Supplemental Data (Statistical analysis)

Table S1 One-way ANOVA comparison of selected HM pollution for different sources in the target area.

Metals		Sum of Squares	df	Mean Square	F	Sig.
As	Between Groups	112.839	2	56.419	0.515	0.599
	Within Groups	16104.381	147	109.554		
	Total	16217.220	149			
Cr	Between Groups	0.556	2	0.278	0.230	0.795
	Within Groups	177.578	147	1.208		
	Total	178.135	149			
Co	Between Groups	2.544	2	1.272	1.946	0.147
	Within Groups	96.083	147	0.654		
	Total	98.627	149			
Fe	Between Groups	97600.297	2	48800.149	1.658	0.194
	Within Groups	4326785.671	147	29433.916		
	Total	4424385.968	149			
Mn	Between Groups	81.657	2	40.829	0.919	0.401
	Within Groups	6531.841	147	44.434		
	Total	6613.499	149			
Mo	Between Groups	203.478	2	101.739	1.169	0.314
	Within Groups	12793.121	147	87.028		
	Total	12996.600	149			
Zn	Between Groups	5745.919	2	2872.960	0.660	0.519
	Within Groups	622862.225	143	4355.680		
	Total	628608.145	145			
Ni	Between Groups	4.442	2	2.221	0.585	0.558
	Within Groups	558.221	147	3.797		
	Total	562.663	149			
Hg	Between Groups	1.787	2	0.893	1.570	0.212
	Within Groups	80.823	142	0.569		
	Total	82.610	144			

Table S2 One-way ANOVA comparison of selected HM pollution for different geographical directions in the target area.

Metals		Sum of Squares	df	Mean Square	F	Sig.
As	Between Groups	311.32	3	103.77	0.953	0.417
	Within Groups	15905.89	146	108.94		
	Total	16217.22	149			
Cr	Between Groups	7.041	3	2.34	2.003	0.116
	Within Groups	171.09	146	1.174		
	Total	178.13	149			
Co	Between Groups	3.103	3	1.034	1.03	0.197
	Within Groups	95.52	146	0.654		
	Total	98.62	149			
Fe	Between Groups	16939.54	3	5646.51	0.187	0.905
	Within Groups	4407446.42	146	30187.98		
	Total	4424385.96	149			
Mn	Between Groups	39.62	3	13.20	0.293	0.830
	Within Groups	6573.87	146	45.02		
	Total	6613.49	149			
Mo	Between Groups	51.90	3	17.30	0.195	0.900
	Within Groups	12944.69	146	88.66		
	Total	12996.6	149			
Zn	Between Groups	4486.37	3	1495.46	0.340	0.796
	Within Groups	624121.7	142	4395.22		
	Total	618608.14	145			
Ni	Between Groups	3.977	3	1.32	0.346	0.792
	Within Groups	558.68	146	3.82		
	Total	562.66	149			
Hg	Between Groups	0.490	3	0.163	0.280	0.840
	Within Groups	82.12	141	0.582		
	Total	82.61	144			

Table S3 Correlation matrix of selected HM in ground water samples (n^a=150).

n=150	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.042	1.000							
Co	0.199[*]	0.117	1.000						
Fe	0.001	0.150	-0.023	1.000					
Mn	0.237[**]	0.054	0.086	0.095	1.000				
Mo	-0.003	-0.003	-0.055	0.092	0.006	1.000			
Zn	-0.034	0.078	0.058	0.115	0.206[*]	0.151	1.000		
Ni	0.110	-0.011	0.070	0.096	0.134	0.651[**]	0.268[**]	1.000	
Hg	-0.084	0.065	-0.017	-0.002	-0.048	0.012	-0.024	0.011	1.000

[a] Number of water samples; [**]correlation is significant at the 0.01 level (2-tailed); [*]correlation is significant at the 0.05 level (2-tailed).

Correlations

Table S4 Correlation matrix of selected HMs in well water samples (n= 33).

Well	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	0.058	1.000							
Co	0.045	-0.001	1.000						
Fe	0.000	0.270	-0.156	1.000					
Mn	0.955[**]	0.121	0.110	0.080	1.000				
Mo	-0.015	-0.100	-0.240	0.067	0.000	1.000			
Zn	0.074	-0.196	-0.213	0.102	0.120	0.813[**]	1.000		
Ni	0.157	-0.091	-0.110	0.050	0.204	0.885[**]	0.762[**]	1.000	
Hg	-0.204	-0.149	0.085	-0.034	-0.131	-0.037	0.027	-0.039	1.000

[**]correlation is significant at the 0.01 level (2-tailed); [*]correlation is significant at the 0.05 level (2-tailed)

Table S5 Correlation matrix of selected HMs in spring water samples (n=15).

