

Captions

Fig. S1.

Time series of PM_{2.5} mass concentrations and average PM_{2.5} levels during non-heating season and heating season

Fig. S2

Source profiles of seven factors deduced from PMF model.

Fig. S3

Backward trajectories in pre-heating season, heating season, and whole sampling period.

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Table S1

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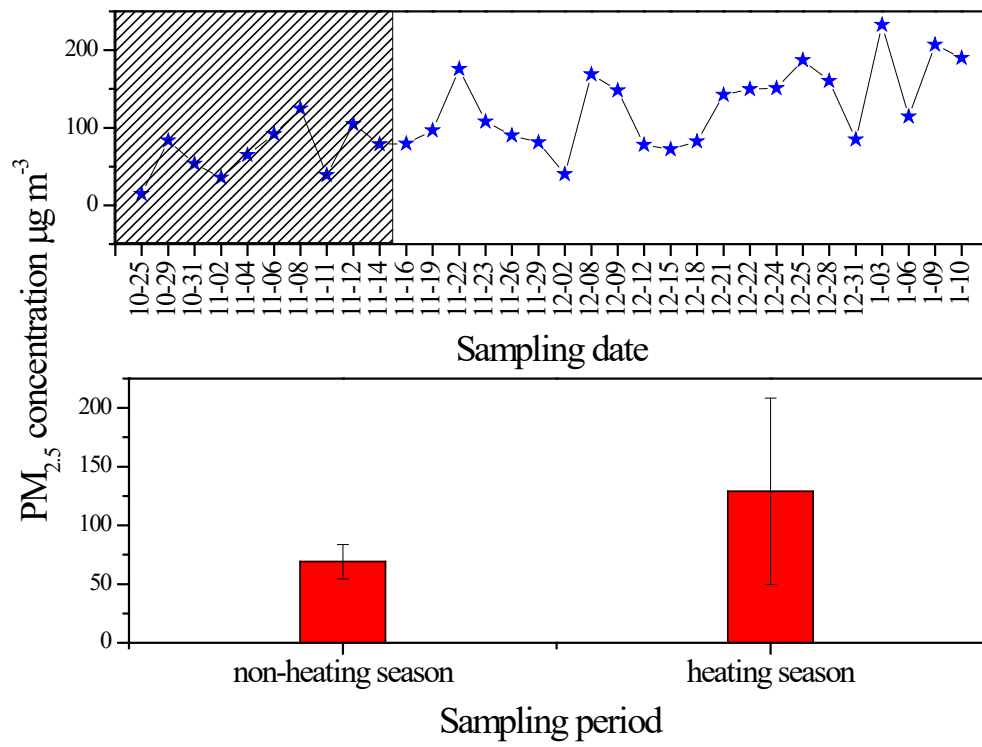


Fig. S1. Time series of PM_{2.5} mass concentrations and average PM_{2.5} levels during non-heating season and heating season

