

Table captions of supplemental material

Table. S1

Each group represents the time series of average ambient temperature (AT;°C), relative wind speed (WS ;km/h) and wind direction(WD) in Beijing from 2018 December 26 to 2019 January 11 .

Table. S2

Detailed information concerning the meteorological parameters during the sampling period is presented.

Table. S3

The P value of Pearson correlation coefficients between mass concentration and meteorological parameters and atmospheric pollutants.

Table. S4

Classification of Pearson correlation coefficients

Table. S5

Detailed information about the concentration of different size-resolved PM ratios

Table. S6

The size distribution of elements for Beijing samples during the winter

Table. S7

The non- carcinogenic risks of toxic elements for children and adult by inhalation route

Table. S8

The carcinogenic risks of toxic elements for children and adult by inhalation route

Fig. S1

The relative portions of carcinogenic and non- carcinogenic risks of toxic elements within PM_{1.1}, PM_{1.1-2.0}, PM_{2.0-3.3}, PM_{3.3-7.0} and PM_{>7.0} in Beijing during the sampling period.

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Figure captions of supplemental material

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Fig. S1

The relative portions of carcinogenic and non- carcinogenic risks of toxic elements within PM_{1.1}, PM_{1.1-2.0}, PM_{2.0-3.3}, PM_{3.3-7.0} and PM_{>7.0} in Beijing during the sampling period.

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Date	T°C	RH%	WS km/h	Wind direction
12/26-12/28	-5.33	13.33	6.00	Northwest
12/28-12/30	-5.00	10.00	5.00	Northwest, Northeast
12/30-12/1	-5.33	13.33	6.00	Northwest, Northeast
1/1-1/3	-1.33	26.67	3.00	Northwest, Northeast
1/3-1/5	-1.67	20.00	2.33	Northwest, Northeast
1/5-1/7	-0.67	16.67	3.33	Southeast, Northwest
1/7-1/9	-0.67	16.67	4.00	Southeast, Northwest
1/9-1/11	-0.67	16.67	3.33	Southeast, Northwest

Table. S2 Detailed information concerning the meteorological parameters during the sampling period is presented.

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Table. S2

Detailed information concerning the meteorological parameters during the sampling period is

Date	Weather	PM _{2.5} μg/m ³	PM ₁₀ μg/m ³	SO ₂ μg/m ³	CO mg/m ³	NO ₂ μg/m ³	O ₃ _8h μg/m ³
2018/12/26	Sunny~cloudy	9	26	4	0.4	26	50
2018/12/27	Sunny~cloudy	7	52	4	0.3	10	54
2018/12/28	Sunny	9	39	4	0.4	19	50
2018/12/29	Sunny	10	28	5	0.4	26	52
2018/12/30	Sunny~cloudy	15	32	4	0.5	37	42
2018/12/31	Cloudy	38	59	10	0.9	56	20
2019/1/1	Sunny~cloudy	28	45	8	0.7	34	47
2019/1/2	Cloudy	57	75	12	1	56	28
2019/1/3	Haze	123	136	21	1.9	82	12
2019/1/4	Sunny	18	40	5	0.5	26	61
2019/1/5	Cloudy	17	34	7	0.5	37	49
2019/1/6	Cloudy	64	95	12	1.4	70	13
2019/1/7	Cloudy	34	54	9	0.9	44	52
2019/1/8	Sunny	10	29	4	0.5	28	62
2019/1/9	Sunny	41	66	12	0.9	59	26
2019/1/10	Sunny~cloudy	75	113	14	1.5	79	17
2019/1/11	Haze	103	130	15	1.7	80	21
Average	-	38.71	61.94	8.82	0.85	45.24	38.59
SD	-	33.91	34.87	4.82	0.49	22.14	16.89

presented.

Table. S3 The P value of pearson correlation coefficients between mass concentration and meteorological parameters and atmospheric pollutants.

Kai Xiao *et al.*,

Table. S3 The P value of pearson correlation coefficients between mass concentration and meteorological parameters and atmospheric pollutants.

