Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts.

Supplementary information

Table 1: Certified reference materials used in the analyses

CRM	Producer	Description	Certificate of Analysis
GBW 07401	National Research Center for Certified Reference Materials, China	Podzolitic Soil	www.ncrm.org.cn
GBW 07402	National Research Center for Certified Reference Materials, China	Chestnut Soil	www.ncrm.org.cn
GBW 07403	National Research Center for Certified Reference Materials, China	Yellow-brown Soil	www.ncrm.org.cn
GBW 07404	National Research Center for Certified Reference Materials, China	Limy-yellow Soil	www.ncrm.org.cn
GBW 07405	National Research Center for Certified Reference Materials, China	Yellow-red Soil, polymetallic ore area	www.ncrm.org.cn
GBW 07406	National Research Center for Certified Reference Materials, China	Red Soil, polymetallic ore area	www.ncrm.org.cn
GBW 07407	National Research Center for Certified Reference Materials, China	Laterite soil	www.ncrm.org.cn
GBW 07411	National Research Center for Certified Reference Materials, China	Soil	www.ncrm.org.cn
GBW 07603	National Research Center for Certified Reference Materials, China	Bush branches (plant matter)	www.ncrm.org.cn
GBW 07308	National Research Center for Certified Reference Materials, China	Stream sediment	www.ncrm.org.cn
GBW 07310	National Research Center for Certified Reference Materials, China	Stream sediment	www.ncrm.org.cn
GBW 07313	National Research Center for Certified Reference Materials, China	Marine sediment	www.ncrm.org.cn
SRM 2710a	National Institute of Standards and Technology (NIST)	Montana I soil	https://www-s.nist.gov/srmors/certificates/2710a.pdf
BGS 102	British Geological Survey	Ironstone soil	https://www.bgs.ac.uk/download/bgs-igf-102-certificate-of-analysis/
BCR 146R	Community Bureau of Reference (BCR)	Sewage sludge of industrial origin	https://crm.jrc.ec.europa.eu/
CRM 143R	Community Bureau of Reference	Sewage sludge of	https://crm.jrc.ec.europa.eu/

	(BCR)	industrial origin	

Table 2: Concentrations of PTE in individual replicate samples

	As	**Al**	**Ba**	**Ca**	**Cd**	**Cr**	**Cu**	**Fe**	**Mn**	**Ni**	**Pb**	**K**	**Ti**	**V**	**U**	**Zn**
A1	5.01	2.91	1587	2.95	0.52	66.8	22.9	1.70	264	19.2	39.9	1.07	4133	30.1	4.80	118
A1 (2)	4.78	2.75	1547	2.95	<0.1	45.0	22.7	1.89	203	18.6	40.4	1.08	4143	30.4	5.10	120
A1 (3)	4.67	2.72		2.95	0.27	45.0	23.5	1.88	200	20.4	36.5	1.07	4200	29.2	4.80	120
Mean	**4.82**	**2.79**	**1567**	**2.95**	**0.39**	**52.3**	**23.0**	**1.82**	**222**	**19.4**	**38.9**	**1.07**	**4159**	**29.9**	**4.90**	**120**
SD	0.17	0.10	28.2	0.00	0.18	12.59	0.4	0.11	36.0	0.91	2.13	0.00	36.0	0.64	0.17	1.23
A2	3.89	2.69	356	3.87	1.00	96.2	105	3.06	451	23.0	81.0	1.57	3657	39.5	6.70	460
A2 (2)	4.12	2.54	354	3.89	1.00	65.7	106	3.41	352	23.2	80.9	1.57	3664	39.3	6.40	454
A2 (3)	3.50	2.58	453	3.93	1.00	59.3	119	2.95	371	22.3	74.0	0.99	3615	31.8	6.30	436
Mean	**3.84**	**2.60**	**388**	**3.90**	**1.00**	**73.7**	**110**	**3.14**	**391**	**22.9**	**78.6**	**1.38**	**3646**	**36.9**	**6.47**	**450**
SD	0.31	0.07	56.6	0.03	0.00	19.7	7.92	0.24	52.6	0.49	4.00	0.33	26.7	4.38	0.21	12.5
A3	4.67	2.77	312	5.43	0.89	93.2	44.9	4.14	540	24.5	75.6	1.51	4181	48.7	7.40	337
A3 (2)	4.45	2.63	308	5.46	0.78	63.0	44.3	4.60	422	24.3	75.2	1.52	4206	50.0	7.30	340
A3 (3)	4.40	2.68	400	5.49	0.70	59.1	50.4	3.97	445	22.8	68.3	0.96	4139	42.2	7.20	317
Mean	**4.51**	**2.69**	**340**	**5.46**	**0.79**	**71.8**	**46.5**	**4.24**	**469**	**23.9**	**73.0**	**1.33**	**4176**	**47.0**	**7.30**	**331**
SD	0.1	0.1	51.8	0.0	0.1	18.6	3.4	0.3	62.5	0.9	4.1	0.3	34.0	4.2	0.1	12.2
A4	4.00	3.06	280	9.37	0.89	195	35.4	3.94	522	27.6	64.9	1.42	4474	68.3	8.40	272
A4 (2)	3.89	2.90	274	9.40	1.00	132	34.3	4.37	406	27.7	65.9	1.42	4467	66.7	8.70	271
A4 (3)	3.60	2.99	350	9.60	0.90	122	39.8	3.79	440	25.9	59.4	0.91	4304	56.6	8.20	256
Mean	**3.83**	**2.99**	**301**	**9.46**	**0.93**	**150**	**36.5**	**4.04**	**456**	**27.0**	**63.4**	**1.25**	**4415**	**63.9**	**8.43**	**266**