Spring	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.123	1.000							
Co	0.714[**]	0.132	1.000						
Fe	0.441	0.224	0.333	1.000					
Mn	CN[a]	CN	CN	CN	1.000				
Mo	0.314	-0.168	0.438	-0.151	CN	1.000			
Zn	0.078	0.360	0.109	0.807[**]	CN	-0.426	1.000		
Ni	0.541[*]	-0.033	0.311	0.227	CN	0.099	0.356	1.000	
Hg	0.046	-0.215	-0.115	0.052	CN	-0.317	-0.051	0.159	1.000

[**]correlation is significant at the 0.01 level (2-tailed); [*]correlation is significant at the 0.05 level (2-tailed); [c] cannot be computed because at least one of the variables is not constant.

Table S6 Correlation matrix of selected HMs in tank water samples (n=102).

Tank	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.039	1.000							
Co	0.094	0.151	1.000						
Fe	-0.065	0.176	0.060	1.000					
Mn	-0.028	0.028	0.075	0.098	1.000				
Mo	-0.015	0.156	0.135	0.182	-0.055	1.000			
Zn	-0.045	0.101	0.111	0.480[**]	0.376[**]	-0.028	1.000		
Ni	0.042	0.022	0.149	0.236[*]	-0.011	0.115	0.234[*]	1.000	
Hg	-0.069	0,127	-0.039	0.007	-0.008	0.128	-0.043	0.021	1.000

[**]correlation is significant at the 0.01 level (2-tailed); [*]correlation is significant at the 0.05 level (2-tailed)

Table S7 Correlation matrix of selected HMs in north direction (n=150).

North	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	0.094	1.000							
Co	0.026	0.101	1.000						
Fe	0.013	0.288[**]	-0.054	1.000					
Mn	0.815[**]	0.116	0.063	0.076	1.000				
Mo	-0.011	-0.023	-0.081	0.080	0.002	1.000			
Zn	0.026	0.142	-0.111	0.172	0.013	0.295[**]	1.000		
Ni	0.201	0.047	-0.072	0.099	0.142	0.792[**]	0.446[**]	1.000	
Hg	-0.145	-0.037	-0.112	-0.008	-0.046	-0.015	0.080	-0.107	1.000

[**]correlation is significant at the 0.01 level (2-tailed).

Table S8 Correlation matrix of selected HMs in south direction

Southern	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	0.098	1.000							
Co	0.480[**]	0.127	1.000						
Fe	0.268	0.104	0.215	1.000					
Mn	-0.054	0.006	0.271	0.626[**]	1.000				
Mo	0.015	0.119	0.184	0.095	-0.002	1.000			
Zn	-0.055	0.031	0.216	0.494[**]	0.861[**]	-0.077	1.000		
Ni	0.214	-0.056	0.538[**]	0.022	0.170	0.222	0.115	1.000	
Hg	-0.043	0.126	0.120	0.139	-0.112	0.255	-0.143	0.225	1.000

[**]correlation is significant at the 0.01 level (2-tailed).

Table S9 Correlation matrix of selected HMs in western direction

Western	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.002	1.000							
Co	0.176	-0.243	1.000						
Fe	-0.053	0.148	0.391	1.000					
Mn	NC [a]	NC	NC	NC	1.000				
Mo	0.404	-0.123	0.036	0.342	NC	1.000			
Se	-0.050	0.496	-0.093	0.089	NC	-0.101	1.000		
Ni	-0.255	-0.309	-0.103	0.119	NC	-0.207	0.550[*]	1.000	
Hg	0.124	0.181	-0.028	-0.201	NC	-0.511[*]	0.372	0.472	1.000

[*]correlation is significant at the 0.05 level (2-tailed); [a] cannot be computed because at least one of the variables is not constant.

