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Seasonal Variations in Concentrations and Chemical Compositions of TSP near a Bulk Material Storage Site for a Steel Plant

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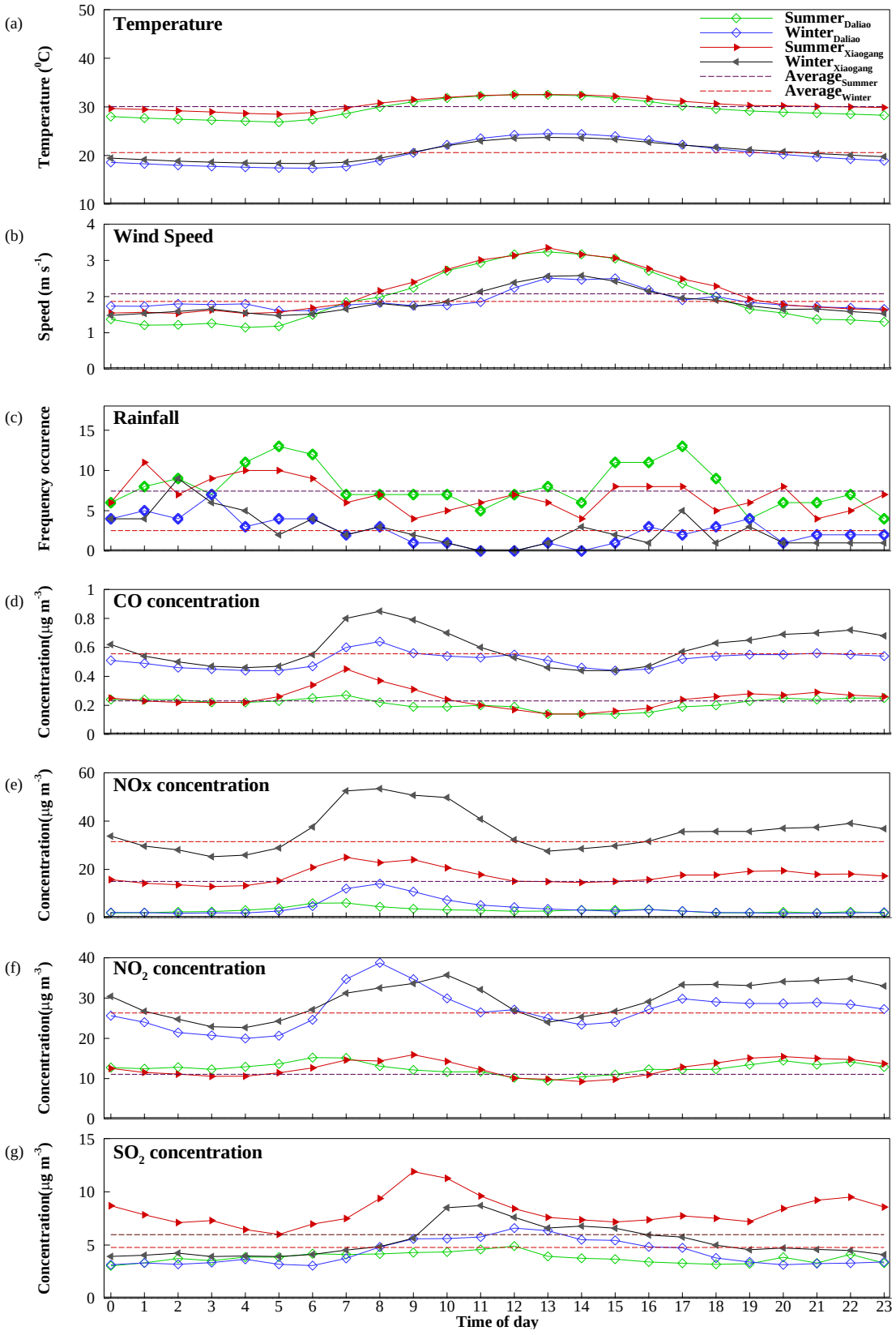

Figure S1. Diurnal variations in (a) temperature, (b) wind speed, (c) rainfal occurrence frequency, and concentrations of (d) CO, (e) NOx, (f) NO2, and SO2 for summer and winter for Xiaogang and Daliao meteorological and air quality monitoring stations.

Table S1. Metal composition in suspended TSP at the steel company's administration building, elementary school A, elementary school B, and public library in summer and winter.