SD	0.2	0.1	42.3	0.1	0.1	39.4	2.9	0.3	59.7	1.0	3.5	0.3	96.4	6.4	0.3	9.1
A5	2.67	3.41	131	3.97	0.89	64.9	22.4	1.85	319	16.7	37.0	0.82	4032	37.3	4.00	120
A5 (2)	2.67	3.19	129	4.00	0.78	45.2	22.9	2.06	251	16.5	36.7	0.83	4067	35.6	4.30	122
A5 (3)	2.30	3.28	166	3.98	0.80	41.5	25.5	1.77	259	15.4	33.6	0.52	3967	29.6	4.00	112
Mean	**2.55**	**3.29**	**142**	**3.98**	**0.82**	**50.6**	**23.6**	**1.89**	**276**	**16.2**	**35.8**	**0.72**	**4022**	**34.2**	**4.10**	**118**
SD	0.2	0.1	20.9	0.02	0.1	12.6	1.7	0.1	37.3	0.7	1.9	0.2	51.0	4.1	0.2	5.4
A6	2.56	2.94	195	3.30	0.74	69.5	17.7	1.72	268	13.0	42.5	1.01	3084	34.0	4.60	132
A6 (2)	2.56	2.79	191	3.32	0.66	48.9	17.5	1.90	208	14.4	42.4	1.01	3045	34.0	4.70	131
A6 (3)	2.40	2.85	251	3.31	0.64	42.6	19.9	1.63	215	13.7	38.1	0.63	2938	28.2	4.30	124
Mean	**2.51**	**2.86**	**212**	**3.31**	**0.68**	**53.7**	**18.4**	**1.75**	**230**	**13.7**	**41.0**	**0.88**	**3022**	**32.1**	**4.53**	**129**
SD	0.1	0.1	33.7	0.0	0.1	14.1	1.3	0.1	32.8	0.7	2.5	0.2	75.4	3.4	0.2	4.3
A7	2.45	3.29	236	6.37	0.26	132	15.8	1.71	406	18.0	32.6	1.12	4183	50.0	5.50	107
A7 (2)	2.00	3.11	231	6.31	0.16	86.0	15.1	1.87	307	15.5	32.4	1.11	4077	48.3	5.30	108
A7 (3)	2.10	3.23	305	6.43	<0.1	77.7	18.1	1.66	335	16.5	29.9	0.69	4161	42.3	5.30	103
Mean	**2.18**	**3.21**	**258**	**6.37**	**0.21**	**98.5**	**16.3**	**1.75**	**349**	**16.7**	**31.7**	**0.97**	**4140**	**46.8**	**5.37**	**106**
SD	0.2	0.1	41.5	0.1	0.1	29.1	1.6	0.1	51.0	1.2	1.5	0.2	56.0	4.0	0.1	2.8
A8	3.23	3.82	287	5.49	0.24	70.3	19.4	2.11	423	18.1	45.8	1.50	4851	45.7	6.30	185
A8 (2)	3.56	3.79	288	5.84	0.44	52.1	20.9	2.48	348	19.0	48.0	1.59	5191	47.9	6.40	195
A8 (3)	3.10	3.68	367	5.55	0.33	44.5	21.9	2.02	350	17.5	41.2	0.95	4790	37.1	6.30	175
Mean	**3.30**	**3.76**	**314**	**5.62**	**0.34**	**55.6**	**20.7**	**2.20**	**374**	**18.2**	**45.0**	**1.34**	**4944**	**43.6**	**6.33**	**185**
SD	0.2	0.1	46	0.2	0.1	13.3	1.2	0.2	42.9	0.8	3.5	0.3	216	5.7	0.1	10.0
A9	1.56	1.70	183	2.57	0.36	66.4	12.0	1.52	297	9.8	29.3	1.28	2328	23.5	3.50	94.7
A9 (2)	1.45	1.56	180	2.59	0.31	45.9	12.5	1.70	230	13.2	29.2	1.29	2329	23.3	3.30	91.3
A9 (3)	1.50	1.59	231	2.54	0.26	42.6	14.3	1.46	212	11.6	26.4	0.80	2326	19.0	3.30	87.3
Mean	**1.50**	**1.62**	**198**	**2.57**	**0.31**	**51.6**	**12.9**	**1.56**	**246**	**11.5**	**28.3**	**1.12**	**2328**	**21.9**	**3.37**	**91.1**
SD	0.1	0.1	28.9	0.03	0.05	12.9	1.2	0.1	44.7	1.7	1.7	0.3	1.6	2.5	0.1	3.7

