.01	0.004*
	UL profiles only	27.73 (26.27, 29.27)	27.58 (26.15, 29.08)	1.01	0.208
	High tertiles only	32.74 (31.23, 34.32)	32.39 (30.91, 33.93)	1.01	0.030*
	Low tertiles only	22.57 (21.69, 23.50)	22.39 (21.49, 23.33)	1.01	0.038*
Average Peak Flow (mL/s)	All profiles	41.00 (39.48, 42.58)	41.39 (39.74, 43.10)	0.99	0.131
	FF profiles only	40.16 (38.33, 42.08)	40.59 (38.34, 42.98)	0.99	0.278
	UL profiles only	41.87 (39.44, 44.45)	42.21 (39.83, 44.73)	0.99	0.302
	High tertiles only	50.51 (48.31, 52.81)	50.01 (47.51, 52.65)	1.01	0.325
	Low tertiles only	33.24 (31.85, 34.69)	34.21 (32.57, 35.93)	0.97	0.002*

^a 95% CI = 95% confidence interval.

^b Sample size = 706 using all profiles

356 using FF profiles only

350 using UL profiles only

352 using Low tertiles only

354 using High tertiles only

* Significant at $p \leq 0.05$ level.

Table S3. Geometric Means (95% CI)^a: Size-Fractionated, Gravimetrically-Determined and Integrated ELPI Fine and Ultrafine Particulate Mass from Mainstream Smoke.

Description	Cut Point (μm) ^b	Sample Size	Geometric Mean (95%CI)		Geo. Mean Ratio (TP/SM)	p-value
			TP	SM		
Gravimetric Microbalance Data						
Fine Particulate Mass (mg) ^c	0.257	All profiles	11.02 (9.98, 12.17)	11.92 (10.80, 13.15)	0.92	0.002*
		FF profiles only	10.54 (9.32, 11.92)	10.88 (9.44, 12.54)	0.97	0.342
		UL profiles only	11.53 (9.83, 13.54)	13.06 (11.40, 14.97)	0.88	0.002*
		High tertiles only	16.11 (15.03, 17.26)	17.32 (16.29, 18.42)	0.93	0.036*
		Low tertiles only	7.54 (7.16, 7.94)	8.20 (7.70, 8.74)	0.92	0.033*
	0.375	All profiles	6.759 (6.293, 7.259)	7.293 (6.793, 7.830)	0.93	0.002*
		FF profiles only	6.498 (5.920, 7.133)	6.938 (6.276, 7.669)	0.94	0.087
		UL profiles only	7.029 (6.287, 7.859)	7.666 (6.917, 8.497)	0.92	0.005*
		High tertiles only	8.820 (8.399, 9.261)	9.224 (8.660, 9.825)	0.96	0.088
		Low tertiles only	5.179 (4.931, 5.440)	5.766 (5.343, 6.036)	0.90	0.011*
	0.602	All profiles	6.556 (6.130, 7.011)	6.928 (6.522, 7.338)	0.95	0.018*
		FF profiles only	6.914 (6.426, 7.440)	7.258 (6.722, 7.836)	0.95	0.126
		UL profiles only	6.216 (5.548, 6.964)	6.594 (6.023, 7.220)	0.94	0.070
		High tertiles only	8.253 (7.852, 8.674)	8.484 (8.125, 8.859)	0.97	0.341
		Low tertiles only	5.208 (4.889, 5.547)	5.641 (5.286, 5.889)	0.92	0.023*
	Other Fine	All profiles	5.693 (5.203, 6.230)	5.965 (5.546, 6.415)	0.95	0.078
		FF profiles only	6.250 (5.677, 6.880)	6.299 (5.729, 6.926)	0.99	0.832
		UL profiles only	5.186 (4.459, 6.032)	5.648 (5.048, 6.319)	0.92	0.033*
		High tertiles only	7.385 (6.865, 7.943)	7.404 (6.894, 7.951)	1.00	0.928
		Low tertiles only	4.389 (3.919, 4.916)	4.805 (4.350, 5.071)	0.91	0.042*
Sum	All profiles	30.38 (28.14, 32.81)	32.50 (30.29, 34.88)	0.93	<0.001*	
	FF profiles only	30.48 (27.85, 33.35)	31.84 (28.99, 34.97)	0.96	0.075	
	UL profiles only	30.29 (26.62, 34.46)	33.18 (29.73, 37.03)	0.91	0.001*	
	High tertiles only	40.89 (39.14, 42.72)	42.75 (40.95, 44.63)	0.96	0.050	
	Low tertiles only	22.57 (21.57, 23.63)	24.71 (23.68, 25.52)	0.91	0.002*	