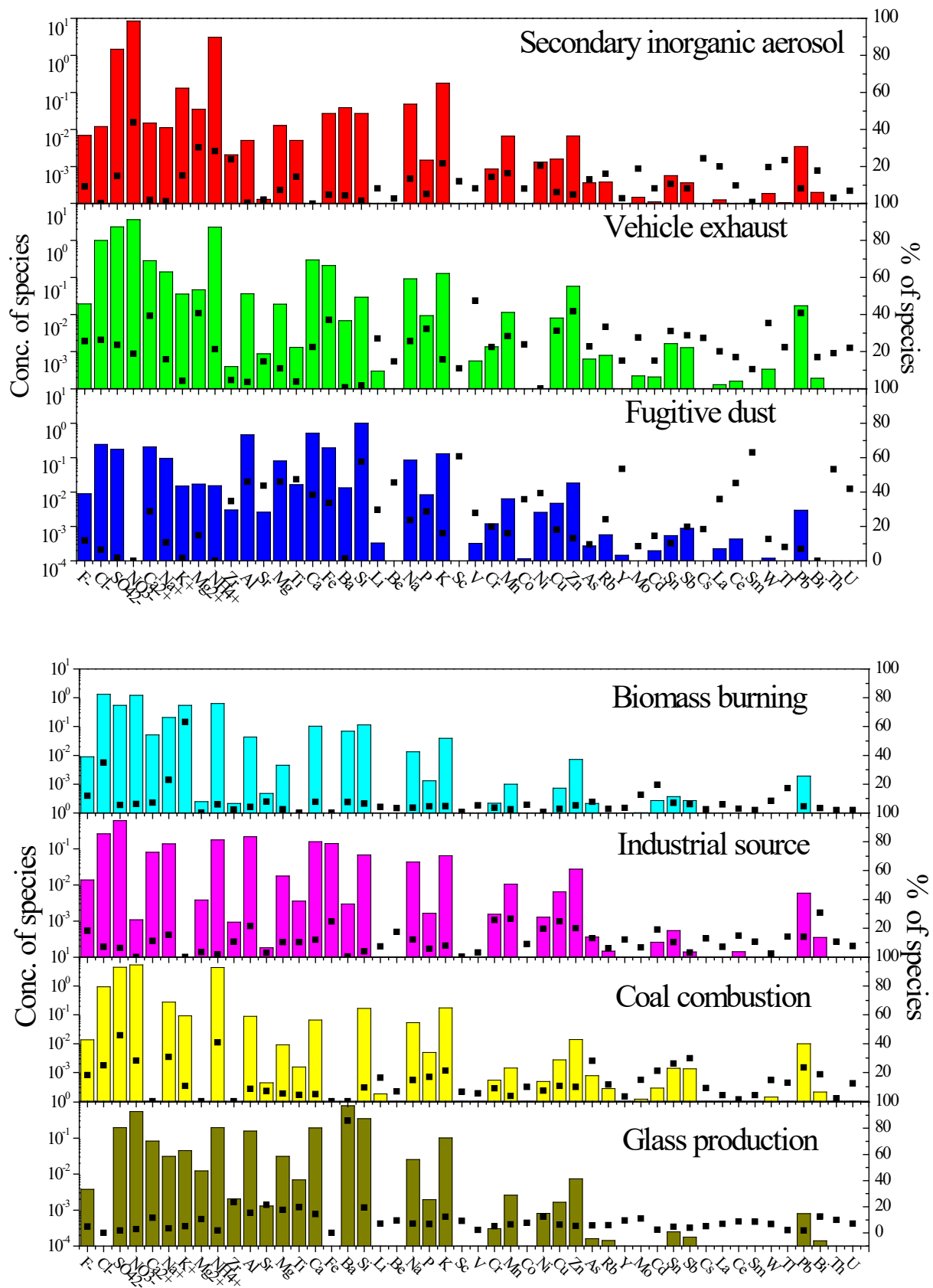


Fig. S2. Source profiles of seven factors deduced from PMF model.

