

Supplementary Material

1. Supplementary Tables

Table S1. Classification of enrichment factor (EF) and potential ecological risk factor (E_r^i) for each element and potential ecological risk index (PER).

Table S2. Key parameters for the health risk assessment through three pathways used in this study (USEPA, 2011;2016, Zhou et al., 2015; Adamiec, 2017).

2. Supplementary Figure

Figure S1. Spatial distribution of potentially toxic elements in PM₁₀ of road dust in this study.

Figure S2. Plots of concentrations and isotopic values of Cu, Zn, and Pb (a: this study, b: Jeong et al., 2021).

Table S1. Classification of enrichment factor (EF) and potential ecological risk factor (E_r^i) for each element and potential ecological risk index (PER).

Enrichment factor		Potential ecological risk		
EF	Classification	E_r^i	PER	Classification
EF<2	Unpolluted	$E_r^i < 40$	PER<150	Low risk
2<EF<4	Slightly polluted	$40 < E_r^i < 80$	150<PER<300	Moderate risk
4<EF<16	Moderately polluted	$80 < E_r^i < 160$	300<PER<600	Considerable risk
16<EF<32	Strongly polluted	$160 < E_r^i < 320$		High risk
EF>32	Extremely polluted	$E_r^i > 320$	PER>600	Extreme risk

Table S2. Key parameters for the health risk assessment through three pathways used in this study (USEPA, 2011;2016, Zhou et al., 2015; Adamiec, 2017).

Parameters	Description	Units	Value for Children	Value for adult
IngR	Ingestion rate	mg day ⁻¹	100	50
EF	Exposure frequency	days	180	180
ED	Exposure duration	years	6	24
BW	Average body weight	kg	15	70
AT	Average time	days year ⁻¹	6×365	24×365
InhR	Inhalation rate	m ³ day ⁻¹	10	20
PEF	Particle emission factor	m ³ kg ⁻¹	1.316×10 ⁹	1.316×10 ⁹
SA	Exposed skin area	cm ²	2800	5700
SL	Skin adherence factor	mg cm ⁻² day ⁻¹	0.2	0.2
ABS	Dermal absorption factor		10 ⁻³	10 ⁻³

Adamiec, E., 2017. Road environments: Impact of metals on human health in heavily congested cities of Poland. *Int. J. Environ. Res. Public Health*, 14, 1-17.

U.S. Environmental Protection Agency. 2016. Regional Screening Levels (RSLs)—Generic Tables (May 2016).

Zhou, Q. et al. 2015. Residents health risk of Pb, Cd and Cu exposure to street dust based on different particle sizes around zinc smelting plant Northeast of China. *Environ. Geochem. Health* 37, 207-220.

U.S. Environmental Protection Agency. 2011. Exposure Factors Handbook 2011 Edition (Final), Washington, DC, EPA/600/R-09/052F.

