Table S1 – Comparison of the accuracy of ICP-MS, DMA-80 and pXRF analysis. ICP-MS: As, Cr, Cu, Fe, Mn, Pb, Sb, Zn; DMA-80: Hg.

CRM		As	Cr	Cu	Fe	Hg	Mn	Pb	Sb	Zn
PACS-3	CRM concentration (mg/kg)	30.3	90.6	356	41060	2.98	432	188	14.7	376
	pXRF average recovery (%)	164%	120%	104%	107%		107%	93%		109%
	Confirmatory analysis average recovery (%)	98%	96%	83%	95%	102%	93%	95%	99%	96%
MESS-4	CRM concentration (mg/kg)	21.7	94.3	32.9	37900	0.09	298	21.5	1.07	147
	pXRF average recovery (%)	121%	106%	160%	102%		103%	93%		102%
	Confirmatory analysis average recovery (%)	91%	98%	87%	89%	96%	91%	101%	85%	94%

Table S2 - Linear regression and t-test carried out on log$_{10}$ transformed data.

Matrix type	Element	Preparation	Data quality[a]	n	RSD%	r²	T-test	Slope z-test	Y-int z-test
								p-value	
Cu-Sb	As	Lab-prepared	Quantitative	37	7%	0.963*	0.000	0.527	0.185
		Fast lab-prepared	Quantitative	37	7%	0.917*	0.000	0.485	0.149
	Cr	Lab-prepared	Qualitative	25	12%	0.523*	0.021	0.721	0.720
		Fast lab-prepared	Qualitative	21	14%	0.249	0.282	0.610	0.531
	Cu	Lab-prepared	Quantitative	37	8%	0.979*	0.000	0.641	0.201
		Fast lab-prepared	Quantitative	37	5%	0.963*	0.000	0.650	0.104
	Fe	Lab-prepared	Quantitative	37	1%	0.970*	0.000	0.731	0.410
		Fast lab-prepared	Quantitative	37	1%	0.933*	0.000	0.079	0.000
	Hg	Lab-prepared	Quantitative	11	14%	0.959*	0.127	0.802	0.637
		Fast lab-prepared	Quantitative	13	11%	0.885*	0.207	0.539	0.367
	Mn	Lab-prepared	Quantitative	37	3%	0.929*	0.004	0.605	0.458
		Fast lab-prepared	Quantitative	37	4%	0.875*	0.002	0.554	0.403
	Pb	Lab-prepared	Definitive	37	6%	0.988*	0.760	0.770	0.524
		Fast lab-prepared	Definitive	37	5%	0.919*	0.066	0.867	0.920
	Sb	Lab-prepared	Definitive	15	9%	0.970*	0.576	0.704	0.589
		Fast lab-prepared	Definitive	12	7%	0.940*	0.980	0.707	0.613
	Zn	Lab-prepared	Quantitative	37	4%	0.969*	0.007	0.849	0.709
		Fast lab-prepared	Quantitative	37	3%	0.933*	0.000	0.809	0.573
Pb-Zn	As	Lab-prepared	Quantitative	52	10%	0.856*	0.000	0.383	0.051
		Fast lab-prepared	Qualitative	52	12%	0.699*	0.001	0.371	0.096
	Cr	Lab-prepared	Qualitative	5	7%	0.100	0.007	0.035	0.000
		Fast lab-prepared	Qualitative	5	8%	0.079	0.024	0.100	0.007
	Cu	Lab-prepared	Qualitative	34	16%	0.358*	0.000	0.024	0.001
		Fast lab-prepared	Qualitative	43	17%	0.233	0.000	0.016	0.000
	Fe	Lab-prepared	Quantitative	53	1%	0.952*	0.000	0.201	0.003
		Fast lab-prepared	Quantitative	51	3%	0.874*	0.000	0.158	0.002
	Hg	Lab-prepared	Qualitative	7	11%	0.050	0.000	0.537	0.017
		Fast lab-prepared	Qualitative	6	9%	0.001	0.000	0.381	0.104
	Mn	Lab-prepared	Quantitative	57	7%	0.895*	0.003	0.917	0.747
		Fast lab-prepared	Quantitative	49	12%	0.806*	0.233	0.799	0.646
	Pb	Lab-prepared	Definitive	58	5%	0.993*	0.370	0.789	0.718
		Fast lab-prepared	Quantitative	55	5%	0.907*	0.013	0.620	0.622
	Sb	Lab-prepared	Qualitative	2	n.d.	n.d.	n.d.	n.d.	n.d.
		Fast lab-prepared	Qualitative	2	n.d.	n.d.	n.d.	n.d.	n.d.
	Zn	Lab-prepared	Definitive	58	4%	0.992*	0.053	0.887	0.711
		Fast lab-prepared	Definitive	56	5%	0.910*	0.508	0.591	0.422

[a] Data quality levels are defined by US EPA [10]

* Significant for p < 0.001