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Ultrafine Particulate Mass (μg) ^d	Sum	All profiles	154.6 (136.6, 174.9)	161.5 (145.2, 179.8)	0.96	0.422
		FF profiles only	150.3 (126.5, 178.5)	140.7 (117.2, 168.8)	1.07	0.385
		UL profiles only	158.8 (132.1, 191.1)	184.8 (166.5, 205.1)	0.86	0.069
		High tertiles only	186.5 (164.5, 211.6)	181.4 (157.7, 208.8)	1.03	0.613
		Low tertiles only	128.8 (105.7, 156.9)	144.3 (123.2, 169.0)	0.89	0.247
Integrated ELPI Data						
Fine Particulate Mass (mg) ^e	0.093	All profiles	0.00110 (0.00096, 0.00126)	0.00120 (0.00105, 0.00136)	0.92	0.303
		FF profiles only	0.0010 (0.00086, 0.00126)	0.0011 (0.00093, 0.00133)	0.94	0.367
		UL profiles only	0.0012 (0.00095, 0.00143)	0.0013 (0.00106, 0.00155)	0.91	0.271
		High tertiles only	0.0015 (0.00122, 0.00177)	0.0015 (0.00121, 0.00180)	0.99	0.944
		Low tertiles only	0.0008 (0.00070, 0.00097)	0.0010 (0.00084, 0.00111)	0.85	0.082
	0.153	All profiles	0.00496 (0.00432, 0.00570)	0.00528 (0.00459, 0.00606)	0.94	0.245
		FF profiles only	0.00472 (0.00388, 0.00573)	0.00486 (0.00401, 0.00588)	0.97	0.678
		UL profiles only	0.00522 (0.00426, 0.00641)	0.00574 (0.00467, 0.00705)	0.91	0.247
		High tertiles only	0.00660 (0.00543, 0.00803)	0.00681 (0.00548, 0.00846)	0.97	0.690
		Low tertiles only	0.00373 (0.00320, 0.00434)	0.00409 (0.00357, 0.00468)	0.91	0.241
0.257	All profiles	0.0318 (0.0275, 0.0369)	0.0334 (0.0290, 0.0384)	0.95	0.463	
	FF profiles only	0.0292 (0.0241, 0.0354)	0.0304 (0.0252, 0.0367)	0.96	0.580	
	UL profiles only	0.0346 (0.0275, 0.0436)	0.0366 (0.0295, 0.0454)	0.95	0.462	
	High tertiles only	0.0439 (0.0359, 0.0538)	0.0446 (0.0350, 0.0553)	0.99	0.838	
	Low tertiles only	0.0230 (0.0196, 0.0270)	0.0249 (0.0219, 0.0284)	0.92	0.314	
0.375	All profiles	0.124 (0.108, 0.142)	0.130 (0.114, 0.149)	0.95	0.300	
	FF profiles only	0.113 (0.095, 0.135)	0.122 (0.1027, 0.1440)	0.93	0.322	
	UL profiles only	0.135 (0.109, 0.168)	0.140 (0.1128, 0.1734)	0.97	0.685	
	High tertiles only	0.167 (0.140, 0.200)	0.176 (0.1453, 0.2127)	0.95	0.497	
	Low tertiles only	0.091 (0.077, 0.108)	0.097 (0.0844, 0.1109)	0.94	0.510	
0.602	All profiles	0.111 (0.096, 0.128)	0.116 (0.101, 0.133)	0.96	0.545	
	FF profiles only	0.100 (0.083, 0.119)	0.110 (0.0933, 0.1286)	0.91	0.240	
	UL profiles only	0.123 (0.097, 0.155)	0.122 (0.0972, 0.1543)	1.00	0.978	
	High tertiles only	0.148 (0.124, 0.177)	0.158 (0.1324, 0.1886)	0.94	0.411	

