Electronic Supplementary Material (ESI) for Analytical Methods.

Supplementary data for

Portable X-Ray Fluorescence Spectrometry: A Cost-Effective Method for Analysing Trace Metals in Deposited Dust

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Supplementary Figures – S1 – S6

Supplementary Table S1. Mean percentage of SRM NIST2711a recoveries (%) using pXRF, repeat wipe analysis recovery (%), and mean concentration for blank wipes (mg/kg) from the three case studies.

		n	As	Cr	Cu	Fe	Mn	Ni	Pb	Zn
	NIST2711a recovery %	6	102		100				98	103
Tsumeb	Replicate recovery %	6	103		95				96	98
	Blank wipe mg/kg	11	<LOD		6				2	76
	NIST2711a recovery %	9		112		97	97	117	98	98
Noumea	Replicate recovery %	7		107		100	100	101	*	103
	Blank wipe mg/kg	5		24		15	55	<LOD	3	54
	NIST2711a recovery %	14		77		77	117	134	103	98
Thio	Replicate recovery %	14		96		96	117	107	95	109
	Blank wipe mg/kg	14		4		<LOD	4	<LOD	<LOD	60

Blank cells indicate trace metals that were not assessed for that case study.

* In Noumea, Pb was present in only 2 of 9 replicate dust wipes due to the low prevalence of Pb in the region. Hence, Pb was not used for repeat recovery calculations in Noumea.

Supplementary Table S2. Loading as µg/sample of trace metal and instrumental LODs of blank wipes detected by ICP-MS analysis for blanks in the different case studies. Blank cells indicate trace metals that were not assessed for that case study.

Description	As	Cr	Cu	Fe	Mn	Ni	Pb	Zn
				(µg/sample)				
Tsumeb case study blank A	< 0.1		0.45				< 0.05	70
Tsumeb case study blank B	< 0.1		0.62				< 0.05	70
Tsumeb case study laboratory blank	< 0.1		0.64				< 0.05	38
Thio case study blank A		< 0.1		2.1	0.10	< 0.05	< 0.05	65
Thio case study blank B		< 0.1		2.6	0.16	< 0.05	< 0.05	55
Noumea case study blank		< 0.1		2.2	0.12	< 0.05	< 0.05	68

Supplementary Table S3. Variance for the subset of dust wipes (SDW). The variance presented for each of the samples tested and each test scenario is the mean – variance for As, Cu, Pb and Zn. The row "mean" is the average of all the sample variances for each test scenario. The bold number for "4" tests represents the lowest variance of the 7 test scenarios (the 1st scenario consisting of a single test was not included given that it does not produce a variance).

Sample ID	Test scenario/ number of tests	Variance
TD029	2nd /2	6264.1
	3rd /4	3241.9
	4th /6	6032.6
	5th /8	1592.6
	6th /10	2512.8
	7th /12	2733.8
TD062	2nd /2	123.5
	3rd /4	364.6
	4th /6	241.0
	5th /8	181.3
	6th /10	116.9
	7th /12	184.8
TD063	2nd /2	46.3
	3rd /4	10.7
	4th /6	38.4
	5th /8	141.4
	6th /10	76.9
	7th /12	76.8
TD074	2nd /2	59.8
	3rd /4	1552.9
	4th /6	239.5
	5th /8	3518.7
	6th /10	277.2
	7th /12	97.6
TD085	2nd /2	2048.5
	3rd /4	1764.9
	4th /6	6708.2
	5th /8	7646.9
	6th /10	12150.0
	7th /12	7700.9
		Variance
Mean	2nd /2	1708.4
	3rd /4	**1387.0**
	4th /6	2651.9
	5th /8	2616.2
	6th /10	3026.7
	7th /12	2158.8

Supplementary Table S4. Concentrations (μg/m²) of dust wipes for the Tsumeb case study (n = 80). Uncorrected pXRF and ICP-MS columns contain the concentrations obtained using these two methods. Additionally, the 'Corrected pXRF' column contains concentrations calculated using the equations derived from linear correlations for each trace metal.

	As			Cu			Pb			Zn		
Sample ID	**Uncorrected pXRF**	**ICP-MS**	**Corrected pXRF**	**Uncorrected pXRF**	**ICP-MS**	**Corrected pXRF**	**Uncorrected pXRF**	**ICP-MS**	**Corrected pXRF**	**Uncorrected pXRF**	**ICP-MS**	**Corrected pXRF**
TD_ON	148	<LOD	105	80	5	35	109	19	624	880	533	1216
TD_UN	103		61	101		80	40		85	470		704
TD001	778		557	793		1432	86		378	789		1157
TD002	1038		747	640		1133	337		1979	929		1357
TD003	1031		743	504		867	362		2142	832		1219
TD004	626		445	269		407	334		1964	633		935
TD005	235	278	167	213	656	285	51	233	292	486	944	671
TD006	255		173	340		546	112		540	1088		1582
TD007	252		170	231		334	61		215	582		863
TD008	1707		1239	306		480	2647		16746	574		851
TD009	89	111	63	133	289	103	52	156	295	453	778	626
TD010	152		97	161		198	57		188	478		715
TD012	1485		1076	228		327	755		4655	669		987
TD013	5598		4096	519		897	3380		21438	1123		1633
TD014	294		201	300		469	56		187	589		872
TD015	311		214	601		1056	71		280	1375		1991
TD016	606		430	410		684	128		648	636		940
TD017	154	101	113	283	233	418	56	122	321	659	122	911
TD018	496		350	340		546	61		220	453		680
TD019	874		627	1375		2568	99		459	780		1145
TD020	634		451	683		1217	117		578	925		1351
TD021	509		360	70		20	455		2734	435		654
TD022	226		152	258		387	66		249	853		1248
TD023	394	311	279	406	800	650	74	256	421	644	256	889
TD024	277		189	296		460	86		374	576		855
TD025	618		439	569		994	87		381	491		733
TD026	341		236	490		839	60		213	617		913

Supplementary Table S4 Continued.

	As			Cu			Pb			Zn		
Sample ID	Uncorrected pXRF	ICP-MS	Corrected pXRF	Uncorrected pXRF	ICP-MS	Corrected pXRF	Uncorrected pXRF	ICP-MS	Corrected pXRF	Uncorrected pXRF	ICP-MS	Corrected pXRF
TD027	2151		1566	2054		3893	239		1353	933		1362
TD028	6167		4515	3676		7061	438		2626	1478		2138
TD029	1055	844	747	1505	1667	2729	74	489	421	384	678	530
TD030	307		211	380		626	55		176	559		830
TD031	382	556	270	443	1444	721	58	322	332	370	822	511
TD032	464		327	362		589	125		625	542		806
TD033	148	167	105	132	422	132	63	278	360	354	644	489
TD034	4054		2963	4424		8522	310		1811	1920		2766
TD035	1824		1325	2510		4784	156		821	875		1280
TD036	3514		2566	1769		3338	230		1297	965		1408
TD037	677		483	724		1296	135		687	449		674
TD038	9613		7045	2898		5542	596		3638	1379		1997
TD039				74		27	55		181	5241		7489
TD040	2379		1733	2185		4150	227		1279	1327		1923
TD041	100		59	88		55	39		73	572		849
TD042	2191		1594	1334		2487	267		1532	31494		44829
TD043	5129		3752	6533		12641	379		2251	2009		2893
TD044	1847		1342	1409		2633	255		1456	1132		1645
TD046	3188		2327	560		977	2106		13293	799		1171
TD047	2869	2000	2031	3459	5222	6426	308	1778	1754	1649	2111	2278
TD048	1625		1179	845		1532	430		2578	886		1295
TD049	5545		4058	7451		14433	479		2889	2446		3515
TD050	248		167	455		771	60		213	766		1124
TD051	964	456	682	1277	1222	2299	114	378	651	788	767	1089
TD052	3766		2751	1004		1844	1218		7614	812		1190
TD053	113		68	166		206	37		63	369		559
TD055	205		136	201		275	43		103	373		565

Supplementary Table S4 Continued.