A10	1.56	1.78	192	3.07	0.41	81.6	17.7	1.52	202	13.1	32.0	1.15	2009	22.9	3.20	112
A10 (2)	1.67	1.64	190	3.10	0.47	57.1	17.2	1.69	160	12.4	31.8	1.16	2049	23.3	3.40	110
A10 (3)	1.70	1.71	251	3.09	0.44	50.8	20.4	1.47	166	13.2	28.7	0.71	1974	19.6	3.40	104
Mean	**1.64**	**1.71**	**211**	**3.09**	**0.44**	**63.2**	**18.4**	**1.56**	**176**	**12.9**	**30.8**	**1.01**	**2010**	**21.9**	**3.33**	**109**
SD	0.1	0.1	34.7	0.01	0.03	16.3	1.7	0.1	22.6	0.5	1.8	0.3	37.3	2.0	0.1	4.1
A11	3.00	3.61	330	5.49	0.78	103	25.5	2.74	610	21.8	51.1	1.58	5311	50.5	9.90	315
A11 (2)	3.23	3.44	329	5.52	0.63	71.2	26.2	3.05	480	21.4	50.8	1.60	5285	51.8	9.90	318
A11 (3)	2.70	3.48	426	5.57	0.56	65.9	29.1	2.65	511	21.0	46.3	1.01	5253	42.7	9.50	300
Mean	**2.98**	**3.51**	**362**	**5.52**	**0.66**	**80.2**	**26.9**	**2.82**	**534**	**21.4**	**49.4**	**1.40**	**5283**	**48.3**	**9.77**	**311**
SD	0.3	0.1	55.8	0.04	0.1	20.3	1.9	0.2	67.7	0.4	2.7	0.3	29.1	4.9	0.2	9.6
A12	3.11	3.56	177	7.65	0.63	199	23.0	2.75	881	23.7	50.5	1.06	4401	62.1	7.80	411
A12 (2)	3.45	3.39	175	7.69	0.46	144	23.3	3.09	686	24.2	50.5	1.07	4404	65.2	7.90	412
A12 (3)	3.00	3.42	228	7.67	0.51	130	26.5	2.65	723	23.3	46.1	0.67	4254	52.2	8.00	388
Mean	**3.19**	**3.46**	**193**	**7.67**	**0.53**	**158**	**24.3**	**2.83**	**764**	**23.7**	**49.1**	**0.93**	**4353**	**59.8**	**7.90**	**404**
SD	0.2	0.1	20.4	0.03	0.1	51.8	2.1	0.2	47.2	0.5	2.8	0.2	67.6	6.8	0.2	9.9
A13	3.56	4.24	119	5.40	0.41	243	37.6	2.34	402	21.2	52.1	0.93	4927	63.6	5.20	219
A13 (2)	3.78	4.02	117	5.45	0.28	162	37.3	2.62	312	21.3	52.2	0.94	4951	64.2	5.40	224
A13 (3)	3.30	4.05	153	5.46	0.34	147	41.1	2.26	331	20.5	47.3	0.58	4824	52.2	5.50	205
Mean	**3.55**	**4.10**	**129**	**5.44**	**0.34**	**184**	**38.7**	**2.41**	**348**	**21.0**	**50.5**	**0.82**	**4901**	**60.0**	**5.37**	**216**
SD	0.2	0.1	20.4	0.03	0.1	51.8	2.1	0.2	47.2	0.5	2.8	0.2	67.6	6.8	0.2	9.9
A14	2.34	2.93	96.6	2.72	0.63	145	24.8	1.84	313	14.7	39.2	0.71	3540	42.8	3.50	113
A14 (2)	2.67	2.79	94.7	2.76	0.76	102	24.3	2.06	250	15.5	39.1	0.71	3517	45.0	3.40	112
A14 (3)	2.50	2.79	125	2.73	0.61	89.5	27.9	1.77	257	14.5	35.6	0.44	3477	34.9	3.70	106
Mean	**2.50**	**2.84**	**105**	**2.74**	**0.67**	**112**	**25.7**	**1.89**	**273**	**14.9**	**38.0**	**0.62**	**3512**	**40.9**	**3.53**	**111**
SD	0.2	0.1	16.9	0.02	0.1	29.4	2.0	0.2	34.8	0.5	2.1	0.2	32.0	5.3	0.2	3.8

A15	2.45	3.26	271	5.33	0.21	69.6	16.5	1.84	392	18.3	34.2	1.39	4257	42.2	6.20	141
A15 (2)	2.56	3.10	265	5.38	0.31	48.9	16.6	2.06	306	18.3	33.8	1.41	4288	42.9	6.50	139
A15 (3)	2.10	3.13	350	5.35	0.27	43.0	18.6	1.78	323	16.7	30.9	0.87	4199	33.7	6.40	133
Mean	**2.37**	**3.17**	**295**	**5.35**	**0.26**	**53.8**	**17.3**	**1.89**	**340**	**17.8**	**33.0**	**1.22**	**4248**	**39.6**	**6.37**	**138**
SD	0.2	0.1	47.2	0.02	0.1	13.9	1.2	0.2	45.8	0.9	1.8	0.3	45.3	5.1	0.2	4.0
A16	3.00	3.52	114	4.70	0.21	110	22.8	2.28	368	20.0	46.0	0.80	5039	53.7	6.00	170
A16 (2)	3.45	3.33	112	4.71	0.17	73.7	22.8	2.55	287	19.9	45.8	0.81	5021	53.6	6.10	170
A16 (3)	3.00	3.40	143	4.75	<0.1	64.9	25.8	2.20	299	19.6	41.7	0.50	4977	44.0	6.60	162
Mean	**3.15**	**3.41**	**123**	**4.72**	**0.19**	**82.8**	**23.8**	**2.35**	**318**	**19.8**	**44.5**	**0.71**	**5012**	**50.4**	**6.23**	**167**
SD	0.3	0.1	17.7	0.03	0.03	23.8	1.7	0.2	43.8	0.2	2.4	0.2	31.8	5.6	0.3	4.8
A17	1.89	2.96	156	2.16	0.44	50.4	14.6	1.55	376	18.5	31.0	1.00	3520	30.6	3.90	130
A17 (2)	1.89	2.82	158	2.16	0.34	34.4	14.6	1.72	292	18.6	30.5	1.01	3434	29.7	4.00	131
A17 (3)	1.80	3.00	208	2.17	0.29	31.7	15.8	1.48	303	16.7	27.8	0.63	3359	25.0	4.10	122
Mean	**1.86**	**2.93**	**174**	**2.16**	**0.36**	**38.8**	**15.0**	**1.58**	**323**	**17.9**	**29.8**	**0.88**	**3438**	**28.4**	**4.00**	**128**
SD	0.1	0.1	29.1	0.01	0.1	10.1	0.7	0.1	46.2	1.1	1.7	0.2	80.3	3.0	0.1	4.8
A18	3.23	3.22	275	4.24	0.62	78.1	27.0	2.77	411	19.6	48.7	1.49	5583	45.0	8.30	187
A18 (2)	3.11	3.04	280	4.18	0.58	52.5	26.8	3.06	313	19.0	48.9	1.47	5515	43.2	8.50	187
A18 (3)	2.80	3.07	360	4.19	0.43	47.9	30.7	2.64	328	18.1	44.3	0.92	5405	35.4	8.20	175
Mean	**3.05**	**3.11**	**305**	**4.20**	**0.54**	**59.5**	**28.1**	**2.82**	**350**	**18.9**	**47.3**	**1.29**	**5501**	**41.2**	**8.33**	**183**
SD	0.2	0.1	47.7	0.03	0.1	16.3	2.2	0.2	52.5	0.8	2.6	0.3	89.6	5.1	0.2	6.8
A19	4.89	6.21	229	9.22	0.78	316	59.4	3.76	587	35.4	116	1.18	7760	99.0	8.60	629
A19 (2)	4.67	5.89	233	9.29	1.00	220	59.5	4.23	460	34.8	117	1.19	7819	100.3	9.10	636
A19 (3)	4.30	6.10	296	9.58	0.70	207	67.7	3.71	499	35.0	108	0.77	7818	83.6	8.50	601
Mean	**4.62**	**6.07**	**253**	**9.37**	**0.83**	**248**	**62.2**	**3.90**	**515**	**35.0**	**114**	**1.05**	**7799**	**94.3**	**8.73**	**622**
SD	0.3	0.2	37.4	0.2	0.2	59.9	4.8	0.3	65.3	0.3	5.3	0.2	34.1	9.3	0.3	18.5
A20	4.67	3.92	204	10.7	0.67	80.4	37.4	3.17	656	28.5	54.8	1.07	5186	63.8	9.50	316

