



Supplementary Table S1. Concentrations of PTEs in each sequential extraction step for tailing samples and recovery percentage respect to the total.

Tailing samples	PTEs	F-E ($\mu\text{g}\cdot\text{g}^{-1}$)	F-C ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Ox ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Orga ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Resi ($\mu\text{g}\cdot\text{g}^{-1}$)	Recovery (%)
DF1	Zn	2.98	372.05	1788.26	14.47	1614.20	99.92%
	Pb	4.52	216.22	1485.25	93.38	63.73	99.90%
	Cd	0.70	1.60	17.57	1.16	<DL *	84.10%
DF2	Zn	2.06	369.94	1389.79	76.63	1974.07	99.93%
	Pb	2.37	238.03	1362.88	11.20	59.91	99.96%
	Cd	0.72	1.67	27.63	3.62	<DL *	96.12%
DF3	Zn	2.04	393.78	1788.29	525.62	1228.29	99.99%
	Pb	4.53	821.45	2612.69	198.64	99.25	99.91%
	Cd	1.20	2.91	29.15	1.79	<DL *	87.62%
DG1	Zn	2.53	264.51	1956.57	28.87	1465.31	99.94%
	Pb	0.84	48.83	1947.03	78.36	33.62	99.94%
	Cd	1.27	2.09	38.59	3.14	<DL *	90.19%
DG2	Zn	2.17	344.04	2489.24	196.79	1527.08	99.90%
	Pb	1.27	204.25	2732.87	375.58	106.66	99.87%
	Cd	0.23	0.54	10.77	1.00	<DL *	83.58%
DG3	Zn	2.37	352.06	2314.53	282.18	1772.39	99.99%
	Pb	25.14	206.02	1943.18	106.18	110.40	99.83%
	Cd	1.55	3.56	59.93	<DL *	<DL *	92.91%

* < DL—Below Detection Limit; DF—fine-grained residues; DG—coarse-grained residues; F-E—exchangeable fraction; F-C—carbonate-bound fraction; F-Ox—oxyhydroxides fraction; F-Orga—organic fraction; F-Resi—residual fraction.

Supplementary Table 2. Concentrations of PTEs in each sequential extraction step for soil samples and recovery percentage respect to the total.

Soil samples	PTEs	F-E ($\mu\text{g}\cdot\text{g}^{-1}$)	F-C ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Ox ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Orga ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Resi ($\mu\text{g}\cdot\text{g}^{-1}$)	Recovery (%)
S2	Zn	2.93	4.16	731.87	12.57	201.64	99.81%
	Pb	4.83	0.92	788.51	0.51	63.37	99.78%
	Cd	0.42	<DL *	6.57	2.37	<DL *	93.64%
S3	Zn	4.20	35.16	623.63	80.27	260.37	99.86%
	Pb	17.91	1.65	1221.32	39.09	113.03	99.86%
	Cd	0.27	0.27	5.07	1.54	<DL *	71.48%
S5	Zn	3.70	49.42	625.37	22.44	315.41	99.64%
	Pb	12.51	1.11	735.84	114.66	92.71	99.67%
	Cd	0.41	0.40	6.41	0.69	<DL *	79.01%
S8	Zn	0.95	1.60	74.25	1.86	47.38	96.95%
	Pb	19.55	13.36	160.53	34.58	50.01	99.30%
	Cd	<DL *	0.63	2.59	0.42	<DL *	72.94%
S9	Zn	3.79	9.31	169.10	3.92	136.10	99.14%
	Pb	38.03	<DL *	358.53	15.63	80.26	99.48%
	Cd	<DL *	<DL *	4.13	1.09	<DL *	74.61%
S10	Zn	2.03	5.54	154.08	6.68	134.27	99.21%
	Pb	8.83	<DL *	211.11	14.47	24.56	99.60%
	Cd	<DL *	<DL *	3.58	0.38	<DL *	79.28%

S11	Zn	1.63	0.27	130.06	6.14	76.16	99.66%
	Pb	10.24	<DL *	144.83	13.75	48.02	98.56%
	Cd	0.40	<DL *	3.55	0.16	<DL *	82.24%
S13	Zn	6.57	9.37	489.69	165.17	405.79	99.68%
	Pb	161.15	<DL *	1015.46	188.77	456.36	99.82%
	Cd	1.86	<DL *	7.59	0.98	<DL *	86.24%
S14	Zn	44.93	56.91	318.88	73.64	359.49	99.87%
	Pb	<DL *	<DL *	878.80	91.09	103.45	99.85%
	Cd	<DL *	<DL *	8.28	0.96	<DL *	92.41%
S15	Zn	5.57	6.57	131.15	6.17	92.53	98.77%
	Pb	8.09	5.50	279.47	9.32	63.33	98.84%
	Cd	0.44	0.31	1.78	0.80	<DL *	83.35%

* < DL—Below Detection Limit; S—soil. F-E: exchangeable fraction; F-E: exchangeable fraction; F-C—carbonate-bound fraction; F-Ox—oxyhydroxides fraction; F-Org—organic fraction; F-Resi—residual fraction.

Supplementary Table 3. Concentrations of PTEs in each sequential extraction step for sediment samples and recovery percentage respect to the total.

Sediment samples	PTEs	F-E ($\mu\text{g}\cdot\text{g}^{-1}$)	F-C ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Ox ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Org ($\mu\text{g}\cdot\text{g}^{-1}$)	F-Resi ($\mu\text{g}\cdot\text{g}^{-1}$)	Recovery (%)
Sed4	Zn	31.19	91.36	913.53	73.92	331.79	99.78%
	Pb	21.16	1.45	1636.50	21.36	84.95	99.74%
	Cd	0.60	<DL *	16.16	1.70	<DL *	92.30%
Sed6	Zn	2.09	31.44	490.18	58.25	146.31	99.76%
	Pb	86.47	58.87	1278.00	88.28	355.99	99.87%
	Cd	<DL *	1.41	28.10	8.41	<DL *	94.83%
Sed12	Zn	2.44	52.02	1206.42	27.94	352.65	99.79%
	Pb	94.64	90.58	1059.71	142.29	142.34	99.97%
	Cd	0.32	0.29	9.98	2.85	<DL *	89.60%

* < DL—Below Detection Limit; SED—sediment; F-E—exchangeable fraction; F-C—carbonate-bound fraction; F-Ox—oxyhydroxides fraction; F-Org—organic fraction; F-Resi—residual fraction.