	As			Cu			Pb			Zn		
Sample ID	Uncorrected pXRF	ICP-MS	Corrected pXRF	Uncorrected pXRF	ICP-MS	Corrected pXRF	Uncorrected pXRF	ICP-MS	Corrected pXRF	Uncorrected pXRF	ICP-MS	Corrected pXRF
TD056	607		432	252		375	459		2759	671		990
TD057	476		335	480		821	78		326	730		1074
TD058	1907		1386	2072		3929	210		1166	1295		1877
TD059	1781	967	1261	847	1111	1486	81	300	463	604	789	835
TD062	384	77	272	230	256	318	231	1011	1315	743	1000	1027
TD063	251	244	177	292	611	436	72	267	412	519	744	717
TD064	180		117	413		689	81		344	859		1257
TD066	248	156	175	374	456	590	89	300	510	850	1111	1175
TD067				74		28	40		81	376		569
TD068	354	74	251	457	200	748	97	111	552	968	644	1338
TD069	< LOD	244	<LOD	86	700	45	51	456	290	476	1333	658
TD070	684	478	484	432	1078	700	149	689	847	909	1556	1255
TD072	313		215	261		392	180		978	656		969
TD074	246	278	174	426	922	688	88	444	501	957	1444	1321
TD075	<LOD		<LOD	938		1715	59		204	688		1014
TD076	257	99	182	239	233	335	116	311	663	978	978	1351
TD078	<LOD	62	<LOD	<LOD	109		80	244	457	943	1011	1303
TD080				119		115	66		249	1081		1573
TD081	2889		2107	1877		3548	178		968	967		1411
TD082	447		314	156		188	198		1090	817		1197
TD084	248	93	175	57	222	-10	278	1444	1586	712	1067	984
TD085	7877	5667	5575	6555	13333	12283	965	5889	5505	3257	4889	4500
TD086	2661		1940	2608		4976	324		1898	2100		3022
TD088	908		652	674		1198	214		1195	834		1221
TD089				152		180	35		53	435		654
TD091	133	100	94	189	544	241	108	878	615	578	1222	798

Supplementary Table S5. Concentrations (µg/m²) of dust wipes for the Noumea case study (n = **). Uncorrected pXRF and ICP-MS columns contain the concentrations obtained using these two methods. Additionally, the Corrected pXRF column contains concentrations calculated using the equations derived from linear correlations for each trace metal.

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
ND_01	167		116	5872		3527	386		159	222		161	33		32	456		349
ND_02	189		131	10378		6233	511		210	133		96	44		43	608		465
ND_03	136		95	6047		3632	361		149				37		36	472		361
ND_04	153		106	7036		4226	406		167				39		37	486		372
ND_05	150		104	9559		5741	406		167	217		157	38		36	394		301
ND_06	259		180	16397		9848	566		233	197		142	50		48	653		500
ND_07	211		147	10708		6431	528		217	228		165	39		37	339		259
ND_08	239		166	11589		6960	506		208	403		291	44		43	733		561
ND_09	222	92	155	13522	17111	8121	489	144	201		289		33	31	32	619	500	474
ND_10	400		278	12556		7541	838		344	278		201	42		40	863		660
ND_11	469		326	34266		20580	903		371	900		651	50		48	803		615
ND_12	481		335	18497		11109	806		332	1772		1281	50		48	678		519
ND_13	800		556	45541		27352	1253		515	2684		1940	63		60	991		758
ND_14	400		278	35525		21336	708		291	947		685	100		96	686		525
ND_15	1092		759	128406		77120	2964		1219	1375		994	50		48	1153		882
ND_16	666		463	51931		31190	1197		492	2169		1568	50		48	1063		813
ND_17	456		317	12313		7395	909		374	403		291	69		66	603		462
ND_18	672		467	43269		25987	1256		517	1213		876	50		48	859		658
ND_19	347	122	241	16097	11333	9668	614	189	252	1619	1333	1171	33	7	32	419	444	321
ND_21	375		261	35716		21451	631		260	1656		1197	50		48	606		464
ND_22	1788	1025	1243	109725	82125	65901	2100	1500	864	10147	8875	7334	63	56	60	2266	2000	1734
ND_23	1016		706	74747		44893	1306		537	6013		4346	63		60	2041		1561
ND_24	503		350	25256		15169	691		284	2094		1513	38		36	616		471

Supplementary Table S5 (continued)

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
ND_25	434	300	302	27359	26375	16432	600	325	247	2819	2875	2037	46	24	44	688	688	526
ND_26	1544		1074	156425		93949	2119		872	3269		2363	103		99	2975		2276
ND_27	394		274	45806		27511	828		340	1244		899	39		37	5689		4353
ND_28	1364		948	111603		67029	2356		969	1819		1315	133		129	2297		1758
ND_29	536		373	88086		52905	1256		516	583		422	2381		2295	1308		1001
ND_30	1572		1093	133233		80020	2031		835	2544		1839	119		115	4469		3420
ND_31	241		167	11197		6725	547		225	175		126	46		44	441		337
ND_32	297		206	24966		14994	503		207	1184		856	38		36	553		423
ND_33	275		191	19042		11436	531		218	1086		785	50		48	561		429
ND_34	403		280	25397		15254	847		348	1411		1020	44		43	600		459
ND_35	700		487	55834		33534	981		404	3028		2189	97		93	2153		1648
ND_37	847	467	589	81467	63556	48929	1553	1078	639	3664	3556	2648	41	17	39	611	711	468
ND_38	513		356	20878		12539	653		269	1519		1098	44		42	734		562
ND_39	447		311	25172		15118	734		302	1691		1222	50		48	750		574
ND_40	544		379	53089		31885	997		410	3481		2516	36		35	986		755
ND_41	381		265	30831		18517	608		250	1525		1102	44		43	633		485
ND_42	494		343	26084		15666	809		333	1113		804	41		39	1044		799
ND_45	208		145	17167		10310	433		178	786		568	44		43	414		317
ND_47	844		587	60639		36420	1192		490	4517		3265	53		51	2192		1677
ND_48	211	100	147	17972	17778	10794	492	233	202	189	422	137	28	9	27	2106	1889	1611
ND_49	234		163	15319		9200	503		207	575		416	38		36	509		390
ND_50	103		72	6341		3808	328		135	328		237	38		36	156		120
ND_51	1459		1015	152038		91314	2003		824	6225		4499	206		199	5606		4290
ND_52	259		180	19388		11644	531		219	997		721	75		72	3488		2669
ND_53	209		146	13703		8230	403		166	479		346	38		36	2313		1770
ND_55	278		193	17844		10717	628		258	334		242	56		54	1509		1155

Supplementary Table S5 (continued)

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
ND_56	484	394	337	35541	47531	21346	731	689	301	2769	3656	2001	50	689	48	1884	2672	1442
ND_57	489		340	48356		29042	1064		438	878		634	52		50	1936		1482
ND_58	414		288	31794		19096	728		299	1208		873	39		37	1803		1379
ND_59	319		222	22461		13490	642		264	894		647	41		39	1989		1522
ND_60	517	375	359	30986	29531	18610	669	365	275	728	761	526	44	39	43	2106	1679	1611
ND_61	225		156	10461		6283	433		178	378		273	33		32	1128		863
ND_62	461	167	321	26908	20111	16161	794	333	327	1275	1056	922	0	9		2061	1667	1577
ND_63	425		296	41913		25173	966		397	1913		1382	25		24	1881		1440
ND_64	528		367	45322		27220	1069		440	2438		1762	50		48	1503		1150
ND_65	381		265	34938		20983	813		334	1803		1303	25		24	1959		1499
ND_66	550		382	42950		25796	931		383	2691		1945	42		40	1594		1220
ND_67	391		272	33872		20343	766		315	1913		1382	44		42	1466		1121
ND_69	169		118	13892		8343	417		171	364		263	22		21	867		663
ND_70	350		243	9209		5531	809		333	406		294	93		90	1521		1164
ND_71A	2211		1537	166547		100028	2922		1202	5572		4028	58		56	3286		2515
ND_71B	1967		1367	156125		93769	2714		1116	5831		4214	64		62	3544		2712
ND_73	258		180	24792		14890	517		213	436		315	64		62	1322		1012
ND_74	528		367	37625		22598	884		364	966		698	84		81	1800		1377
ND_75	383		267	33467		20100	803		330	364		263	50		48	1986		1520
ND_76	1033		718	41481		24913	1131		465	1078		779	33		32	1353		1035
ND_78	316		219	23928		14371	603		248	534		386	38		36	2928		2241
ND_79	456		317	36116		21691	838		344	1875		1355	54		52	1728		1322
ND_80	1468		1021	69174		41546	1405		578	8937		6460	53		51	1668		1277
ND84	2189	4638	1525	110446	112632	66941	2095	983	866	8354	6846	6053	52	41	51	1692	1093	1033
ND_85	1872	567	1302	93978	51222	56443	1964	756	808	9339	5667	6750	44	14	43	1694	1111	1297

Supplementary Table S5 (continued)