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	Low tertiles only	0.082 (0.068, 0.100)	0.085 (0.0723, 0.0997)	0.97	0.770	
0.932	All profiles	0.096 (0.083, 0.110)	0.097 (0.085, 0.111)	0.99	0.976	
	FF profiles only	0.091 (0.076, 0.108)	0.098 (0.0837, 0.1142)	0.93	0.372	
	UL profiles only	0.101 (0.080, 0.127)	0.097 (0.0777, 0.1213)	1.04	0.734	
	High tertiles only	0.123 (0.104, 0.145)	0.128 (0.1086, 0.1512)	0.96	0.584	
	Low tertiles only	0.074 (0.061, 0.091)	0.074 (0.0625, 0.0877)	1.00	0.981	
1.57	All profiles	0.095 (0.083, 0.108)	0.101 (0.089, 0.114)	0.94	0.382	
	FF profiles only	0.088 (0.075, 0.104)	0.095 (0.082, 0.111)	0.92	0.265	
	UL profiles only	0.103 (0.084, 0.127)	0.106 (0.087, 0.129)	0.97	0.759	
	High tertiles only	0.126 (0.107, 0.148)	0.132 (0.111, 0.156)	0.95	0.502	
	Low tertiles only	0.072 (0.061, 0.085)	0.077 (0.067, 0.088)	0.94	0.523	
Sum	All profiles	0.467 (0.407, 0.535)	0.488 (0.429, 0.555)	0.96	0.508	
	FF profiles only	0.430 (0.363, 0.509)	0.464 (0.397, 0.543)	0.93	0.304	
	UL profiles only	0.507 (0.407, 0.631)	0.513 (0.415, 0.634)	0.99	0.897	
	High tertiles only	0.621 (0.524, 0.735)	0.652 (0.547, 0.776)	0.95	0.502	
	Low tertiles only	0.351 (0.295, 0.417)	0.365 (0.317, 0.421)	0.96	0.669	
Ultrafine Particulate Mass (mg) ^f	0.007	All profiles	4.51x10 ⁻⁵ (3.73x10 ⁻⁵ , 5.44x10 ⁻⁵)	5.13x10 ⁻⁵ (4.40x10 ⁻⁵ , 5.98x10 ⁻⁵)	0.88	0.480
		FF profiles only	3.59x10 ⁻⁵ (2.91x10 ⁻⁵ , 4.44x10 ⁻⁵)	4.27x10 ⁻⁵ (3.57x10 ⁻⁵ , 5.10x10 ⁻⁵)	0.84	0.152
		UL profiles only	5.65x10 ⁻⁵ (4.17x10 ⁻⁵ , 7.65x10 ⁻⁵)	6.17x10 ⁻⁵ (4.84x10 ⁻⁵ , 7.86x10 ⁻⁵)	0.92	0.513
		High tertiles only	5.87x10 ⁻⁵ (4.51x10 ⁻⁵ , 7.64x10 ⁻⁵)	6.74x10 ⁻⁵ (5.41x10 ⁻⁵ , 8.39x10 ⁻⁵)	0.87	0.262
		Low tertiles only	3.46x10 ⁻⁵ (2.69x10 ⁻⁵ , 4.44x10 ⁻⁵)	3.91x10 ⁻⁵ (3.26x10 ⁻⁵ , 4.69x10 ⁻⁵)	0.88	0.364
0.027	All profiles	6.72x10 ⁻⁵ (5.88x10 ⁻⁵ , 7.70x10 ⁻⁵)	7.19x10 ⁻⁵ (6.26x10 ⁻⁵ , 8.28x10 ⁻⁵)	0.93	0.284	
	FF profiles only	6.52x10 ⁻⁵ (5.39x10 ⁻⁵ , 7.89x10 ⁻⁵)	6.76x10 ⁻⁵ (5.67x10 ⁻⁵ , 8.05x10 ⁻⁵)	0.96	0.621	
	UL profiles only	6.93x10 ⁻⁵ (5.67x10 ⁻⁵ , 8.47x10 ⁻⁵)	7.66x10 ⁻⁵ (6.10x10 ⁻⁵ , 9.61x10 ⁻⁵)	0.90	0.436	
	High tertiles only	8.67x10 ⁻⁵ (7.28x10 ⁻⁵ , 10.33x10 ⁻⁵)	8.49x10 ⁻⁵ (7.03x10 ⁻⁵ , 10.26x10 ⁻⁵)	1.02	0.787	
	Low tertiles only	5.21x10 ⁻⁵ (4.37x10 ⁻⁵ , 6.22x10 ⁻⁵)	6.09x10 ⁻⁵ (4.97x10 ⁻⁵ , 7.46x10 ⁻⁵)	0.86	0.221	
0.054	All profiles	2.45x10 ⁻⁴ (2.16x10 ⁻⁴ , 2.78x10 ⁻⁴)	2.66x10 ⁻⁴ (2.34x10 ⁻⁴ , 3.04x10 ⁻⁴)	0.92	0.076	
	FF profiles only	2.32x10 ⁻⁴ (1.96x10 ⁻⁴ , 2.76x10 ⁻⁴)	2.63x10 ⁻⁴ (2.20x10 ⁻⁴ , 3.15x10 ⁻⁴)	0.88	0.083	
	UL profiles only	2.58x10 ⁻⁴ (2.14x10 ⁻⁴ , 3.13x10 ⁻⁴)	2.70x10 ⁻⁴ (2.21x10 ⁻⁴ , 3.30x10 ⁻⁴)	0.96	0.631	
	High tertiles only	3.12x10 ⁻⁴ (2.65x10 ⁻⁴ , 3.67x10 ⁻⁴)	3.32x10 ⁻⁴ (2.74x10 ⁻⁴ , 4.03x10 ⁻⁴)	0.94	0.401	
	Low tertiles only	1.93x10 ⁻⁴ (1.64x10 ⁻⁴ , 2.27x10 ⁻⁴)	2.14x10 ⁻⁴ (1.84x10 ⁻⁴ , 2.50x10 ⁻⁴)	0.90	0.253	

