

Supplementary Material

Thirdhand vaping exposures are associated with pulmonary and systemic inflammation in a mouse model

Sarah Commodore¹, Shikha Sharma¹, Carolyn Damilola Ekpruke¹, Robert Pepin², Angela M. Hansen², Dustin Rousselle¹, Maksat Babayev¹, Jonas M. Ndeke³, Rachel Alford¹, Erik Parker⁴, Stephanie Dickinson⁴, Sunita Sharma⁵, Patricia Silveyra^{1,6}

¹Department of Environmental and Occupational Health, School of Public Health Bloomington, Indiana University, Bloomington, IN 47408, USA.

²Department of Chemistry, Indiana University, Bloomington, IN 47405, USA.

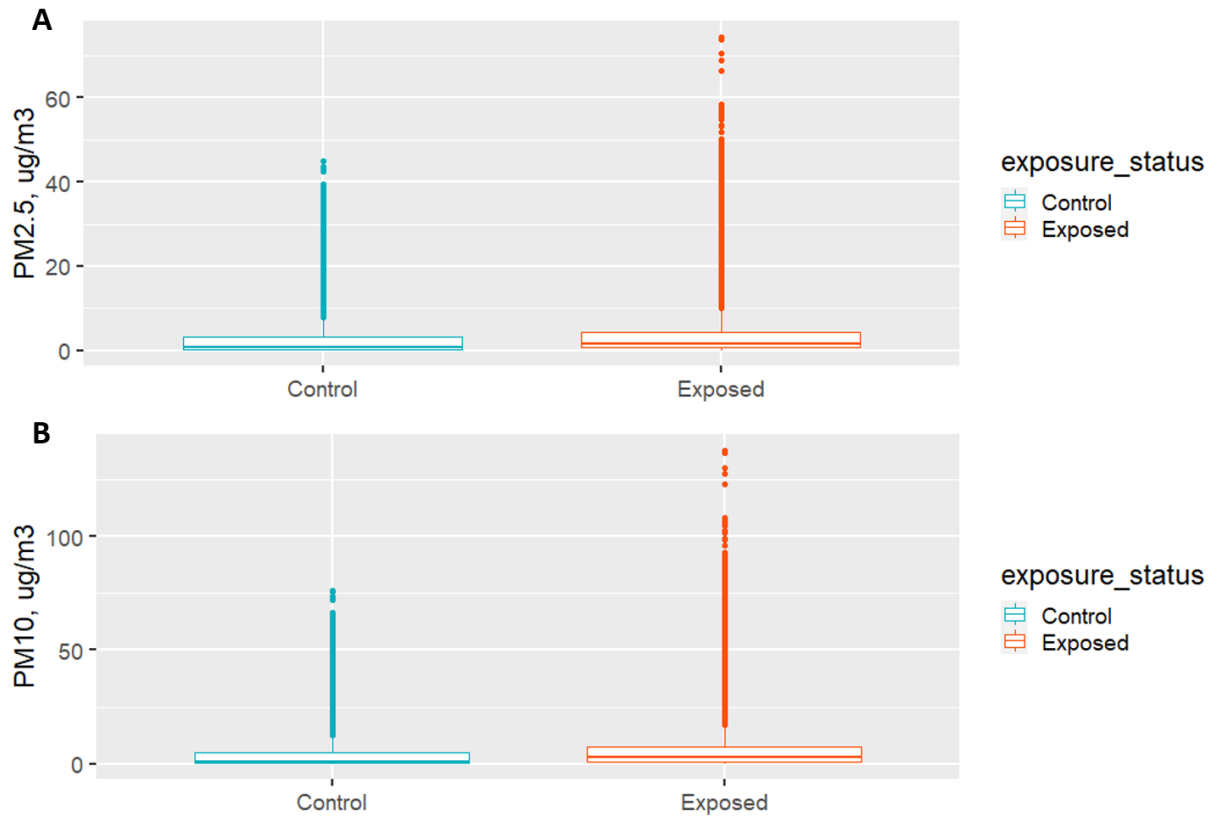
³Department of Epidemiology and Biostatistics, School of Public Health Bloomington, Indiana University, Bloomington, IN 47405, USA.

