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Supporting Information to:

Field evaluation of a passive personal air sampler for PAH exposure in workplaces

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Text SI-1

Quality assurance/Quality control

Field blanks (1 in 7 samples) were taken every deployment day by keeping pre-cleaned mini-PUFs, PUF-PAS disks, GFFs, PUF plugs, and XAD-2 outside in the deployment area during the assembly of the samplers. The field and lab blanks were extracted and analyzed parallel with and in the same way as the samples. The levels of all PAH compounds in the field blanks and lab blanks never exceeded 1% of the quantities detected in the samples, indicating minimal contamination during transport, deployment, and storage before analysis. The limit of detection (LOD), calculated as the mean field blanks plus three times the standard deviation of the mean, varied depending on compound from 0.1 to 5 ng per sample, except for naphthalene which had a LOD of 60 ng per sample.

Quality control samples spiked with certified reference materials (urban dust; SRM1649a, National Institute of Standards & Technology, Gaithersburg, MD) were extracted, cleaned and analyzed together with the samples. The levels did not deviate from the certified results for the PAH compounds.

Table SI-1. Air concentrations of 15 EPA PAHs in µg m^{-3} (gas and particle phase), from active sampling, at the two sampling points within each site, presented as average of the two one week samplings at site 1 and average of replicates at site 2, together with the percentage of each compound found in the gas phase (PUF plugs or XAD-2) (%GP).

	Site 1a[a] (n=2)		**Site 1b**[a] (n=2)		**Site 2a** (n=4)		**Site 2b** (n=2)	
Concentration (µg/m3)	**Mean**	**%GP**	**Mean**	**%GP**	**Mean**	**%GP**	**Mean**	**%GP**
Nap	0.065	97	0.031	97	6.1	99	6.2	99
Acy	0.043	99	0.023	99	2.6	100	0.36	99
Ace	0.26	99	0.027	98	0.93	98	0.10	90
Flu	0.26	99	0.046	98	4.7	100	0.23	93
Phe	0.45	96	0.080	94	7.3	98	0.57	80
Fla	0.20	73	0.051	72	4.3	74	0.31	64
Pyr	0.054	74	0.026	71	2.5	65	0.19	54
BaA	0.006	31	0.003	36	2.1	3.0	0.12	15
Chr	0.026	16	0.016	20	2.4	3.0	0.15	22
BbF	0.008	5.9	0.010	13	1.1	2.0	0.078	6.0
BkF	0.005	8.9	0.004	19	0.72	2.0	0.061	6.9
BaP	0.005	25	0.003	32	2.3	1.0	0.16	6.4
Ind	0.002	5.5	0.003	21	0.36	0.7	0.032	8.6
DaA	<0.001	38	<0.001	22	0.075	0.3	0.007	0.0
BgP	0.006	17	0.004	17	1.0	0.6	0.11	5.4
Sum_{15}PAH	1.4		0.31		38		9.3	

[a]Previously reported in Bohlin et al.[25].

Table SI-2. Air concentrations of 16 extra PAHs in μg m^{-3} (gas and particle phase), from active sampling, at the two sampling points within each site, presented as average of the two one week samplings at site 1 and average of replicates at site 2, together with the percentage of each compound found in the gas phase (PUF plugs or XAD-2) (%GP).