A20 (2)	4.67	3.69	208	10.7	0.67	55.3	37.1	3.53	505	28.0	54.8	1.07	5165	65.0	9.60	318
A20 (3)	4.40	3.70	270	10.6	0.49	51.8	42.3	3.05	518	27.1	49.5	0.66	5062	52.4	9.60	300
Mean	**4.58**	**3.77**	**227**	**10.7**	**0.61**	**62.5**	**38.9**	**3.25**	**560**	**27.9**	**53.1**	**0.93**	**5138**	**60.4**	**9.57**	**311**
SD	0.2	0.1	37.3	0.1	0.1	15.6	2.9	0.3	83.9	0.7	3.1	0.2	66.3	7.0	0.1	9.9
	As	**Al**	**Ba**	**Ca**	**Cd**	**Cr**	**Cu**	**Fe**	**Mn**	**Ni**	**Pb**	**K**	**Ti**	**V**	**U**	**Zn**
A21	2.78	3.08	89	2.59	0.16	79.7	19.6	1.72	357	15.7	39.5	0.77	3956	36.5	4.50	101
A21 (2)	2.67	2.96	88	2.60	0.27	54.7	19.8	1.91	275	15.5	39.5	0.77	3929	36.5	4.00	101
A21 (3)	2.20	2.97	115	2.57	0.17	50.4	22.9	1.64	293	16.1	35.8	0.48	3866	29.5	4.10	95
Mean	**2.55**	**3.00**	**97**	**2.59**	**0.20**	**61.6**	**20.8**	**1.76**	**308**	**15.8**	**38.2**	**0.67**	**3917**	**34.1**	**4.20**	**99**
SD	0.3	0.1	15.5	0.02	0.1	15.8	1.8	0.1	43.2	0.3	2.1	0.2	46.3	4.0	0.3	3.2
A22	2.89	3.24	90	2.67	<0.1	367	21.9	1.95	320	16.4	39.7	0.75	4050	66.7	4.50	107
A22 (2)	2.67	3.12	91	2.67	<0.1	249	22.3	2.17	246	14.4	40.1	0.75	4020	65.0	4.00	104
A22 (3)	2.60	3.14	119	2.67	<0.1	219	24.6	1.86	261	14.8	36.1	0.46	3922	53.1	4.00	100
Mean	**2.72**	**3.17**	**100**	**2.67**		**279**	**22.9**	**1.99**	**276**	**15.2**	**38.6**	**0.66**	**3997**	**61.6**	**4.17**	**104**
SD	0.2	0.1	16.2	0.003		78.4	1.5	0.2	39.2	1.1	2.2	0.2	66.9	7.4	0.3	3.4
A23	3.45	2.99	145	3.57	0.34	59.0	18.7	1.85	389	17.2	39.8	0.85	3458	41.7	3.80	140
A23 (2)	3.78	2.83	156	3.58		40.5	19.1	2.07	304	15.4	39.2	0.85	3466	41.9	4.20	139
A23 (3)	3.30	2.86	191	3.58	0.19	37.3	21.7	1.77	316	16.8	35.7	0.53	3393	34.1	4.30	132
Mean	**3.51**	**2.89**	**164**	**3.58**	**0.27**	**45.6**	**19.8**	**1.90**	**336**	**16.5**	**38.2**	**0.74**	**3439**	**39.2**	**4.10**	**137**
SD	0.2	0.1	24.0	0.01	0.1	11.7	1.6	0.2	45.9	0.9	2.2	0.2	40.0	4.5	0.3	4.6
A24	3.34	2.58	166	4.25	0.56	51.9	16.8	1.69	390	15.3	44.2	0.97	2603	36.0	4.10	140
A24 (2)	3.67	2.44	165	4.26	0.63	35.3	16.5	1.89	302	15.8	44.3	0.97	2602	35.6	4.10	140
A24 (3)	3.20	2.47	215	4.29	0.19	32.2	19.2	1.63	320	15.3	40.2	0.61	2582	29.1	4.00	128
Mean	**3.40**	**2.50**	**182**	**4.27**	**0.46**	**39.8**	**17.5**	**1.74**	**337**	**15.5**	**42.9**	**0.85**	**2595**	**33.6**	**4.07**	**136**
SD	0.2	0.1	28.8	0.02	0.2	10.6	1.5	0.1	46.4	0.3	2.3	0.2	11.6	3.9	0.1	6.9
A25 (2)	2.22	1.29	207	3.11	0.63	541	22.0	1.97	209	16.4	50.7	1.19	3136	85.1	4.00	140

