Supplementary Materials:

Table S1. Main meteorological data during the TSP sampling periods.

Periods	P1	P2	P3	P4
Wind directions	Frequency of wind directions, %			
N	11	15	10	7
NE	7	7	26	9
E	7	3	23	13
SE	10	6	6	10
S	12	8	8	4
SW	15	13	6	17
W	21	25	5	27
NW	17	23	16	13
Wet precipitation, mm				
Total amount	34	17	141	81
Maximal amount	7.3	6.6	61.1	16.3

The data were provided by Judita Navašinskienė, a senior specialist of the Lithuanian Hydrometeorological Service. P1, P2, P3, P4 are sampling periods in 2020: P1 – 04.03–15.04, P2 – 16.04–27.05, P3 – 28.05–08.07, P4 – 09.07–19.08. N – north; NE – north-east; E – east; SE – south-east; S – south; SW – south-west; W – west; NW – north-west.

Table S2. Elemental contents ($\mu g\ g^{-1}$) in dust of port city Klaipėda.

	LOD	MIN	25th	50th	75th	<1km	B'Fe	C'ap	C'ph	D'KCl	F*wa	Bn	Cv
Si	24	27689	62070	108412	149852	73417	26511	7073	1211	1206	67076	367083	309445
Al	27	3580	7758	13087	19487	7068	2981	1812	1246	2619	8082	35340	81505
Fe	2	8605	22307	34315	253126	295711	654630	3847	4765	1450	5628	13754	39176
Ca	1	15984	32814	60343	96381	34426	6119	215077	4137	1138	249505	7824	25658
K	2	2204	8008	12354	14756	7324	664	786	830	213579	20615	18309	23244
Mg	37	42.8	1265	5122	10273	1610	1636	4938	3328	<120	6015	4024	14955
Ti	0.3	328	761	1226	1756	813	210	217	205	11.6	2066	2033	3837
Mn	0.2	144	285	385	434	327	174	224	156	12.5	268	297	774
P	3	742	1507	2482	3621	1652	254	99758	139851	98.4	1014	918	655
S	0.6	1339	4198	5123	6721	4302	636	750	24562	814	66251	439	621
Cl	0.8	19.8	1406	3393	6653	1416	781	185	315	209689	202894	99.0	370
Sr	0.1	46.3	101	182	280	101	17.8	2424	33.7	12.2	219	71.9	320
Zr	0.2	19.5	67.8	123	171	65.7	18.6	232	47.1	8.92	14.9	219	193
V	0.3	11.9	29.5	40.4	57.0	39.2	18.7	25.6	85.7	<1.0	19.8	28.0	97
Cr	0.2	1.09	51.4	87.1	177	238	59.2	4.24	101	<1.0	164	33.0	92
Rb	0.1	4.22	23.3	42.7	54.9	26.2	3.59	8.49	14.3	56.7	219	65.5	84
Zn	0.2	206	631	1168	1940	869	16.6	15.8	196	5.85	12654	63.0	67
Ni	1.0	2.75	23.2	32.9	50.5	27.5	14.3	12.3	25.5	10.3	20.6	11.0	47
Cu	0.5	46.8	86.1	135	198	79.2	50.3	68.0	79.3	47.0	989	10.7	28
Pb	0.2	3.11	25.9	36.0	47.8	40.1	12.8	6.81	5.70	7.74	2882	21.1	17
As	0.1	0.47	2.45	4.72	6.75	3.77	1.90	1.14	10.7	<1.0	1.90	2.90	4.8
Br	0.1	6.06	12.0	16.7	22.5	16.1	1.84	0.60	2.70	563	2634	4.73	1.6

LOD – lower limits of detection [30]; MIN – minimum found values, 25th, 50th and 75th – percentiles of elemental contents of complete dataset of dust samples, n=50; <1km – median elemental contents in the dust of area located closer than at 1 km distance from stevedoring of iron ore (twelfe sampling sites: 3, 4, 11–20, Figure 1); elemental contents in dust of production stevedored in B, C, D sites (Figure 1): *B'Fe* – iron ore; *C'ap* – apatite; *C'ph* – phosphorite, *D'KCl* – potassium fertilizers; *F*wa* – elemental contents in waste incineration ash (F site in Figure 1); *Bn* – *native topsoil background values* [21]; *Cv* – C*larke values* given by [32].

Table S3. The 25th and 75th percentiles of this study and reference values of analytes (µg g^{-1}) from selected publications.