	Site 1a (n=2)		**Site 1b** (n=2)		**Site 2a** (n=4)		**Site 2b** (n=2)	
Concentration (μg/m3)	**Mean**	**%GP**	**Mean**	**%GP**	**Mean**	**%GP**	**Mean**	**%GP**
1-Methylnapthalene	0.11	99	0.018	98	2.5	98	6.2	99
2-Methylnaphthalene	0.073	99	0.011	98	1.1	98	0.36	98
Biphenyl	0.055	99	0.011	98	0.36	97	0.10	96
2,3-Dimethylnaphthalene	0.012	99	0.003	98	0.17	98	0.23	89
2,3,5-Trimethylnaphthalene	0.003	98	0.002	97	0.15	93	0.57	73
1-Methylfluorene	0.002	98	0.001	94	0.21	97	0.10	75
2-Methylphenanthrene	0.023	94	0.002	87	0.48	95	0.31	71
3-Methylphenanthrene	0.026	92	0.003	84	0.58	95	0.19	68
1-Methylphenanthrene	0.013	94	0.002	86	0.39	92	0.12	70
1-Methylanthracene	0.010	92	0.002	83	0.19	92	0.15	69
2-Phenylnaphthalene	0.011	83	0.002	76	0.23	90	0.078	63
1-Methylfluoranthene	0.004	48	0.002	32	0.05	22	0.061	45
1-Methylpyrene	<0.001	52	<0.001	32	0.04	14	0.16	42
Retene	<0.001	47	<0.001	39	0.005	42	0.032	84
2-Methylchrysene	<0.001		<0.001	21	0.22	4	0.007	8
Perylene	0.001	1	0.001	71	0.57	1	0.11	20

Table SI-3. Estimated R-values (m^3 day^{-1}), average±standard deviation, for 16 extra PAHs.

PUF: Exposure time:	**PUF-PAS** **2 weeks** (n=12)	**Mini-PUF** **2 weeks** (n=12)	**Mini-PUF** **8h** (n=12)
1-Methylnapthalene	2.1±1.0	0.9±0.2	1.2±0.3
2-Methylnaphthalene	1.9±0.5	0.8±0.2	1.6±0.2
Biphenyl	2.0±0.3	0.7±0.2	2.3±0.3
2,3-Dimethylnaphthalene	2.2±1.1	0.6±0.1	1.2±0.2
2,3,5-Trimethylnaphthalene	1.9±0.6	6.7±8.6	2.4±0.2
1-Methylfluorene	1.4±0.3	1.6±1.4	3.0±0.8
2-Methylphenanthrene	6.2±2.0	2.1±0.8	4.4±0.6
3-Methylphenanthrene	6.0±1.9	2.0±0.6	4.4±0.5
1-Methylphenanthrene	6.5±2.2	2.1±0.7	4.9±0.9
1-Methylanthracene	5.8±2.0	1.9±0.6	4.2±0.5
2-Phenylnaphthalene	8.3±3.1	3.4±2.4	4.9±0.4
1-Methylfluoranthene	12±8.8	1.9±1.1	3.5±1.3
1-Methylpyrene	20±13	3.7±1.9	3.7±1.3
Retene	10±4.0	0.6±0.9	3.4±0.6
2-Methylchrysene	6.2±3.6	1.2±0.7	1.4±0.4
Perylene	7.0±7.2	1.2±0.7	1.4±0.2

Table SI-4. Accuracy (expressed as % (((C$_{act}$-C$_{PAS}$)/C$_{act}$)x100)) of R-values in estimating air concentrations.

PUF: Exposure time:	**PUF-PAS 2 weeks** (n=6)	**Mini-PUF 2 weeks** (n=6)	**Mini-PUF 8h** (n=4)
Nap	30	107	2
Ace	-26	91	150
Acy	-73	-18	22
Flu	10	-15	-2
Phe	-7	-26	-23
Fla	110	42	-40
Pyr	260	65	-19
BaA	240	54	-37
Chr	200	50	-35
BbF	340	180	41
BkF	190	53	10
BaP	150	-3	6
Ind	910	360	110
BgP	100	-32	33
PAH$_{15}$	36	-31	9