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
ND_86	247	31	172	8628	5962	5182	585	55	240	263	173	190	38	4	37	519	325	397
ND_87	365	34	254	16389	6912	9843	779	74	321	315	121	227	44	9	42	656	340	502
ND_88	591		411	24264		14573	900		370	1368		989	40		39	793		607
ND_89	585		407	36958		22197	1001		412	976		706	33		32	1113		852
ND_90	404		281	30231		18157	921		379	297		215	40		39	800		612
ND_91	806	78	561	49768	13617	29891	1116	112	459	1177	443	851	114	84	110	1004	499	769
ND_92	398		277	14774		8873	836		344	244		176	38		36	807		618
ND_93	812	152	564	43245	18103	25973	1255	295	516	2428	1143	1755	44	32	42	1884	1048	1442
ND_94	474		330	60762		36494	1204		495	426		308	57		55	900		689
ND_81	363		253	17119		10282	672		276	1124		813	30		29	547		419
ND_82	289		201	10156		6099	642		264	1422		1028	37		36	483		370
ND_83	1158		805	110164		66164	2114		869	3261		2357	97		94	3419		2617
ND_84	2189		1522	110446		66334	2095		862	8354		6038	52		51	1692		1295
ND_100	443	53	308	16026	8094	9625	762	88	313	519	343	375	29	4	28	776	334	594
ND_102	1752	311	1218	133815	50046	80369	2226	573	916	4146	1672	2997	77	55	75	13721	-	
ND_103	852		592	63841		38343	1237		509	4148		2998	57		55	1570		1202
ND_104	810	259	563	93056	57856	55889	1802	858	741	413	359	298	70	85	67	2140	1397	1638
ND_105	708		492	60892		36572	1409		580	631		456	64		62	3403		2604
ND_106	529		368	27045		16243	952		391	1083		783	59		57	1013		775
ND_107	482		335	34165		20519	1038		427	441		319	39		38	1112		851
ND_108	762	161	530	58865	28984	35354	1403	403	577	935	604	676	41	20	40	1094	684	837
ND_109	441		307	29494		17714	944		388	232		168	43		42	1024		783

Supplementary Table S5 (continued)

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
NBWSLN01	528	40	368	11153	3568	6760	856	78	354	831	357	602	39	2	38	739	399	451
NBWSLN02	411	211	286	16178	16778	9805	683	322	283	2050	2222	1485	50	5	48	1231	911	751
NBW0201	350	61	244	8275	5556	5015	650	103	269	467	478	338	39	4	38	564	456	344
NBW0202	1636	289	1140	75117	25333	45528	1839	444	760	6439	2778	4666	41	12	39	1231	700	751
NBW03	1036	956	722	58328	36444	35352	1422	667	588	6483	4667	4698	328	411	317	1442	933	880
NBW04	2561	3000	1784	131397	68111	79640	2850	1333	1178	8853	6556	6415	37	21	36	3228	2444	1971
NBW05	931	311	648	43381	24000	26293	1289	456	533	4836	3333	3504	44	13	43	1728	1222	1055
NBW06	1608	522	1120	78389	34778	47512	1786	611	739	9267	5000	6715	44	32	43	1494	933	913
NBW_07	1925	556	1341	102839	42000	62331	2100	733	868	11872	6222	8603	61	16	59	1497	856	914
NBW08	350	38	244	9783	5333	5930	742	84	307	228	211	165	33	8	32	1000	656	611
NBW09	314	9	219	2044	1222	1239	667	22	276	0	36	0	33	1	32	692	456	422
NBW10	494	133	344	15372	10444	9317	839	167	347	1775	1333	1286	0	4	0	975	611	595
NBW11	417	50	290	10356	5556	6277	814	104	337	478	344	346	44	3	43	747	489	456
NBW12	350	29	244	5314	2556	3221	692	46	286	292	211	211	33	2	32	603	411	368
NBW13	1903	1222	1325	105339	87222	63846	2039	1556	843	12022	12000	8711	56	20	54	2144	1889	1309
NBW14	289	7	201	1686	989	1022	653	17	270	0	22	0	0	7	0	272	178	166

Supplementary Table S6. Concentrations (µg/m^2) of dust wipes for the Thio case study (n = **). Uncorrected pXRF and ICP-MS columns contain the concentrations obtained using these two methods. Additionally, the Corrected pXRF column contains concentrations calculated using the equations derived from linear correlations for each trace metal.

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
E1	5429	810	910	231595	57143	66676	2952	952	1464	5381	4667	4233	690	162	177	12357	5333	6303
E2	2095		351	19833		5710	1405		696	<LOD		-	429		110	9071		4627
E3	722		121	11500		3311	578		286	<LOD		-	267		68	6111		3117
E4	5000		839	12478		3592	822		408	<LOD		-	200		51	4278		2182
E5	900		151	11200		3224	589		292	<LOD		-	207		53	4822		2460
E6	1222	284	205	37322	12000	10745	833	267	413	652	889		256	7	66	5500	1911	2806
E7	1100		184	28833		8301	578		286	<LOD		-	256		66	6889		3514
E8	532	78	89	54961	11039	15823	529	208	262	351	338		95	10	24	5737	1948	2969
E9	672	211	113	79122	19222	22779	611	322	303	1881	1333		94	24	24	2764	1222	1410
E10	322	31	54	15381	3000	4428	239	48	118	306	244		58	4	15	1311	567	669
E58	217		36	7436		2141	156		77	<LOD		-	50		13	1297		662
E59	180		30	5786		1666	138		69	<LOD		-	38		10	1078		550
E60	2385	513	400	318355	104605	91654	2632	1118	1305	592	1447		345	46	89	25773	15132	13147
E61	3273		549	183914		52949	3059		1517	<LOD		-	329		84	7566		3859
E62	496		83	18612		5358	208		103	<LOD		-	62		16	1430		729
E63	2891	1034	485	192931	63678	55545	1805	1057	895	1667	2000		109	16	28	4063	1931	2073
E88	227		38	12862		3703	23		11	<LOD		-	132		34	2540		1296
E89	415		70	54099		15575	48		24	<LOD		-	228		59	3353		1711
E90	89		15	12598		3627	36		18	<LOD		-	179		46	2420		1234
E91	244		41	31176		8976	31		15	<LOD		-	178		46	2717		1386
E92	63		11	10044		2282	25		12	<LOD		-	119		31	1009		515
E93	135		23	5905		1700	54		27	<LOD		-	297		76	3000		1530
E94	679		114	21537		6201	360		179	<LOD		-	173		44	3989		2035

Supplementary Table S6 (continued). Dust wipes sampled indoors are indicated in bold. An asterisk (*) next to Pb loading in homes sampled indoors denotes those exceeding the 2021 United States Environmental Protection Agency's Dust Lead Clearance Levels (DLCL) floor standards of 10 µg/ft^2 (108 µg/m^2) [1]. Samples with matching number ending *e* indicate collected outdoors while those with a label ending *i* indicate that were collected indoors.

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
E95	164		28	46128		13280	38		19	<LOD		-	160		41	2227		1136
E96	310		52	35140		10117	205		102	<LOD		-	95		24	2630		1342
E97	627		105	57554		16570	31		15	<LOD		-	193		50	6966		3553
E31-01-e	694		116	694		200	278		138	<LOD		-	1250		321	17083		8714
E31-02-e	139		23	6914		1991	11		6	<LOD		-	72		19	1597		815
E31-01-i	175		29	28		8	83		41	<LOD		-	72		**19**	958		489
E31-02-i	456		77	27569		7937	313		155	<LOD		-	138		**35**	2775		1416
E32-01-e	394		66	456		131	144		71	<LOD		-	97		25	2938		1498
E32-02-e	28		5	28		8	11		6	<LOD		-	44		11	289		147
E33-01-e	214		36	464		134	11		6	<LOD		-	64		16	1256		640
E33-02-e	214		36	464		134	11		6	<LOD		-	25		6	158		81
E34-01-e	97		16	511		147	11		6	<LOD		-	53		14	1100		561
E34-02-e	28		5	8600		2476	11		6	<LOD		-	28		7	294		150
E35-01-e	61		10	28		8	11		6	<LOD		-	58		15	750		383
E35-02-e	388		65	1950		561	100		50	<LOD		-	400		103	5900		3010
E35-01-i	850		143	250		72	100		50	<LOD		-	500		**128***	6750		3443
E35-02-i	1744	223	292	71456	20750	20572	1031	425	511	1213	1125	954	131	30	**34**	2888	1975	1473
E36-01-e	331		56	1275		367	100		50	<LOD		-	400		32	5900		1556
E36-02-e	397	63	67	18203	6667	5421	186	76	92	367	378	288	69	8	18	1389	733	708
E37-01-e	178		30	342		98	93		46	<LOD		-	64		16	1094		558
E37-02-e	2086	500	350	97322	29556	28019	906	544	499	2442	2333	1921	61	13	16	1311	689	669
E38-01-e	164		27	28		8	60		30	<LOD		-	67		17	1253		639
E39-01-e	156		26	28		8	117		58	<LOD		-	61		16	1364		696
E39-02-e	28		5	6436		1853	11		6	<LOD		-	33		9	281		143
E40-01-e	231		39	1711		493	100		50	<LOD		-	50		13	1064		543
E40-02-e	1097	233	184	52086	16778	14996	411	267	204	1442	1222	1134	56	2	14	1331	789	679
E41-01-e	172		29	28		8	74		37	<LOD		-	61		16	1169		597

Supplementary Table S6 (continued). Dust wipes sampled indoors are indicated in bold. An asterisk (*) next to Pb loading in homes sampled indoors denotes those exceeding the 2021 United States Environmental Protection Agency's Dust Lead Clearance Levels (DLCL) floor standards of 10 µg/ft^2 (108 µg/m^2) [1]. Samples with matching number ending *e* indicate collected outdoors while those with a label ending *i* indicate that were collected indoors.

