

Table S1. Detailed climate information of the sampling regions in this study.

Region	Temperature	Average Humidity (%rh)
	Min-Max (Average) (°C)	
Ansan (Shihwa; <i>SH</i>)	-4.2–4.7 (0)	73.0
Gunsan (Gunsan; <i>GS</i>)	-1.7–6.2 (2)	80.0
Yeongam (Daebul; <i>DB</i>)	-2.7–7.7 (3.9)	79.0
Gwangyang (Gwangyang; <i>GY</i>)	0.4–9 (4.3)	63.0
Changwon (Changwon; <i>CW</i>)	0.8–9.2 (4.7)	47.0
Busan (Noksan; <i>NS</i>)	1.7–9.8 (5.4)	48.0
Onsan (Onsan; <i>OS</i>)	0.1–9.6 (4.3)	52.0
Ulsan (Ulsan; <i>US</i>)	0.1–9.6 (4.3)	52.0
Pohang (Pohang; <i>PH</i>)	0.2–8.5 (4)	52.0

Korean Metrological Administration Climate Data Portal (<https://data.kma.go.kr>)

Table S2. Median, minimum and maximum values (in parentheses) for amount of road dust surface loading (g/m²), median particle size (µm), magnetic susceptibility (10⁻⁶ SI), PTEs concentrations and pollution assessment indices in road dust from 9 different Industrial regions of this study.

	SH	GS	DB	GY	CW	NS	OS	US	PH
Total RDS load (g/m ²)	432 (150–1287)	334 (81–594)	1669 (581–4099)	1147 (355–2098)	465 (253–854)	800 (173–1780)	1174 (319–3151)	672 (211–1643)	708 (231–2397)
Particle median size (µm)	151 (86–256)	204 (115–570)	355 (205–562)	199 (94–437)	334 (107–561)	174 (113–351)	194 (116–379)	191 (61–308)	260 (147–464)
MS (10 ⁻⁶ SI)	87 (17–410)	76 (22–191)	80 (29–799)	120 (45–896)	241 (50–620)	198 (71–848)	173 (42–333)	70.1 (5.7–427)	346 (89–791)
Al (%)	5.0 (4.0–7.0)	4.8 (4.1–5.1)	5.1 (4.1–5.6)	4.8 (3.4–6.2)	5.5 (3.5–6.4)	5.4 (3.8–6.2)	5.2 (3.7–6.2)	5.6 (4.0–7.0)	5.0 (3.3–6.0)
Li (mg/kg)	17.9 (15.1–65.9)	18.2 (14.0–29.6)	18.0 (12.4–22.4)	28.1 (20.8–48.7)	23.2 (16.3–36.3)	18.6 (10.8–23.9)	27.5 (21.1–33.2)	32.1 (15.6–49.7)	29.6 (21.3–37.8)
Cr (mg/kg)	311 (75–1991)	299 (98–3108)	70 (18.3–356)	413 (90–1273)	984 (139–2044)	1486 (307–22760)	281 (135–666)	179 (26.5–1539)	1405 (434–6329)
Ni (mg/kg)	86 (26.3–823)	33 (15.6–136)	15.7 (6.2–140)	89 (31.0–270)	151 (34.0–542)	315 (50.6–9470)	168 (46.8–252)	59.6 (8.4–266)	164 (34–648)
Cu (mg/kg)	339 (35.8–6966)	80 (18.5–223)	66 (17.8–243)	77 (31.5–540)	374 (94.5–2108)	305 (167–4166)	3582 (499–10122)	366 (46.4–5486)	287 (75.4–492)
Zn (mg/kg)	1317 (208–8238)	664 (171–1414)	640 (229–6478)	1031 (425–2820)	1473 (577–3342)	2931 (1282–6780)	9965 (1960–56076)	1139 (223–22661)	1659 (511–5711)
As (mg/kg)	15.1 (8.0–70.8)	12.0 (6.6–21.7)	9.2 (3.7–20.7)	12.7 (3.8–25.8)	15.7 (10.9–40.4)	15.1 (5.9–22.7)	225 (63.4–563)	31.5 (4.8–140)	1.2 (0.2–20)
Cd (mg/kg)	1.6 (0.5–5.0)	0.6 (0.2–1.2)	0.4 (0.2–1.5)	0.5 (0.2–4.2)	2.0 (1.2–4.2)	3.5 (1.8–7.5)	34.8 (5.2–209)	2.5 (0.4–7.1)	2.3 (0.5–12.3)
Pb (mg/kg)	423 (63–4102)	187 (51–701)	67 (30–226)	69 (32–470)	291 (177–1071)	457 (231–878)	3411 (527–22833)	257 (52–1473)	154 (28.0–1108)
Hg (mg/kg)	0.06 (0.02–0.23)	0.02 (0.01–0.07)	0.01 (0.00–0.02)	0.04 (0.01–0.84)	0.04 (0.02–0.34)	0.09 (0.04–0.55)	3.08 (0.67–22.0)	0.12 (0.02–0.98)	0.29 (0.03–7.56)
PER	1430 (362–4897)	545 (163–979)	291 (133–1221)	564 (214–2805)	1789 (885–2284)	2798 (1302–7149)	29191 (4026–134216)	2077 (313–6271)	1905 (531–13708)

Table S3. Pearson's correlation coefficient between the measured parameters in the RD of this study. Marked correlations (bold) are significant at the 0.01 level (2-tailed).

	size	MS	Al	Li	Cr	Ni	Cu	Zn	As	Cd	Pb	Hg
size	-											
MS	0.08	-										
Al	-0.19	-0.26	-									
Li	-0.03	-0.02	0.27	-								
Cr	0.02	0.37	-0.11	-0.10	-							
Ni	-0.01	0.29	-0.12	-0.13	0.90	-						
Cu	-0.06	0.09	-0.14	0.00	-0.05	0.01	-					
Zn	-0.09	0.13	-0.14	-0.00	-0.01	0.02	0.65	-				
As	-0.13	-0.05	0.06	0.14	-0.10	-0.03	0.67	0.48	-			
Cd	-0.09	-0.00	-0.09	0.05	-0.04	-0.00	0.62	0.90	0.58	-		
Pb	-0.11	0.00	-0.09	0.04	-0.05	-0.00	0.64	0.86	0.67	0.97	-	
Hg	-0.05	0.04	-0.03	0.08	-0.00	-0.00	0.43	0.48	0.59	0.51	0.50	-