

Table S1 Results of correlation analysis between children’s lung function and different air pollutants at different lag time exposures

Lag time	Air pollutants	FVC	FEV ₁	PEF	FEF ₇₅	FEF ₂₅
Lag0	PM _{2.5}	−0.124	−0.169	0.001	−0.200*	0.040
	PM ₁₀	−0.048	−0.099	0.056	−0.137	0.084
	SO ₂	0.213*	0.108	0.125	−0.051	0.110
	NO ₂	0.079	0.008	0.154	−0.113	0.156
	CO	−0.071	−0.116	0.021	−0.114	0.064
	O ₃	−0.013	0.033	−0.121	0.145	−0.080
Lag1	PM _{2.5}	−0.120	−0.133	−0.102	−0.121	−0.056
	PM ₁₀	−0.098	−0.121	−0.085	−0.100	−0.041
	SO ₂	0.079	0.024	0.033	−0.064	0.006
	NO ₂	−0.033	−0.079	−0.026	−0.180	−0.008
	CO	−0.095	−0.102	−0.038	−0.128	−0.002
	O ₃	0.012	0.043	−0.034	0.136	−0.025
Lag2	PM _{2.5}	−0.111	−0.126	−0.136	−0.090	−0.079
	PM ₁₀	−0.096	−0.108	−0.093	−0.076	−0.046
	SO ₂	−0.013	−0.045	0.000	−0.096	−0.010
	NO ₂	−0.099	−0.111	−0.048	−0.138	−0.021
	CO	−0.171	−0.175	−0.108	−0.127	−0.059
	O ₃	0.069	0.064	0.004	0.131	−0.009
Lag3	PM _{2.5}	−0.236*	−0.274**	−0.241*	−0.090	−0.212*
	PM ₁₀	−0.238*	−0.295**	−0.294**	−0.116	−0.260**
	SO ₂	−0.134	−0.171	−0.215*	−0.178	−0.207*
	NO ₂	−0.202*	−0.293**	−0.345**	−0.194*	−0.306**
	CO	−0.261**	−0.296**	−0.264**	−0.129	−0.224*
	O ₃	−0.019	0.070	0.154	0.167	0.114
Lag4	PM _{2.5}	−0.003	−0.046	−0.028	−0.046	−0.012
	PM ₁₀	−0.006	−0.060	−0.026	−0.076	−0.028
	SO ₂	0.032	−0.011	−0.041	−0.135	−0.045
	NO ₂	0.070	0.017	−0.061	−0.076	−0.052
	CO	−0.023	−0.040	−0.052	−0.053	−0.031
	O ₃	−0.061	−0.007	0.110	0.061	0.096
Lag5	PM _{2.5}	−0.165	−0.148	−0.078	−0.003	−0.062
	PM ₁₀	−0.106	−0.115	−0.064	−0.011	−0.078
	SO ₂	0.024	0.022	0.068	−0.032	0.051
	NO ₂	0.014	−0.011	0.013	0.007	0.002
	CO	−0.144	−0.108	−0.051	0.035	−0.044
	O ₃	−0.049	−0.081	−0.027	−0.064	−0.034
Lag0_5	PM _{2.5}	−0.211*	−0.222*	−0.171	−0.117	−0.118
	PM ₁₀	−0.144	−0.163	−0.109	−0.091	−0.075
	SO ₂	0.069	0.031	0.046	−0.075	0.029
	NO ₂	−0.042	−0.118	−0.053	−0.183	−0.033
	CO	−0.201*	−0.211*	−0.156	−0.134	−0.114
	O ₃	−0.013	0.047	0.034	0.161	0.034

* indicates significant correlation at the level of $\alpha=0.05$; ** indicates significant correlation at the level of $\alpha=0.01$; FVC, forced vital capacity; FEV₁, forced expiratory volume in 1 second; PEF, peak expiratory flow; FEF₂₅, forced expiratory flow at 25%; FEF₇₅, 75% of exhaled FVC.