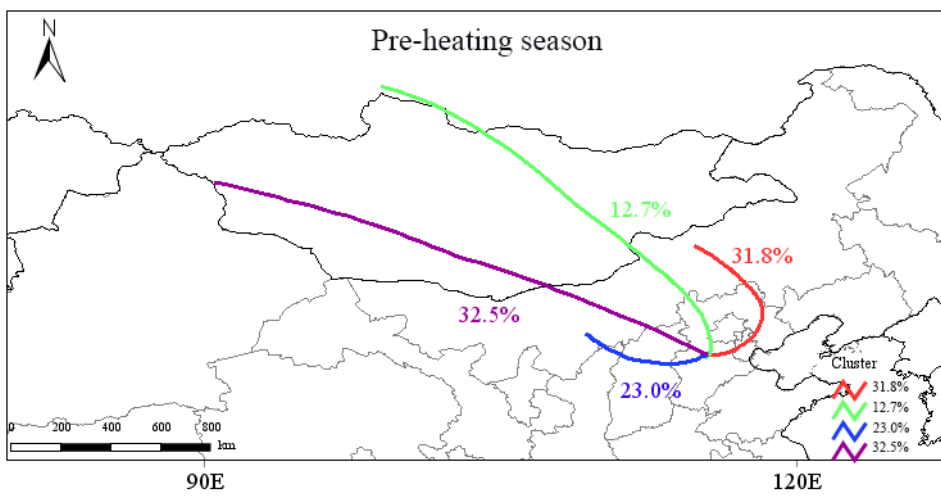
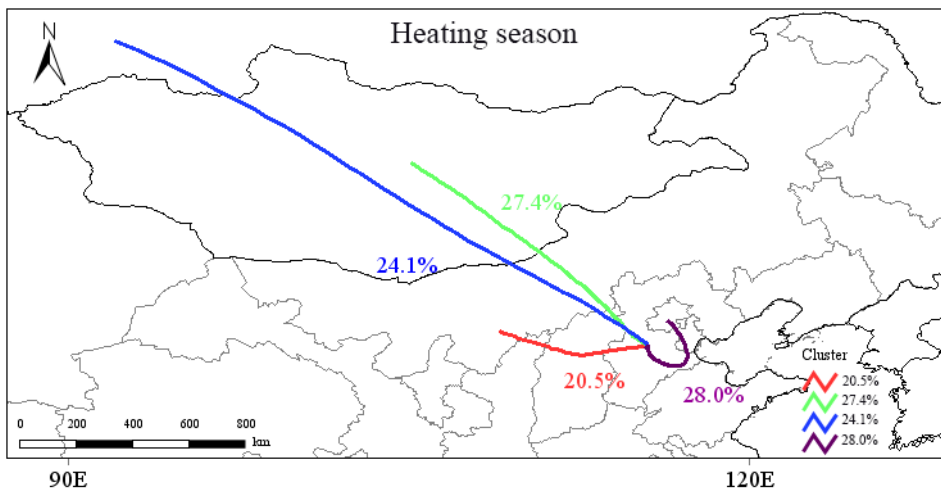
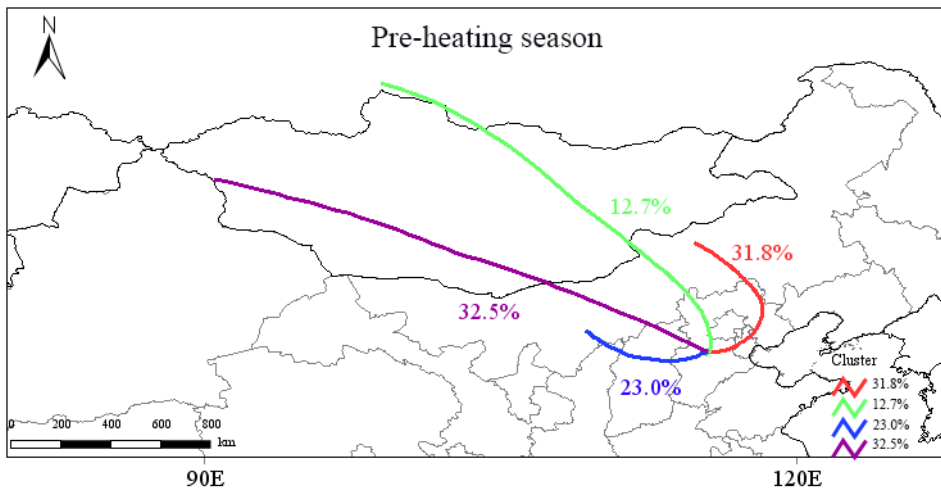


Fig. S3. Backward trajectories in pre-heating season, heating season, and whole sampling period.