Source	This study 25th – 75th	1	2	3a	3b	4	5	6a	6b	7	8	9	10	11
		Total suspended particulates (TSP)						PM10		PM2.5		<10 µm particles		
Potentially harmful elements														
As	2.5–6.7			148	135	18	26	26	43			783	12	100
Cr	51–177	72	154		1071	118	134	59	131	170	175		229	286
Cu	86–198	98	205	3815	1690	762	*70*	169	560	224	323		1332	1816
Ni	23–51	38	56	598	2262	135	59	140	124	59	193	1140	58	110
Pb	26–48	119	102	1290	533	333	148	441	674	606	797	330	248	276
V	29–57	62	81		99	190	118	390	223	68	122	253	84	105
Zn	631–1940	*408*	*400*			673	*201*	1360	2340	1904	879	1386	1572	2162
S	4198–6721			7662	4510			65809	76596		54377	85623	7000	7600
Crustal elements														
Al	7758–9487	45700		13258	21548		75000	*3676*	*6915*		39412	9105	42340	
Ca	32814–96381	63900		55975	125595			*9191*	*14220*	4332	74893	36262	132000	*22700*
Fe	22307–253126	27300		*11630*	23958	43000	48000	*10515*	23901	*6909*	47818	33546	50000	51500
K	8008–14756	13700		9903	36530			6875	8723	5023	11139		14000	19000
Mg	1265–10273	14900									9956	10832	12000	5200
Mn	285–434			438	792	674	763	*254*	294	*193*	1026	2278	654	1029
P	1507–3621							*1471*	1631			*491*	*1000*	2200
Rb	23–55		58	31	61					52	52		65	386
Si	62070–149852			*35155*	*57039*			*12500*	*23227*		98723		90216	
Sr	101–280		706		255	111	177			*62*	442		243	284
Ti	761–1756			1046	2458	2600	4000	*103*	*199*	*361*	4163	*736*	2964	6300
Zr	68–171		138		252								120	232
Halogens														
Br	12–22									345	783			
Cl	1406–6653			4290	4107			51471	30000		6983		5000	
SH	3	20	<10?	10		Snow cover		ni	ni	2	ni	10	ni	ni
D'A	(XRF)	HNO₃ HF	HNO₃ HF HClO₄	HNO₃, HF		ni	HNO₃, HF	(XRF)	(XRF)	(XRF)	(XRF)	HNO₃, HF	HNO₃ HF HClO₄	HNO₃ HF HClO₄
D'C	(XRF)	7days, 140°C	24h, 150°C	8 h, 80°C		ni	ni, 150-190°C	(XRF)	(XRF)	(XRF)	(XRF)	45min, ni, MW	ni	ni

Source: 1 – [81]: Beijing, China, 2008–2009, all seasons, mean values (MV) from Table 1; 2 – [66]: Beijing, China, 2013–2014, winter, MV from Table S2; 3 – [80]: Qiungyuan, China, 2016, autumn, 3a – calculated average of four e-waste recycling sites, 3b – background, MV from Table 1; 4 – [57]: Moscow, Russia, 2013, winter, MV from Table 1; 5 – [56]: Eastern Tien Shan, China, 2008–2010, all seasons, MV from Table 1; 6 – [82]: Belgium, 2006–2007, all seasons, recalculated MV from Table 2, 6a – Houtem (seaside), 6b – Mechelen (suburban); 7 –[83]: Krakow, Poland, 2014–2015, all seasons, average of recalculated data from Table 2; 8 – [84]: Makkah, Saudi Arabia, 2014–2015, all seasons, average of recalculated data from Table 1; 9 – [18]: Shanghai Port, China, 2011, winter, spring and summer, recalculated hybrid coastal data from Table 2; 10 – [8]: Barcelona, Spain, 2007, June, MV from Table 2; 11 – [35]: Viana do Castelo, Portugal, 2018, September–October, MV from Table 1; SH – sampling height above ground, <10? – samplers were attached to telephone poles; snow cover – samples from snow cover; D'A – acids used for digestion, (XRF) – x-ray analysis without digestion; D'C – digestion conditions, i.e. duration and temperature, °C. If reference value taken from publication exceeds our 75th percentile, it is bolded, if it is below 25th percentile, it is in italic; ni – no information.

Table S4. Factor loadings of complete datasets of TSP and background topsoil samples.