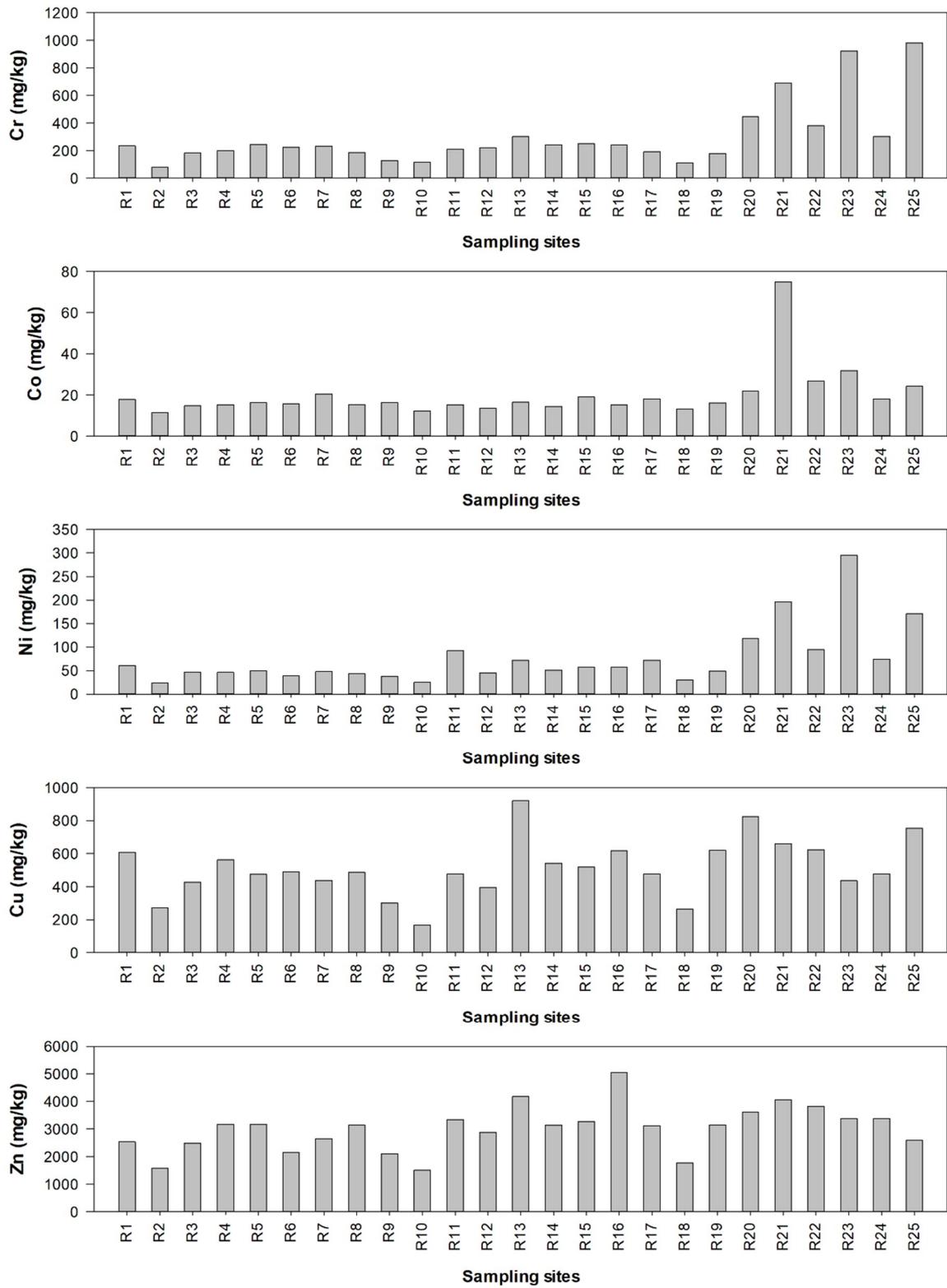


Figure S1. Spatial distribution of potentially toxic elements in PM₁₀ of road dust in this study.

