Supplementary Material

Table S1. Limit of Detection (LOD) and Limit of Quantification (LOQ) of the studied elements.

Element	LOD	LOQ	Unit
Co	1	3.33	ppm
Cr	1	3.33	ppm
Cu	1	3.33	ppm
Fe	0.01	0.03	%
Ni	1	3.33	ppm
Pb	2	6.66	ppm
V	1	3.33	ppm
Zn	2	6.66	ppm

Table S2. Accuracy: recovery from certified reference materials.

Element	EMOG-17 measured	EMOG-17 accepted	EMOG-17 recovery (%)	OREAS 45f measured	OREAS 45f accepted (range)	OREAS 45f recovery (%)
Co	747	756	98.8	38	39	97.4
Cr	46	48	95.8	317	341	93.0
Cu	8400	8370	100.4	315	336	93.8
Fe (%)	4.57	4.66	98.1	14.00	13.68	102.4
Ni	7450	7700	96.8	182	192	94.8
Pb	7140	7225	98.8	12	12.5	96.0
V	63	66	95.5	201	217	92.6
Zn	7160	7535	95.0	19	22)	86.4

Table S3. EF Index classification used for the present study.

EF	EF < 1	No enrichment
	EF<3	Minor enrichment
	EF= 3–5	Moderate enrichment
	EF= 5–10	Moderately severe enrichment
	EF= 10–25	Severe enrichment
	EF= 25–50	Very severe enrichment
	EF > 50	Extremely severe enrichment

Table S4. Standard of contamination levels by the geoaccumulation index (Igeo).

I_{geo} Class	I_{geo} value	Contamination level
0	$I_{geo} \leq 0$	Uncontaminated

1	$0 < I_{geo} < 1$	Uncontaminated to moderately contaminated
2	$1 < I_{geo} < 2$	Moderately contaminated
3	$1 < I_{geo} < 2$	Moderately to strongly contaminated
4	$2 < I_{geo} < 3$	Strongly contaminated
5	$3 < I_{geo} < 4$	Strongly to extremely contaminated
6	$I_{geo} > 5$	Extremely contaminated

Table S5. CF classes according to Hakanson [16].

CF classes	Values
low contamination	CF<1
moderate contamination	1≤ CF<3
considerable contamination	3≤ CF<6
very high contamination	CF≥6

Table S6. Classification of the pollution load index (PLI).

PLI value	Classification
PLI < 1	Unpolluted
PLI > 1	Polluted

Table S7. DC classes.

DC classes	Values
low contamination	<8
moderate contamination	8-16
considerable contamination	16-32
very high contamination	>32

Table S8. GPS coordinates of the 28 soil sampling sites in North Riyadh, Saudi Arabia.

Sample	**Latitude (N)**	**Longitude (E)**
S1	24°55'5.15"N	46°37'4.39"E
S2	24°55'0.66"N	46°36'52.67"E
S3	24°55'5.99"N	46°35'38.56"E
S4	24°55'9.83"N	46°35'46.91"E
S5	24°57'22.78"N	46°35'31.87"E

S6	24°57'15.06"N	46°35'19.21"E
S7	24°57'11.17"N	46°35'48.52"E
S8	24°57'38.59"N	46°35'50.49"E
S9	24°57'50.46"N	46°36'40.30"E
S10	24°56'53.75"N	46°37'12.41"E
S11	24°55'50.15"N	46°37'34.85"E
S12	24°55'32.41"N	46°38'8.38"E
S13	24°54'18.28"N	46°38'50.57"E
S14	24°54'32.62"N	46°38'28.91"E
S15	24°50'42.34"N	46°38'24.38"E
S16	24°50'35.63"N	46°37'44.69"E
S17	24°50'12.11"N	46°37'52.21"E
S18	24°50'18.31"N	46°34'49.96"E
S19	24°52'24.62"N	46°34'37.99"E
S20	24°56'33.25"N	46°33'38.27"E
S21	24°55'49.57"N	46°34'4.67"E
S22	24°54'30.93"N	46°34'46.18"E
S23	24°53'39.97"N	46°35'7.57"E
S24	24°53'1.95"N	46°32'4.67"E
S25	24°54'55.05"N	46°29'47.41"E
S26	24°58'51.65"N	46°28'11.17"E
S27	24°59'4.58"N	46°31'56.82"E
S28	24°55'45.59"N	46°33'53.78"E