A25	2.11	1.40	205	3.14	0.67	787	21.8	1.77	268	16.1	50.9	1.20	3084	84.5	4.10	139
A25 (3)	1.70	1.27	268	3.07	0.59	491	25.1	1.69	217	15.5	46.5	0.73	2979	71.1	4.00	131
Mean	**2.01**	**1.32**	**227**	**3.11**	**0.63**	**606**	**23.0**	**1.81**	**231**	**16.0**	**49.3**	**1.04**	**3066**	**80.2**	**4.03**	**137**
SD	0.3	0.1	36.0	0.03	0.04	158.2	1.8	0.1	31.8	0.4	2.5	0.3	80.0	7.9	0.1	4.8
A26	3.34	1.41	194	2.96	0.80	60.9	20.7	1.35	222	20.4	55.5	1.13	2206	23.0	3.70	164
A26 (2)	3.23	1.30	191	2.98	0.82	40.8	20.7	1.50	173	20.8	55.8	1.15	2212	22.9	3.70	163
A26 (3)	2.80	1.37	261	2.96	0.73	37.9	22.9	1.29	181	17.5	51.0	0.71	2149	18.9	3.90	152
Mean	**3.12**	**1.36**	**215**	**2.97**	**0.78**	**46.5**	**21.4**	**1.38**	**192**	**19.6**	**54.1**	**1.00**	**2189**	**21.6**	**3.77**	**159**
SD	0.3	0.1	39.6	0.01	0.05	12.5	1.3	0.1	26.3	1.8	2.7	0.2	34.8	2.3	0.1	6.9
A27	2.67	2.99	214	6.67	0.16	235	19.4	1.80	407	26.2	34.4	0.96	3677	63.9	5.90	145
A27 (2)	2.89	2.96	203	6.97	0.19	162	20.6	2.05	333	27.3	34.9	1.01	3846	65.2	5.80	148
A27 (3)	2.40	2.86	279	6.70	0.11	154	22.0	1.74	332	24.6	31.3	0.60	3640	53.2	6.20	136
Mean	**2.65**	**2.94**	**232**	**6.78**	**0.15**	**184**	**20.7**	**1.86**	**357**	**26.0**	**33.5**	**0.85**	**3721**	**60.8**	**5.97**	**143**
SD	0.2	0.1	41.2	0.2	0.04	44.9	1.3	0.2	43.1	1.3	2.0	0.2	110.1	6.6	0.2	6.0
A28 (2)	4.67	2.92	211	7.38	0.21	115	22.4	2.21	397	23.6	43.7	0.92	3605	61.1	5.30	173
A28	4.34	3.03	216	7.27	0.16	167	21.8	1.95	506	22.8	43.5	0.91	3514	60.9	5.60	164
A28 (3)	4.10	2.93	276	7.33	0.15	103	25.7	1.90	419	21.4	40.0	0.57	3478	49.5	5.80	163
Mean	**4.37**	**2.96**	**234**	**7.33**	**0.17**	**128**	**23.3**	**2.02**	**440**	**22.6**	**42.4**	**0.80**	**3532**	**57.2**	**5.57**	**167**
SD	0.3	0.1	36.2	0.1	0.03	34.0	2.1	0.2	57.6	1.1	2.1	0.2	65.3	6.7	0.3	5.5
A29	2.89	4.26	156	6.88	0.27	86.0	17.9	2.40	836	20.8	34.4	1.10	4278	61.9	5.80	189
A29 (2)	2.56	3.99	156	6.91	0.18	59.8	17.9	2.68	657	21.9	35.2	1.10	4357	62.1	6.00	190
A29 (3)	2.50	4.08	207	6.88	<0.1	52.5	20.1	2.30	678	19.8	31.7	0.69	4154	51.0	6.00	179
Mean	**2.65**	**4.11**	**173**	**6.89**	**0.22**	**66.1**	**18.6**	**2.46**	**724**	**20.8**	**33.8**	**0.97**	**4263**	**58.3**	**5.93**	**186**
SD	0.2	0.1	29.4	0.02	0.1	17.6	1.3	0.2	98.1	1.0	1.8	0.2	102.5	6.4	0.1	6.0
A30	3.78	4.89	174	3.53	0.30	84.5	21.0	2.54	801	20.9	53.3	1.24	4887	63.6	6.30	287