Table S2 Reduction in pulmonary function indicators in children per 10 µg/m³ increase in the concentration of atmospheric pollutants [β (95% CI)]

Lag time	Air pollutants	FVC (mL)	FEV ₁ (mL)	PEF (mL)	FEF ₇₅ (mL)	FEF ₂₅ (mL)
Lag0	PM _{2.5}	0.27 (−0.82, 1.36)	−0.04 (−1.09, 1.00)	1.16 (−2.56, 4.88)	−0.61 (−2.11, 0.89)	1.81 (−1.73, 5.36)
	PM ₁₀	0.11 (−0.77, 1.00)	−0.08 (−0.94, 0.78)	1.46 (−1.56, 4.47)	−0.31 (−1.53, 0.91)	1.87 (−1.01, 4.75)
	SO ₂	1.11 (−2.46, 4.67)	−1.27 (−4.70, 2.16)	−2.13 (−14.29, 10.03)	−1.75 (−6.68, 3.19)	−0.99 (−12.61, 10.63)
	NO ₂	0.80 (−2.26, 3.86)	−0.22 (−3.16, 2.73)	7.56 (−2.76, 17.89)	−2.32 (−6.53, 1.89)	7.36 (−2.49, 17.22)
	CO	0.04 (−0.06, 0.15)	0.01 (−0.09, 0.12)	0.18 (−0.18, 0.54)	−0.01 (−0.15, 0.14)	0.25 (−0.09, 0.59)
	O ₃	0.11 (−2.93, 3.15)	0.85 (−2.06, 3.77)	−7.22 (−17.42, 2.97)	3.63 (−0.51, 7.77)	−5.33 (−15.12, 4.47)
Lag1	PM _{2.5}	−0.53 (−1.57, 0.51)	−0.56 (−1.55, 0.44)	−2.82 (−6.33, 0.70)	0.02 (−1.43, 1.47)	−2.17 (−5.55, 1.20)
	PM ₁₀	−0.59 (−1.45, 0.26)	−0.60 (−1.42, 0.22)	−2.00 (−4.93, 0.93)	−0.05 (−1.24, 1.14)	−1.42 (−4.23, 1.39)
	SO ₂	−0.70 (−4.37, 2.96)	−2.67 (−6.15, 0.81)	−9.47 (−21.81, 2.87)	−2.19 (−7.25, 2.88)	−9.49 (−21.27, 2.29)
	NO ₂	−1.83 (−4.90, 1.25)	−2.01 (−4.96, 0.93)	−3.79 (−14.31, 6.73)	−2.68 (−6.94, 1.59)	−3.59 (−13.64, 6.47)
	CO	−0.04 (−0.14, 0.07)	−0.03 (−0.12, 0.07)	−0.11 (−0.45, 0.24)	0.02 (−0.12, 0.16)	−0.08 (−0.41, 0.25)
	O ₃	1.10 (−1.84, 4.03)	2.36 (−0.44, 5.16)	1.78 (−8.22, 11.79)	3.84 (−0.12, 7.80)	2.61 (−6.96, 12.18)
Lag2	PM _{2.5}	0.128 (−0.917, 1.172)	−0.31 (−1.31, 0.69)	−1.40 (−4.95, 2.14)	−0.32 (−1.77, 1.13)	−1.09 (−4.45, 2.30)
	PM ₁₀	−0.15 (−0.99, 0.70)	−0.47 (−1.27, 0.33)	−1.31 (−4.17, 1.54)	−0.41 (−1.57, 0.75)	−0.96 (−3.69, 1.77)
	SO ₂	−0.68 (−4.25, 2.88)	−2.17 (−5.56, 1.22)	−4.01 (−16.12, 8.09)	−3.38 (−8.27, 1.52)	−4.25 (−15.80, 7.30)
	NO ₂	−0.09 (−3.09, 2.91)	−0.94 (−3.81, 1.93)	−2.67 (−12.86, 7.52)	−2.59 (−6.71, 1.54)	−2.14 (−11.88, 7.59)
	CO	0.02 (−0.09, 0.1)	−0.02 (−0.11, 0.08)	−0.12 (−0.47, 0.22)	−0.04 (−0.18, 0.10)	−0.07 (−0.40, 0.26)
	O ₃	0.32 (−2.61, 3.24)	0.67 (−2.11, 3.44)	−1.75 (−11.77, 8.28)	3.84 (−0.15, 7.83)	−0.45 (−10.01, 9.12)
Lag3	PM _{2.5}	−0.65 (−1.68, 0.38)	−1.05 (−2.02, −0.08)*	−3.17 (−6.63, 0.30)	−0.48 (−1.93, 0.96)	−2.70 (−6.01, 0.61)
	PM ₁₀	−0.78 (−1.60, 0.04)	−1.18 (−1.94, −0.42)**	−3.80 (−6.51, −1.08)**	−0.66 (−1.82, 0.49)	−3.22 (−5.83, −0.61)*