Variable	F1TSP [1]	F2TSP	F3TSP	F4TSP	F5TSP	F1BT	F2BT	F3BT
	Total suspended particulates (TSP) [2]					Background topsoil (BT) [3]		
Rb	0.93	0.13	0.04	0.13	0.11	0.53	-0.79	0.04
Al	0.93	-0.02	0.00	0.16	0.20	0.83	-0.51	-0.07
Si	0.93	-0.03	0.08	0.01	0.20	-0.82	-0.30	-0.33
Zr	0.90	0.10	0.09	0.18	0.12	0.14	-0.82	-0.32
K	0.85	0.01	0.10	0.29	-0.03	0.52	-0.77	-0.01
Mg	0.78	0.10	-0.07	-0.44	0.07	0.78	-0.27	0.48
Mn	0.75	0.16	0.03	0.31	0.49	0.19	0.28	0.16
Ti	0.75	0.21	0.06	0.48	0.20	0.74	-0.54	-0.13
Ca	0.70	0.59	-0.01	-0.24	0.04	0.43	0.36	0.71
P	0.05	0.96	0.06	0.15	-0.07	-0.28	0.65	-0.28
Sr	0.10	0.94	0.08	0.03	-0.05	0.41	0.78	0.02
Br	0.06	-0.02	0.93	0.02	0.04	0.25	0.45	0.46
S	-0.08	0.04	0.84	0.26	-0.21	0.30	0.83	0.07
Cl	0.23	0.12	0.80	-0.17	0.12	0.15	0.23	0.31
Zn	0.10	-0.11	0.19	0.75	-0.01	-0.29	0.53	-0.22
V	0.15	0.20	-0.23	0.71	0.05	0.84	0.22	-0.02
Cu	0.50	0.18	0.24	0.54	-0.11	0.56	0.55	-0.57
Ni	0.28	0.32	-0.07	0.34	0.28	0.93	0.05	-0.21
Pb	0.33	0.07	0.20	0.17	0.80	0.27	0.12	-0.13
As	0.31	-0.14	-0.11	-0.08	0.72	0.46	0.53	-0.47
Cr	-0.47	-0.05	-0.12	-0.07	0.69	0.83	0.12	-0.28
Fe	-0.72	-0.18	-0.11	-0.21	0.33	0.89	0.25	-0.13
Ex.V. [4]	35%	12%	11%	11%	10%	34%	26%	10%

[1] Abbreviations of factors (in the first row), factor loadings (FL) were obtained by principal component extraction.

[2] Complete dataset of 50 TSP samples; if |FL|>0.36, FL is significant at p<0.01 and is bolded; if 0.28≤|FL|≤0.36, FL is significant at p<0.05.

[3] BT – dataset of 20 topsoil samples taken for calculation of native background values, i.e. from athletic stadiums of Klaipėda; if |FL|>0.56, FL is significant at p<0.01 and is bolded; if 0.44<|FL|≤0.56, FL is significant at p<0.05.

[4] Ex.V. – percentage of explained variance.

[4] Ex.V. – percentage of explained variance.

Table S5. Mean elemental contents ($\mu g\ g^{-1}$) and geochemical indices (*gI*) in Klaipėda dust during four sampling periods.

Variables	Contents [1]	*Igeo'C*	*Igeo'N*	*Cv/Bn* [2]	*nEF'Al'C*	*nEF'Al'N*	$(Cv_{Al}/Bn_{Al})/(Cv/Bn)$ [3]	*aE'N*
Potentially harmful elements								
As	5.26	-0.69	0.04	1.66	12	8.4	1.39	1.82
Cr	78.7	-1.11	0.37	2.79	21	26	0.83	2.39
Cu	167	1.87	3.25	2.62	32	37	0.88	15.6
Ni	40.4	-1.02	1.07	4.27	6.7	12	0.54	3.68
Pb	37.6	0.40	0.09	0.81	21	7.4	2.86	1.78
V	45.7	-1.76	0.03	3.46	4.1	6.1	0.67	1.63
Zn	1390	3.57	3.66	1.06	148	68	2.17	22.1
S	5588	2.48	2.98	1.41	64	39	1.63	12.7
Crustal elements								
Al	16636	-3.05	-1.85	2.31				0.47
Ca	91172	0.97	2.69	3.28	16	23	0.70	11.7
Fe	79083	-0.73	0.78	2.85	69	85	0.81	5.75
K	13601	-1.47	-1.12	1.27	3.3	1.8	1.82	0.74
Mg	9036	-1.98	-0.08	3.72	2.1	3.4	0.62	2.25
Mn	395	-1.61	-0.23	2.61	3.8	4.3	0.88	1.33
P	6657	1.78	1.30	0.71	43	13	3.23	7.25
Rb	48.2	-1.59	-1.23	1.28	2.6	1.4	1.80	0.74
Si	130883	-1.99	-2.24	0.84	2.2	0.8	2.74	0.36
Sr	476	-0.87	1.28	4.45	4.5	8.7	0.52	6.63
Ti	1447	-2.11	-1.20	1.89	2.1	1.7	1.22	0.71
Zr	150	-1.15	-1.33	0.88	3.3	1.3	2.62	0.69
Halogens								
Br	17.5	2.80	1.24	0.34	88	13	6.82	3.70
Cl	4723	2.64	4.54	3.74	51	83	0.62	47.7

[1] Mean values of contents and *gI* were estimated according to seven evenly distributed sampling sites (in duplicate sites 1&2, 3&4 and 8&9, the results are averaged) during sampling periods from 04.03.2020 to 19.08.2020. [2] Ratio of *Clarke values* and *native background values*. [3] Constants indicating the ratios of *nEF'Al'C* and *nEF'Al'N* for analytes and formula for their calculation.