Table S1 Meanings and values of calculation parameters of the chemical daily intake, the dermal absorbed dose, and the exposure concentration.

Parameters/Unit	Parameter meaning	Child Value	Adult Value
C	concentration;		
BW/kg	Average body weight	15	70
EF/d·a ⁻¹	Exposure rate	350	350
ED/a	Exposure duration	6	24
AT,carcinogenic/d	Average time	70·365	70·365
AT,noncarcinogenic/d		ED·365	ED·365
IngR/mg·d ⁻¹	Ingestion rate	200	100
CF/kg·mg ⁻¹	Conversion factor	10 ⁻⁶	10 ⁻⁶
ET/h·d ⁻¹	Exposure time	24	24
SA/cm ²	Exposed skin surface area	2800	5700
AF/mg·cm ⁻² ·d ⁻¹	Skin adherence factor for airborne particulates	0.2	0.07
ABS	Dermal absorption factor	0.001 for other elements,0.03 for As and Cd	
ATn,carcinogenic/h	Average time	70·365·24	ED·365·24
ATn,noncarcinogenic/h		ED·365·24	ED·365·24

Table S2. Mean mass concentrations of chemical components in the whole sampling period, PHS, and HS ($\mu\text{g m}^{-3}$).

Species	WSP	PHS	HS
Na ⁺	0.915±1.11	0.449±0.107	1.13±1.28
NH ₄ ⁺	10.8±8.68	4.82±4.22	13.6±8.81
Ca ²⁺	0.718±0.401	0.695±0.291	0.729±0.442
Mg ²⁺	0.119±0.0788	0.151±0.0720	0.104±0.0775
NO ₃ ²⁻	19.4±14.5	11.1±9.89	23.2±14.6
SO ₄ ²⁻	10.1±10.5	3.54±2.67	13.1±11.4
Cl ⁻	3.89±2.87	1.38±0.799	5.03±2.74
F ⁻	0.0764±0.0414	0.0497±0.0247	0.0886±0.0418
SNA	40.4±32.2	19.4±16.7	49.9±32.9
SNA/PM _{2.5}	32.6%±17.1%	26.7%±16.9%	35.3%±16.5%

Table S3. Exposure assessment values for carcinogenic and non-carcinogenic effects of elements via inhalation.

Element	Concentration ($\mu\text{g}/\text{m}^3$)	Carcinogenic risk		Non-carcinogenic risk	
		$\text{EC}_{\text{inh}} (\mu\text{g m}^{-3})$		$\text{EC}_{\text{inh}} (\mu\text{g m}^{-3})$	
		Children	Adults	Children	Adults
As	2.85E-03	2.34E-04	9.36E-04	8.85E-01	2.73E-03
Ba	9.23E-01			1.39E-03	8.85E-01
Cd	1.45E-03	1.19E-04	4.77E-04	3.08E-04	1.39E-03
Co	3.22E-04	2.64E-05	1.06E-04	5.89E-03	3.08E-04
Cr	6.15E-03			8.42E-04	5.89E-03
Cr(VI)	8.78E-04	7.22E-05	2.89E-04	5.05E-03	8.42E-04
Cr(III)	5.27E-03			2.60E-02	5.05E-03
Cu	2.71E-02			5.52E-01	2.60E-02
Fe	5.76E-01			6.04E-04	5.52E-01
Mn	4.02E-02			8.22E-04	3.86E-02
Mo	8.57E-04			7.05E-03	8.22E-04
Ni	7.35E-03	6.04E-04	2.42E-03	4.17E-02	7.05E-03
Pb	4.35E-02	3.58E-03	1.43E-02	4.40E-03	4.17E-02
Sb	4.58E-03			5.21E-03	4.40E-03
Sn	5.44E-03			5.77E-03	5.21E-03
Tl	4.60E-04			5.64E-05	4.41E-04
V	1.16E-03			9.43E-04	1.11E-03
Zn	1.40E-01			9.18E-03	1.34E-01

Table S4. Cancer risk (CR) results derived from elements via inhalation in PHS and HS.