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Sum	All profiles	3.63x10 ⁻⁴ (3.19x10 ⁻⁴ , 4.13x10 ⁻⁴)	3.94x10 ⁻⁴ (3.45x10 ⁻⁴ , 4.50x10 ⁻⁴)	0.92	0.118
	FF profiles only	3.38x10 ⁻⁴ (2.85x10 ⁻⁴ , 4.00x10 ⁻⁴)	3.75x10 ⁻⁴ (3.14x10 ⁻⁴ , 4.48x10 ⁻⁴)	0.90	0.128
	UL profiles only	3.90x10 ⁻⁴ (3.19x10 ⁻⁴ , 4.77x10 ⁻⁴)	4.14x10 ⁻⁴ (3.36x10 ⁻⁴ , 5.09x10 ⁻⁴)	0.94	0.562
	High tertiles only	4.65x10 ⁻⁴ (3.94x10 ⁻⁴ , 5.49x10 ⁻⁴)	4.88x10 ⁻⁴ (4.03x10 ⁻⁴ , 5.91x10 ⁻⁴)	0.95	0.497
	Low tertiles only	2.83x10 ⁻⁴ (2.39x10 ⁻⁴ , 3.35x10 ⁻⁴)	3.18x10 ⁻⁴ (2.69x10 ⁻⁴ , 3.75x10 ⁻⁴)	0.89	0.262

^a 95% CI = 95% confidence interval.

^b The two highest fine particulate cut points were ignored because the mass of particulate matter at each was negligibly small.

^c Sample sizes for Fine Particulate Mass by Gravimetric Microbalance Data: All profiles = 144; FF profiles only = 72; UL profiles only = 72; Low profiles only = 72; High profiles only = 72.

^d Sample sizes for Ultrafine Particulate Mass by Gravimetric Microbalance Data: All profiles = 138; FF profiles only = 68; UL profiles only = 70; Low profiles only = 70; High profiles only = 68.

^e Sample sizes for Fine Particulate Mass by Integrated ELPI Data: All profiles = 144; FF profiles only = 72; UL profiles only = 72; Low profiles only = 72; High profiles only = 72.

