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Supplement of

A quantitative assessment of the behavior of metallic elements in urban soils exposed to industrial dusts near Dunkerque (northern France)

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Table S1: Detection limits (DL) and uncertainties in major element measurements according to sample concentration range. "-" means no data.

Oxides	Concentration ranges					DL %
	>10 %	5-10 %	1-5 %	0.5-1 %	0.1-0.5 %	
Na_2O	-	<5 %	<10 %	<25 %	-	0.5
MgO	-	<5 %	<10 %	<20 %	-	0.7
Al_2O_3	<5 %	<10 %	<20 %	-	-	1.9
SiO_2	<5 %	-	-	-	-	10
K2O	-	<5 %	<10 %	<15 %	-	0.9
CaO	<5 %	<10 %	<20 %	-	-	2.1
Fe_2O_3	<5 %	<5 %	<10 %	-	-	0.1

Table S2: Selected references from JCPDS data base for mineralogical analysis. RIR: Reference Intensity Ratio.

Ref. code	Score	Compound Name	RIR
01-085-0335	74	Quartz	3.03
01-081-2027	66	Calcite	3.23
00-009-0466	46	Feldspars	2.1
01-070-1868	35	Micas	0.79

Table S3: Detection limit (DL, in ppb) and recovery values of the reference standards (MESS-3 and PACS-2) after ICP-AES/MS total PTE analysis.

	Element	MESS-3	PACS-2	DL (ppb)
ICP-AES	Cu	93 %	100 %	5
ICP-MS	Cr	88 %	91 %	0.025
	Mn	82 %	89 %	0.025
	Ni	92 %	102 %	0.3
	Zn	72 %	93 %	0.150
	Mo	99 %	92 %	0.005
	Cd	107 %	99 %	0.003

Table S4: Hydrogen Index (HI; mg HC/g TOC) and Oxygen Index (OI_{RE6}; mg O_2/g TOC) characterizing the four soil cores. "-" means no data.

Core	Depth (cm)	HI (mg HC/g TOC)	OI_{RE6} (mg O_2/g TOC)
1	0-1	314	169
	1-2	332	162
	2-3	335	159
	3-4	322	162
	4-5	314	164
	5-6	313	165
	7-8	300	165
	9-10	289	169
	10-11	-	-
2	0-1	270	161
	1-2	266	157
	2-3	234	154
	3-4	204	163
	4-5	173	159
	5-6	172	164
	7-8	146	164
	9-10	137	196
	10-11	-	-
3	0-1	294	173
	1-2	286	169
	2-3	262	175
	3-4	246	183
	4-5	232	188
	5-6	219	190
	7-8	198	199
	9-10	179	218
	10-11	-	-
4	0-1	266	177
	1-2	266	175
	2-3	254	178
	3-4	226	184
	4-5	198	189
	5-6	179	196
	7-8	159	196
	9-10	156	198
	10-11	-	-

Table S5: Total (quartz, calcite, feldspars, micas) and clay (smectite, illite, kaolinite, chlorite) mineral composition (%) of the four studied cores. "-" means no data.

Core	Depth (cm)	Quartz (%)	Calcite (%)	Feldspars (%)	Micas (%)	Smectite (%)	Illite (%)	Kaolinite (%)	Chlorite (%)
1	0-1	86	4	3	7	7	56	22	15
	1-2	86	4	3	7	17	50	21	11
	2-3	83	4	3	10	22	46	20	11
	3-4	84	5	3	8	22	45	31	3
	4-5	84	4	4	8	25	47	18	10
	5-6	84	3	3	10	14	50	25	11
	7-8	79	5	4	12	29	43	19	8
	9-10	-	-	-	-	36	36	15	13
	10-11	81	5	3	11	-	-	-	-
2	0-1	77	8	4	11	23	50	18	9
	1-2	77	8	5	10	35	41	15	9
	2-3	81	7	4	8	27	48	15	10
	3-4	77	8	4	11	35	42	15	8
	4-5	77	8	4	11	35	41	16	7
	5-6	72	11	5	12	34	41	15	9
	7-8	74	8	4	14	32	44	16	9
	9-10	-	-	-	-	-	-	-	-
	10-11	70	12	4	14	34	42	15	9
3	0-1	56	19	4	21	43	32	17	9
	1-2	57	21	4	18	49	28	15	8
	2-3	49	27	4	20	41	33	16	10
	3-4	52	24	4	20	55	25	14	6
	4-5	56	21	4	19	52	27	14	7
	5-6	47	20	8	25	55	26	14	6
	7-8	65	16	3	16	53	27	13	8
	9-10	-	-	-	-	-	-	-	-
	10-11	51	25	5	19	54	26	14	7
4	0-1	70	12	5	13	39	36	14	11
	1-2	67	12	5	16	52	26	14	8
	2-3	71	12	4	13	62	21	11	6
	3-4	74	10	4	12	65	19	10	6
	4-5	67	14	4	15	62	20	13	5
	5-6	68	12	3	17	67	18	11	5
	7-8	66	11	4	19	63	20	11	7
	9-10	-	-	-	-	-	-	-	-
	10-11	67	13	3	17	67	17	10	5