Table S6. Medians of *aE'N* during study periods P1, P2, P3 and P4 and significance of variability of elemental contents.

Variable	Cl	S	Sr	Ni	Br	V	Zn
P1	146	16.2	3.6	2.5	5.5	1.0	19.9
P2	48.4	14.7	3.4	4.8	4.4	1.4	13.2
P3	13.2	9.4	2.4	3.8	2.5	1.9	37.3
P4	35.0	12.9	3.1	3.0	2.8	1.4	21.9
p [1]	0.0001	0.0063	0.0063	0.0109	0.0152	0.0452	0.0477

[1] *p*-value of Friedman ANOVA test.

Table S7. Medians of *Igeo'N* and *aE'N* in dust from two areas and differences between the areas in the values of each index

Variable	*Igeo'N*			*aE'N*		
	<1km [1]	>1km [2]	p [3]	<1km [1]	>1km [2]	p [3]
Potentially harmful elements						
As	-0.24	0.39	0.640	1.3	2.0	0.640
Cr	2.26	0.44	0.001 [4]	7.2	2.1	0.001
Cu	2.30	3.53	0.005	7.4	17.7	0.005
Ni	0.74	1.40	0.134	2.5	4.0	0.111
Pb	0.31	0.32	0.779	1.9	1.9	0.851
V	-0.14	0.71	0.075	1.4	2.5	0.075
Zn	3.19	4.58	0.075	13.8	36.0	0.075
S	2.70	2.70	0.925	9.8	9.7	0.925
Crustal elements						
Al	-2.77	-1.50	0.007	0.2	0.5	0.004
Ca	1.56	2.96	0.011	4.4	11.8	0.011
Fe	3.84	0.34	0.001	21.5	1.9	0.001
K	-1.81	-0.83	0.001	0.4	0.8	0.001
Mg	-1.85	0.77	0.015	0.4	2.6	0.015
Mn	-0.41	-0.07	0.061	1.1	1.4	0.061
P	0.25	1.16	0.134	1.8	3.4	0.092
Rb	-2.05	-0.86	0.005	0.4	0.8	0.003
Si	-3.15	-1.85	0.011	0.2	0.4	0.005
Sr	-0.13	1.00	0.049	1.4	3.0	0.049
Ti	-1.98	-0.84	0.011	0.4	0.8	0.009
Zr	-2.37	-0.97	0.005	0.3	0.8	0.005
Halogens						
Br	1.18	0.87	0.708	3.4	2.7	0.708
Cl	3.25	3.51	0.708	14.3	18.1	0.851

[1] Median of index in <1km area. [2] Median of index in >1km area. [3] p-level of the differences in the values of index between *<1km* and *<1km* areas according to U-test.

Table S8. Medians of *nEF'Al'C* and *nEF'Al'N* in dust from two areas and differences between the areas in the values of each index.

Variable	nEF'Al'C			nEF'Al'N		
	<1km [1]	>1km [2]	p [3]	<1km [1]	>1km [2]	p [3]
Potentially harmful elements						
As	7.3	5.2	0.031	5.2	3.7	0.031
Cr	33	3.3	0.001	40	4.0	0.001
Cu	28	29	0.640	32	33	0.640
Ni	6.7	4.1	0.134	12.5	7.7	0.134
Pb	22	11	0.001	7.6	3.8	0.001
V	4.5	2.8	0.111	6.7	4.2	0.111
Zn	127	132	0.925	59	61	0.925
S	68	30	0.019	42	19	0.019
Crustal elements						
Ca	14	15	0.261	20	22	0.261
Fe	79	3.5	0.001	97	4.4	0.001
K	2.7	2.7	0.779	1.5	1.5	0.779
Mg	1.6	3.1	0.049	2.5	5.0	0.049
Mn	4.4	2.5	0.003	5.0	2.8	0.003
P	28	27	0.925	8.8	8.5	0.925
Rb	2.6	2.8	0.092	1.4	1.6	0.092
Si	2.2	2.0	0.111	0.8	0.7	0.111
Sr	3.1	2.3	0.075	5.9	4.5	0.075
Ti	2.1	2.0	0.925	1.7	1.7	0.925
Zr	2.7	3.9	0.075	1.0	1.5	0.075
Halogens						
Br	113	36	0.009	17	5.5	0.009
Cl	46	18	0.015	75	29	0.015

[1] Median of index in <1km area. [2] Median of index in >1km area. [3] p-level of the differences in the values of index between *<1km* and *<1km* areas according to U-test.