A30 (2)	3.78	4.65	174	3.60	0.29	58.1	21.7	2.85	624	21.4	53.7	1.26	4953	62.4	6.50	288
A30 (3)	3.60	4.70	227	3.57	0.18	52.3	24.0	2.45	658	20.0	48.6	0.77	4841	49.8	6.50	272
Mean	**3.72**	**4.75**	**192**	**3.57**	**0.26**	**65.0**	**22.2**	**2.61**	**695**	**20.8**	**51.9**	**1.09**	**4894**	**58.6**	**6.43**	**283**
SD	0.1	0.1	30.5	0.03	0.1	17.1	1.6	0.2	94.1	0.7	2.8	0.3	56.6	7.6	0.1	8.8
A31	5.01	4.07	204	9.80	0.29	327	28.7	3.95	483	40.2	54.0	1.07	8323	108	14.8	449
A31 (2)	4.78	3.89	203	9.88	0.34	215	29.2	4.44	379	42.5	54.0	1.08	8361	109	15.0	454
A31 (3)	4.30	3.93	267	9.79	0.37	195	31.8	3.80	398	38.1	49.1	0.67	8106	92.2	15.3	424
Mean	**4.70**	**3.97**	**225**	**9.83**	**0.33**	**246**	**29.9**	**4.06**	**420**	**40.3**	**52.3**	**0.94**	**8263**	**103**	**15.0**	**442**
SD	0.4	0.1	36.2	0.05	0.04	71.3	1.7	0.3	55.5	2.2	2.8	0.2	137.5	9.6	0.3	16.0
A32	4.78	4.33	195	9.28	0.00	235	28.9	3.53	458	33.9	78.2	0.99	7574	98.6	12.50	317
A32 (2)	4.89	4.11	190	9.37	0.16	161	28.8	3.97	358	33.0	78.6	1.01	7625	97.7	13.10	319
A32 (3)	4.40	4.15	249	9.31	<0.2	147	32.6	3.41	377	31.3	71.6	0.63	7514	80.8	12.10	299
Mean	**4.69**	**4.19**	**211**	**9.32**	**0.08**	**181**	**30.1**	**3.64**	**397**	**32.7**	**76.1**	**0.88**	**7571**	**92.4**	**12.6**	**311**
SD	0.3	0.1	32.9	0.04	0.1	47.4	2.2	0.3	53.2	1.3	3.9	0.2	55.5	10.0	0.5	11.0
A33	4.56	3.23	215	3.19	1.30	326	44.1	3.01	345	21.8	68.5	1.43	3226	64.3	5.90	279
A33 (2)	3.56	2.99	220	3.17	1.44	212	45.2	3.32	267	21.2	70.3	1.39	3194	62.7	6.00	283
A33 (3)	3.50	3.03	287	3.17	1.20	195	50.5	2.86	283	20.2	63.2	0.87	3120	50.9	5.90	260
Mean	**3.87**	**3.09**	**241**	**3.18**	**1.31**	**244**	**46.6**	**3.07**	**298**	**21.1**	**67.3**	**1.23**	**3180**	**59.3**	**5.93**	**274**
SD	0.6	0.1	40.5	0.01	0.1	71.5	3.4	0.2	41.0	0.8	3.7	0.3	54.1	7.3	0.1	12.4
A34	3.78	4.94	333	5.43	0.78	548	53.9	4.12	516	33.4	107	1.82	5079	106	8.40	511
A34 (2)	3.78	4.69	336	5.43	0.89	374	54.8	4.58	406	33.1	108	1.82	5079	105	8.30	513
A34 (3)	3.50	4.74	440	5.42	0.70	348	61.4	3.95	421	31.3	98.2	1.13	4917	87.5	8.40	484
Mean	**3.69**	**4.79**	**370**	**5.42**	**0.79**	**424**	**56.7**	**4.22**	**448**	**32.6**	**104**	**1.59**	**5025**	**99.5**	**8.37**	**503**
SD	0.2	0.1	61.0	0.01	0.1	109	4.1	0.3	59.9	1.1	5.3	0.4	93.4	10.4	0.1	16.2
A35	3.89	5.08	95.5	8.01	0.20	279	14.1	2.76	358	23.5	24.5	0.47	4378	90.8	4.50	92
A35 (2)	3.89	4.85	95.7	8.21		183	14.8	3.09	285	23.9	24.6	0.47	4307	92.4	4.50	91

A35 (3)	3.50	4.92	124	8.16	0.22	168	17.0	2.66	299	21.6	22.5	0.29	4215	75.7	4.70	87
Mean	**3.76**	**4.95**	**105**	**8.13**	**0.21**	**210**	**15.3**	**2.84**	**314**	**23.0**	**23.9**	**0.41**	**4300**	**86.3**	**4.57**	**90**
SD	0.2	0.1	16.3	0.1	0.01	60.5	1.5	0.2	38.7	1.2	1.2	0.1	81.6	9.2	0.1	2.6
A36	4.89	5.08	86.0	8.48	0.24	199	18.0	2.95	405	24.5	27.9	0.48	4618	87.0	5.10	112
A36 (2)	5.01	4.78	90.4	8.46	0.12	145	17.7	3.28	326	24.9	27.6	0.49	4724	88.6	4.80	112
A36 (3)	4.40	4.85	117	8.43	0.17	134	20.4	2.83	346	23.2	25.0	0.30	4588	72.1	5.20	106
Mean	**4.77**	**4.90**	**98**	**8.46**	**0.18**	**160**	**18.7**	**3.02**	**359**	**24.2**	**26.8**	**0.42**	**4644**	**82.6**	**5.03**	**110**
SD	0.3	0.2	16.9	0.03	0.1	34.9	1.5	0.2	41.2	0.9	1.6	0.1	71.5	9.1	0.2	3.6
A37	3.56	3.20	493	2.78	0.89	150	21.7	2.79	359	22.7	51.0	2.13	7014	55.9	11.30	211
A37 (2)	3.45	3.01	496	2.80	0.89	100	22.1	3.11	278	22.2	50.8	2.12	6886	56.3	11.20	211
A37 (3)	3.10	3.02	641	2.79	0.90	96.1	25.1	2.67	294	19.7	46.5	1.33	6737	46.6	11.20	198
Mean	**3.37**	**3.08**	**543**	**2.79**	**0.89**	**116**	**23.0**	**2.86**	**310**	**21.5**	**49.4**	**1.86**	**6879**	**52.9**	**11.23**	**207**
SD	0.2	0.1	84.6	0.01	0.01	30.2	1.8	0.2	42.9	1.6	2.5	0.5	139	5.5	0.1	7.5
A38	1.45	1.51	164	0.73	0.00	81.5	9.28	0.97	125	11.0	15.3	1.06	2178	17.1	2.00	69
A38 (2)	1.45	1.44	165	0.73	0.42	54.1	9.02	1.09	93.4	11.3	15.4	1.05	2149	16.5	2.40	67
A38 (3)	1.40	1.46	218	0.73	0.28	48.1	10.5	0.94	99.3	9.10	13.9	0.66	2095	13.9	2.20	65
Mean	**1.43**	**1.47**	**182**	**0.73**	**0.23**	**61.2**	**9.6**	**1.00**	**106**	**10.5**	**14.9**	**0.92**	**2141**	**15.9**	**2.20**	**67**
SD	0.0	0.0	30.9	0.001	0.2	17.8	0.8	0.1	16.6	1.2	0.8	0.2	42.2	1.7	0.2	2.3
A39	4.23	2.21	95.2	2.81	0.63	69.5	39.8	1.88	388	20.5	54.5	0.67	2408	37.7	2.50	170
A39 (2)	4.45	2.09	96.7	2.84	0.61	47.8	39.9	2.11	303	21.3	54.8	0.67	2408	37.3	2.50	170
A39 (3)	3.70	2.10	125	2.82	0.48	43.1	44.5	1.80	319	19.6	50.0	0.42	2351	30.9	2.40	162
Mean	**4.13**	**2.13**	**106**	**2.82**	**0.57**	**53.5**	**41.4**	**1.93**	**337**	**20.5**	**53.1**	**0.58**	**2389**	**35.3**	**2.47**	**167**
SD	0.4	0.1	16.6	0.01	0.1	14.0	2.7	0.2	45.4	0.9	2.7	0.1	33.1	3.8	0.1	4.7
A40	3.45	2.74	145	7.02	0.13	226	16.0	1.96	390	19.3	30.0	0.72	2697	65.6	4.10	104
A40 (2)	3.34	2.55	145	6.92		149	16.0	2.17	301	18.4	30.2	0.71	2673	63.7	4.40	106