	SO ₂	−4.32 (−7.63, −1.01)*	−4.96 (−8.08, −1.84)**	−16.73 (−27.83, −5.63)**	−4.72 (−9.39, −0.05)*	−14.87 (−25.50, −4.24)**
	NO ₂	−3.32 (−6.21, −0.44)*	−4.94 (−7.59, −2.28)***	−17.00 (−26.44, −7.55)***	−4.18 (−8.22, −0.14)*	−14.75 (−23.84, −5.65)**
	CO	−0.06 (−0.16, 0.04)	−0.11 (−0.20, −0.01)*	−0.39 (−0.72, −0.05)*	−0.07 (−0.21, 0.07)	−0.31 (−0.62, 0.01)
	O ₃	−0.37 (−3.40, 2.65)	1.89 (−0.99, 4.76)	5.63 (−4.55, 15.81)	5.93 (1.88, 9.99)**	4.43 (−5.30, 14.16)
Lag4	PM _{2.5}	0.55 (−0.53, 1.64)	−0.03 (−1.07, 1.00)	0.32 (−3.32, 3.96)	−0.44 (−1.95, 1.08)	0.34 (−3.17, 3.85)
	PM ₁₀	−0.18 (−1.05, 0.70)	−0.65 (−1.48, 0.17)	−0.94 (−3.85, 1.97)	−0.85 (−2.05, 0.35)	−0.91 (−3.73, 1.90)
	SO ₂	−2.24 (−5.45, 0.97)	−4.10 (−7.36, −0.85)**	−11.09 (−22.69, 0.51)	−6.41 (−11.18, −1.65)**	−10.81 (−21.99, 0.36)
	NO ₂	−0.86 (−3.35, 1.64)	−3.25 (−6.09, −0.41)*	−10.07 (−20.10, −0.04)*	−4.36 (−8.54, −0.18)*	−9.17 (−18.86, 0.51)
	CO	0.02 (−0.07, 0.11)	0.01 (−0.08, 0.09)	−0.09 (−0.43, 0.26)	−0.04 (−0.18, 0.10)	0.01 (−0.28, 0.30)
	O ₃	1.00 (−1.78, 3.79)	2.40 (−0.41, 5.20)	11.54 (1.80, 21.28)*	2.36 (−1.79, 6.51)	10.31 (0.89, 19.73)*
Lag5	PM _{2.5}	−0.18 (−1.27, 0.90)	−0.21 (−1.24, 0.81)	−1.85 (−5.43, 1.73)	0.02 (−1.50, 1.53)	−1.64 (−5.08, 1.81)
	PM ₁₀	−0.35 (−1.22, 0.52)	−0.40 (−1.21, 0.41)	−1.23 (−4.13, 1.66)	−0.22 (−1.43, 0.99)	−1.52 (−4.29, 1.25)
	SO ₂	−2.96 (−6.41, 0.49)	−2.84 (−6.09, 0.42)	−4.96 (−16.50, 6.58)	−3.74 (−8.54, 1.07)	−5.50 (−16.58, 5.58)
	NO ₂	−1.01 (−4.06, 2.04)	−1.41 (−4.28, 1.47)	−1.76 (−11.88, 8.36)	−0.72 (−4.98, 3.53)	−2.28 (−12.01, 7.46)
	CO	−0.01 (−0.12, 0.09)	0.01 (−0.09, 0.11)	−0.08 (−0.43, 0.26)	0.05 (−0.09, 0.20)	−0.05 (−0.39, 0.28)
	O ₃	−2.76 (−5.69, 0.18)	−2.11 (−4.90, 0.68)	−2.65 (−12.45, 7.14)	−2.10 (−4.76, 0.57)	−1.68 (−11.11, 7.76)
Lag0_5	PM _{2.5}	−0.32 (−2.25, 1.62)	−1.21 (−3.03, 0.60)	−4.21 (−10.57, 2.15)	−0.96 (−3.65, 1.73)	−3.02 (−9.16, 3.13)
	PM ₁₀	−1.14 (−2.72, 0.44)	−1.71 (−3.19, −0.24)*	−3.71 (−9.03, 1.61)	−1.30 (−3.48, 0.88)	−3.04 (−8.22, 2.14)
	SO ₂	−4.33 (−9.50, 0.84)	−5.81 (−10.62, −1.00)*	−14.07 (−31.19, 3.06)	−7.14 (−14.29, 0.01)	−14.42 (−30.86, 2.02)
	NO ₂	−6.77 (−13.66, 0.12)	−10.20 (−16.51, −3.89)**	−19.70 (−42.61, 3.21)	−13.36 (−22.74, −3.97)**	−18.57 (−40.61, 3.48)
	CO	−0.02 (−0.21, 0.18)	−0.08 (−0.26, 0.10)	−0.33 (−0.98, 0.31)	−0.05 (−0.32, 0.22)	−0.16 (−0.78, 0.46)
	O ₃	0.50 (−5.41, 6.41)	4.05 (−1.50, 9.60)	3.43 (−16.14, 23.00)	11.22 (3.30, 19.14)**	5.91 (−13.00, 24.82)