[illegible]

Table. S4

Classification of Pearson correlation coefficients

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Table. S4 Classification of Pearson correlation coefficients

r	indication
-1	A perfect negative linear relationship; no effect
≥ -0.70	A strong negative linear relationship; no effect
≥ -0.50	A moderate negative relationship; no effect
≥ -0.30	A weak negative linear relationship; no effect
0	No linear relationship
≥ 0.30	A weak positive linear relationship; effect
≥ 0.50	A moderate positive relationship; effect
≥ 0.70	A strong positive linear relationship; effect
+1	A perfect positive linear relationship; effect

Table. S5

Detailed information about the concentration of different size-resolved PM ratios

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Concentration ($\mu\text{g}/\text{m}^3$)							PMi/TSP (%)				
Date	PM 1.1	PM _{1.1-2.0} 2.0	PM _{2.0-3.3} 3.3	PM _{3.3-7.0} 7.0	PM _{>7.0} 7.0	TSP	PM 1.1	PM _{1.1-2.0} 2.0	PM _{2.0-3.3} 3.3	PM _{3.3-7.0} 7.0	PM _{>7.0} 7.0
12/26-12/28	44.1 9	32.35	32.25	60.20	54.7 9	223. 78	0.20	0.14	0.14	0.27	0.24
12/28-12/30	21.6 1	16.91	23.92	47.63	39.8 6	149. 93	0.14	0.11	0.16	0.32	0.27
12/30-12/1	34.2 6	30.59	27.94	51.84	58.6 2	203. 26	0.17	0.15	0.14	0.26	0.29
1/1-1/3	38.9 5	37.00	82.81	66.17	58.2 5	283. 17	0.14	0.13	0.29	0.23	0.21
1/3-1/5	45.9 0	30.34	30.48	64.21	57.6 8	228. 62	0.20	0.13	0.13	0.28	0.25
1/5-1/7	46.0 0	35.08	30.71	68.72	71.7 2	252. 22	0.18	0.14	0.12	0.27	0.28
1/7-1/9	28.5 9	33.85	30.94	67.83	53.1 8	214. 39	0.13	0.16	0.14	0.32	0.25
1/9-1/11	57.8 7	41.89	33.24	79.34	77.5 1	289. 84	0.20	0.14	0.11	0.27	0.27
Average	39.6 7	32.25	36.54	63.24	58.9 5	230. 65					
ratio	0.17	0.14	0.16	0.27	0.26	1.00					
SD	0.03	0.01	0.05	0.03	0.02						

Table. S5 Detailed information about the concentration of different size-resolved PM ratiosPMi: PM_{1.1}, PM_{1.1-2.0}, PM_{2.0-3.3}, PM_{3.3-7.0}, PM_{>7.0}

Table. S7.

The non- carcinogenic risks of toxic elements for children and adult by inhalation route

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Table. S7. The non- carcinogenic risks of toxic elements for children and adult by inhalation route

Element	HQ									
	PM _{1,1}		PM _{1,1-2,0}		PM _{2,0-3,3}		PM _{3,3-7,0}		PM _{>7,0}	
	Children	Adult	Children	Adult	Children	Adult	Children	Adult	Children	Adult
V	1.80E-03	1.80E-03	5.57E-04	5.57E-04	9.64E-04	9.64E-04	2.03E-03	2.03E-03	5.72E-03	5.72E-03
Cr ⁶⁺	2.20E-03	2.20E-03	7.73E-04	7.73E-04	2.53E-03	2.53E-03	1.59E-03	1.59E-03	5.31E-03	5.31E-03
Co	8.70E-03	8.70E-02	5.26E-03	5.26E-02	7.07E-03	7.07E-02	1.22E-02	1.22E-02	2.96E-02	2.96E-01
Ni	1.41E-01	1.41E-01	6.10E-02	6.10E-02	9.71E-02	9.71E-02	9.63E-02	9.63E-02	2.09E-01	2.09E-01
As	4.37E-02	4.37E-02	1.10E-02	1.10E-02	8.28E-03	8.28E-03	9.78E-03	9.78E-03	1.11E-02	1.11E-02
Cd	1.15E-01	1.15E-02	2.51E-02	2.51E-03	1.18E-02	1.18E-03	8.10E-03	8.10E-03	9.45E-03	9.45E-04
Pb	1.01E-01	1.01E-01	1.78E-02	1.78E-02	8.64E-03	8.64E-03	5.35E-03	5.35E-03	9.36E-03	9.36E-03

Table. S8.

