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**Concentrations, spatial distributions and sources of heavy metals in surface soils of the coal mining city, Wuhai, China**

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Table S1: Summary of concentrations of soil heavy metals collected from typical coal mining cities and non-mining cities in recent years. (mg/kg)

	Locations	N <sup>a</sup>	As	Hg	Cr	Ni	Cu	Zn	Cd	Pb	Reference
Typical coal mining cities	Wuhai, China	58	9.31 (6.37-16.8)	0.12 (0.01-4.95)	61.7 (44.7-104)	24.7 (16.2-58.3)	19.6 (12.1-121)	55.2 (29.4-371)	0.16 (0.06-0.50)	28.0 (15.2-316)	This study
	Lianyuan, China	6078	15.0 (0.78-512)	-	93.0 (21.5-206)	-	33.3 (7.92-719)	107 (21.1-1112)	0.59 (0.05-8.71)	37.8 (8.69-745)	[1]
	Fuxin, China	138	9.71 (1.99-11.2)	0.03 (0.02-0.06)	91.9 (5.10-278)	56.0 (28.2-138)	9.31 (1.20-37.2)	120 (24.1-433)	1.03 (0.16-10.2)	12.2 (1.00-92.1)	[2]
	Tangshan, China	120	5.89 (1.19-11.3)	0.06 (0.01-0.39)	37.0 (8.76-64.6)	16.8 (4.13-33.4)	22.4 (7.76-64.5)	70.3 (24.2-137)	1.50 (0.03-0.40)	22.9 (10.4-47.3)	[3]
	Daye, China	213	-	-	35.5 (8.62-117)	28.1 (3.82-83.3)	175 (9.37-2057)	257 (48.9-2579)	1.14 (0.03-34.6)	103 (0.10-3907)	[4]
	Changsha, China	54	20.6 (8.10-32.4)	-	-	20.2 (8.03-98.3)	37.1 (13.4-138)	111 (30.0-417)	0.74 (0.05-2.74)	50.1 (14.7-176)	[5]
	Xilinhot, China	27	-	-	37.0 (8.00-106)	27.0 (4.00-181)	7.90 (2.60-16.9)	54.0 (2.00-246)	0.12 (LOD-0.86)	24.0 (LOD-296)	[6]
Non-mining cities	Zhejiang, China	114	18.2 (0.11-110)	0.43 (0.08-2.18)	69.1 (5.44-189)	36.6 (2.57-74.4)	29.8 (11.5-79.0)	90.9 (28.9-201)	0.80 (0.18-5.45)	157 (19.2-512)	[7]
	Hunan, China	112	21.1 (4.00-77.4)	0.25 (0.04-1.04)	75.0 (6.72-169)	26.8 (3.49-66.6)	38.9 (13.9-112)	147 (43.3-403)	0.85 (0.06-8.87)	56.1 (15.2-234)	[8]
	Jiangsu, China	26451	9.33 (2.15-245)	0.80 (0.001-8.09)	75.8 (16.6-459)	-	25.8 (5.89-756)	72.0 (18.1-1021)	0.15 (0.33-22.80)	26.3 (11.4-1932)	[9]
	Xinjiang, China	56	20.7 (12.4-31.0)	-	118 (100-141)	42.7 (6.15-60.5)	64.2 (52.6-90.9)	123 (84.7-233)	0.74 (0.07-1.74)	32.6 (10.5-127)	[10]
	Beijing, China	758	7.99 (3.51-12.8)	0.13 (0.01-0.83)	58.2 (36.4-103)	21.2 (11.8-31.5)	26.8 (11.9-97.2)	78.0 (37.3-207)	0.20 (0.07-1.04)	22.6 (4.81-60.8)	[11]

Xiamen, China	146	5.82 (1.50-18.0)	-	41.8 (10.4-972)	10.7 (2.40-91.3)	23.3 (2.10-563)	80.6 (13.8-616)	-	37.4 (12.4-173)	[12]
Xiangtan, China	63	-	-	61.4 (50.7-71.8)	22.2 (17.9-26.1)	26.4 (18.0-44.3)	178 (105-354)	16.35 (5.68-60.65)	46.8 (29.2-56.5)	[13]
Taiyuan, China	139	10.7 (0.62-23.5)	0.09 (0.01-0.70)	74.1 (14.8-193)	29.7 (6.82-47.4)	32.1 (5.83-274)	90.8 (16.9-279)	0.25 (0.04-1.44)	27.9 (6.32-73.7)	[14]
LaiZhou Bay, China	111	-	0.05 (0.01-1.42)	71.9 (11.1-110)	27.5 (10.9-101)	21.0 (5.30-179)	62.3 (28.9-598)	-	21.5 (9.70-85.8)	[15]

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<sup>a</sup> number of sampling sites

Table S2: Correlation coefficients between different heavy metals.

	As	Hg	Cr	Ni	Cu	Zn	Cd	Pb
As	1.000	-0.031	0.209	0.236	0.378**	0.287*	0.259*	0.285*
Hg		1.000	0.112	0.073	0.136	0.103	0.095	0.009
Cr			1.000	0.445**	0.051	0.127	0.258	0.029
Ni				1.000	0.122	0.127	0.308*	0.047
Cu					1.000	0.960**	0.703**	0.970**
Zn						1.000	0.772*	0.968**
Cd							1.000	0.683**
Pb								1.000

\*\* Correlation is significant at  $P < 0.01$  (two-tailed).

\* Correlation is significant at  $P < 0.05$  (two-tailed).

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