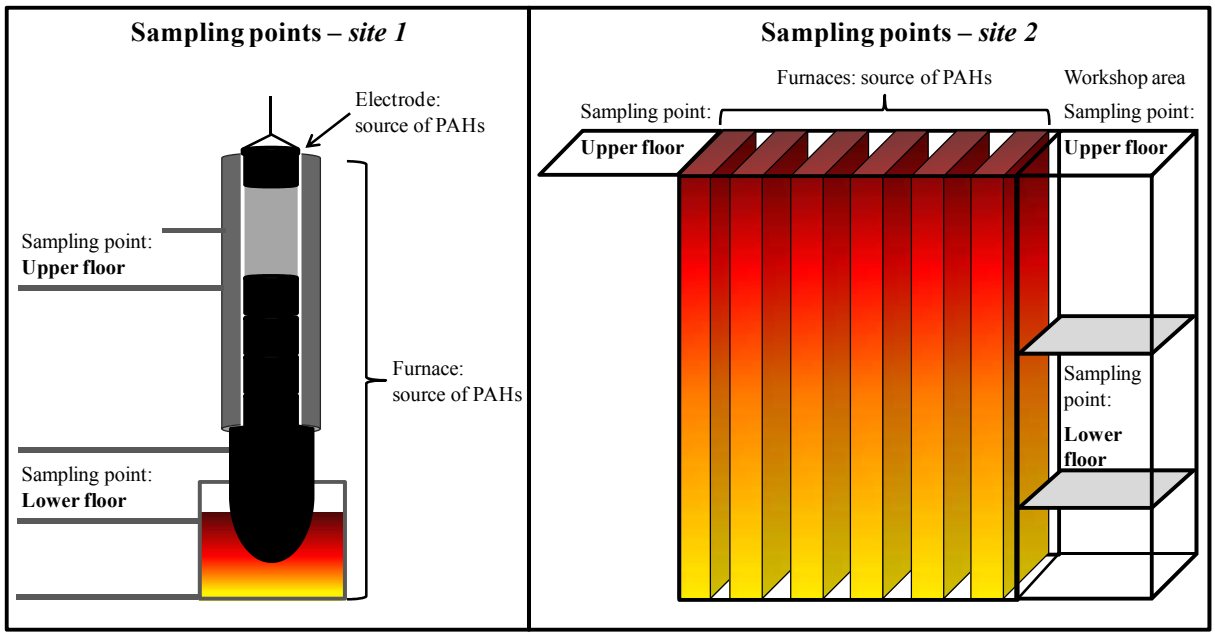

Figure SI-1. Schematic figure of the sampling points at each site. The sources of potential PAH emission are also indicated.

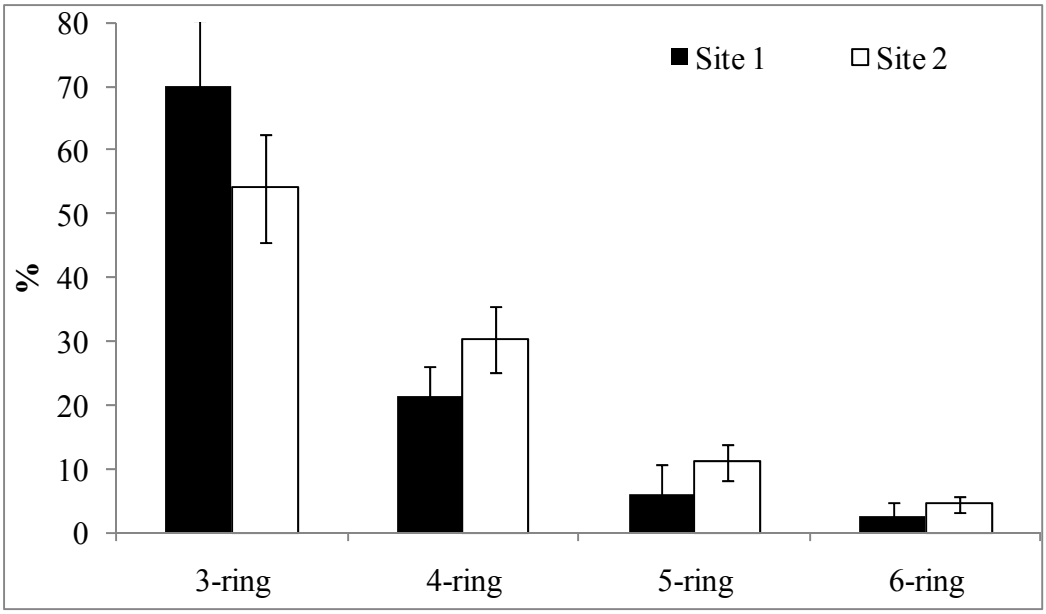

Figure SI-2. Average PAH pattern at the two sampling sites. The pattern is based on 12 samples at each site.