	Cr			Fe			Mn			Ni			Pb				Zn	
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
E41-02-e	317		53	4281		1233	25		12	<LOD		-	125		32	2225		1135
E42-01-e	388		65	2900		835	300		149	<LOD		-	163		42	2356		1202
E42-02-e	150		25	2313		666	25		12	<LOD		-	88		22	694		354
E42-01-i	356		60	1350		389	125		62	<LOD		-	108		**28**	2888		1473
E42-02-i	638		107	6006		1729	388		192	<LOD		-	133		**34**	1538		784
E43-01-e	363		61	1900		547	163		81	<LOD		-	133		34	2725		1390
E43-02-e	850	133	143	35181	9333	10128	206	111	102	664	578	522	64	4	16	1347	656	687
E44-01-e	167		28	700		202	78		39	<LOD		-	61		16	906		462
E44-02-e	344		58	25647		7384	93		46	<LOD		-	72		19	1681		857
E44-01-i	172		29	394		114	89		44	<LOD		-	50		**13**	1000		510
E44-02-i	119		20	9475		2728	25		12	<LOD		-	150		**38**	1669		851
E45-01-e	375		63	1675		482	188		93	<LOD		-	133		34	3078		1549
E45-02-e	275	40	46	7975	2778	2296	56	37	28	78	189	61	64	3	16	700	578	357
E45-01-i	186		31	1133		326	111		55	<LOD		-	56		**14**	1478		754
E45-02-i	475	325	80	44025	34250	12675	175	525	87	969	2225	762	306	375	**79**	5188	5500	2646
E46-01-e	1300		55	2500		180	1400		174	<LOD		-	575		37	9700		1237
E46-02-e	933		157	11200		3224	100		50	<LOD		-	144		122	7175		3660
E47-01-e	1500		252	5250		1511	900		446	<LOD		-	475		122	9500		4846
E47-02-e	1981	450	332	106250	32750	30589	1138	600	564	4313	4000	3392	131	21	34	7413	2175	3781
E48-01-e	375		63	63		18	192		95	<LOD		-	113		29	2656		1335
E48-02-e	122		20	4906		1412	11		6	<LOD		-	67		17	1075		548
E49-01-e	114		19	467		134	11		6	<LOD		-	61		16	989		504
E49-02-e	719	100	121	18750	6500	5398	400	108	198	342	600	269	131	4	34	2625	1275	1339
E50-01-e	319		53	63		18	133		66	<LOD		-	125		32	2313		1180
E50-02-e	1431	375	240	66150	26250	19045	650	450	322	1100	1400	865	438	400	112	5263	2750	2684
E50-01-i	356		60	63		18	192		95	<LOD		-	117		**30**	2269		1157

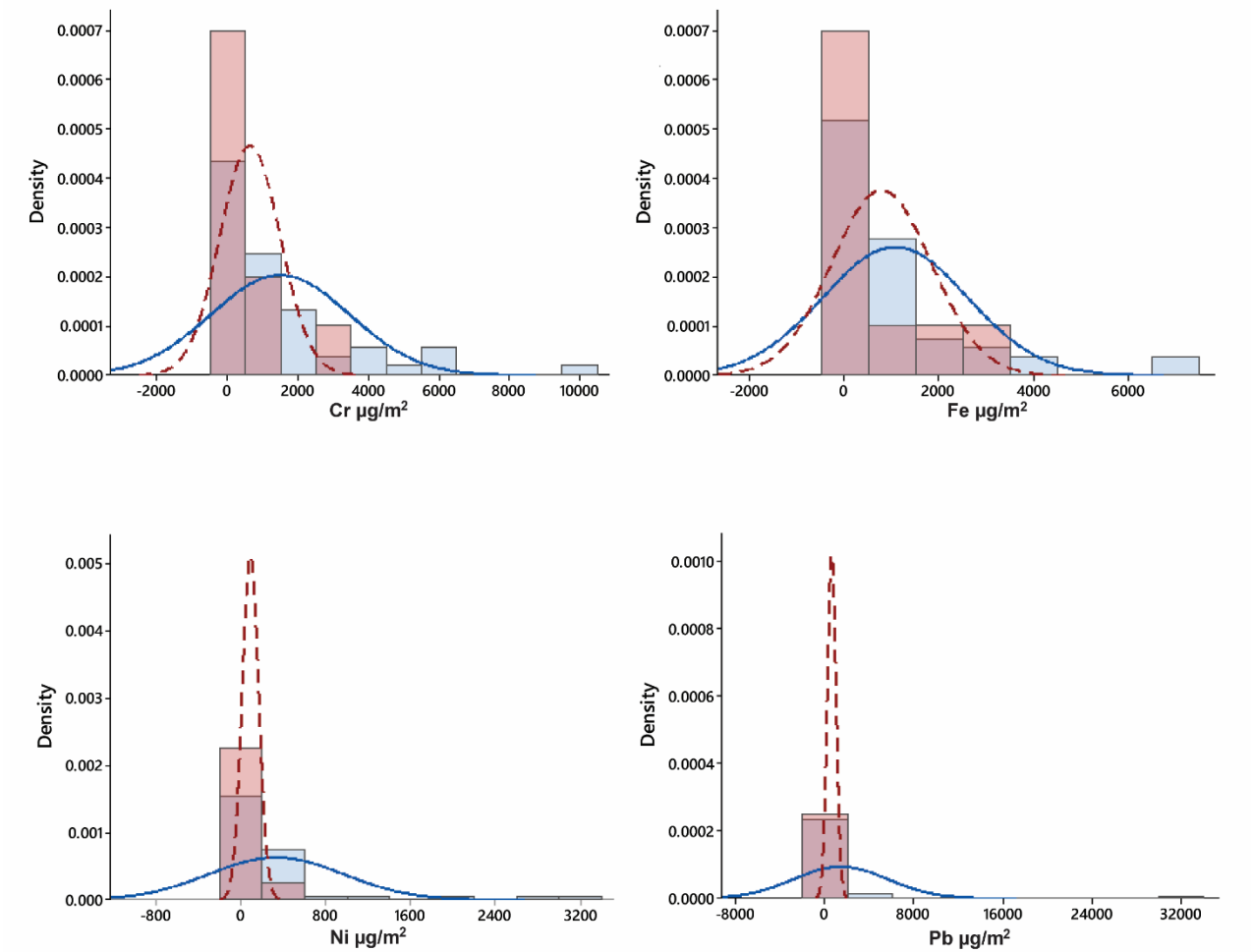
Supplementary Table S6 (continued). Dust wipes sampled indoors are indicated in bold. An asterisk (*) next to Pb loading in homes sampled indoors denotes those exceeding the 2021 United States Environmental Protection Agency's Dust Lead Clearance Levels (DLCL) floor standards of 10 µg/ft² (108 µg/m²) [1]. Samples with matching number ending *e* indicate collected outdoors while those with a label ending *i* indicate that were collected indoors.