^f Sample sizes for Ultrafine Particulate Mass by Integrated ELPI Data: All profiles = 144; FF profiles only = 72; UL profiles only = 72; Low profiles only = 72; High profiles only = 72.

* Significant at $p \leq 0.05$ level.

Table S4. Geometric Means (95% CI)^a: Size-Fractionated, Fine and Ultrafine Particle-Bound SVOCs.

Compound	Sample Size	Geometric Mean (95%CI)		Geo. Mean Ratio (TP/SM)	p-value
		TP	SM		
Fine Particle-Bound SVOCs^c					
Nicotine (µg/session)	All profiles	2,099 (1,910, 2,306)	2,246 (2,064, 2,444)	0.93	0.002*
	FF profiles only	2,077 (1,834, 2,353)	2,174 (1,917, 2,467)	0.96	0.129
	UL profiles only	2,121 (1,830, 2,457)	2,320 (2,063, 2,610)	0.91	0.006*
	High tertiles only	3,009 (2,830, 3,200)	3,070 (2,883, 3,270)	0.98	0.430
	Low tertiles only	1,464 (1,387, 1,545)	1,643 (1,555, 1,736)	0.89	0.002*
Cotinine (ng/session)	All profiles	17,017 (15,793, 18,3370)	17,627 (16,444, 18,896)	0.97	0.055
	FF profiles only	17,411 (16,005, 18,940)	17,921 (16,365, 19,626)	0.97	0.277
	UL profiles only	16,632 (14,642, 18,893)	17,338 (15,540, 19,345)	0.96	0.962
	High tertiles only	22,508 (21,548, 23,511)	22,946 (22,008, 23,924)	0.98	0.406
	Low tertiles only	12,866 (12,165, 13,607)	13,542 (12,922, 14,191)	0.95	0.073
Pyrene (ng/session)	All profiles	346 (325, 369)	363 (342, 385)	0.95	0.007*
	FF profiles only	345 (320, 372)	357 (331, 385)	0.97	0.177
	UL profiles only	347 (312, 387)	370 (336, 407)	0.94	0.015*
	High tertiles only	438 (420, 458)	449 (428, 471)	0.98	0.262
	Low tertiles only	274 (261, 287)	294 (281, 308)	0.93	0.014*
Benzo[a]pyrene (ng/session)	All profiles	75.4 (69.4, 81.9)	78.1 (71.8, 85.8)	0.97	0.103
	FF profiles only	68.1 (61.4, 75.5)	68.8 (61.8, 76.6)	0.99	0.726
	UL profiles only	83.5 (73.6, 94.6)	88.6 (78.8, 99.6)	0.94	0.054
	High tertiles only	96.8 (88.6, 105.7)	99.1 (90.6, 108.4)	0.98	0.358
	Low tertiles only	58.7 (54.2, 63.6)	61.5 (56.3, 67.1)	0.95	0.188
Quinoline (ng/session)	All profiles	204 (178, 234)	217 (191, 247)	0.94	0.022*
	FF profiles only	240 (201, 287)	252 (213, 299)	0.95	0.261
	UL profiles only	173 (141, 212)	187 (154, 226)	0.92	0.031*
	High tertiles only	338 (309, 370)	350 (322, 381)	0.97	0.309
	Low tertiles only	123 (110, 136)	134 (122, 148)	0.91	0.039*
NAT (ng/session) ^b	All profiles	781 (709, 859)	793 (720, 872)	0.98	0.352
	FF profiles only	708 (612, 819)	724 (627, 836)	0.98	0.367
	UL profiles only	860 (761, 973)	868 (765, 985)	0.99	0.704

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Puff Profile Comparisons: Brinkman, Kim, Chuang, Kroeger, Deojay, Clark, Gordon