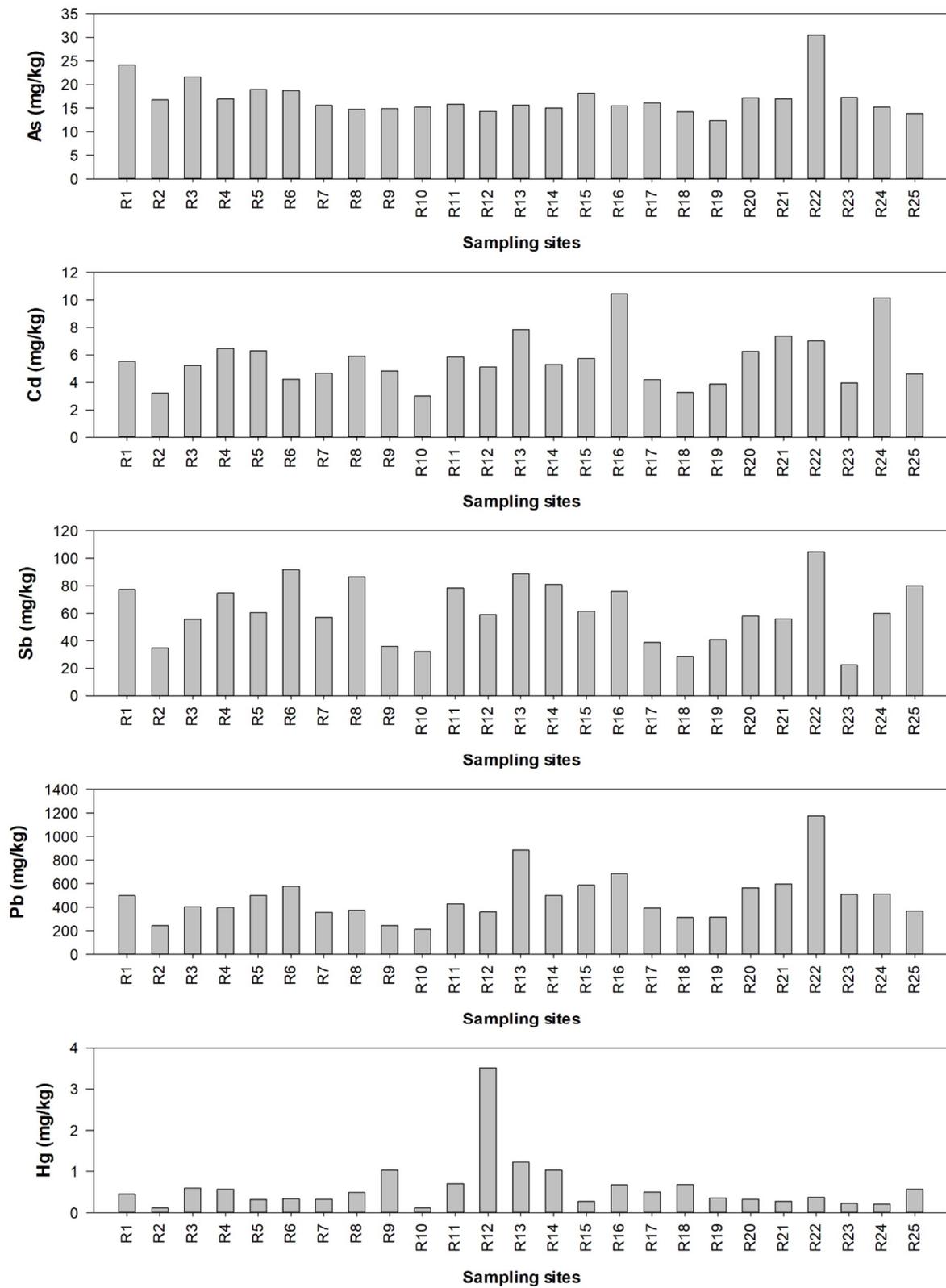


Figure S2. Continued.

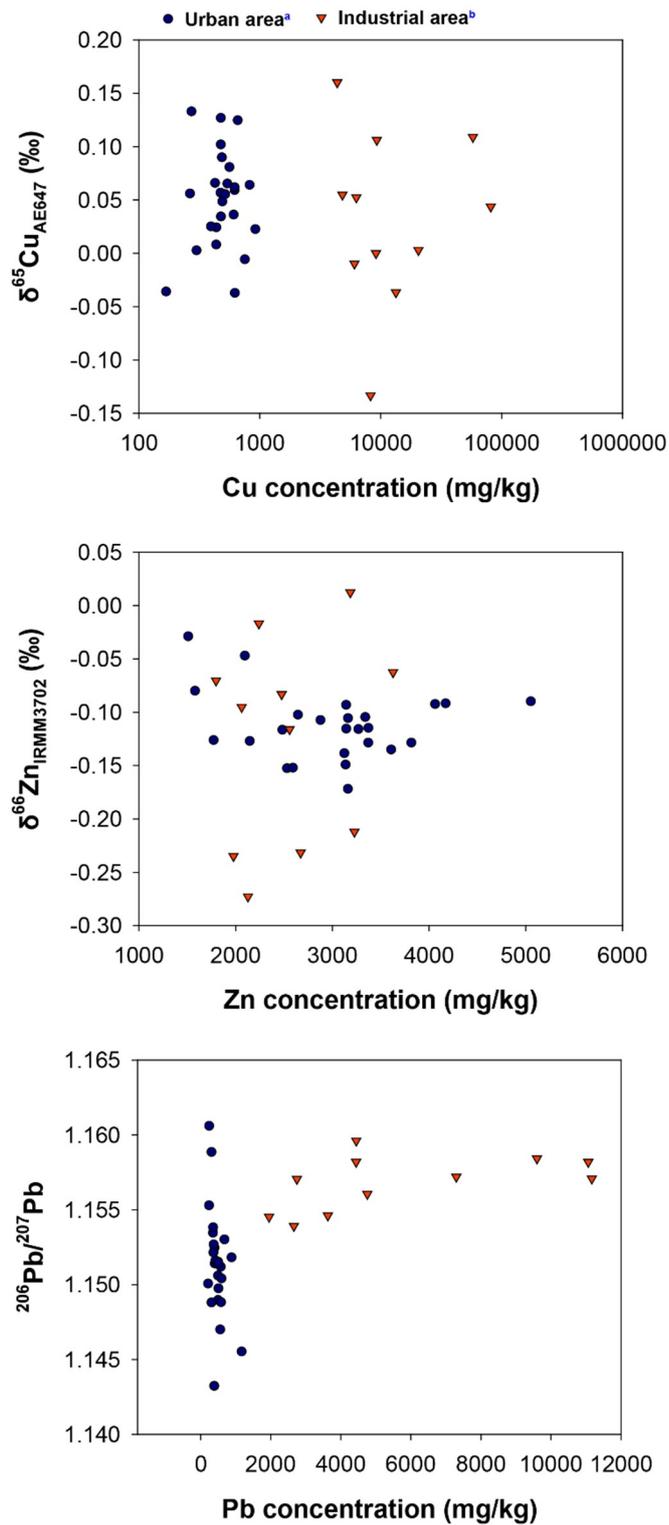


Figure S2. Plots of concentrations and isotopic values of Cu, Zn, and Pb (a: this study, b: Jeong et al., 2021).

Jeong, H.; Ra, K. Multi-isotope signatures (Cu, Zn, Pb) of different particle sizes in road-deposited sediments: a case study from industrial area. *J. Anal. Sci. Technol.* 2021, 12, 39.