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
E51-01-e	172		**29**	356		**102**	83		**41**	<LOD		-	53		14	919		469
E51-02-e	558	244	94	37383	24778	10763	136	356	67	525	1044	413	75	58	19	872	700	445
E51-01-i	294		22	650		83	<LOD		6	<LOD		-	119		**14**	2275		516
E51-02-i	963		161	28263		8137	556		276	<LOD		-	163		**42**	3213		1639
E52-01-e	331		56	1483		427	158		79	<LOD			142		36	2125		1084
E52-02-e	269	31	45	11286	2000	3249	156	44	77	244	111	192	69	5	18	822	578	419
E52-01-i	181		30	#VALUE!		8	115		57	<LOD		-	63		**16**	1036		529
E52-02-i	292		49	6925		1994	103		51	<LOD		-	69		**18**	1333		680
E53-01-e	142		24	28		8	67		33	<LOD		-	58		15	858		438
E53-02-e	28		5	1503		433	11		6	<LOD		-	37		9	169		86
E54-01-e	128		21	28		8	61		30	<LOD		-	53		14	1128		575
E54-02-e	89		15	858		247	11		6	<LOD		-	36		9	247		126
E55-01-e	319		53	63		18	250		124	<LOD		-	138		35	2819		1438
E55-02-e	28		5	706		203	11		6	<LOD		-	33		9	231		118
E56-01-e	150		25	659		190	133		66	<LOD		-	58		15	953		486
E56-02-e	78		13	2225		641	11		6	<LOD		-	44		11	381		194
E57-01-e	381		64	2431		700	150		74	<LOD		-	0		0	1775		905
E57-02-e	228	67	38	14472	5556	4167	44	78	22	141	333	111	53	4	14	761	522	388
E58-01-e	178		30	633		182	97		48	<LOD		-	67		17	1483		757
E58-02-e	500	148	84	27338	17000	7870	200	185	99	731	1050	575	131	8	34	1931	1750	985
E59-01-e	325		55	63		18	188		93	<LOD		-	119		30	2656		1355
E59-02-e	369		62	6363		1832	192		95	<LOD		-	125		32	1881		960
E60-01-e	275		46	1025		295	25		12	<LOD		-	125		32	3825		1951
E60-02-e	4625	975	776	184050	58000	52988	1438	1075	713	1163	1150	914	250	105	64	6863	4250	3501
E61-01-e	381		64	63		18	242		120	<LOD			119		30	1863		950
E61-02-e	8725	610	1463	176675	42000	50865	2025	720	1004	1400	1400	1101	467	6	120	10950	5200	5586
E62-01-e	1650		277	5400		1555	1450		719	<LOD			600		154	8425		4928

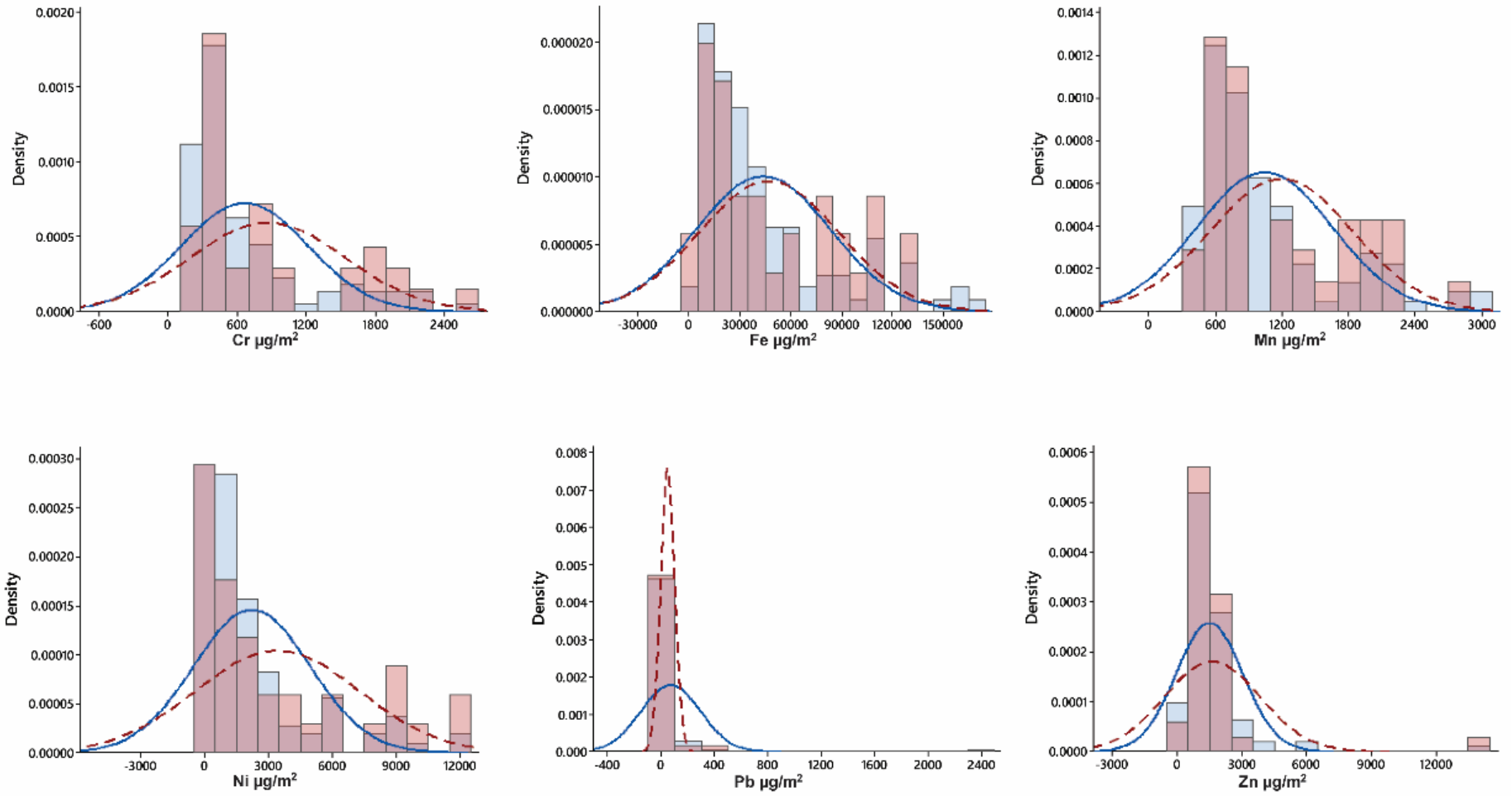
Supplementary Table S6 Continued. Dust wipes sampled indoors are indicated in bold. An asterisk (*) next to Pb loading in homes sampled indoors denotes those exceeding the 2021 United States Environmental Protection Agency's Dust Lead Clearance Levels (DLCL) floor standards of 10 µg/ft^2 (108 µg/m^2) [1]. Samples with matching number ending *e* indicate collected outdoors while those with a label ending *i* indicate that were collected indoors.

	Cr			Fe			Mn			Ni			Pb			Zn		
Sample ID	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**	**pXRF**	**ICP-MS**	**Corrected pXRF**
E62-02-e	1988		333	14794		4259	25		12	<LOD		-	200		51	4988		2544
E62-01i	388		65	63		18	175		87	<LOD		-	131		**34**	3531		1801
E62-02-i	1063		178	35613		10253	450		223	<LOD		-	125		**32**	3463		1766
E63-01-e	556		93	5725		1648	225		112	<LOD		-	119		30	2069		1055
E63-02-e	531		89	5319		1531	283		140	<LOD		-	125		32	2619		1336
E63-01-i	638		107	9375		2699	188		93	<LOD		-	119		**30**	3113		1588
E63-02-i	2575		432	46000		13243	1333		661	<LOD		-	550		**141***	11950		6096
E64-01-e	1700		285	4800		1382	900		446	<LOD		-	450		115	9725		4961
E64-02-e	1700	325	285	71450	22750	20570	706	375	350	3156	2750	2483	94	14	24	2213	1225	1129
E64-01-i	1575		66	2800		202	1050		130	<LOD		-	575		**37**	9825		1253
E64-02-i	6500	690	1090	295550	53000	85089	3125	1100	1549	11250	6800	8849	850	150	**218***	16150	5500	8238
E65-01-e	2000		335	250		72	1400		694	<LOD			600		154	14200		7243
E65-02-e	1750	198	293	80694	15250	23232	819	300	406	2863	1800	2252	113	4	29	3313	1300	1690
E66-01-e	325		55	63		18	25		12	<LOD		-	125		32	3625		1849
E66-02-e	1500		252	28200		8119	800		397	<LOD		-	500		128	18200		9284
E67-02-e	2150		361	80375		23140	1350		669	<LOD		-	575		147	15325		7817
E67-02-i	275		46	2294		660	25		12	<LOD		-	125		**32**	2600		1326
E68-01-e	1400		235	250		72	100		50	<LOD		-	500		128	12000		6121
E68-02-e	1875		314	15600		4491	1133		562	<LOD		-	475		122	10275		5241
E68-02-i	9325	2300	1564	402150	128000	115779	2575	2500	1277	4575	6200	3599	575	47	**147***	10925	6500	5573