* indicates significant correlation at the level of $\alpha=0.05$; ** indicates significant correlation at the level of $\alpha=0.01$; *** indicates significant correlation at the level of $\alpha=0.001$; Multiple linear regression models were adjusted for height, weight, age, sex, relative humidity, and average temperature. FVC, forced vital capacity; FEV₁, forced expiratory volume in 1 second; PEF, peak expiratory flow; FEF₂₅, forced expiratory flow at 25%; FEF₇₅, 75% of exhaled FVC.

Table S3 Dual-pollutant modeling and multi-pollutant modeling results [β (95% CI)]

Pollutant model	FVC (mL)	FEV ₁ (mL)	PEF (mL)	FEF ₇₅ (mL)	FEF ₂₅ (mL)
Dual-pollutant					
NO ₂	-3.32 (-6.21, -0.44)*	-4.94 (-7.59, -2.28)***	-17.00 (-26.44, -7.55)***	-4.18 (-8.22, -0.14)*	-14.75 (-23.84, -5.65)**
+PM _{2.5}	-3.95 (-7.99, 0.10)	-5.55 (-9.27, -1.82)*	-20.85 (-34.06, -7.64)	-6.27 (-11.91, -0.63)	-18.27 (-30.99, -5.55)*
+SO ₂	-1.38 (-5.41, 2.64)	-3.78 (-7.51, -0.06)	-13.45 (-26.72, -0.18)	-2.59 (-8.26, 3.09)	-11.25 (-24.03, 1.52)
+O ₃	-4.48 (-7.73, -1.23)*	-5.21 (-8.24, -2.18)**	-18.35 (-29.08, -7.61)**	-1.89 (-6.39, 2.61)	-16.20 (-26.54, -5.85)*
Multi-pollutant					
NO ₂ + PM _{2.5}	-3.95 (-7.99, 0.10)	-5.55 (-9.27, -1.82)*	-20.85 (-34.06, -7.64)	-6.27 (-11.91, -0.63)	-18.27 (-30.99, -5.55)*
+SO ₂	-1.76 (-6.98, 3.46)	-4.30 (-9.13, 0.53)	-17.37 (-34.54, -0.21)	-4.77 (-12.10, 2.55)	-14.79 (-31.32, 1.74)
+O ₃	-5.23 (-9.59, -0.87)	-5.88 (-9.94, -1.82)*	-22.38 (-36.74, -8.03)*	-3.85 (-9.86, 2.17)	-19.91 (-33.75, -6.07)*

* indicates significant correlation at the level of $\alpha=0.05$; ** indicates significant correlation at the level of $\alpha=0.01$; *** indicates significant correlation at the level of $\alpha=0.001$; The model adjusted for age, weight, height, sex, relative humidity, and average temperature. FVC, forced vital capacity; FEV₁, forced expiratory volume in 1 second; PEF, peak expiratory flow; FEF₂₅, forced expiratory flow at 25%; FEF₇₅, 75% of exhaled FVC.