

Table S1. Absolute levels of RAS constituents ($\mu\text{g}/\text{m}^3$) measured during background (where detected), baseline and product use.

Constituent (LOQ $\mu\text{g}/\text{m}^3$)	Group I (N=9)	Group II (N=9)	Group III (N=9)	Group IV (N=10)
Nicotine (0.248)				
Baseline	<LOQ	<LOQ	<LOQ	<LOQ
Pre-defined	0.4763 \pm 0.1618	2.8275 \pm 0.4371	n/a	n/a
<i>Ad libitum</i>	0.3810 \pm 0.0694	0.9595 \pm 0.2232	1.4725 \pm 0.3177	40.6500 \pm 6.3966
Propylene glycol (3.63)				
Baseline	17.338 \pm 2.199	63.238 \pm 4.015	61.938 \pm 6.216	9.763 \pm 1.225
Pre-defined	62.200 \pm 5.144	274.750 \pm 12.230	n/a	n/a
<i>Ad libitum</i>	50.400 \pm 3.186	131.750 \pm 3.862	379.000 \pm 15.556	65.975 \pm 5.161
Glycerol (4.11)				
Baseline	<LOQ	<LOQ	<LOQ	<LOQ
Pre-defined	67.888 \pm 16.806	126.750 \pm 12.712	n/a	n/a
<i>Ad libitum</i>	98.900 \pm 28.142	78.650 \pm 8.745	242.000 \pm 7.616	<LOQ
Arsenic (0.123)				
Baseline	<LOQ	<LOQ	<LOQ	<LOQ
Pre-defined	<LOQ	<LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Cadmium (0.123)				
Baseline	<LOQ	<LOQ	<LOQ	<LOQ
Pre-defined	<LOQ	<LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Chromium (0.123)				
Baseline	0.0613 \pm 0.0707	0.1370 \pm 0.0059	0.1203 \pm 0.0825	0.0655 \pm 0.0757
Pre-defined	0.0665 \pm 0.0769	<LOQ	n/a	n/a
<i>Ad libitum</i>	0.0728 \pm 0.0840	<LOQ	0.0688 \pm 0.0799	0.1040 \pm 0.0696
Nickel (0.123)				
Baseline	0.0358 \pm 0.0715	0.2048 \pm 0.1378	<LOQ	<LOQ
Pre-defined	0.1100 \pm 0.0746	0.0313 \pm 0.0625	n/a	n/a
<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Formaldehyde (0.619)				
Background before baseline	2.740 \pm 0.890	0.725 \pm 1.450	2.603 \pm 0.350	2.510 \pm 0.440
Baseline	3.690 \pm 0.289	5.685 \pm 1.710	3.433 \pm 0.204	4.375 \pm 0.108
Background before pre-defined	6.043 \pm 1.922	3.970 \pm 0.721	n/a	n/a
Pre-defined	5.355 \pm 0.078	4.973 \pm 0.340	n/a	n/a
Background before <i>ad libitum</i>	11.795 \pm 2.661	6.238 \pm 1.479	3.728 \pm 0.296	3.500 \pm 0.087
<i>Ad libitum</i>	9.160 \pm 0.995	5.823 \pm 0.123	3.878 \pm 0.509	55.100 \pm 4.113
Crotonaldehyde (0.619)				
Baseline	<LOQ	<LOQ	<LOQ	<LOQ