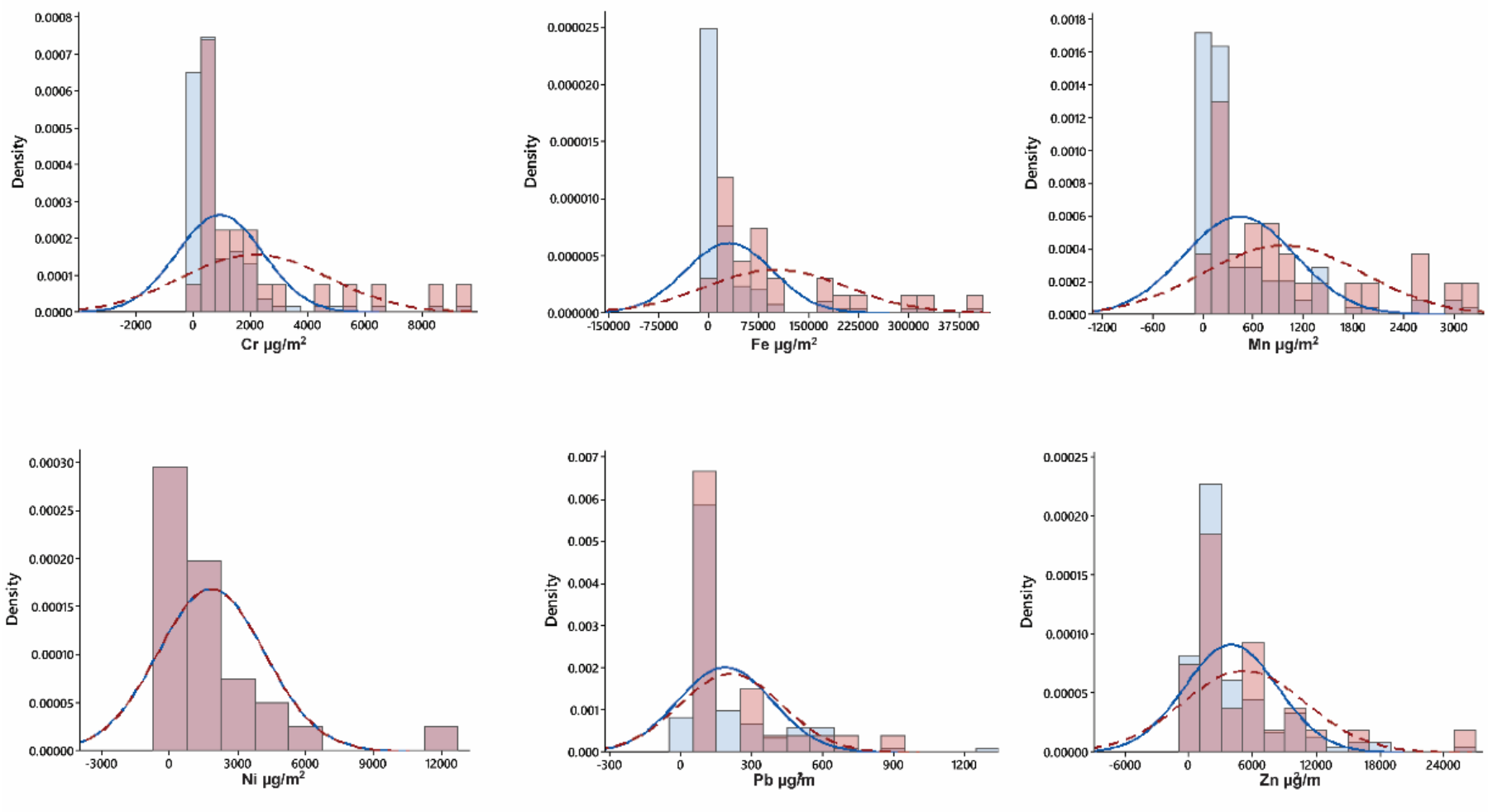
Supplementary Figure S1. Comparison between two sample groups of trace metal distributions analysed by pXRF before the correction method was implemented: in red, 100% of samples analysed from Tsumeb (n = 53); in blue, samples analysed by pXRF from Tsumeb (19%, n = 10/53) and submitted for ICP-MS analysis. No significant differences were found between the two compared groups $p>0.05$ for each evaluated trace metal.

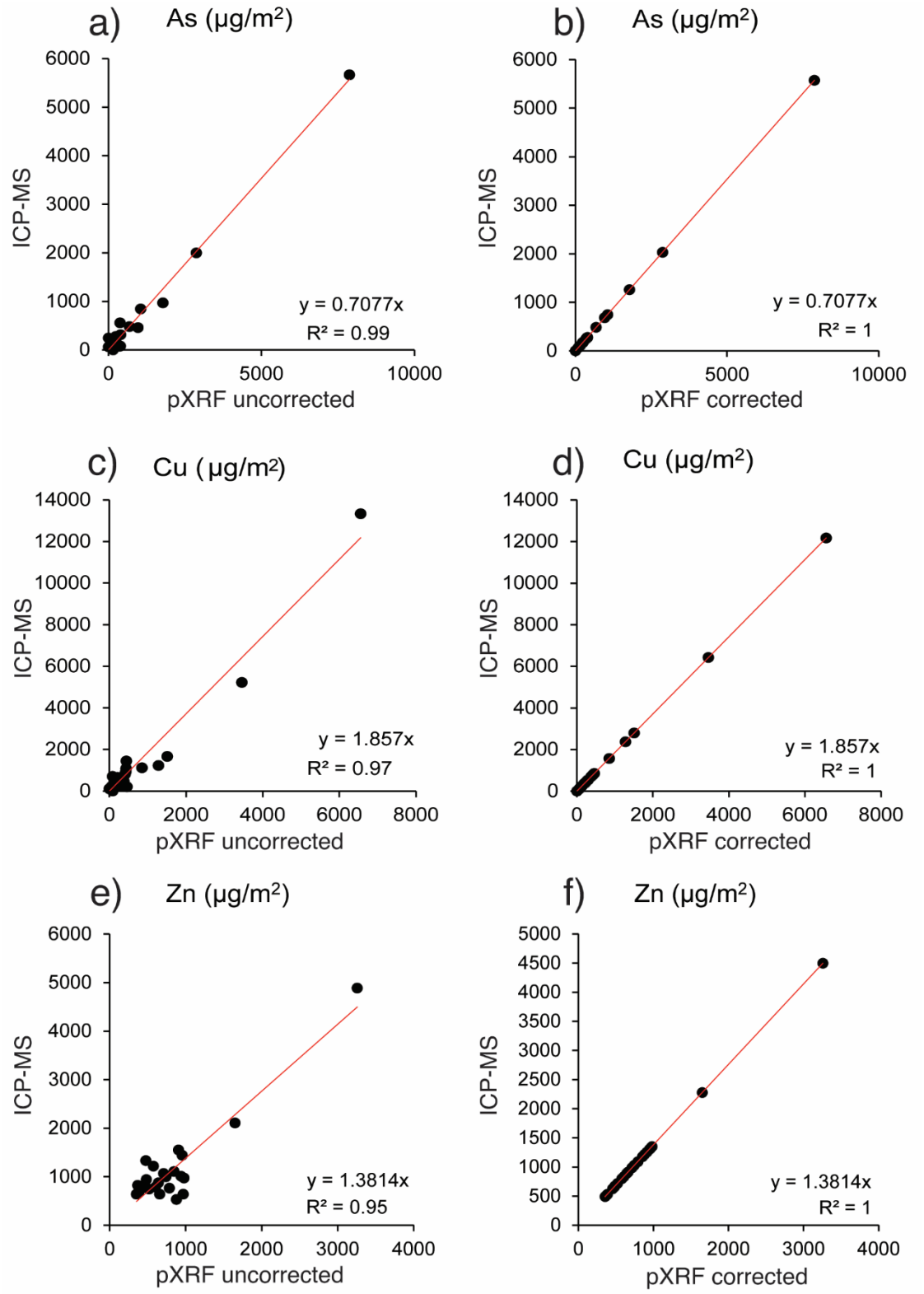


Supplementary Figure S2. Comparison between two sample groups of trace metal distributions analysed by pXRF before the correction method was applied: in red, 100% of samples analysed from Noumea (n = 112); in blue, samples analysed by pXRF from Noumea (31%, n = 35/112) and submitted for ICP-MS analysis. No significant differences were found between the two compared groups p>0.05 for each evaluated trace metal.