Period	Element	SFo (mg kg ⁻¹ day ⁻¹)	IUR (µg m ⁻³)	GIABS	CR _{inh}	
					Children	Adult
NHS	AS	1.5	0.0043	1	6.95E-07	2.78E-06
	Cd		0.0018	0.025	1.07E-07	4.26E-07
	Co		0.009	1	2.11E-07	8.43E-07
	Cr(VI)	0.5	0.084	0.025	5.32E-06	2.13E-05
	Ni	0.91	0.000026	0.04	2.56E-07	1.02E-06
	Pb		0.000012	1	2.10E-08	8.40E-08
	SUM					6.61E-06
HS	AS	1.5	0.0043	1	1.15E-06	4.59E-06
	Cd		0.0018	0.025	2.64E-07	1.06E-06
	Co		0.009	1	2.50E-07	1.00E-06
	Cr(VI)	0.5	0.084	0.025	6.40E-06	2.56E-05
	Ni	0.91	0.000026	0.04	1.12E-07	4.48E-07
	Pb		0.000012	1	5.29E-08	2.12E-07
	SUM					8.23E-06

Table S5. Results of the hazard quotients (HQs) for elements in PM_{2.5} via inhalation in PHS.

Element	RfCi (mg m ⁻³)	RfDo (mg kg ⁻¹ day ⁻¹)	GIABS	HQinh	
				Children	Adults
As	0.0003	0.0003	1	1.26E-01	1.26E-01
Ba	0.2	0.2	0.07	4.29E+00	4.29E+00
Cd	0.001	0.001	0.025	6.91E-02	6.91E-02
Co	0.0003	0.0003	1	4.55E-02	4.55E-02
Cr			0.013		
Cr(VI)	0.003	0.003	0.025	7.38E-03	7.38E-03
Cr(III)	1.5	1.5	0.013		
Cu	0.04	0.04	1		
Fe	0.7	0.7	1		
Mn	0.14	0.14	1	5.89E-01	5.89E-01
Mo	0.005	0.005	1	2.80E-04	2.80E-04
Ni	0.011	0.011	0.04	5.74E-01	5.74E-01
Pb	0.0035	0.0035	1		
Sb	0.0004	0.0004	0.15	9.55E-03	9.55E-03
Sn	0.6	0.6	1		
Sr	0.6	0.6	1		
Tl	0.00001	0.00001	1		
V	0.005	0.005	0.026	2.81E-03	2.81E-03
Zn	0.3	0.3	1		

Table S6. Results of the hazard quotients (HQs) for elements in PM_{2.5} via inhalation in HS.

Element	RfCi (mg m ⁻³)	RfDo (mg kg ⁻¹ day ⁻¹)	GIABS	HQinh	
				Children	Adults
As	0.000015	0.0003	1	2.08E-01	2.08E-01
Ba	0.0005	0.2	0.07	6.24E-01	6.24E-01
Cd	0.00001	0.001	0.025	1.71E-01	1.71E-01
Co	0.000006	0.0003	1	5.41E-02	5.41E-02
Cr			0.013		
Cr(VI)	0.0001	0.003	0.025	8.89E-03	8.89E-03
Cr(III)		1.5	0.013		
Cu		0.04	1		
Fe		0.7	1		
Mn	0.00005	0.14	1	8.54E-01	8.54E-01
Mo	0.003	0.005	1	2.71E-04	2.71E-04
Ni	0.00002	0.011	0.04	2.52E-01	2.52E-01
Pb		0.0035	1		
Sb	0.0003	0.0004	0.15	1.70E-02	1.70E-02
Sn		0.6	1		
Tl		0.00001	1		
V	0.0004	0.005	0.026	2.76E-03	2.76E-03
Zn		0.3	1		