A40 (3)	2.80	2.57	188	6.91	<0.1	138	18.7	1.87	315	17.3	27.7	0.44	2611	52.6	4.40	99
Mean	**3.20**	**2.62**	**159**	**6.95**	**0.13**	**171**	**16.9**	**2.00**	**335**	**18.3**	**29.3**	**0.63**	**2660**	**60.7**	**4.30**	**103**
SD	0.3	0.1	24.6	0.1		48.4	1.6	0.2	47.8	1.0	1.4	0.2	44.4	7.0	0.2	3.4

Table 3: Bioaccessibility concentrations of PTE in individual replicate samples

	Al	**As**	**Ba**	**Cr**	**Cu**	**Fe**	**Mn**	**Ni**	**Pb**	**Zn**
B1	2564	2.2	49.9	5.7	32.4	2142	259	6.3	46.3	432
B1(2)	2243	1.9	48.0	4.2	26.0	1842	225	5.0	33.6	394
B1(3)	2855	2.2	50.8	5.6	35.7	2587	262	6.5	44.4	408
Mean	**2554**	**2.1**	**49.6**	**5.2**	**31.4**	**2190**	**249**	**5.9**	**41.4**	**411**
SD	306	0.1	1.4	0.9	4.9	374	20.3	0.8	6.9	19.3
B2(1)	1524	2.0	25.5	1.7	14.7	718	58.7	1.3	37.9	117
B2(2)	814	1.4	17.4	0.1	13.8	329	31.4	0.4	13.5	76
B2(3)	1517	1.8	25.4	1.3	13.3	663	53.6	1.8	28.3	126
Mean	**1285**	**1.7**	**22.8**	**1.0**	**13.9**	**570**	**47.9**	**1.1**	**26.6**	**106**
SD	408	0.3	4.7	0.8	0.7	211	14.5	0.7	12.3	26.9
B3	3069	2.6	46.5	4.2	27.4	1063	183	4.1	47.9	462
B3(2)	2878	1.9	45.4	3.4	23.6	887	169	4.2	38.0	415
B3(3)	3340	2.2	47.4	4.1	28.5	1147	176	4.1	47.1	427
Mean	**3095**	**2.2**	**46.4**	**3.9**	**26.5**	**1032**	**176**	**4.1**	**44.3**	**435**
SD	232	0.3	1.0	0.4	2.6	133	7.0	0.1	5.5	24.5
B4	1746	2.0	19.5	0.9	8.8	545	82.1	1.0	14.2	72.0
B4(2)	1683	1.9	19.2	0.9	9.2	516	78.6	0.8	15.1	64.5
B4(3)	1778	1.9	20.2	0.9	8.4	569	82.1	0.9	13.3	66.0
Mean	**1736**	**2.0**	**19.6**	**0.9**	**8.8**	**543**	**80.9**	**0.9**	**14.2**	**67.5**

SD	49	0.1	0.5	0.0	0.4	26.6	2.0	0.1	0.9	4.0
B5	2479	1.9	26.4	2.3	14.9	656	150	1.5	23.2	161
B5(2)	2491	2.2	27.2	2.3	14.8	634	147	1.7	23.0	159
B5(3)	2527	1.9	26.9	2.3	15.3	686	143	1.9	22.2	149
Mean	**2499**	**2.0**	**26.9**	**2.3**	**15.0**	**659**	**147**	**1.7**	**22.8**	**157**
SD	25	0.1	0.4	0.0	0.3	26.2	3.7	0.2	0.5	6.9
B6	4126	2.2	31.5	4.5	11.2	882	513	3.6	18.5	428
B6(2)	3898	1.8	30.4	4.2	11.6	883	510	3.7	19.5	413
B6(3)	4459	2.2	35.2	3.8	10.0	910	495	3.3	18.4	398
Mean	**4161**	**2.0**	**32.4**	**4.2**	**10.9**	**892**	**506**	**3.5**	**18.8**	**413**
SD	282	0.22	2.54	0.32	0.87	16.0	9.83	0.20	0.63	15.0
B7	401	2.0	19.4	2.7	13.9	297	224	3.7	1.3	548
B7(2)	359	2.4	18.3	2.6	14.4	275	225	4.1	1.0	543
B7(3)	175	1.8	10.0	0.3	4.7	37	99	1.8		245
Mean	**312**	**2.1**	**15.9**	**1.8**	**11.0**	**203**	**183**	**3.2**	**1.1**	**445**
SD	120	0.3	5.2	1.4	5.5	144	72.4	1.2	0.2	173
B8	9094	3.2	38.6	16.1	19.2	1370	179	7.1	34.2	421
B8(2)	9061	3.2	37.8	15.6	19.2	1362	161	6.4	32.8	412
B8(3)	10128	2.9	39.4	17.2	18.9	2405	178	6.5	35.7	410
Mean	**9427**	**3.1**	**38.6**	**16.3**	**19.1**	**1712**	**172**	**6.7**	**34.3**	**414**
SD	607	0.1	0.8	0.9	0.1	600	10.1	0.4	1.5	5.6