Metal Elements	Summer				Winter			
	Site 1	Site 2	Site 3	Site 4	Site 1	Site 2	Site 3	Site 4
Na	4.04	9.59	8.46	6.06	2.96	3.70	3.53	2.40
Mg	3.36	0.97	1.92	ND	0.80	0.88	1.01	ND
Al	1.07	0.15	0.79	0.51	0.62	0.90	0.85	0.78
Si	ND	0.80	0.15	1.01	ND	1.19	1.72	1.36
K	1.23	0.42	1.06	0.17	0.75	0.62	0.84	0.69
Ca	0.44	0.49	1.60	0.89	0.62	0.53	1.01	0.67
Fe	0.40	0.59	0.39	0.34	3.65	2.75	2.91	2.35
Ti	3.93×10^{-3}	0.01	4.82×10^{-3}	4.01×10^{-3}	0.03	0.03	0.03	0.02
V	0.01	0.02	0.01	0.01	0.03	0.05	0.02	0.01
Cr	0.01	3.20×10^{-3}	3.64×10^{-3}	3.42×10^{-3}	0.01	0.01	0.02	0.01
Mn	0.02	0.01	0.01	0.01	0.16	0.10	0.09	0.08
Co	1.30×10^{-4}	1.81×10^{-4}	1.64×10^{-4}	1.34×10^{-4}	1.56×10^{-3}	1.43×10^{-3}	1.40×10^{-3}	1.41×10^{-3}
Ni	0.01	4.96×10^{-3}	4.00×10^{-3}	3.52×10^{-3}	0.02	0.03	0.02	0.01
Cu	0.01	0.01	0.04	0.13	0.07	0.05	0.08	0.06
Zn	0.05	0.08	0.02	0.02	0.58	0.42	0.49	0.33
As	1.41×10^{-3}	6.17×10^{-4}	3.90×10^{-4}	3.79×10^{-4}	3.15×10^{-3}	3.23×10^{-3}	3.06×10^{-3}	3.45×10^{-3}
Se	3.92×10^{-3}	4.08×10^{-4}	3.91×10^{-4}	4.41×10^{-4}	2.38×10^{-3}	2.72×10^{-3}	3.52×10^{-3}	2.66×10-3
Sn	1.72×10^{-3}	2.02×10^{-3}	1.05×10^{-3}	1.42×10^{-3}	4.25×10^{-3}	0.01	4.71×10^{-3}	0.01
Cs	9.71×10^{-4}	ND	6.33×10^{-5}	ND	2.07×10^{-4}	ND	2.37×10^{-4}	ND
Pb	0.03	4.85×10-3	4.44×10-3	0.01	0.04	0.04	0.05	0.06
Total	10.69	13.14	14.48	9.16	10.36	11.31	12.67	8.86

Note: **Site 1** refers to the Steel company administration building
Site 2 refers to Elementary school A
Site 3 refers to Elementary school B
Site 4 refers to Public library

Table S2. Chronic Daily Occupational Exposure to Potentially toxic elements contained in TSP at the steel company's administration building, elementary school A, elementary school B, and public library in summer and winter.

		Chronic (70-year average) Daily Occupational Exposure (mg kg^{-1} day^{-1}) = Air volume (m^3)*Concentration (μg $m^{-3}/10^3$ μg mg^{-1})/70kg =(8hours $day^{-1}\times60$ mins $hour^{-1}\times0.015$ m^3 min^{-1})* Concentration (mg m^{-3})/70 kg							
		Steel compay administration building	**Fenglin (Elementary school A)**	**Fengming (Elementary school B)**	**Linyuan (Public library)**	**Steel compay admin building**	**Fenglin (Elementary school A)**	**Fengming (Elementary school B)**	**Linyuan (Public library)**
Carcinogenic	Cr	1.18×10^{-6}	3.29×10^{-7}	3.74×10^{-7}	3.52×10^{-7}	1.36×10^{-6}	1.28×10^{-6}	1.55×10^{-6}	1.39×10^{-6}
	Co	1.34×10^{-8}	1.86×10^{-8}	1.68×10^{-8}	1.38×10^{-8}	1.61×10^{-7}	1.47×10^{-7}	1.44×10^{-7}	1.45×10^{-7}
	Ni	9.31×10^{-7}	5.10×10^{-7}	4.12×10^{-7}	3.62×10^{-7}	2.03×10^{-6}	2.83×10^{-6}	2.20×10^{-6}	1.40×10^{-6}
	As	1.45×10^{-7}	6.35×10^{-8}	4.01×10^{-8}	3.89×10^{-8}	3.24×10^{-7}	3.32×10^{-7}	3.15×10^{-7}	3.54×10^{-7}
	Pb	2.90×10^{-6}	4.99×10^{-7}	4.56×10^{-7}	5.28×10^{-7}	4.31×10^{-6}	3.90×10^{-6}	4.72×10^{-6}	6.37×10^{-6}

Non-carcinogenic	Mn	2.41×10^{-6}	9.70×10^{-7}	1.22×10^{-6}	7.89×10^{-7}	1.69×10^{-5}	1.00×10^{-5}	9.09×10^{-6}	7.84×10^{-6}
	Cu	1.20×10^{-6}	9.13×10^{-7}	4.50×10^{-6}	1.36×10^{-5}	6.72×10^{-6}	5.11×10^{-6}	8.08×10^{-6}	6.32×10^{-6}
	Zn	4.90×10^{-6}	8.11×10^{-6}	2.45×10^{-6}	2.25×10^{-6}	5.97×10^{-5}	4.36×10^{-5}	5.04×10^{-5}	3.37×10^{-5}

Table S3. Pearson r correlation values between Average TSP concentrations and the metal elements, water soluble ions, elemental and organic carbon.

	Average TSP concentrations	
	Pearson r correlation values	**P-value**
Metal elements	0.95	*P*<.001
Water soluble ions	0.96	*P*<.001
Elemental Carbon	0.95	*P*<.001
Organic Carbon	0.8	*P*=.02
Note; n=8		
Df = 6		