	High tertiles only	1,004 (908, 1,109)	1,013 (924, 1,111)	0.99	0.602
	Low tertiles only	607 (540, 683)	620 (547, 703)	0.98	0.453
NNN (ng/session) ^b	All profiles	372 (339, 408)	376 (344, 411)	0.99	0.586
	FF profiles only	321 (283, 363)	329 (292, 371)	0.97	0.445
	UL profiles only	431 (379, 490)	430 (380, 486)	1.00	0.917
	High tertiles only	498 (460, 540)	501 (464, 540)	1.00	0.853
	Low tertiles only	277 (251, 307)	283 (257, 310)	0.98	0.582
		All profiles	444 (405, 486)	445 (405, 488)	1.00
NAB (ng/session) ^b	FF profiles only	461 (399, 532)	465 (402, 538)	0.99	0.707
	UL profiles only	427 (378, 482)	425 (376, 480)	1.01	0.866
	High tertiles only	563 (506, 627)	567 (508, 633)	0.99	0.750
	Low tertiles only	350 (315, 388)	348 (315, 386)	1.00	0.910
NNK (ng/session) ^b	All profiles	402 (365, 444)	402 (365, 443)	1.00	0.998
	FF profiles only	363 (323, 408)	357 (318, 401)	1.02	0.587
	UL profiles only	446 (382, 521)	453 (390, 526)	0.98	0.598
	High tertiles only	542 (495, 594)	538 (491, 590)	1.01	0.756
	Low tertiles only	299 (269, 332)	301 (271, 333)	0.99	0.838
Ultrafine Particle-Bound SVOCs^{d, e}					
Nicotine (µg/session)	All profiles	1,157 (1,122, 1,192)	1,167 (1,131, 1,204)	0.99	0.538
	FF profiles only	1,135 (1,084, 1,190)	1,135 (1,090, 1,182)	1.00	0.997
	UL profiles only	1,178 (1,129, 1,230)	1,200 (1,144, 1,259)	0.98	0.109
	High tertiles only	1,170 (1,117, 1,226)	1,202 (1,142, 1,265)	0.97	0.125
	Low tertiles only	1,143 (1,093, 1,195)	1,134 (1,093, 1,176)	1.01	0.739
Cotinine (ng/session)	All profiles	1,172 (982, 1,398)	1,217 (1,030, 1,438)	0.96	0.127
	FF profiles only	1,057 (871, 1,281)	1,103 (902, 1,348)	0.96	0.093
	UL profiles only	1,300 (945, 1,786)	1,343 (1,007, 1,790)	0.97	0.462
	High tertiles only	1,382 (1,074, 1,777)	1,427 (1,136, 1,793)	0.97	0.176
	Low tertiles only	994 (777, 1,271)	1,038 (817, 1,318)	0.96	0.340
Pyrene (ng/session)	All profiles	23.6 (21.4, 26.1)	24.7 (22.1, 27.5)	0.96	0.070
	FF profiles only	21.9 (19.4, 24.7)	22.2 (19.4, 25.4)	0.99	0.727
	UL profiles only	25.6 (21.7, 30.1)	27.5 (23.2, 32.5)	0.93	0.007*

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Puff Profile Comparisons: Brinkman, Kim, Chuang, Kroeger, Deojay, Clark, Gordon