⁴Biostatistics Consulting Center, Department of Epidemiology and Biostatistics, School of Public Health Bloomington, Indiana University, Bloomington, IN 47405, USA.

⁵Division of Pulmonary Sciences and Critical Care Medicine, University of Colorado Anschutz Medical Campus, Aurora, CO 80045, USA.

⁶Department of Medicine, Indiana University School of Medicine, Indianapolis, IN 46202, USA.

Correspondence to: Dr. Sarah Commodore, Department of Environmental and Occupational Health, School of Public Health Bloomington, Indiana University, 2719 E 10th St, Bloomington, IN 47408, USA. E-mail: scommod@iu.edu



Supplementary Figure 1. Boxplots of combined PM_{2.5} (A) and PM₁₀ (B) data measured during four different monitoring periods in cages with ENDS-contaminated towels and control towels.

Supplementary Table 1. Analysis of variance (ANOVA) of Il-7 in serum and Il-13, Il-1 β and Il-12p70 in bronchoalveolar lavage fluid (BALF) of mice exposed to towels with ENDS-contaminated aerosols compared to control mice

Serum Il-7					
Parameter	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Exposure status	1	1.12	1.12	12.31	0.01
Sex	1	0.19	0.19	2.12	0.19
Age	1	0.45	0.45	4.94	<u>0.06</u>
Exposure status*Age	1	0.01	0.01	0.14	0.72
Exposure status*Sex	1	0.44	0.44	4.81	<u>0.06</u>
BALF Il-13					
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Exposure status	1	0.05	0.05	9.72	0.02
Sex	1	0.00	0.00	0.24	0.64
Age	1	0.00	0.00	0.23	0.65
Exposure status*Age	1	0.00	0.00	0.94	0.36
Exposure status*Sex	1	0.00	0.00	0.72	0.43
BALF Il-1β					
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Exposure status	1	1.47	1.47	3.25	0.11
Sex	1	0.28	0.28	0.62	0.46
Age	1	0.13	0.13	0.29	0.61
Exposure status*Age	1	0.91	0.91	2.02	0.20
Exposure status*Sex	1	0.21	0.21	0.46	0.52
BALF Il-12p70					
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Exposure status	1	0.26	0.26	3.52	0.10
Sex	1	0.11	0.11	1.48	0.26
Age	1	0.19	0.19	2.58	0.15

Exposure status*Age	1	0.02	0.02	0.25	0.63
Exposure status*Sex	1	0.03	0.03	0.38	0.56

P values in bold are < 0.05, while underlined *p* values are < 0.1.

Supplementary Table 2. Results of linear mixed effects model for exposed and control mouse weights over time

Parameter	Estimate	Standard Error	df	t value	P value
(Intercept)	21.1	1.3	11.0	15.6	<0.0001
Exposure status (exposed mice as reference)	-3.6	1.3	12.0	-2.7	0.019
Sex (male as reference)	2.3	1.4	9.9	1.7	0.122
Time 1 (time 0 is baseline reference of initial mouse weight)	0.5	0.5	55.9	1.1	0.288
Time 2	1.3	0.5	55.9	2.9	0.006
Time 3	1.5	0.5	55.9	3.2	0.002
Time 4	2.7	0.5	55.9	5.7	<0.0001
Time 5	2.5	0.5	56.0	4.8	<0.0001
Time 6	1.0	0.5	56.0	2.0	<u>0.056</u>
Exposure status*time 1	0.4	0.6	55.9	0.6	0.576
Exposure status*time 2	-0.05	0.6	55.9	-0.1	0.941
Exposure status*time 3	0.2	0.6	55.9	0.3	0.737
Exposure status*time 4	-0.8	0.6	55.9	-1.3	0.208
Exposure status*time 5	-0.7	0.7	56.1	-1.0	0.330
Exposure status*time 6	1.3	0.7	56.1	1.7	<u>0.093</u>