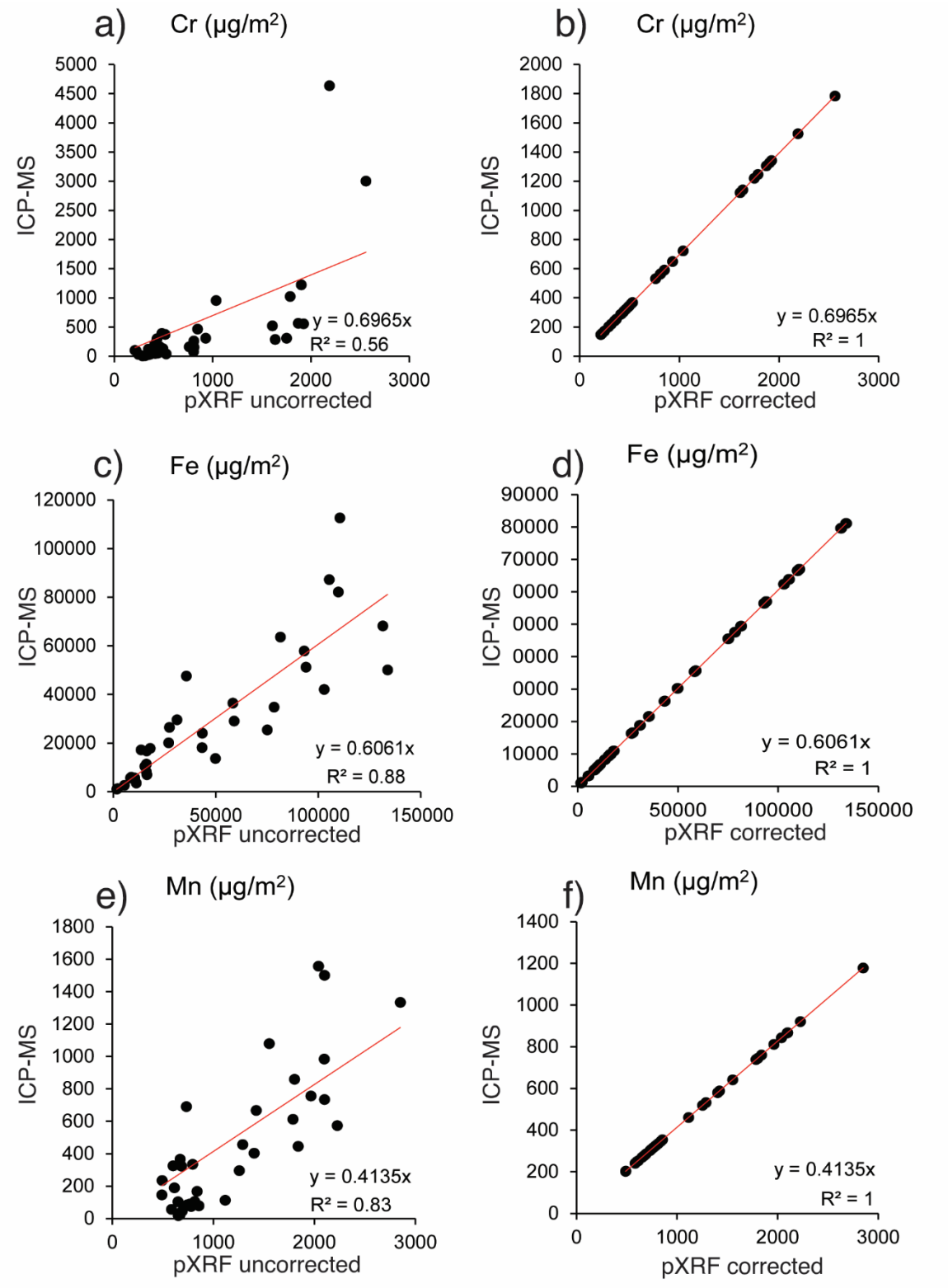


Supplementary Figure S3. Comparison between two sample groups of trace metal distributions analysed by pXRF before the correction method was implemented: in red, 100% of samples analysed from Thio (n = 123); in blue, samples analysed by pXRF from Thio (21%, n = 26/123) and submitted for ICP-MS analysis. No significant differences were found between the two compared groups $p>0.05$ for each evaluated trace metal.