	High tertiles only	25.5 (21.6, 30.1)	26.8 (22.3, 32.1)	0.95	0.090
	Low tertiles only	22.0 (19.5, 24.8)	22.8 (19.9, 26.1)	0.96	0.357
Benzo[a]pyrene (ng/session)	All profiles	4.20 (3.49, 5.06)	4.36 (3.57, 5.33)	0.96	0.112
	FF profiles only	3.55 (2.75, 4.56)	3.70 (2.77, 4.95)	0.96	0.262
	UL profiles only	4.98 (3.79, 6.54)	5.15 (3.88, 6.83)	0.97	0.289
	High tertiles only	5.03 (3.71, 6.82)	5.13 (3.66, 7.19)	0.98	0.604
	Low tertiles only	3.51 (2.86, 4.31)	3.71 (2.96, 4.66)	0.95	0.068
	Quinoline (ng/session)	All profiles	129 (117, 141)	136 (124, 149)	0.95
FF profiles only		149 (134, 165)	158 (148, 170)	0.94	0.052
UL profiles only		111 (100, 124)	117 (103, 132)	0.95	0.026*
High tertiles only		134 (116, 156)	142 (125, 162)	0.94	0.011*
Low tertiles only		123 (108, 141)	130 (112, 151)	0.95	0.098
NAT (ng/session) ^b	All profiles	82.8 (70.8, 96.8)	84.2 (71.6, 99.0)	0.98	0.393
	FF profiles only	69.1 (54.6, 87.5)	69.1 (54.9, 86.8)	1.00	0.982
	UL profiles only	99.2 (83.0, 118.6)	102.7 (84.6, 124.5)	0.97	0.185
	High tertiles only	93.3 (77.4, 112.5)	95.6 (78.4, 116.5)	0.98	0.371
	Low tertiles only	73.4 (56.5, 95.5)	74.2 (56.8, 96.7)	0.99	0.753
NNN (ng/session) ^b	All profiles	29.5 (24.3, 35.7)	30.2 (25.2, 36.3)	0.98	0.292
	FF profiles only	24.4 (19.2, 31.0)	24.1 (19.2, 30.4)	1.01	0.706
	UL profiles only	35.6 (26.4, 47.9)	37.9 (29.7, 48.4)	0.94	0.090
	High tertiles only	38.0 (27.9, 51.8)	37.3 (27.4, 50.7)	1.02	0.523
	Low tertiles only	22.8 (19.6, 26.6)	24.5 (21.0, 28.6)	0.93	0.070
NAB (ng/session) ^b	All profiles	62.0 (52.4, 73.3)	61.1 (51.2, 72.9)	1.01	0.510
	FF profiles only	63.0 (48.3, 82.3)	59.9 (45.8, 78.4)	1.05	0.139
	UL profiles only	61.0 (47.5, 78.3)	62.3 (47.3, 82.0)	0.98	0.480
	High tertiles only	64.4 (48.5, 85.6)	64.1 (47.0, 87.4)	1.01	0.872
	Low tertiles only	59.6 (47.5, 74.9)	58.2 (46.5, 72.8)	1.02	0.451
NNK (ng/session) ^b	All profiles	38.4 (32.0, 46.1)	38.04 (31.8, 45.5)	1.01	0.731
	FF profiles only	30.9 (25.6, 37.3)	31.7 (26.2, 38.5)	0.97	0.082
	UL profiles only	47.7 (36.0, 63.3)	45.6 (34.1, 61.0)	1.05	0.409
	High tertiles only	49.7 (37.5, 65.8)	49.7 (38.2, 64.6)	1.00	0.989
	Low tertiles only	29.7 (25.8, 34.1)	29.1 (25.4, 33.5)	1.02	0.726

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Puff Profile Comparisons: Brinkman, Kim, Chuang, Kroeger, Deojay, Clark, Gordon

- ^a 95% CI = 95% confidence interval.
- ^b NAT = *N*-Nitrosoanatabine; NNN = *N*-Nitrosonornicotine; NAB = *N*-Nitrosoanabasine; NNK = 4-(*N*-Nitrosomethylamino)-1-(3-pyridyl)-1-butanone.
- ^c Sample sizes for Fine Particle-Bound SVOC: All profiles = 144; FF profiles only = 72; UL profiles only = 72; Low profiles only = 72; High profiles only = 72.
- ^d Sample sizes for Ultrafine Particle-Bound SVOCs: All profiles = 48; FF profiles only = 24; UL profiles only = 24; Low profiles only = 24; High profiles only = 24.
- ^e Summed over 3 replicate samples.

Table S5. Geometric Means (95% CI)^a: Concentrations in Peak Area Units for Gas-Phase VOCs.^b