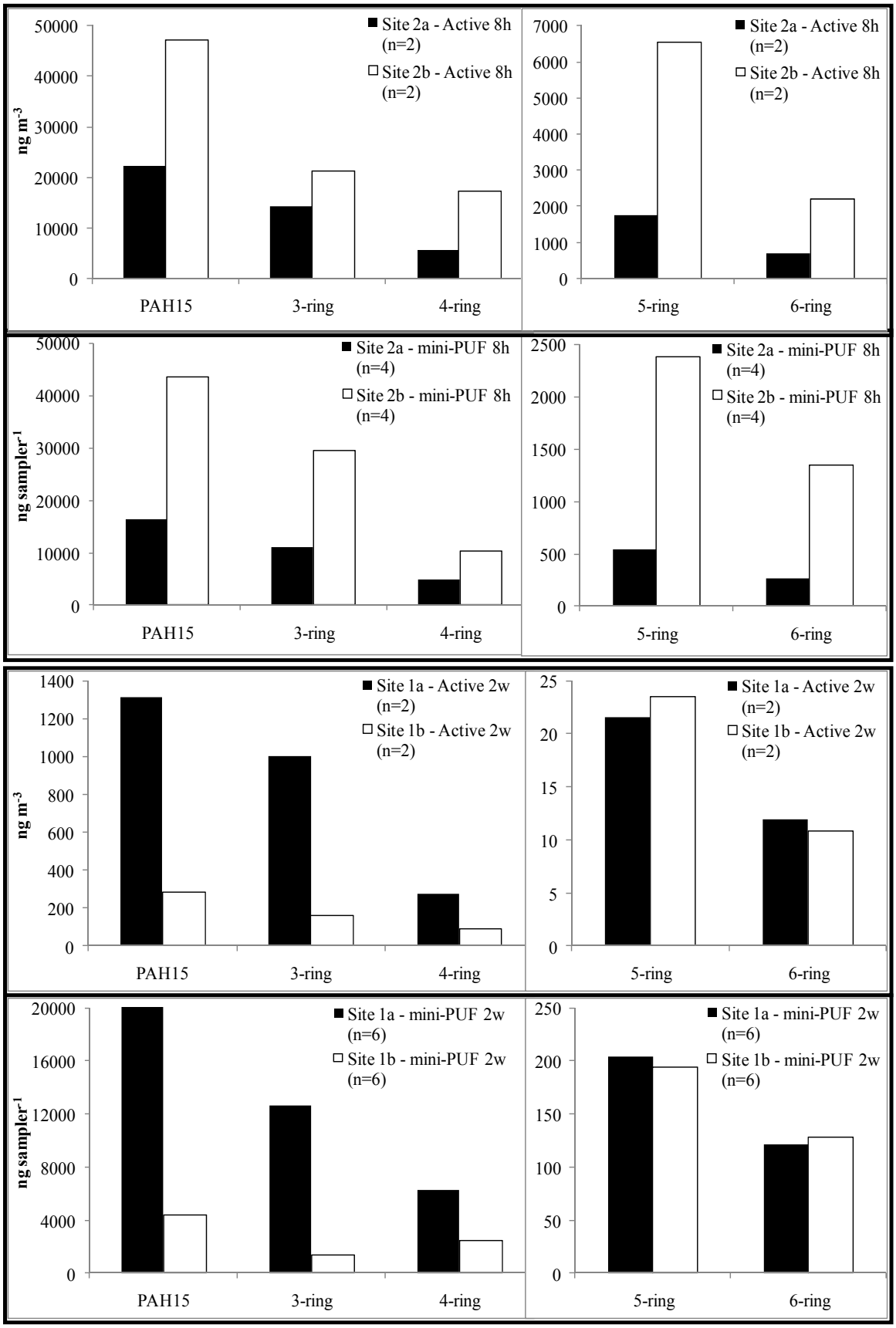

Figure SI-3. Spatial distribution of PAHs from active and passive samplers at two sampling points in each site.