	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	1.0935 ± 0.7839
o-Tolualdehyde (0.0149)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Acetaldehyde (0.619)					
	Background before baseline	3.0125 ± 0.7023	0.6450 ± 1.2900	4.8650 ± 0.4876	4.6625 ± 0.1702
	Baseline	3.4638 ± 0.2354	2.7975 ± 0.4545	3.8275 ± 0.1909	4.1025 ± 0.1748
	Background before pre-defined	5.2800 ± 1.9407	3.6725 ± 0.5538	n/a	n/a
	Pre-defined	3.9313 ± 0.3089	3.6775 ± 0.3652	n/a	n/a
	Background before <i>ad libitum</i>	8.7350 ± 1.2678	5.4750 ± 0.6368	4.2850 ± 0.3608	5.3400 ± 0.5995
	<i>Ad libitum</i>	6.4075 ± 0.6394	7.7288 ± 4.4290	5.3825 ± 0.4129	110.5000 ± 5.3229
Butyraldehyde (0.698)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	6.118 ± 0.860
m- and p-Tolualdehyde (1.240)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Acetone (0.619)					
	Background before baseline	21.618 ± 29.558	3.938 ± 7.875	NR	27.050 ± 8.662
	Baseline	16.013 ± 0.802	21.000 ± 5.314	NR	40.925 ± 4.148
	Background before pre-defined	35.500 ± 21.324	14.943 ± 5.394	n/a	n/a
	Pre-defined	25.863 ± 0.477	31.050 ± 4.118	n/a	n/a
	Background before <i>ad libitum</i>	41.350 ± 17.666	21.625 ± 10.341	NR	19.025 ± 5.405
	<i>Ad libitum</i>	45.588 ± 3.171	30.238 ± 5.025	NR	78.600 ± 6.044
Benzaldehyde (0.619)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	0.5300 ± 1.0600
Propionaldehyde (0.798)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	NR	<LOQ	<LOQ	<LOQ
Isovaleraldehyde (0.619)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	2.095 ± 0.567
Hexaldehyde (1.200)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a

	<i>Ad libitum</i>	2.0698 ± 0.5217	<LOQ	<LOQ	3.2713 ± 0.3696
Valeraldehyde (0.619)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	6.095 ± 0.887
2,5-Dimethylbenzaldehyde (0.884)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	4.538 ± 0.843
Methyl ethyl ketone (1.45)					
	Background before baseline	6.7150 ± 1.8311	2.2425 ± 2.7019	10.6700 ± 1.3361	9.6150 ± 1.1676
	Baseline	5.1450 ± 0.7422	4.1088 ± 0.9380	6.9400 ± 1.1038	7.5450 ± 0.5572
	Background before pre-defined	7.2200 ± 1.2561	4.4925 ± 0.6173	n/a	n/a
	Pre-defined	7.1463 ± 1.9858	4.3075 ± 0.3774	n/a	n/a
	Background before <i>ad libitum</i>	11.7650 ± 1.4732	5.4525 ± 2.2910	8.3300 ± 1.4816	7.5025 ± 0.7192
	<i>Ad libitum</i>	9.0200 ± 0.8979	5.9000 ± 0.6691	7.4575 ± 0.9666	24.4750 ± 2.1991
Acrolein (0.619)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
1,3-Butadiene (0.194)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	10.5550 ± 0.5709
Benzene (0.281)					
	Baseline	0.5843 ± 0.0280	1.4305 ± 0.1778	0.9145 ± 0.0474	2.2685 ± 0.0669
	Pre-defined	0.8338 ± 0.0240	0.6823 ± 0.0075	n/a	n/a
	<i>Ad libitum</i>	0.5400 ± 0.0039	0.7025 ± 0.1280	1.0605 ± 0.0152	15.5075 ± 0.4649
Isoprene (0.243)					
	Baseline	7.4870 ± 0.4478	6.4588 ± 0.1464	7.5715 ± 0.1687	7.8865 ± 0.2324
	Pre-defined	9.2058 ± 0.2934	7.0130 ± 0.2909	n/a	n/a
	<i>Ad libitum</i>	7.0823 ± 1.8117	6.2833 ± 1.6497	9.4103 ± 0.2820	175.7000 ± 8.0403
Toluene (0.330)					
	Baseline	1.0908 ± 0.2644	2.2078 ± 0.2517	2.0225 ± 0.4056	3.8565 ± 0.1952
	Pre-defined	2.9933 ± 0.3542	0.1883 ± 0.2192	n/a	n/a
	<i>Ad libitum</i>	1.5220 ± 0.2453	0.6803 ± 0.1808	2.1505 ± 0.0817	34.6825 ± 1.0908
Furan (0.178)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	12.078 ± 0.497
Ethylene oxide (0.628)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a

	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Vinyl chloride (0.222)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	0.1138 ± 0.2275
Propylene oxide (0.826)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Nitromethane (4.33)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
2-Nitropropane (6.33)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Vinyl acetate (6.11)					
	Baseline	<LOQ	<LOQ	<LOQ	<LOQ
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ
Ethylbenzene (0.378)					
	Baseline	<LOQ	<LOQ	<LOQ	1.0978 ± 0.0296
	Pre-defined	<LOQ	<LOQ	n/a	n/a
	<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	4.6200 ± 0.1589

Values are means of four samplers ± SD. Note: N: number of participants in the group; n/a: not applicable; NR: not reportable, compound was not quantifiable due to unknown matrix interferences;

<LOQ: below the level of quantification.

