

Table 1 The concentrations of heavy elements in dissolved and particulate phases at the studied stations during the studied periods

Stations	Heavy elements	Dissolved phase( $\mu\text{g/l}$ )	Particulate phase ( $\mu\text{g/g}$ dry weight)	
		Mean $\pm$ SD	Exchangeable Mean $\pm$ SD	Residual Mean $\pm$ SD
Station 1	Cd	3.06 $\pm$ 1.82	53.51 $\pm$ 63.21	64.61 $\pm$ 83.69
	Cu	2.58 $\pm$ 0.84	67.10 $\pm$ 31.15	107.60 $\pm$ 226.30
	Fe	145.68 $\pm$ 108.39	9510.0 $\pm$ 3640.0	23945.0 $\pm$ 8872.0
	Mn	4.98 $\pm$ 1.46	1480.2 $\pm$ 442.0	423.3 $\pm$ 121.9
	Ni	10.45 $\pm$ 2.15	132.38 $\pm$ 79.83	194.83 $\pm$ 84.94
	Pb	46.26 $\pm$ 8.68	312.60 $\pm$ 193.0	444.60 $\pm$ 512.9
	Zn	8.20 $\pm$ 3.69	245.40 $\pm$ 211.9	246.40 $\pm$ 146.6
Station 2	Cd	3.08 $\pm$ 1.81	54.30 $\pm$ 66.25	61.76 $\pm$ 81.19
	Cu	2.44 $\pm$ 0.8	56.54 $\pm$ 15.5	88.20 $\pm$ 179.7
	Fe	107.91 $\pm$ 64.15	9505.0 $\pm$ 3996.0	24181.0 $\pm$ 5099.0
	Mn	4.79 $\pm$ 1.29	1866.8 $\pm$ 633.0	371.1 $\pm$ 90.8
	Ni	10.18 $\pm$ 1.28	129.84 $\pm$ 81.83	174.91 $\pm$ 63.77
	Pb	46.55 $\pm$ 7.70	268.6 $\pm$ 173.6	383.7 $\pm$ 368.2
	Zn	8.73 $\pm$ 5.24	385.3 $\pm$ 205.2	233.2 $\pm$ 109.6
Station 3	Cd	2.95 $\pm$ 1.68	48.81 $\pm$ 47.52	59.48 $\pm$ 63.13
	Cu	2.28 $\pm$ 0.74	61.06 $\pm$ 26.49	85.7 $\pm$ 149.5
	Fe	88.21 $\pm$ 66.96	10107.0 $\pm$ 4850.0	22331.0 $\pm$ 4810.0
	Mn	4.09 $\pm$ 1.46	1956.8 $\pm$ 679.9	374.2 $\pm$ 90.5
	Ni	9.47 $\pm$ 1.65	135.17 $\pm$ 78.98	172.31 $\pm$ 76.91
	Pb	40.91 $\pm$ 9.44	303.6 $\pm$ 176.6	440.5 $\pm$ 444.7
	Zn	5.92 $\pm$ 1.54	232.8 $\pm$ 105.5	233.4 $\pm$ 106.0
Station 4	Cd	3.07 $\pm$ 1.81	56.47 $\pm$ 53.96	69.64 $\pm$ 68.46
	Cu	2.29 $\pm$ 0.90	57.27 $\pm$ 37.80	101.4 $\pm$ 207.5
	Fe	63.69 $\pm$ 43.01	9419.0 $\pm$ 4134.0	18667.0 $\pm$ 7889.0
	Mn	4.575 $\pm$ 1.474	2396.5 $\pm$ 1041.0	334.4 $\pm$ 134.1
	Ni	9.07 $\pm$ 1.93	120.42 $\pm$ 85.69	126.49 $\pm$ 86.19
	Pb	42.55 $\pm$ 6.91	321.1 $\pm$ 111.6	509.3 $\pm$ 462.6
	Zn	9.65 $\pm$ 16.87	234.1 $\pm$ 101.3	254.2 $\pm$ 138.8
Station 5	Cd	2.88 $\pm$ 1.54	28.42 $\pm$ 29.29	31.93 $\pm$ 35.25
	Cu	2.14 $\pm$ 0.84	22.74 $\pm$ 9.46	60.8 $\pm$ 101.5
	Fe	41.75 $\pm$ 25.77	6111.0 $\pm$ 3322.0	18428.0 $\pm$ 7933.0
	Mn	3.97 $\pm$ 1.28	954.1 $\pm$ 373.5	325.2 $\pm$ 137.7
	Ni	8.39 $\pm$ 2.07	81.99 $\pm$ 49.42	146.55 $\pm$ 48.36
	Pb	42.08 $\pm$ 9.04	144.6 $\pm$ 61.10	159.8 $\pm$ 144.50
	Zn	5.427 $\pm$ 3.5	107.0 $\pm$ 78.80	127.4 $\pm$ 61.30

Note: mean  $\pm$  Standard deviation (SD)