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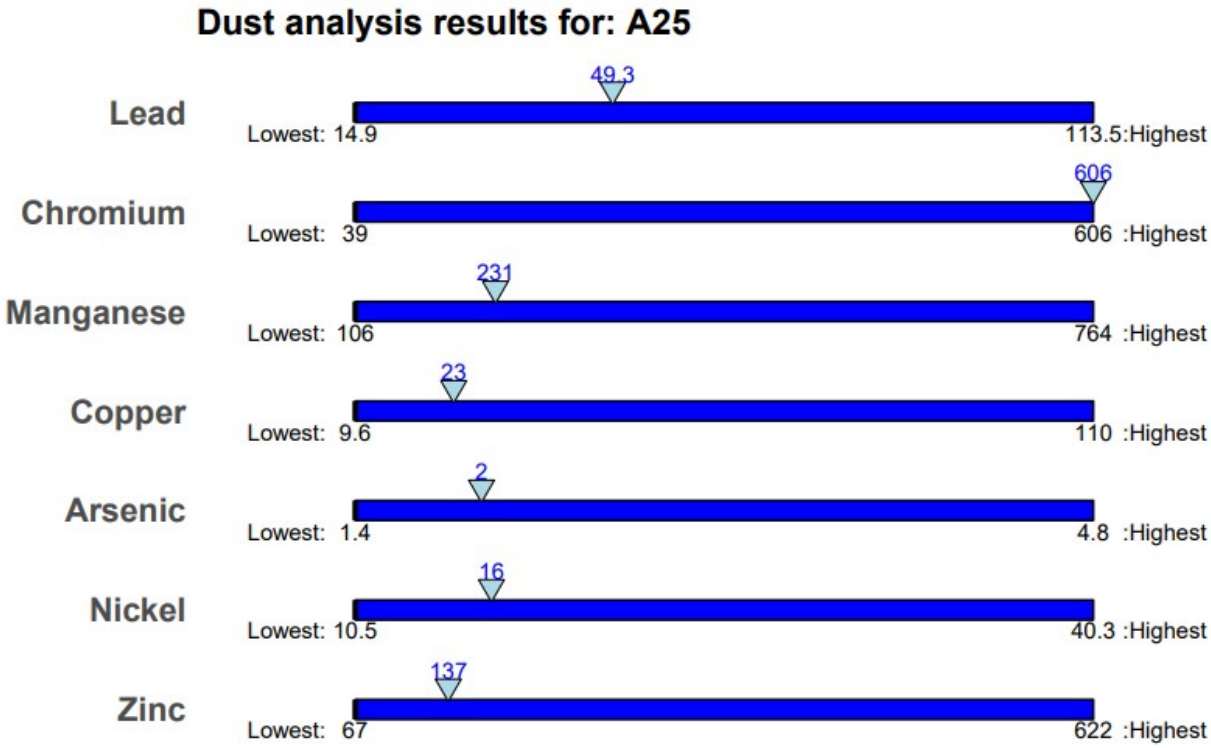
Thank you for participating in our research by providing us with an indoor dust sample. You are one of many schools helping us understand typical levels of various substances in Nigeria. Your dust was analysed for seven substances in our laboratories as shown below. Each of the substances we measure is represented by a dark blue line. The lowest and highest levels measured in this study to date, for Nigeria, are reported in milligrams of substance per kilogram of dust, mg/kg.Your school dust sample results are shown by the light blue triangle.



There are no national or international standards for these substances in indoor dust at present. This study will be able to provide average levels for Nigeria. You can view results from around the world atwww.mapmyenvironment.com. As our dataset grows, you will be able to see typical levels of various substances found indoors for your neighbourhood. No individual participants or household data is identifiable as the location is scrambled randomly within 150 metres of the true location, and each time the global map is refreshed, this randomised location is changed.

There are a number of ways you can reduce your contact with dust at home and at school illustrated at the end of this report. We hope you find these a useful reminder of practical, everyday things we can all do to reduce dust levels indoors. Further information is available on www.mapmyenvironment.comor by contacting us at ee.dustsafe@northumbria.ac.uk.

Kind Regards,

Dr Abimbola Famuyiwa

and the DustSafeUK* Team(Prof. Jane Entwistle, Dr. Lindsay Bramwell, PhD student Khadija Jabeen and students from the Department of Geography and Environmental Sciences, Northumbria University)

*(part of the NERC-funded Home Biome project)

 @DustSafeStudy  @DustSafeUK  @dustsafe_uk

Tips for reducing indoor dust

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Northumbria University NEWCASTLE

360 DUST ANALYSIS

1) Implement a 'No Shoes' policy in the home.

2) Wash dirty work/outdoor clothes separately.

3) Use an entry system, such as a rug, that captures dust and moisture.

4) Adopt efficient cleaning practices such as wet mopping and the use of a wet rag to minimise dust re-suspension.

5) Keep windows closed during windy periods.

6) Store dirty gardening or work clothes and tools separately.

7) Maintain good hygiene - wash and disinfect hands regularly.

8) Install a HEPA filter on your vacuum cleaner.