Table S2. Absolute levels of RAS constituents ($\mu\text{g}/\text{m}^3$) measured during background (where detected), baseline and product use conditions, for all groups, for each of the four sampling port.

Constituent (LOQ $\mu\text{g}/\text{m}^3$)	Group I (N = 9)	Group II (N = 9)	Group III (N=9)	Group IV (N=10)
Condition				
Nicotine (0.248)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	0.294, 0.611, 0.386, 0.614	2.280, 3.350, 2.850, 2.830	n/a	n/a
<i>Ad libitum</i>	0.315, 0.376, 0.355, 0.478	0.992, 0.687, 0.929, 1.230	1.220, 1.190, 1.650, 1.830	34.700, 36.100, 43.500, 48.300
Propylene glycol (3.63)				
Baseline	17.60, 15.70, 15.70, 20.35	66.30, 57.40, 63.90, 65.35	59.10, 55.30, 63.60, 69.75	9.02, 8.43, 10.70, 10.90
Pre-defined	61.20, 63.95, 55.70, 67.95	257.00, 279.00, 278.00, 285.00	n/a	n/a
<i>Ad libitum</i>	47.90, 50.00, 48.70, 55.00	128.00, 129.00, 134.00, 136.00	361.00, 372.00, 396.00, 387.00	59.70, 64.30, 68.20, 71.70
Glycerol (4.11)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	62.90, 90.90, 50.80, 66.95	112.00, 143.00, 127.00, 125.00	n/a	n/a
<i>Ad libitum</i>	68.60, 136.00, 90.10, 100.90	70.20, 73.80, 80.50, 90.10	236.00, 250.00, 247.00, 235.00	<LOQ, <LOQ, <LOQ, <LOQ
Arsenic (0.123)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Cadmium (0.123)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Chromium (0.123)				
Baseline	0.124, <LOQ, <LOQ, 0.121	0.141, 0.136, 0.129, 0.142	0.133, 0.175, 0.173, <LOQ	0.133, 0.129, <LOQ, <LOQ
Pre-defined	<LOQ, 0.128, 0.138, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	0.145, <LOQ, 0.146, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	0.126, 0.149, <LOQ, <LOQ	0.139, 0.146, 0.131, <LOQ
Nickel (0.123)				
Baseline	0.143, <LOQ, <LOQ, <LOQ	<LOQ, 0.285, 0.246, 0.288	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	0.163, < LOQ, 0.13, 0.147	<LOQ, 0.125, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Formaldehyde (0.619)				
Background before baseline	4.01, 1.96, 2.63, 2.36	<LOQ, <LOQ, 2.90, <LOQ	2.18, 2.48, 2.76, 2.99	2.90, 2.37, 1.95, 2.82
Baseline	3.59, 3.50, 3.55, 4.12	5.84, 4.27, 8.04, 4.59	3.49, 3.67, 3.18, 3.39	4.33, 4.28, 4.53, 4.36
Background before pre-defined	5.25, 8.86, 5.51, 4.55	2.92, 4.47, 4.08, 4.41	n/a	n/a
Pre-defined	5.36, 5.26, 5.45, 5.35	4.75, 5.42, 5.05, 4.67	n/a	n/a
Background before <i>ad libitum</i>	10.10, 14.80, 13.20, 9.08	4.27, 5.97, 7.60, 7.11	4.13, 3.49, 3.52, 3.77	3.58, 3.57, 3.43, 3.42
<i>Ad libitum</i>	9.78, 8.08, 8.58, 10.20	5.98, 5.82, 5.81, 5.68	3.94, 3.14, 4.24, 4.19	50.00, 55.80, 54.60, 60.00