The carcinogenic risks of toxic elements for children and adult by inhalation route

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Table. S8. The carcinogenic risks of toxic elements for children and adult by inhalation route

Elem ent	CR									
	PM _{1.1}		PM _{1.1-2.0}		PM _{2.0-3.3}		PM _{3.3-7.0}		PM _{>7.0}	
	Children	Adult	Children	Adult	Children	Adult	Children	Adult	Children	Adult
V	1.12E-07	4.48045E-07	3.46834E-08	1.38734E-07	6.004E-08	2.4E-07	1.26066E-07	5.043E-07	3.5629E-07	1.42517E-06
Cr ⁶⁺	1.98E-07	5.4879E-07	6.95617E-08	1.92454E-07	2.274E-07	6.29E-07	1.43304E-07	3.965E-07	4.7807E-07	1.32265E-06
Co	3.52E-09	1.29947E-07	2.13122E-09	7.86185E-08	2.865E-09	1.06E-07	4.92749E-09	1.818E-07	1.1969E-08	4.41515E-07
Ni	3.55E-08	4.9121E-06	1.53686E-08	2.12599E-06	2.447E-08	3.39E-06	2.42575E-08	3.356E-06	5.2732E-08	7.2946E-06
As	2.11E-07	1.63156E-06	5.30076E-08	4.09268E-07	4.006E-08	3.09E-07	4.73236E-08	3.654E-07	5.3481E-08	4.12922E-07
Cd	1.56E-08	2.87392E-07	3.38457E-09	6.24264E-08	1.586E-09	2.93E-08	1.09327E-09	2.016E-08	1.2751E-09	2.35185E-08
Pb	9.05E-09	2.50443E-05	1.60541E-09	4.44163E-06	7.772E-10	2.15E-06	4.81621E-10	1.332E-06	8.4225E-10	2.33022E-06

Fig. S1

The relative portions of carcinogenic and non- carcinogenic risks of toxic elements within PM_{1.1}, PM_{1.1-2.0}, PM_{2.0-3.3}, PM_{3.3-7.0} and PM_{>7.0} in Beijing during the sampling period.

Kai Xiao *et al.*,

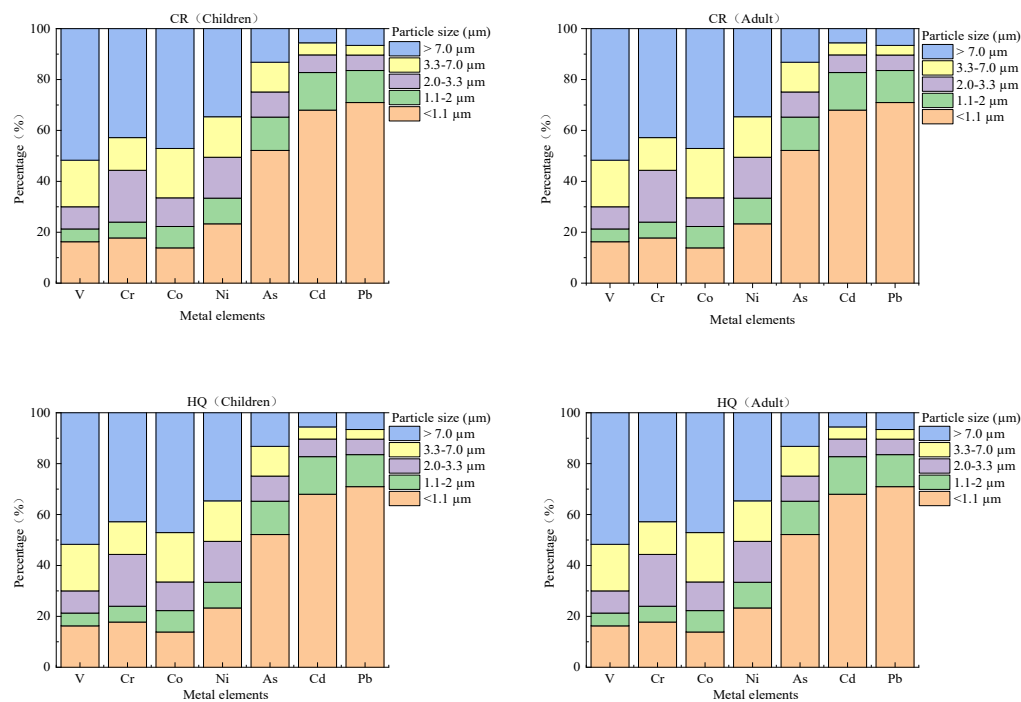


Fig. S1

The relative portions of carcinogenic and non- carcinogenic risks of toxic elements within PM_{1.1}, PM_{1.1-2.0}, PM_{2.0-3.3}, PM_{3.3-7.0} and PM_{>7.0} in Beijing during the sampling period.