Compound	Sample Size	Geometric Mean (95%CI)		Geo. Mean Ratio (TP/SM)	p-value
		TP	SM		
Acetaldehyde (ppbv×s)	All profiles	1,081,242 (928,674, 1,258,876)	1,078,627 (930,473, 1,250,370)	1.00	0.951
	FF profiles only	882,464 (697,976, 1,115,717)	883,603 (703,472, 1,109,858)	1.00	0.981
	UL profiles only	1,324,795 (1,106,005, 1,586,866)	1,316,695 (1,105,803, 1,567,807)	1.01	0.918
	High tertiles only	1,580,210 (1,319,508, 1,892,419)	1,526,723 (1,293,379, 1,802,165)	1.04	0.528
	Low tertiles only	739,829 (620,585, 881,986)	762,048 (630,563, 920,950)	0.97	0.603
Acetonitrile (ppbv×s)	All profiles	231,320 (193,160, 277,019)	240,574 (203,115, 284,942)	0.96	0.398
	FF profiles only	179,757 (137,540, 234,932)	186,171 (144,771, 239,407)	0.97	0.576
	UL profiles only	297,674 (237,999, 372,313)	310,876 (253,424, 381,352)	0.96	0.544
	High tertiles only	385,616 (318,154, 467,383)	376,447 (316,532, 447,702)	1.02	0.700
	Low tertiles only	138,763 (114,126, 168,718)	153,743 (124,885, 189,270)	0.90	0.154
Acrylonitrile (ppbv×s)	All profiles	18,404 (15,536, 21,803)	18,689 (15,904, 21,961)	0.98	0.715
	FF profiles only	14,736 (11,388, 19,068)	15,071 (11,821, 19,215)	0.98	0.697
	UL profiles only	22,986 (18,696, 28,261)	23,174 (18,993, 28,275)	0.99	0.898
	High tertiles only	29,380 (24,305, 35,514)	28,492 (23,799, 34,111)	1.03	0.608
	Low tertiles only	11,529 (9,607, 13,836)	12,258 (10,161, 14,788)	0.94	0.313
Benzene (ppbv×s)	All profiles	23,217 (19,813, 27,206)	23,954 (20,646, 27,791)	0.97	0.308
	FF profiles only	19,213 (14,995, 24,617)	19,987 (15,801, 25,283)	0.96	0.340
	UL profiles only	28,056 (23,216, 33,905)	28,708 (24,150, 34,126)	0.98	0.628
	High tertiles only	35,630 (29,651, 42,814)	35,028 (29,459, 41,650)	1.02	0.689
	Low tertiles only	15,129 (12,768, 17,926)	16,381 (13,821, 19,414)	0.92	0.088
1,3-Butadiene (ppbv×s)	All profiles	36,533 (31,109, 42,903)	37,100 (31,844, 43,223)	0.98	0.665
	FF profiles only	30,299 (23,659, 38,804)	30,999 (24,484, 39,248)	0.98	0.636
	UL profiles only	44,049 (36,139, 53,691)	44,401 (36,838, 53,515)	0.99	0.885
	High tertiles only	55,958 (46,372, 67,526)	54,156 (45,247, 64,820)	1.03	0.528
	Low tertiles only	23,851 (20,029, 28,403)	25,415 (21,244, 30,405)	0.94	0.212

Supporting Information - 2014

Puff Profile Comparisons: Brinkman, Kim, Chuang, Kroeger, Deojay, Clark, Gordon

2,5-Dimethyl- furan (ppbv*s)	All profiles	14,526 (12,108, 17,428)	15,528 (13,048, 18,480)	0.94	0.018*
	FF profiles only	11,859 (8,976, 15,667)	12,827 (9,805, 16,779)	0.92	0.052
	UL profiles only	17,795 (14,159, 22,363)	18,799 (15,149, 23,327)	0.95	0.189
	High tertiles only	25,071 (20,549, 30,588)	25,815 (21,229, 31,393)	0.97	0.429
	Low tertiles only	8,417 (7,083, 10,002)	9,340 (7,895, 11,049)	0.90	0.020*
Formaldehyde (µg/cartridge)	All profiles	0.416 (0.378, 0.458)	0.380 (0.346, 0.418)	1.09	0.055
	FF profiles only	0.410 (0.353, 0.475)	0.370 (0.318, 0.430)	1.11	0.103
	UL profiles only	0.423 (0.371, 0.482)	0.391 (0.345, 0.443)	1.08	0.285
	High tertiles only	0.454 (0.390, 0.527)	0.396 (0.339, 0.464)	1.14	0.086
	Low tertiles only	0.382 (0.338, 0.431)	0.365 (0.326, 0.409)	1.05	0.415

^a 95% CI = 95% confidence interval.

^b Sample sizes: All profiles = 144; FF profiles only = 72; UL profiles only = 72; Low profiles only= 72; High profiles only= 72.

* Significant at $p \leq 0.05$ level.