Table S10 Correlation matrix of selected HMs in eastern direction

Eastern	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.263	1.000							
Co	0.301	0.375	1.000						
Fe	-0.139	-0.046	-0.358	1.000					
Mn	-0.049	0.509	-0.163	0.193	1.000				
Mo	-0.110	0.077	-0.430	0.704^{**}	0.523^{*}	1.000			
Zn	-0.177	-0.153	-0.368	0.442	-0.156	0.565^{*}	1.000		
Ni	0.393	-0.049	-0.106	0.399	0.204	0.268	-0.188	1.000	
Hg	-0.336	0.345	0.209	-0.011	-0.020	-0.047	-0.031	-0.317	1.000

[*]correlation is significant at the 0.05 level (2-tailed); [**]correlation is significant at the 0.01 level (2-tailed)

Table S11 Correlation matrix of selected HMs in slope 0

	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-1.000^{**}	1.000							
Co	1.000^{**}	-1000^{**}	1.000						
Fe	1.000^{**}	-1000^{**}	1.000^{**}	1.000					
Mn	NC [a]	NC	NC	NC	1.000				
Mo	1.000^{**}	-1.000^{**}	1.000^{**}	1.000^{**}	NC	1.000			
Zn	1.000^{**}	-1.000^{**}	1.000^{**}	1.000^{**}	NC	1.000^{**}	1.000		
Ni	1.000^{**}	-1.000^{**}	1.000^{**}	1.000^{**}	NC	1.000^{**}	1.000^{**}	1.000	
Hg	NC	NC	NC	NC	NC	NC	NC	NC	1.000

[**]correlation is significant at the 0.01 level (2-tailed); [a]cannot be computed because at least one of the variables is not constant

Table S12 Correlation matrix of selected HMs in slope 0-8

	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	0.196	1.000							
Co	0.046	0.140	1.000						
Fe	-0.008	0.399^{**}	-0.063	1.000					
Mn	0.818^{**}	0.157	0.076	0.055	1.000				
Mo	-0.023	-0.084	-0.133	0.066	-0.014	1.000			
Zn	-0.003	0.111	-0.166	0.178	-.005	0.306^{*}	1.000		
Ni	0.197	0.071	-0.082	0.084	0.126	0.841^{**}	0.469^{**}	1.000	
Hg	-0.204	-0.446^{**}	-0.311^{*}	-0.005	-0.062	-0.030	0.216	-0.042	1.000

[**]correlation is significant at the 0.01 level (2-tailed); [*]correlation is significant at the 0.05 level (2-tailed).

Table S13 Correlation matrix of selected HMs in slope 8-15

	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.223	1.000							
Co	-0.062	0.194	1.000						
Fe	-0.204	0.035	-0.021	1.000					
Mn	-0.002	0.119	0.226	0.240	1.000				
Mo	-0.310	0.034	0.285	0.466**	0.228	1.000			
Zn	-0.114	0.271	0.056	0.377*	0.457**	0.112	1.000		
Ni	-0.221	0.027	0.220	0.298	0.281	0.415**	0.217	1.000	
Hg	-0.061	0.174	-0.094	0.045	-0.013	-0.105	-0.079	0.017	1.000

**correlation is significant at the 0.01 level (2-tailed); *correlation is significant at the 0.05 level (2-tailed)

Table S14 Correlation matrix of selected HMs in slope 15-30

	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.061	1.000							
Co	0.443**	-0.066	1.000						
Fe	0.293	0.307*	0.357*	1.000					
Mn	-0.042	0.125	0.260	0.555**	1.000				
Mo	0.115	0.231	-0.042	0.169	-0.045	1.000			
Zn	-0.045	0.113	0.230	0.537**	0.980**	-0.058	1.000		
Ni	-0.084	-0.065	0.267	0.237	0.177	0.118	0.176	1.000	
Hg	-0.043	-0.016	0.127	-0.310*	-0.194	0.225	-0.183	0.022	1.000

**correlation is significant at the 0.01 level (2-tailed); *correlation is significant at the 0.05 level (2-tailed).

Table S15 Correlation matrix of selected HMs in slope>30

	As	Cr	Co	Fe	Mn	Mo	Zn	Ni	Hg
As	1.000								
Cr	-0.149	1.000							
Co	0.039	0.204	1.000						
Fe	-0.145	0.120	-0.065	1.000					
Mn	-0.030	-0.209	-0.161	0.885**	1.000				
Mo	-0.051	0.133	0.093	0.140	-0.104	1.000			
Zn	-0.125	-0.194	0.039	0.650**	0.734**	-0.218	1.000		
Ni	0.197	-0.104	0.043	-0.305	-0.348	-0.005	-0.145	1.000	
Hg	-0.349	0.441	0.411	0.406	0.249	0.161	0.445	0.027	1.000

**correlation is significant at the 0.01 level (2-tailed); *correlation is significant at the 0.05 level (2-tailed)