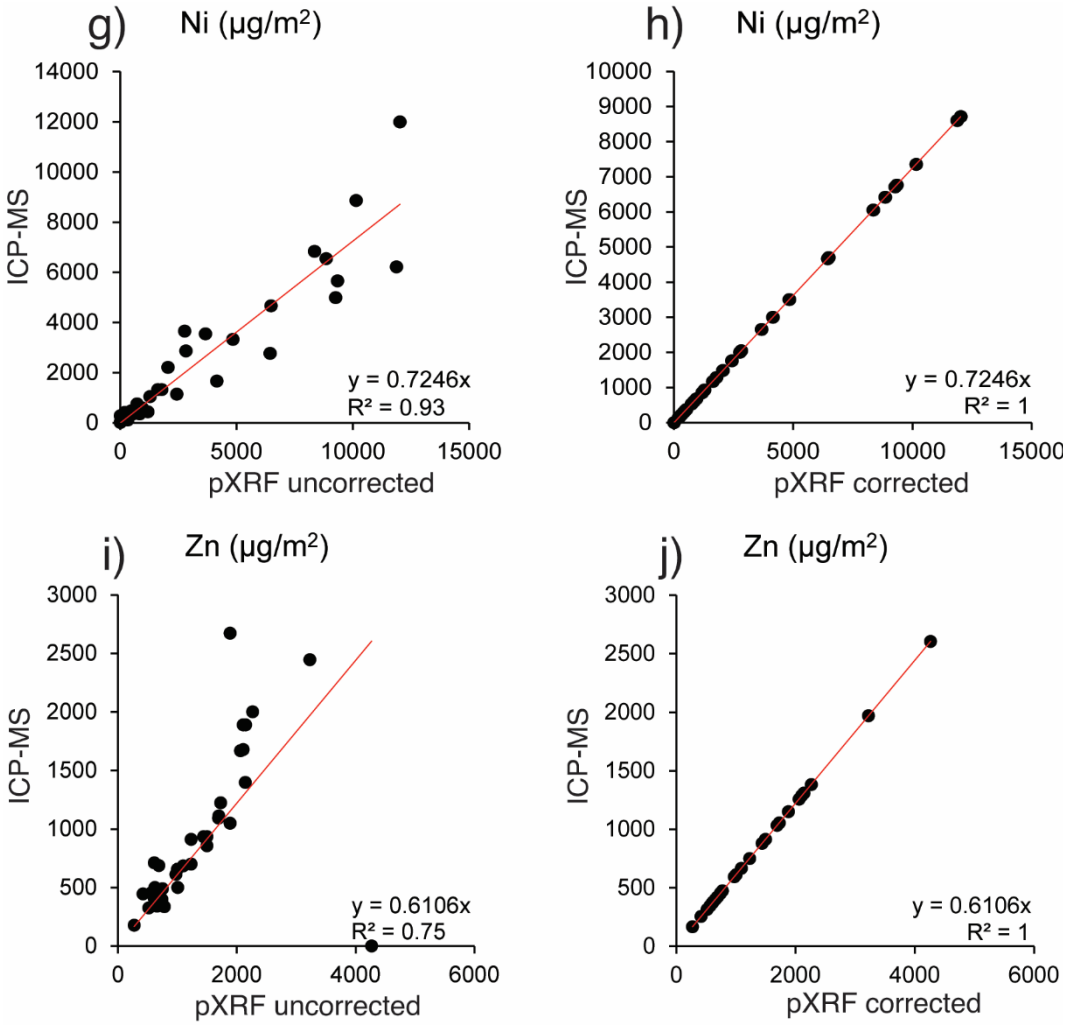




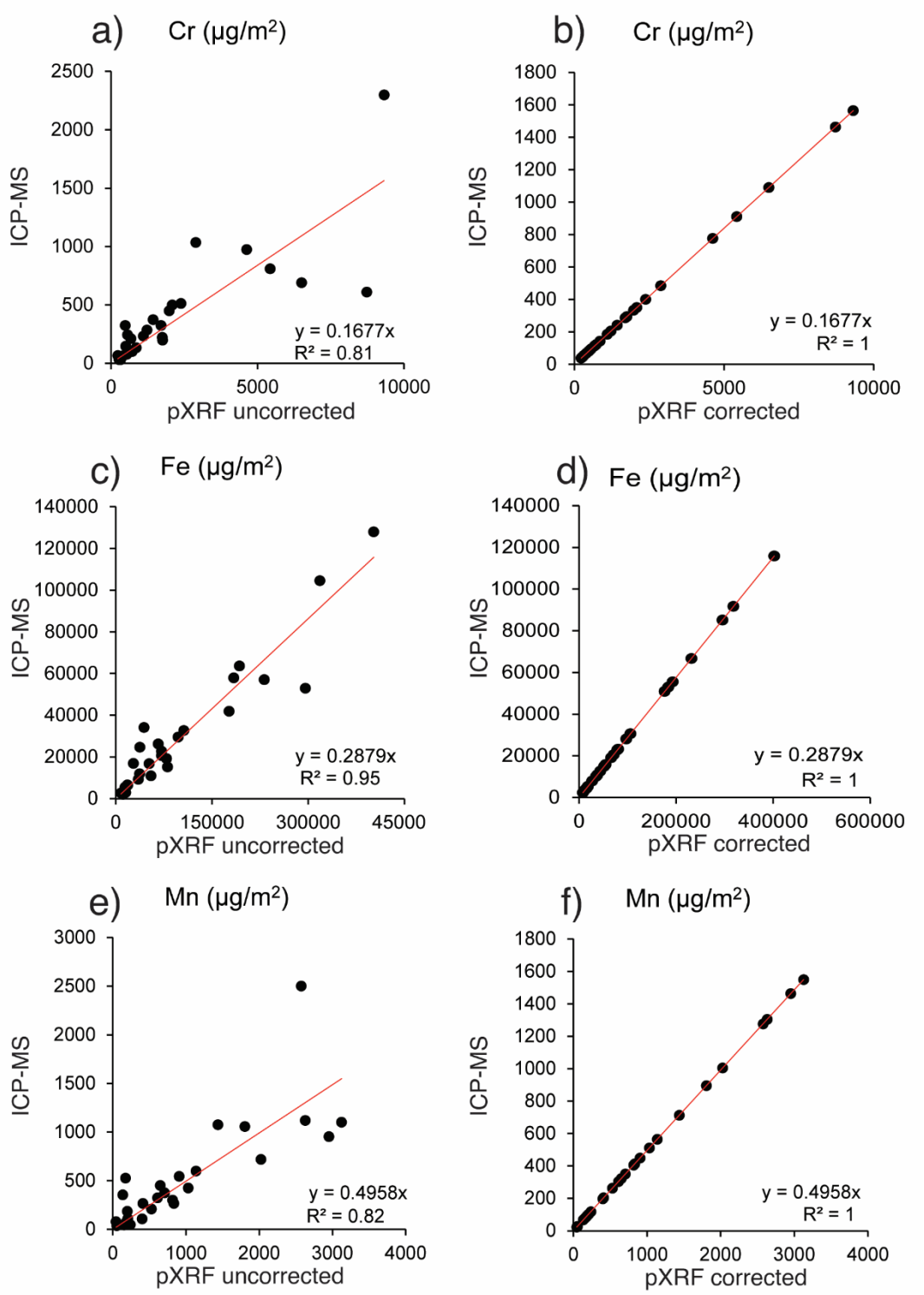
Supplementary Figure S4. Linear regression plots showing the adjustment or correction of As (pre (a) and post (b) correction), Cu (pre (c) and post (d) correction) and Zn (pre (e) and post (f) correction) in Tsumeb dust wipes (n = 25).



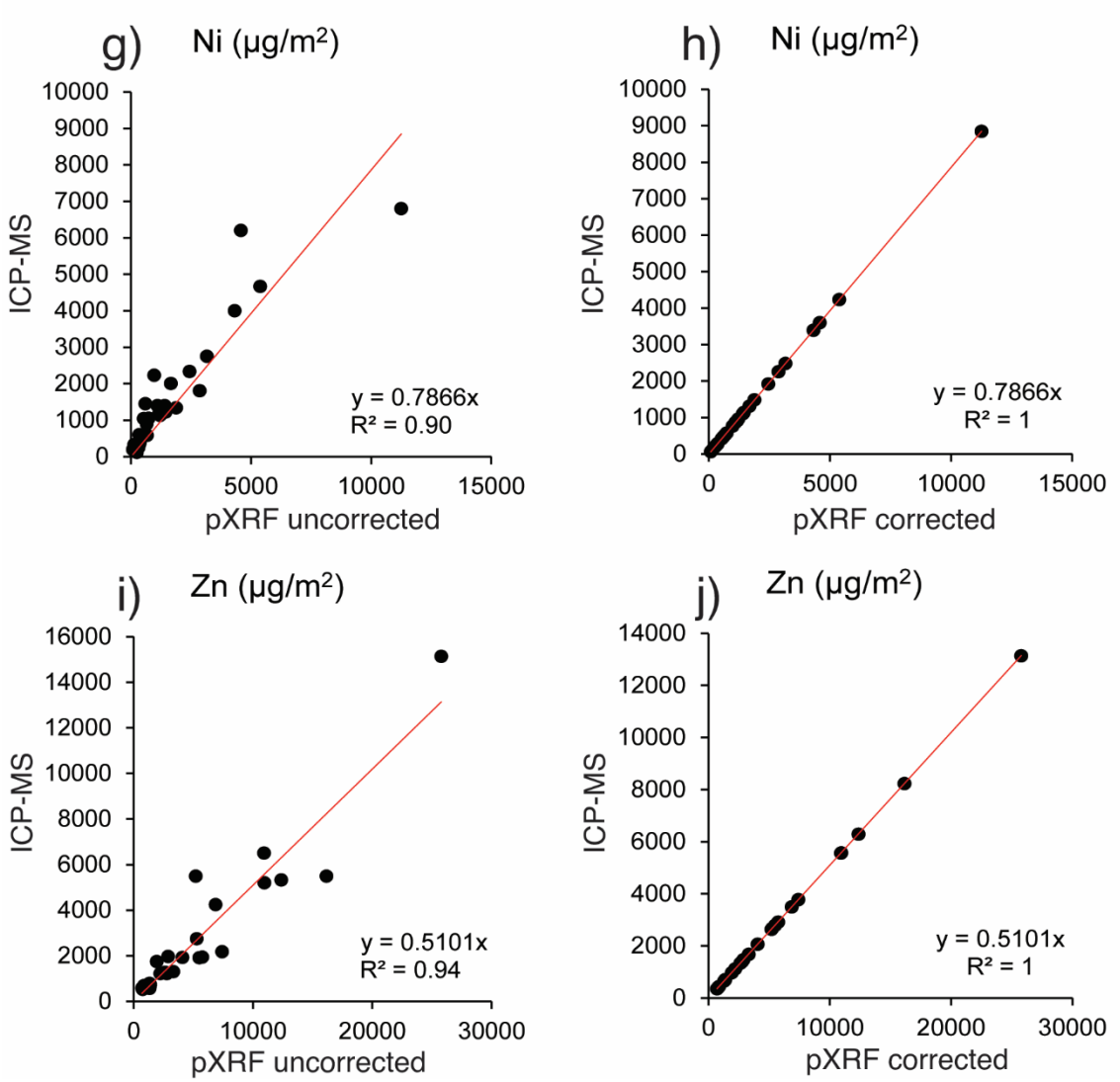
Supplementary Figure S5. Linear regression plots showing the adjustment or correction of Cr (pre (a) and post (b) correction), Fe (pre (c) and post (d) correction) and Mn (pre (e) and post (f) correction) in Noumea dust wipes (n = 35).



Supplementary Figure S5 Continued. Linear regression plots showing the adjustment or correction of Ni (pre (g) and post (h) correction), and Zn (pre (i) and post (j) correction) in Noumea dust wipes (n = 35).



Supplementary Figure S6. Linear regression plots showing the adjustment or correction of Cr (pre (a) and post (b) correction), Fe (pre (c) and post (d) correction) and Mn (pre (e) and post (f) correction) in Thio dust wipes (n = 27).



Supplementary Figure S6 Continued. Linear regression plots showing the adjustment or correction of Ni (pre (g) and post (h) correction), and Zn (pre (i) and post (j) correction) in Thio dust wipes (n = 27).

References

1. US EPA. United States Environmental Protection Agency, Review of Dust-Lead Post Abatement Clearance Levels: Federal Register, 86 (4); 2021. Available from: https://www.govinfo.gov/content/pkg/FR-2021-01-07/pdf/2020-28565.pdf.