

**Table S1.** Daily air pollutant concentrations correlation matrix for study period 1st April – 31th May 2020, Kanazawa city<sup>a</sup>

	Flt	Pyr	BaA	Chr	BbF	BkF	BaP	BghiP	IcdP	Total PAHs	TSP	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>2.5</sub>
Flt	1	0.984**	0.088	0.981**	0.951**	0.952**	0.846**	0.856**	0.850**	0.969**	0.584**	0.453**	0.18	0.664**
Pyr		1	0.179	0.978**	0.948**	0.966**	0.901**	0.892**	0.882**	0.981**	0.542**	0.415**	0.222	0.670**
BaA			1	0.177	0.257*	0.283*	0.380**	0.341**	0.309*	0.245	-0.042	-0.123	0.144	0.139
Chr				1	0.978**	0.978**	0.904**	0.903**	0.899**	0.987**	0.626**	0.468**	0.214	0.720**
BbF					1	0.987**	0.917**	0.942**	0.935**	0.986**	0.604**	0.415**	0.22	0.715**
BkF						1	0.945**	0.958**	0.947**	0.995**	0.557**	0.370**	0.222	0.696**
BaP							1	0.953**	0.949**	0.941**	0.486**	0.296*	0.221	0.674**
BghiP								1	0.989**	0.952**	0.476**	0.309*	0.278*	0.640**
IcdP									1	0.945**	0.466**	0.312*	0.260*	0.640**
Total PAHs										1	0.564**	0.402**	0.228	0.693**
TSP											1	0.677**	0.119	0.613**
SO <sub>2</sub>												1	0.174	0.646**
NO <sub>2</sub>													1	0.071
PM <sub>2.5</sub>														1

\*\*p&lt;0.01, \*p&lt;0.05

a. Pearson's correlation coefficients.

**Table S2.** Daily air pollutant concentrations correlation matrix for study period 1st April – 31th May 2020, Fukuoka city<sup>a</sup>

	Flt	Pyr	BaA	Chr	BbF	BkF	BaP	BghiP	IcdP	Total PAHs	TSP	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>2.5</sub>
Flt	1	0.980**	-0.013	0.986**	0.888**	0.957**	0.932**	0.757**	0.865**	0.967**	0.368**	-0.021	0.393**	0.106
Pyr		1	0.129	0.971**	0.912**	0.956**	0.940**	0.787**	0.855**	0.979**	0.349**	-0.033	0.389**	0.080
BaA			1	0.029	0.321*	0.132	0.135	0.197	0.053	0.176	-0.150	-0.025	-0.231	-0.153
Chr				1	0.898**	0.977**	0.964**	0.787**	0.887**	0.975**	0.334**	-0.047	0.393**	0.093
BbF					1	0.949**	0.890**	0.751**	0.884**	0.958**	0.356**	-0.058	0.400**	0.153
BkF						1	0.980**	0.826**	0.932**	0.989**	0.330**	-0.062	0.414**	0.138
BaP							1	0.832**	0.896**	0.963**	0.271*	-0.060	0.386**	0.092
BghiP								1	0.842**	0.843**	0.319*	-0.046	0.288*	0.191
IcdP									1	0.921**	0.393**	-0.066	0.457**	0.281*
Total PAHs										1	0.366**	-0.041	0.397**	0.141
TSP											1	0.156	0.354**	0.580**
SO <sub>2</sub>												1	-0.123	0.250
NO <sub>2</sub>													1	0.256*
PM <sub>2.5</sub>														1

\*\*p&lt;0.01, \*p&lt;0.05

a. Pearson's correlation coefficients.

**Table S3. Adjusted estimates of cough symptoms in total PAH exposure in the GEE lag 3 model**

	Coefficient (B)	95% CI	p value
Monitoring site (Kanazawa vs. Fukuoka)	0.630	−0.769, 2.030	0.377
Sex (men vs. women)	−0.614	−1.584, 0.355	0.214
Age, year	0.008	−0.013, 0.028	0.463
Body mass rank	−0.383	−1.133, 0.366	0.316
No asthma	0.195	−0.868, 1.258	0.719
Total PAHs, ng/m <sup>3</sup>	0.142	−0.052, 0.336	0.152
PM <sub>2.5</sub> , µg/m <sup>3</sup>	−0.016	−0.028, −0.004	<b>0.010</b>
SO <sub>2</sub> , ppb	68.054	4.556, 131.552	<b>0.036</b>
NO <sub>2</sub> , ppb	6.100	−13.438, 25.639	0.541

CI, confidence interval. The p values of <0.05 are highlighted in bold. Adjusted for monitoring sites, sex, age, body mass ranking, asthma, and daily concentrations of PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub>

**Table S4. Adjusted estimates of cough symptoms in total PAH exposure in the GEE lag 4 model**

	Coefficient (B)	95% CI	p value
Monitoring site (Kanazawa vs. Fukuoka)	0.654	−0.752, 2.060	0.362
Sex (men vs. women)	−0.597	−1.561, 0.367	0.225
Age, year	0.008	−0.013, 0.028	0.459
Body mass rank	−0.379	−1.125, 0.366	0.319
No asthma	0.185	−0.874, 1.245	0.732
Total PAHs, ng/m <sup>3</sup>	0.193	−0.038, 0.424	0.101
PM <sub>2.5</sub> , µg/m <sup>3</sup>	−0.015	−0.029, −0.001	<b>0.039</b>
SO <sub>2</sub> , ppb	48.165	−22.173, 118.504	0.180
NO <sub>2</sub> , ppb	6.965	−12.525, 26.454	0.484

CI, confidence interval. The p values of <0.05 are highlighted in bold. Adjusted for monitoring sites, sex, age, body mass ranking, asthma, and daily concentrations of PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub>