Supplementary materials for the study entitled "Using mobile air cleaners in school classrooms for aerosol removal: which, where, and how"

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Appendix A

Supplementary information on the selection of mobile air cleaners.

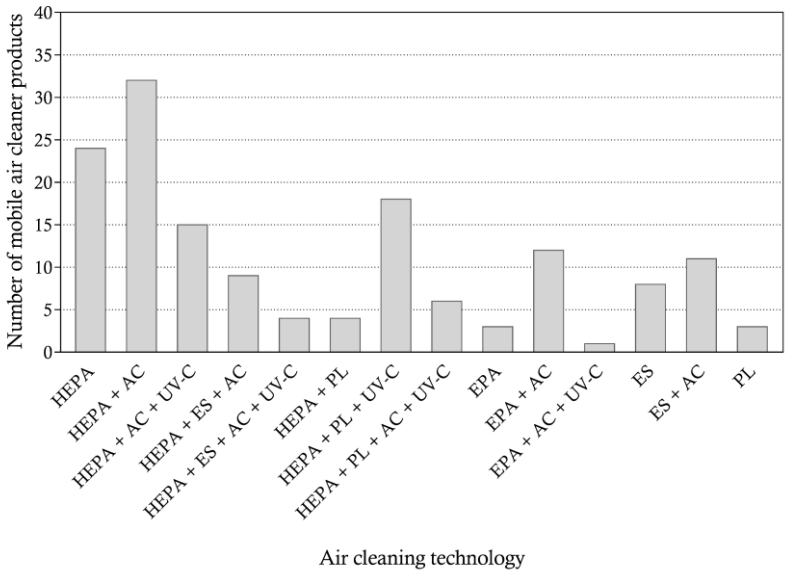

Figure A.1. Air cleaning technology of the pre-selected mobile air cleaners.

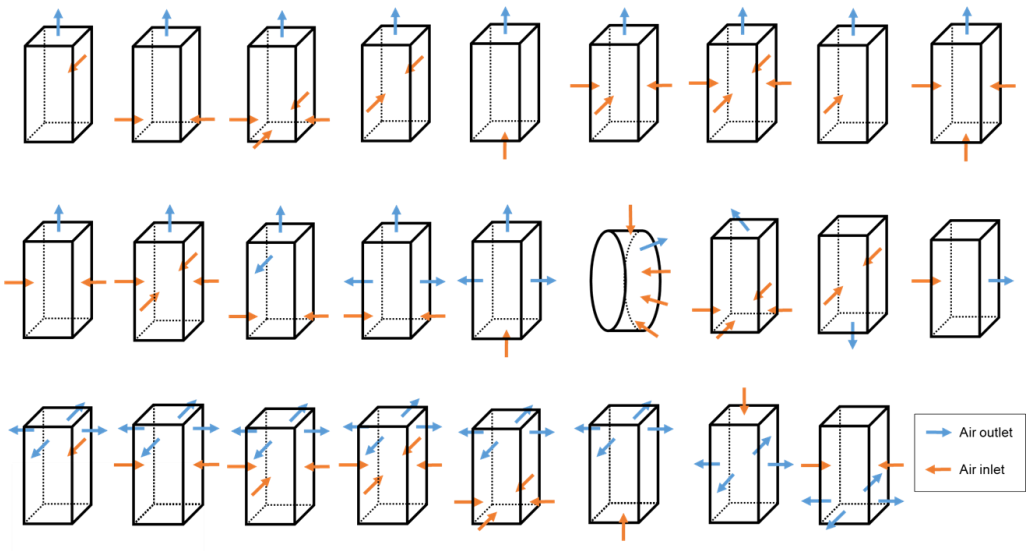

Figure A.2. Airflow pattern of the pre-selected mobile air cleaners.

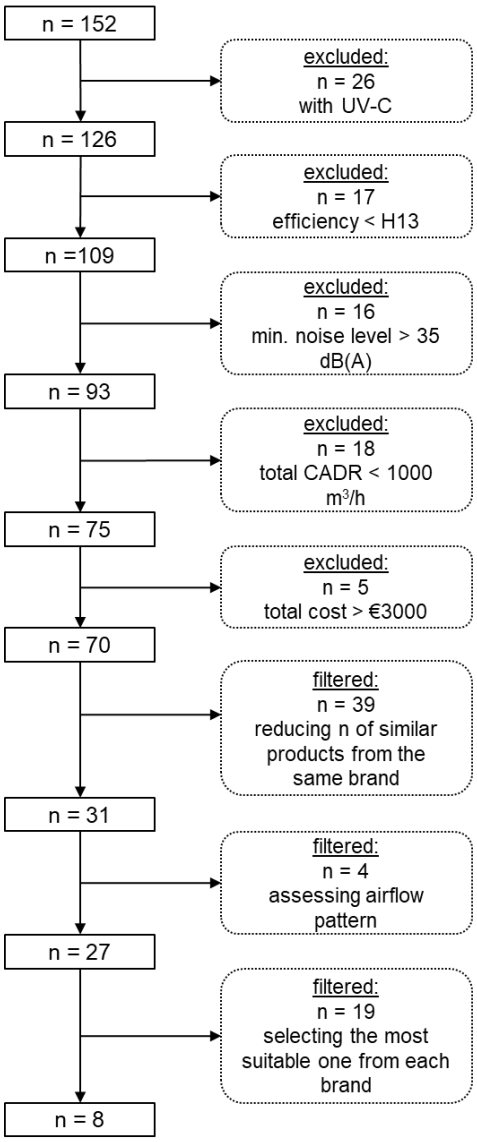

Figure A.3. Flowchart of the selection process of the tested mobile air cleaners.

Appendix B

Forms for the perception test.

General Information

1. Age _____ years

2. Gender

☐ Male ☐ Female

3. Which of the 9 images best suits how you feel at this moment?

☐ ☐ ☐

☐ ☐ ☐

☐ ☐ ☐

4. Please briefly describe the type of clothing you are wearing at this moment.

Top: _____

Bottom: _____

Shoes: _____

Questionnaire of Sound and Air Movement Perception

Part 1. Assessment of sound

1.1 Can you hear any sound at the location where you are sitting?

☐ Yes ☐ No

(If the answer is **Yes**, please continue with question 1.2 and 1.3; If the answer is **No**, you can skip question 1.2 and 1.3)

1.2 How loud is the sound that you hear?

Quiet ○ ○ ○ ○ ○ Loud

1.3 What is your assessment of the sound that your hear?

☐ ☐ ☐ ☐ ☐

Part 2. Assessment of air movement

2.1 Can you feel any air movement at the location where you are sitting?

☐ Yes ☐ No

(If the answer is **Yes**, please continue with question 2.2-2.4; If the answer is **No**, you can skip question 2.2-2.4)

2.2 At which part(s) of your body do you feel the air movement? Please mark the body part(s) with "x".

2.3 How strong is the air movement that you feel?

Mild ○ ○ ○ ○ ○ Strong

2.4 What is your assessment of the air movement that you feel?

☐ ☐ ☐ ☐ ☐

Appendix C

Supplementary information on the results of the particle decay test in the lab experiment.

Table C.1. Total decay coefficient k_{total} of $PM_{2.5}$.

Device[a]	Setting[b]	Configuration[c]	Location	k_{total} (h^{-1})	95% CI (lower, upper)[d]	R^2
MAC1	S1	C1	A	2.229	2.202, 2.257	0.988
			B	2.252	2.218, 2.286	0.982
			C	2.237	2.209, 2.265	0.988
			D	2.205	2.181, 2.228	0.991
			E	2.170	2.151, 2.189	0.994
			F	2.200	2.182, 2.218	0.994
		C2	A	2.830	2.811, 2.849	0.998
			B	2.825	2.800, 2.849	0.996
			C	2.853	2.825, 2.880	0.995
			D	2.935	2.920, 2.950	0.999
			E	2.869	2.851, 2.887	0.998
			F	2.862	2.843, 2.881	0.998
	S2	C1	A	5.052	5.004, 5.099	0.996
			B	5.193	5.151, 5.234	0.997
			C	5.026	4.984, 5.069	0.997
			D	5.050	5.008, 5.091	0.997
			E	4.965	4.919, 5.010	0.996
			F	5.077	5.035, 5.118	0.997
		C2	A	5.217	5.187, 5.247	0.999
			B	5.387	5.358, 5.416	0.999
			C	5.205	5.173, 5.237	0.999
			D	5.212	5.187, 5.237	0.999
			E	5.155	5.129, 5.181	0.999
			F	5.227	5.204, 5.251	0.999
MAC2	S1	C1	A	8.656	8.462, 8.851	0.989
			B	8.849	8.710, 8.988	0.995
			C	8.705	8.538, 8.873	0.992
			D	8.473	8.316, 8.631	0.993
			E	8.527	8.320, 8.733	0.987
			F	8.896	8.704, 9.087	0.990
		C2	A	5.280	5.140, 5.420	0.973
			B	4.538	4.488, 4.588	0.995
			C	4.372	4.335, 4.410	0.997
			D	4.480	4.443, 4.518	0.997
			E	4.605	4.553, 4.658	0.995
			F	4.499	4.453, 4.544	0.996
	S2	C1	A	13.213	13.012, 13.415	0.996
			B	14.672	14.426, 14.918	0.996
			C	13.312	13.112, 13.513	0.996
			D	12.886	12.675, 13.096	0.996
			E	14.281	13.946, 14.616	0.991
			F	13.008	12.801, 13.214	0.996
		C2	A	7.737	7.616, 7.857	0.994
			B	7.773	7.667, 7.879	0.995
			C	7.420	7.308, 7.533	0.994
			D	7.632	7.534, 7.730	0.996
			E	7.798	7.662, 7.934	0.992
			F	7.820	7.726, 7.915	0.996
MAC3	S1	C1	A	6.312	6.246, 6.378	0.997
			B	6.526	6.458, 6.593	0.997
			C	7.043	6.914, 7.173	0.990

Table C.1 (continued)

			D	8.149	7.934, 8.364	0.980
			E	6.839	6.690, 6.989	0.985
			F	7.713	7.557, 7.869	0.988
	S2	C1	A	15.107	14.949, 15.265	0.999
			B	15.816	15.558, 16.075	0.997
			C	16.149	15.789, 16.508	0.994
			D	15.926	15.582, 16.271	0.994
			E	15.478	15.232, 15.724	0.997
			F	15.816	15.610, 16.021	0.998
MAC4	S1	C1	A	5.461	5.388, 5.534	0.994
			B	5.773	5.726, 5.821	0.998
			C	6.108	6.042, 6.174	0.996
			D	5.863	5.801, 5.925	0.996
			E	5.977	5.899, 6.054	0.995
			F	6.426	6.377, 6.475	0.998
		C2	A	5.960	5.902, 6.018	0.997
			B	6.375	6.311, 6.439	0.997
			C	5.930	5.855, 6.005	0.995
			D	5.876	5.780, 5.973	0.991
			E	6.057	6.006, 6.109	0.998
			F	6.518	6.430, 6.606	0.994
	S2	C1	A	13.908	13.703, 14.113	0.996
			B	14.725	14.491, 14.958	0.996
			C	14.468	14.216, 14.719	0.995
			D	14.666	14.413, 14.920	0.995
			E	14.095	13.880, 14.309	0.996
			F	13.648	13.492, 13.804	0.998
		C2	A	14.119	13.741, 14.496	0.990
			B	14.866	14.615, 15.118	0.996
			C	13.777	13.473, 14.080	0.993
			D	14.181	14.002, 14.360	0.998
			E	14.765	14.523, 15.007	0.996
			F	14.444	14.101, 14.787	0.992
		C3	A	7.296	7.225, 7.367	0.997
			B	6.811	6.730, 6.892	0.996
			C	6.866	6.818, 6.915	0.999
			D	7.221	7.162, 7.281	0.998
			E	7.402	7.308, 7.496	0.995
			F	6.757	6.803, 6.811	0.998
MAC5	S1	C1	A	6.461	6.390, 6.532	0.997
			B	6.063	5.967, 6.160	0.993
			C	6.071	5.979, 6.164	0.993
			D	6.710	6.575, 6.844	0.989
			E	6.418	6.353, 6.483	0.997
			F	6.043	5.974, 6.112	0.996
		C2	A	6.870	6.794, 6.945	0.996
			B	6.956	6.845, 7.068	0.993
			C	6.764	6.667, 6.862	0.994
			D	7.304	7.198, 7.410	0.994
			E	7.841	7.737, 7.945	0.995
			F	9.167	8.982, 9.352	0.990
	S2	C1	A	10.984	10.836, 11.132	0.997
			B	10.836	10.726, 10.947	0.998
			C	10.462	10.317, 10.608	0.996
			D	11.182	11.010, 11.354	0.996
			E	10.630	10.472, 10.789	0.996
			F	10.760	10.603, 10.917	0.996

Table C.1 (continued)

		C2	A	12.297	12.130, 12.464	0.997
			B	12.467	12.234, 12.701	0.995
			C	11.737	11.358, 12.116	0.984
			D	14.784	14.481, 15.088	0.994
			E	13.993	13.819, 14.167	0.998
			F	13.862	13.720, 14.005	0.998
MAC6	S1	C1	A	7.363	7.254, 7.471	0.994
			B	7.251	7.176, 7.326	0.997
			C	7.441	7.334, 7.548	0.994
			D	7.263	7.170, 7.355	0.995
			E	7.573	7.480, 7.665	0.996
			F	7.331	7.252, 7.409	0.997
		C2	A	5.961	5.864, 6.059	0.990
			B	5.830	5.764, 5.896	0.995
			C	5.645	5.576, 5.715	0.994
			D	6.097	6.015, 6.179	0.993
			E	6.027	5.952, 6.101	0.994
			F	5.789	5.731, 5.848	0.996
	S2	C1	A	14.212	14.014, 14.410	0.996
			B	15.286	15.039, 15.533	0.995
			C	14.350	14.101, 14.598	0.994
			D	13.837	13.654, 14.020	0.997
			E	15.250	14.989, 15.512	0.994
			F	14.330	14.129, 14.532	0.996
		C2	A	13.064	12.904, 13.225	0.998
			B	13.673	13.476, 13.870	0.997
			C	13.283	13.100, 13.467	0.997
			D	13.502	13.340, 13.664	0.998
			E	13.383	13.224, 13.541	0.998
			F	13.313	13.121, 13.504	0.997
		C3	A	7.973	7.862, 8.085	0.995
			B	8.290	8.182, 8.397	0.996
			C	8.022	7.909, 8.135	0.995
			D	8.315	8.182, 8.450	0.993
			E	8.373	8.239, 8.506	0.994
			F	8.332	8.214, 8.450	0.995
MAC7	S1	C1	A	9.525	9.428, 9.622	0.998
			B	9.752	9.664, 9.840	0.998
			C	9.334	9.205, 9.462	0.996
			D	9.514	9.423, 9.606	0.998
			E	9.650	9.552, 9.749	0.998
			F	9.387	9.293, 9.481	0.998
		C2	A	11.076	10.936, 11.216	0.997
			B	11.510	11.360, 11.660	0.997
			C	10.835	10.692, 10.979	0.996
			D	10.986	10.845, 11.127	0.997
			E	11.428	11.328, 11.527	0.999
			F	11.653	11.491, 11.814	0.996
	S2	C1	A	19.226	18.912, 19.541	0.996
			B	20.256	19.929, 20.583	0.996
			C	19.209	18.817, 19.600	0.993
			D	19.450	19.163, 19.736	0.996
			E	21.203	20.850, 21.557	0.996
			F	18.864	18.548, 19.181	0.995
		C2	A	19.159	18.895, 19.422	0.997
			B	20.826	20.546, 21.106	0.997
			C	18.475	18.070, 18.881	0.992

Table C.1 (continued)

			D	19.005	18.753, 19.258	0.997
			E	19.484	19.103, 19.864	0.994
			F	18.755	18.525, 18.986	0.998
		C3	A	11.821	11.677, 11.965	0.997
			B	10.582	10.341, 10.823	0.990
			C	10.847	10.744, 10.951	0.998
			D	11.781	11.655, 11.906	0.998
			E	11.083	10.900, 11.266	0.995
			F	11.385	11.272, 11.498	0.998

[a] MAC: mobile air cleaner.
[b] S: setting.
[c] C: configuration.
[d] 95% confidence interval.

Table C.2. Total decay coefficient k_{total} of PM_{10}.

Device[a]	Setting[b]	Configuration[c]	Location	k_{total} (h^{-1})	95% CI (lower, upper)[d]	R^2
MAC1	S1	C1	A	2.135	2.101, 2.169	0.979
			B	2.290	2.258, 2.322	0.984
			C	2.262	2.234, 2.289	0.988
			D	2.229	2.205, 2.254	0.990
			E	2.190	2.169, 2.211	0.993
			F	2.236	2.216, 2.255	0.994
		C2	A	2.742	2.720, 2.765	0.996
			B	2.941	2.916, 2.966	0.996
			C	2.943	2.917, 2.969	0.996
			D	3.007	2.989, 3.026	0.998
			E	2.952	2.922, 2.982	0.995
			F	2.947	2.928, 2.966	0.998
	S2	C1	A	5.052	4.598, 4.777	0.983
			B	5.257	5.214, 5.300	0.997
			C	5.100	5.054, 5.147	0.997
			D	5.066	5.012, 5.121	0.997
			E	4.977	4.924, 5.031	0.995
			F	5.143	5.094, 5.193	0.996
		C2	A	4.884	4.819, 4.949	0.993
			B	5.370	5.342, 5.397	0.999
			C	5.282	5.250, 5.314	0.999
			D	5.225	5.193, 5.258	0.999
			E	5.142	5.113, 5.171	0.999
			F	5.296	5.266, 5.326	0.999
MAC2	S1	C1	A	7.454	7.183, 7.725	0.968
			B	9.698	9.527, 9.868	0.994
			C	9.242	9.065, 9.418	0.993
			D	8.617	8.429, 8.806	0.990
			E	8.889	8.643, 9.136	0.984
			F	9.051	8.829, 9.273	0.998
		C2	A	5.183	5.006, 5.359	0.953
			B	4.809	4.747, 4.871	0.993
			C	4.617	4.572, 4.662	0.996
			D	4.682	4.634, 4.730	0.996
			E	4.908	4.840, 4.977	0.992
			F	4.691	4.640, 4.742	0.995
	S2	C1	A	12.114	11.721, 12.506	0.981
			B	15.379	15.124, 15.634	0.996
			C	13.827	13.597, 14.057	0.996
			D	13.144	12.879, 13.409	0.993

Table C.2 (continued)

			E	14.341	14.000, 14.682	0.991
			F	13.289	13.041, 13.537	0.994
		C2	A	7.470	7.272, 7.668	0.980
			B	8.333	8.212, 8.454	0.995
			C	7.947	7.820, 8.074	0.993
			D	7.944	7.826, 8.063	0.994
			E	8.353	8.192, 8.515	0.990
			F	8.060	7.954, 8.165	0.996
MAC3	S1	C1	A	6.604	6.460, 6.748	0.985
			B	7.150	7.054, 7.247	0.995
			C	7.847	7.669, 8.024	0.985
			D	9.087	8.799, 9.376	0.972
			E	7.260	7.060, 7.459	0.977
			F	8.568	8.354, 8.781	0.983
	S2	C1	A	15.091	14.641, 15.541	0.988
			B	17.028	16.651, 17.405	0.994
			C	17.876	17.239, 18.423	0.989
			D	16.843	16.319, 17.367	0.988
			E	16.153	15.800, 16.505	0.994
			F	17.044	16.657, 17.431	0.994
MAC4	S1	C1	A	4.870	4.793, 4.948	0.991
			B	5.810	5.759, 5.862	0.997
			C	6.164	6.093, 6.236	0.996
			D	5.793	5.727, 5.859	0.996
			E	5.846	5.763, 5.929	0.993
			F	6.439	6.380, 6.498	0.997
		C2	A	5.942	5.884, 6.000	0.997
			B	6.568	6.491, 6.644	0.996
			C	5.360	5.265, 5.454	0.989
			D	5.840	5.747, 5.933	0.992
			E	6.002	5.943, 6.061	0.998
			F	6.733	6.631, 6.836	0.993
	S2	C1	A	11.739	11.366, 12.111	0.981
			B	15.105	14.819, 15.391	0.994
			C	14.634	14.376, 14.891	0.995
			D	14.301	13.982, 14.619	0.992
			E	13.773	13.534, 14.012	0.995
			F	13.514	13.335, 13.693	0.997
		C2	A	14.077	13.729, 14.425	0.992
			B	15.036	14.758, 15.314	0.995
			C	12.312	11.090, 12.716	0.983
			D	14.281	14.041, 14.520	0.996
			E	14.474	14.209, 14.739	0.995
			F	14.727	14.332, 15.123	0.990
		C3	A	7.200	7.125, 7.276	0.997
			B	6.903	6.818, 6.987	0.996
			C	6.258	6.169, 6.348	0.993
			D	7.103	7.032, 7.174	0.997
			E	7.337	7.224, 7.451	0.993
			F	6.893	6.837, 6.948	0.998
MAC5	S1	C1	A	6.476	6.393, 6.558	0.995
			B	6.053	5.955, 6.150	0.992
			C	5.457	5.355, 5.559	0.989
			D	6.481	6.323, 6.639	0.983
			E	6.270	6.182, 6.359	0.994
			F	6.078	6.021, 6.136	0.997
		C2	A	6.971	6.875, 7.067	0.994

Table C.2 (continued)

			B	7.412	7.295, 7.529	0.993
			C	7.077	6.948, 7.205	0.991
			D	7.602	7.479, 7.725	0.993
			E	8.318	8.190, 8.446	0.994
			F	9.820	9.615, 10.025	0.989
	S2	C1	A	11.184	10.998, 11.369	0.995
			B	11.193	11.055, 11.331	0.997
			C	9.062	8.806, 9.317	0.983
			D	11.165	10.932, 11.399	0.992
			E	10.713	10.502, 10.924	0.993
			F	11.324	11.124, 11.523	0.994
		C2	A	13.038	12.790, 13.287	0.994
			B	13.873	13.616, 14.129	0.995
			C	12.985	12.510, 13.460	0.981
			D	16.490	16.094, 16.885	0.992
			E	15.279	15.052, 15.507	0.997
			F	15.010	14.838, 15.181	0.998
MAC6	S1	C1	A	7.269	7.112, 7.427	0.986
			B	7.881	7.800, 7.962	0.997
			C	7.849	7.742, 7.956	0.995
			D	7.562	7.459, 7.665	0.995
			E	7.742	7.642, 7.842	0.995
			F	7.703	7.621, 7.784	0.997
		C2	A	6.053	5.915, 6.190	0.980
			B	6.347	6.268, 6.426	0.994
			C	5.846	5.781, 5.911	0.995
			D	6.276	6.183, 6.369	0.992
			E	6.243	6.161, 6.325	0.994
			F	5.908	5.850, 5.967	0.996
	S2	C1	A	14.225	13.853, 14.598	0.986
			B	16.565	16.278, 16.852	0.994
			C	15.471	15.237, 15.706	0.996
			D	14.669	14.454, 14.884	0.996
			E	16.214	15.899, 16.529	0.993
			F	15.526	15.247, 15.806	0.994
		C2	A	13.242	12.960, 13.525	0.992
			B	14.646	14.462, 14.829	0.998
			C	13.581	13.436, 13.726	0.998
			D	13.639	13.469, 13.810	0.998
			E	14.185	13.987, 14.383	0.997
			F	13.578	13.413, 13.742	0.998
		C3	A	7.819	7.628, 8.010	0.984
			B	9.220	9.077, 9.363	0.994
			C	8.526	8.407, 8.646	0.995
			D	8.556	8.419, 8.692	0.994
			E	8.665	8.516, 8.813	0.993
			F	8.656	8.529, 8.782	0.995
MAC7	S1	C1	A	8.206	8.127, 8.286	0.998
			B	8.539	8.452, 8.625	0.998
			C	8.558	8.488, 8.629	0.998
			D	8.674	8.631, 8.717	0.999
			E	8.422	8.358, 8.486	0.999
			F	8.646	8.594, 8.699	0.999
		C2	A	10.159	10.029, 10.289	0.997
			B	10.660	10.567, 10.753	0.998
			C	10.553	10.485, 10.622	0.999
			D	10.642	10.559, 10.725	0.999

Table C.2 (continued)

			E	10.361	10.223, 10.500	0.996
			F	11.173	11.063, 11.282	0.998
	S2	C1	A	17.420	17.223, 17.618	0.996
			B	17.716	17.440, 17.992	0.996
			C	18.171	18.003, 18.340	0.998
			D	18.380	18.202, 18.559	0.996
			E	18.175	17.985, 18.364	0.996
			F	18.077	17.895, 18.259	0.998
		C2	A	19.392	19.165, 19.619	0.998
			B	19.823	19.611, 20.034	0.998
			C	19.128	18.902, 19.354	0.998
			D	18.931	18.749, 19.113	0.999
			E	18.436	18.051, 18.821	0.993
			F	18.641	18.465, 18.817	0.999
		C3	A	10.187	10.082, 10.292	0.998
			B	10.151	9.798, 10.272	0.989
			C	10.151	10.033, 10.270	0.997
			D	10.766	10.683, 10.849	0.999
			E	9.849	9.665, 10.033	0.993
			F	10.621	10.561, 10.680	0.999

[a] MAC: mobile air cleaner.
[b] S: setting.
[c] C: configuration.
[d] 95% confidence interval.

Table C.3. Natural decay coefficient k_n of $PM_{2.5}$.

Time	Location	k_n (h^{-1})	95% CI (lower, upper)[a]	R^2	T (°C)[b]	RH (%)[b]
2023-05-25 11:11-14:35	A	1.482	1.459, 1.505	0.970	22.8 (0.3)	43.5 (0.5)
	B	1.528	1.507, 1.549	0.977	22.8 (0.3)	42.4 (0.5)
	C	1.597	1.573, 1.622	0.971	22.7 (0.3)	43.1 (0.5)
	D	1.647	1.621, 1.672	0.972	23.0 (0.3)	41.7 (0.4)
	E	1.387	1.369, 1.406	0.978	22.8 (0.3)	42.6 (0.4)
	F	1.533	1.517, 1.548	0.988	23.0 (0.3)	42.5 (0.5)
2023-05-25 14:55-17:32	A	1.480	1.458, 1.501	0.979	23.3 (0.1)	40.5 (0.3)
	B	1.580	1.563, 1.596	0.990	23.2 (0.1)	39.5 (0.3)
	C	1.580	1.567, 1.593	0.993	23.1 (0.1)	40.1 (0.3)
	D	1.544	1.531, 1.558	0.993	23.3 (0.1)	39.0 (0.3)
	E	1.529	1.515, 1.543	0.992	23.2 (0.1)	39.7 (0.3)
	F	1.527	1.517, 1.536	0.996	23.3 (0.1)	39.5 (0.3)
2023-05-25 18:10-22:00	A	0.803	0.796, 0.811	0.984	22.8 (0.1)	39.6 (0.2)
	B	0.788	0.779, 0.797	0.979	22.8 (0.1)	38.7 (0.2)
	C	0.805	0.797, 0.813	0.983	22.7 (0.1)	39.2 (0.2)
	D	0.813	0.804, 0.822	0.980	22.7 (0.2)	38.6 (0.2)
	E	0.794	0.786, 0.802	0.982	22.8 (0.1)	38.9 (0.2)
	F	0.819	0.810, 0.827	0.982	22.7 (0.2)	39.0 (0.3)
2023-05-26 10:20-12:55	A	1.372	1.356, 1.389	0.995	23.3 (0.2)	35.4 (0.3)
	B	1.498	1.485, 1.511	0.993	23.3 (0.2)	34.5 (0.3)
	C	1.489	1.475, 1.504	0.990	23.2 (0.2)	34.9 (0.3)
	D	1.528	1.515, 1.542	0.992	23.5 (0.1)	34.0 (0.3)
	E	1.433	1.422, 1.443	0.995	23.3 (0.2)	34.7 (0.3)
	F	1.367	1.355, 1.379	0.993	23.4 (0.1)	34.4 (0.2)
2023-05-26 14:12-16:30	A	1.131	1.118, 1.143	0.987	23.1 (0.1)	33.9 (0.2)
	B	1.151	1.136, 1.166	0.981	23.1 (0.1)	33.1 (0.2)
	C	1.154	1.139, 1.169	0.981	23.0 (0.2)	33.4 (0.2)
	D	1.151	1.136, 1.166	0.981	23.0 (0.1)	33.0 (0.1)
	E	1.119	1.106, 1.132	0.984	23.1 (0.1)	33.4 (0.2)
	F	1.209	1.195, 1.224	0.995	23.1 (0.1)	33.2 (0.2)

Table C.3 (continued)

2023-05-26 17:15-20:00	A	1.039	1.024, 1.054	0.975	23.1 (0.1)	33.9 (0.4)
	B	1.044	1.030, 1.059	0.977	23.0 (0.1)	33.1 (0.4)
	C	1.051	1.037, 1.065	0.978	22.9 (0.1)	33.5 (0.4)
	D	1.071	1.057, 1.085	0.980	22.9 (0.1)	33.1 (0.4)
	E	1.037	1.023, 1.051	0.977	23.0 (0.1)	33.4 (0.4)
	F	1.029	1.015, 1.044	0.975	23.0 (0.1)	33.3 (0.4)
2023-07-07 10:28-13:30	A	1.643	1.625, 1.661	0.987	23.6 (0.3)	47.8 (1.2)
	B	1.560	1.549, 1.571	0.995	22.3 (0.4)	51.6 (2.6)
	C	1.629	1.617, 1.641	0.994	23.5 (0.3)	47.0 (1.1)
	D	1.500	1.491, 1.510	0.995	23.6 (0.2)	45.8 (1.0)
	E	1.653	1.640, 1.665	0.994	23.6 (0.3)	46.5 (1.2)
	F	1.587	1.577, 1.597	0.996	23.7 (0.3)	46.8 (1.2)

[a] 95% confidence interval.

[b] mean (SD).

Table C.4. Natural decay coefficient k_n of PM_{10}.

Time	Location	k_n (h^{-1})	95% CI (lower, upper)[a]	R^2	T (°C)[b]	RH (%)[b]
2023-05-25 11:11-14:35	A	1.419	1.389, 1.448	0.945	22.8 (0.3)	43.5 (0.5)
	B	1.630	1.604, 1.656	0.970	22.8 (0.3)	42.4 (0.5)
	C	1.706	1.676, 1.736	0.964	22.7 (0.3)	43.1 (0.5)
	D	1.720	1.686, 1.753	0.957	23.0 (0.3)	41.7 (0.4)
	E	1.390	1.368, 1.412	0.969	22.8 (0.3)	42.6 (0.4)
	F	1.579	1.560, 1.599	0.982	23.0 (0.3)	42.5 (0.5)
2023-05-25 14:55-17:32	A	1.399	1.373, 1.425	0.965	23.3 (0.1)	40.5 (0.3)
	B	1.601	1.581, 1.621	0.985	23.2 (0.1)	39.5 (0.3)
	C	1.609	1.591, 1.627	0.988	23.1 (0.1)	40.1 (0.3)
	D	1.546	1.529, 1.564	0.987	23.3 (0.1)	39.0 (0.3)
	E	1.496	1.479, 1.512	0.987	23.2 (0.1)	39.7 (0.3)
	F	1.542	1.529, 1.555	0.993	23.3 (0.1)	39.5 (0.3)
2023-05-25 18:10-22:00	A	0.761	0.754, 0.768	0.985	22.8 (0.1)	39.6 (0.2)
	B	0.782	0.772, 0.791	0.975	22.8 (0.1)	38.7 (0.2)
	C	0.791	0.782, 0.800	0.978	22.7 (0.1)	39.2 (0.2)
	D	0.793	0.784, 0.803	0.976	22.7 (0.2)	38.6 (0.2)
	E	0.771	0.762, 0.781	0.975	22.8 (0.1)	38.9 (0.2)
	F	0.799	0.790, 0.808	0.979	22.7 (0.2)	39.0 (0.3)
2023-05-26 10:20-12:55	A	1.261	1.246, 1.276	0.985	23.3 (0.2)	35.4 (0.3)
	B	1.471	1.458, 1.484	0.993	23.3 (0.2)	34.5 (0.3)
	C	1.463	1.449, 1.477	0.991	23.2 (0.2)	34.9 (0.3)
	D	1.487	1.472, 1.502	0.990	23.5 (0.1)	34.0 (0.3)
	E	1.377	1.364, 1.390	0.991	23.3 (0.2)	34.7 (0.3)
	F	1.352	1.339, 1.365	0.991	23.4 (0.1)	34.4 (0.2)
2023-05-26 14:12-16:30	A	1.053	1.041, 1.065	0.985	23.1 (0.1)	33.9 (0.2)
	B	1.137	1.123, 1.150	0.984	23.1 (0.1)	33.1 (0.2)
	C	1.134	1.120, 1.148	0.983	23.0 (0.2)	33.4 (0.2)
	D	1.114	1.100, 1.128	0.982	23.0 (0.1)	33.0 (0.1)
	E	1.077	1.063, 1.090	0.982	23.1 (0.1)	33.4 (0.2)
	F	1.186	1.172, 1.201	0.984	23.1 (0.1)	33.2 (0.2)
2023-05-26 17:15-20:00	A	1.022	1.009, 1.036	0.979	23.1 (0.1)	33.9 (0.4)
	B	1.040	1.024, 1.055	0.972	23.0 (0.1)	33.1 (0.4)
	C	1.052	1.037, 1.067	0.975	22.9 (0.1)	33.5 (0.4)
	D	1.072	1.058, 1.086	0.979	22.9 (0.1)	33.1 (0.4)
	E	1.029	1.014, 1.045	0.973	23.0 (0.1)	33.4 (0.4)
	F	1.023	1.008, 1.038	0.974	23.0 (0.1)	33.3 (0.4)
2023-07-07 10:28-13:30	A	1.504	1.497, 1.512	0.997	23.6 (0.3)	47.8 (1.2)
	B	1.541	1.532, 1.549	0.996	22.3 (0.4)	51.6 (2.6)
	C	1.596	1.591, 1.602	0.999	23.5 (0.3)	47.0 (1.1)

Table C.4 (continued)

	D	1.468	1.460, 1.477	0.996	23.6 (0.2)	45.8 (1.0)
	E	1.572	1.562, 1.582	0.996	23.6 (0.3)	46.5 (1.2)
	F	1.541	1.530, 1.553	0.994	23.7 (0.3)	46.8 (1.2)

[a] 95% confidence interval.

[b] mean (SD).

Table C.5. Aerosol removal rate of the mobile air cleaner k_{mac} based on the mean value of k_{total} and k_n.

Device[a]	Setting[b]	Configuration[c]	k_{mac} for $PM_{2.5}$	k_{mac} for PM_{10}
MAC1	S1	C1	0.911	0.873
		C2	1.557	1.568
	S2	C1	3.758	3.693
		C2	3.933	3.850
MAC2	S1	C1	7.379	7.462
		C2	3.291	3.442
	S2	C1	12.361	12.423
		C2	6.391	6.645
MAC3	S1	C1	5.664	6.255
	S2	C1	14.379	15.250
MAC4	S1	C1	4.612	4.430
		C2	4.807	4.694
	S2	C1	12.959	12.489
		C2	13.079	12.776
		C3	5.740	5.567
MAC5	S1	C1	4.960	4.732
		C2	6.062	6.337
	S2	C1	9.493	9.399
		C2	11.758	12.897
MAC6	S1	C1	6.074	6.318
		C2	4.589	4.745
	S2	C1	13.286	14.068
		C2	12.068	12.443
		C3	6.913	7.202
MAC7	S1	C1	8.254	7.144
		C2	9.976	9.204
	S2	C1	18.774	16.609
		C2	18.161	17.714
		C3	9.870	8.876

[a] MAC: mobile air cleaner.

[b] S: setting.

[c] C: configuration.

Appendix D

Supplementary information on the results of the perception of air movement caused by the mobile air cleaners.

Table D.1. Body parts of the subjects for air movement perception.

Device[a]	Setting[b]	Configuration[c]	Body parts sensed air movement[de]
MAC1	S1	C2	face (1), neck (1)
	S2	C2	face (1), neck (2)
	S3	C2	face (2), neck (1), hands (1)
MAC2	S1	C1	face (2), hand (1), arms (1)
	S2	C1	face (3), neck (1), hands (2)
MAC3	S1	C1	-
	S2	C1	face (2), chest (1)
	S3	C1	face (1), hands (1)
MAC4	S1	C2	-
	S2	C2	face (2), chest (1), arms (1), hands (2)
MAC5	S1	C1	face (1)
	S2	C1	face (2), head (1), arms (1), hands (3), thighs (1)
	S3	C1	face (1), head (1), hands (3)
	S1	C2	arms (1)
	S2	C2	arms (1)
	S3	C2	legs (1)
MAC6	S1	C1	face (1), neck (1), shoulders (1)
	S2	C1	face (2), neck (1), shoulders (1), hands (1)
	S3	C1	face (2), neck (1), shoulders (1), arms (1), hands (1), legs (1)
	S1	C2	-
	S2	C2	face (3), head (1), neck (1), hands (2), thighs (1), ankles (1)
	S3	C2	face (2), head (1), back (1), hands (1)
MAC7	S1	C1	face (2), head (1), neck (1), chest (1), arms (1), legs (1)
	S2	C1	face (2), neck (1), shoulders (1), arms (1), legs (2)
	S3	C1	face (3), arms (1), legs (1)
	S1	C2	face (1), head (1), arms (3), hands (1), legs (1)
	S2	C2	face (2), head (1), neck (1), arms (3), hands (1), legs (1)
	S3	C2	face (2), head (1), neck (2), arms (2), hands (1), legs (1)

[a] MAC: mobile air cleaner.
[b] S: setting.
[c] C: configuration.
[d] Numbers in the parentheses show the number of subjects reported.
[e] -: none of the subjects has sensed the sound or air movement caused by the mobile air cleaners.

Appendix E

Supplementary information on the results of the particle decay test in the real classroom.

Table E.1. Total decay coefficient k_{total} of $PM_{2.5}$.

Device[a]	Setting[b]	Configuration[c]	Location	k_{total} (h^{-1})	95% CI (lower, upper)[d]	R^2
MAC1	S2	C2	A	4.623	4.549, 4.696	0.990
			B	4.537	4.483, 4.591	0.994
			C	4.520	4.462, 4.578	0.993
			D	4.563	4.505, 4.621	0.993
			E	4.920	4.877, 4.963	0.997
			F	4.536	4.474, 4.598	0.992
MAC2	S2	C1	A	11.382	11.276, 11.489	0.999
			B	11.756	11.648, 11.864	0.999
			C	11.122	10.980, 11.264	0.997
			D	11.763	11.650, 11.876	0.998
			E	11.494	11.321, 11.668	0.996
			F	11.458	11.323, 11.593	0.998
MAC3	S2	C1	A	13.055	12.920, 13.190	0.998
			B	12.472	12.360, 12.585	0.999
			C	12.312	12.149, 12.475	0.997
			D	12.482	12.375, 12.589	0.999
			E	11.280	10.954, 11.606	0.987
			F	13.205	13.051, 13.359	0.998
MAC4	S1	C1	A	10.132	9.992, 10.273	0.997
			B	10.350	10.218, 10.483	0.997
			C	9.873	9.735, 10.011	0.996
			D	10.178	10.035, 10.322	0.996
			E	10.096	9.884, 10.309	0.992
			F	10.434	10.275, 10.593	0.996
MAC5	S2	C2	A	9.422	9.283, 9.561	0.996
			B	8.658	8.571, 8.745	0.998
			C	8.317	8.180, 8.453	0.994
			D	9.403	9.199, 9.606	0.990
			E	10.603	10.401, 10.804	0.993
			F	8.955	8.833, 9.077	0.996
MAC6	S2	C1	A	11.060	10.920, 11.200	0.997
			B	9.859	9.583, 10.134	0.987
			C	10.860	10.713, 11.007	0.997
			D	10.823	10.652, 10.994	0.996
			E	9.551	9.213, 9.889	0.978
			F	10.891	10.742, 11.041	0.997
MAC7	S1	C2	A	8.870	8.796, 8.943	0.999
			B	8.889	8.809, 8.969	0.988
			C	8.757	8.673, 8.842	0.998
			D	8.376	8.265, 8.486	0.996
			E	8.658	8.526, 8.790	0.995
			F	8.319	8.126, 8.511	0.989

[a] MAC: mobile air cleaner.
[b] S: setting.
[c] C: configuration.
[d] 95% confidence interval.

Table E.2. Total decay coefficient k_{total} of PM_{10}.

Device[a]	Setting[b]	Configuration[c]	Location	k_{total} (h^{-1})	95% CI (lower, upper)[d]	R^2
MAC1	S2	C2	A	5.761	5.700, 5.822	0.996
			B	5.562	5.512, 5.611	0.997
			C	5.180	5.144, 5.215	0.998
			D	5.249	5.209, 5.288	0.998
			E	5.608	5.571, 5.645	0.998
			F	5.379	5.341, 5.417	0.998
MAC2	S2	C1	A	12.471	12.342, 12.601	0.998
			B	12.943	12.808, 13.077	0.998
			C	11.765	11.647, 11.883	0.998
			D	11.966	11.843, 12.089	0.998
			E	11.893	11.661, 12.126	0.994
			F	11.797	11.693, 11.901	0.999
MAC3	S2	C1	A	13.891	13.775, 14.008	0.999
			B	13.206	13.045, 13.368	0.998
			C	12.522	12.384, 12.659	0.998
			D	12.543	12.417, 12.670	0.999
			E	11.334	10.953, 11.715	0.982
			F	13.142	13.028, 13.255	0.999
MAC4	S1	C1	A	11.803	11.664, 11.942	0.998
			B	11.957	11.838, 12.077	0.998
			C	11.107	11.000, 11.215	0.998
			D	11.293	11.157, 11.429	0.998
			E	10.878	10.640, 11.116	0.992
			F	11.365	11.232, 11.498	0.998
MAC5	S2	C2	A	10.722	10.548, 10.896	0.995
			B	10.262	10.102, 10.421	0.995
			C	9.958	9.800, 10.117	0.995
			D	11.008	10.747, 11.269	0.990
			E	12.388	12.112, 12.664	0.991
			F	10.300	10.074, 10.526	0.991
MAC6	S2	C1	A	12.657	12.478, 12.835	0.997
			B	11.186	10.794, 11.578	0.981
			C	12.439	12.210, 12.667	0.995
			D	12.282	11.939, 12.431	0.994
			E	10.325	9.919, 10.732	0.975
			F	12.739	12.465, 13.013	0.993
MAC7	S1	C2	A	9.334	9.173, 9.495	0.994
			B	9.444	9.322, 9.565	0.997
			C	9.303	9.181, 9.425	0.997
			D	8.975	8.822, 9.128	0.994
			E	9.078	8.903, 9.252	0.993
			F	8.767	8.547, 8.987	0.987

[a] MAC: mobile air cleaner.
[b] S: setting.
[c] C: configuration.
[d] 95% confidence interval.

Table E.3. Natural decay coefficient k_n of $PM_{2.5}$.

Time	Location	k_n (h^{-1})	95% CI (lower, upper)[a]	R^2	T (°C)[b]	RH (%)[b]
2023-07-20 12:25-14:00	A	3.151	3.129, 3.172	0.997	22.9 (0.1)	52.0 (1.0)
	B	3.109	3.084, 3.135	0.996	23.0 (0.1)	50.3 (0.8)
	C	2.823	2.809, 2.838	0.998	23.0 (0.1)	51.5 (1.2)
	D	2.925	2.911, 2.940	0.998	23.3 (0.1)	49.8 (1.2)
	E	3.157	3.142, 3.171	0.999	23.3 (0.0)	50.0 (1.1)
	F	3.283	3.260, 3.306	0.997	23.2 (0.1)	50.3 (0.9)

[a] 95% confidence interval.

[b] mean (SD).

Table E.4. Natural decay coefficient k_n of PM_{10}.

Time	Location	k_n (h^{-1})	95% CI (lower, upper)[a]	R^2	T (°C)[b]	RH (%)[b]
2023-07-20 12:25-14:00	A	3.187	3.165, 3.210	0.997	22.9 (0.1)	52.0 (1.0)
	B	3.325	3.302, 3.348	0.997	23.0 (0.1)	50.3 (0.8)
	C	2.931	2.912, 2.949	0.998	23.0 (0.1)	51.5 (1.2)
	D	3.046	3.029, 3.063	0.998	23.3 (0.1)	49.8 (1.2)
	E	3.314	3.295, 3.333	0.998	23.3 (0.0)	50.0 (1.1)
	F	3.394	3.377, 3.411	0.999	23.2 (0.1)	50.3 (0.9)

[a] 95% confidence interval.

[b] mean (SD).

Table E.5. Aerosol removal rate of the mobile air cleaner k_{mac} based on the mean value of k_{total} and k_n.

Device[a]	Setting[b]	Configuration[c]	k_{mac} for $PM_{2.5}$	k_{mac} for PM_{10}
MAC1	S2	C2	1.570	2.274
MAC2	S2	C1	8.426	8.941
MAC3	S2	C1	9.125	9.448
MAC4	S2	C2	7.091	8.197
MAC5	S2	C2	6.213	7.569
MAC6	S2	C1	7.233	8.600
MAC7	S1	C2	5.562	5.950

[a] MAC: mobile air cleaner.

[b] S: setting.

[c] C: configuration.