Crotonaldehyde (0.619)					
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	1.315, 1.199, <LOQ, 1.860
o-Tolualdehyde (0.0149)					
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Acetaldehyde (0.619)					
Background before baseline	3.940, 2.270, 2.760, 3.080	<LOQ, <LOQ, 2.580, <LOQ	4.340, 5.440, 5.070, 4.610	4.480, 4.620, 4.890, 4.660	
Baseline	3.585, 3.400, 3.165, 3.705	2.830, 2.675, 3.390, 2.295	4.030, 3.870, 3.570, 3.840	3.850, 4.220, 4.120, 4.220	
Background before pre-defined	3.820, 7.910, 5.580, 3.810	2.930, 3.570, 4.070, 4.120	n/a	n/a	
Pre-defined	4.030, 3.630, 3.745, 4.320	3.390, 3.670, 4.195, 3.455	n/a	n/a	
Background before <i>ad libitum</i>	8.510, 8.450, 10.500, 7.480	4.640, 5.430, 5.660, 6.170	4.040, 4.270, 4.030, 4.800	5.050, 6.130, 4.740, 5.440	
<i>Ad libitum</i>	6.585, 5.745, 6.085, 7.215	4.560, 5.995, 6.070, 14.290	5.210, 4.890, 5.810, 5.620	104.000, 110.000, 111.000, 117.000	
Butyraldehyde (0.698)					
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	5.45, 5.70, 7.37, 5.95
m- and p-Tolualdehyde (1.240)					
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Acetone (0.619)					
Background before baseline	65.30, 9.57, 0.00, 11.60	<LOQ, <LOQ, 15.75, <LOQ	NR, NR, NR, NR	31.80, 27.60, 34.10, 14.70	
Baseline	16.10, 14.95, 16.10, 16.90	23.00, 20.30, 26.65, 14.05	NR, NR, NR, NR	35.40, 45.30, 42.30, 40.70	
Background before pre-defined	23.10, 38.40, 64.30, 16.20	8.87, 14.20, 14.70, 22.00	n/a	n/a	
Pre-defined	25.15, 26.15, 26.10, 26.05	28.65, 33.30, 35.60, 26.65	n/a	n/a	
Background before <i>ad libitum</i>	36.40, 33.10, 67.40, 28.50	11.80, 17.90, 20.70, 36.10	NR, NR, NR, NR	19.70, 11.30, 23.70, 21.40	
<i>Ad libitum</i>	42.35, 45.10, 49.95, 44.95	28.05, 28.00, 27.15, 37.75	NR, NR, NR, NR	71.40, 82.70, 75.90, 84.40	
Benzaldehyde (0.619)					
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ, 2.12
Propionaldehyde (0.798)					
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	NR, <LOQ, NR, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, NR, <LOQ, <LOQ	n/a	n/a	n/a
<i>Ad libitum</i>	NR, NR, NR, NR	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Isovaleraldehyde (0.619)					

Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	2.12, 2.18, 1.35, 2.73
Hexaldehyde (1.200)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	1.909, 2.667, 1.440, 2.263	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	3.485, 2.890, 3.035, 3.675
Valeraldehyde (0.619)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	6.24, 5.50, 5.35, 7.29
2,5-Dimethylbenzaldehyde (0.884)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	5.46, 3.66, 4.01, 5.02
Methyl ethyl ketone (1.45)				
Background before baseline	9.040, 4.610, 6.920, 6.290	<LOQ, 3.540, 5.430, <LOQ	9.830, 11.600, 12.000, 9.250	8.190, 11.000, 9.900, 9.370
Baseline	6.040, 4.255, 4.970, 5.315	4.195, 4.150, 5.190, 2.900	7.070, 5.900, 6.360, 8.430	6.790, 7.550, 8.120, 7.720
Background before pre-defined	7.640, 8.700, 6.800, 5.740	3.630, 5.020, 4.480, 4.840	n/a	n/a
Pre-defined	10.115, 6.385, 6.055, 6.030	4.435, 4.520, 4.530, 3.745	n/a	n/a
Background before <i>ad libitum</i>	11.200, 12.700, 13.200, 9.960	3.700, 4.770, 4.520, 8.820	7.890, 7.770, 7.160, 10.500	6.840, 7.740, 8.410, 7.020
<i>Ad libitum</i>	9.235, 7.885, 8.905, 10.055	5.205, 5.450, 6.505, 6.440	7.370, 6.270, 7.560, 8.630	21.200, 25.200, 25.800, 25.700
Acrolein (0.619)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
1,3-Butadiene (0.194)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ

Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	9.870, 10.310, 10.930, 11.110
Benzene (0.281)				
Baseline	0.586, 0.596, 0.545, 0.610	1.587, 1.582, 1.275, 1.278	0.975, 0.863, 0.924, 0.896	2.250, 2.273, 2.356, 2.195
Pre-defined	0.846, 0.860, 0.806, 0.823	0.678, 0.692, 0.675, 0.684	n/a	n/a
<i>Ad libitum</i>	0.538, 0.541, 0.536, 0.545	0.770, 0.775, 0.754, 0.511	1.059, 1.075, 1.068, 1.040	14.910, 15.370, 15.840, 15.910
Isoprene (0.243)				
Baseline	7.376, 7.118, 7.316, 8.138	6.373, 6.325, 6.482, 6.655	7.591, 7.346, 7.594, 7.755	7.633, 7.821, 7.900, 8.192
Pre-defined	8.861, 9.109, 9.299, 9.554	6.932, 6.672, 7.079, 7.369	n/a	n/a
<i>Ad libitum</i>	7.657, 7.929, 4.398, 8.345	7.027, 6.918, 7.363, 3.825	9.215, 9.160, 9.494, 9.772	166.400, 173.700, 176.900, 185.800
Toluene (0.330)				
Baseline	0.948, 1.296, 0.790, 1.329	2.390, 2.391, 1.857, 2.193	2.603, 1.658, 1.928, 1.901	4.045, 3.659, 4.002, 3.720
Pre-defined	3.079, 3.456, 2.766, 2.672	0.411, <LOQ, <LOQ, 0.342	n/a	n/a
<i>Ad libitum</i>	1.720, 1.614, 1.164, 1.590	0.662, 0.854, 0.769, 0.436	2.109, 2.273, 2.107, 2.113	33.260, 34.490, 35.170, 35.810
Furan (0.178)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	11.50, 11.99, 12.11, 12.71
Ethylene oxide (0.628)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Vinyl chloride (0.222)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, 0.455
Propylene oxide (0.826)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ

Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Nitromethane (4.33)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
2-Nitropropane (6.33)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Vinyl acetate (6.11)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ
Ethylbenzene (0.378)				
Baseline	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	1.096, 1.074, 1.140, 1.081
Pre-defined	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	n/a	n/a
<i>Ad libitum</i>	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	<LOQ, <LOQ, <LOQ, <LOQ	4.421, 4.566, 4.722, 4.771

Note: N: number of participants in the group; n/a: not applicable; NR: not reportable, compound was not quantifiable due to unknown matrix interferences; <LOQ: below the level of quantification.

Table S3. Absolute levels of nicotine, propylene glycol and glycerol ($\mu\text{g}/\text{cm}^2$) in each surface sample location during each product use condition

Constituent (LOQ $\mu\text{g}/\text{cm}^2$)	Group I					Group II				Group III				Group IV			
	(N=9)					(N=9)				(N=9)				(N=10)			
Condition	Sampl e 1	Sampl e 2	Sampl e 3	Sampl e 4	Sampl e 1	Sampl e 2	Sampl e 3	Sampl e 4	Sampl e 1	Sampl e 2	Sampl e 3	Sampl e 4	Samp le 1	Samp le 2	Sample 3	Samp le 4	
Nicotine (0.00126)																	

Baseline	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
Pre-defined	0.00308	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	0.00437	<LOQ	<LOQ
Propylene glycol (0.0185)																	
Baseline	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
Pre-defined	0.0249	0.0189	0.0201	<LOQ	<LOQ	<LOQ	0.0194	<LOQ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<i>Ad libitum</i>	<LOQ	<LOQ	<LOQ	<LOQ	0.0262	0.0253	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
Glycerol (0.0209)																	
Baseline	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ
Pre-defined	<LOQ	<LOQ	<LOQ	<LOQ	0.0819	0.0829	0.078	0.0321	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<i>Ad libitum</i>	0.025	<LOQ	0.0258	0.0281	<LOQ	<LOQ	<LOQ	<LOQ	0.2701	0.511	0.325	0.2395	<LOQ	<LOQ	<LOQ	<LOQ	<LOQ

Note: N: number of participants in the group; n/a: not applicable; LOQ: limit of quantification.