

Supplementary Information for

Impact of traffic volumes on levels, patterns, and toxicity of polycyclic aromatic hydrocarbons in roadside soils

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Table S1. Risk parameters used for Monte-Carlo simulation for children and adults.

Input parameter	Description (unit)	Children	Adults	Data distribution	Reference
C _{soil}	BaP equivalent concentration (mg/kg)	G (0.13, 2.18) ^a	G (0.13, 2.18)	log normal	This study
ED	exposure duration (year)	U (0, 18) ^b	U (0, 52)	uniform	This study
EF	exposure frequency (day/year)	G (252, 1.01)	G (252, 1.01)	log normal	1
BW	body weight (kg)	A (35.9, 19.2) ^c	A (62.8, 10.9)	log normal	2, 3
AT	averaging time (day)	25,550	25,550	constant	
CF	conversion factor (kg/mg)	1.00E-06	1.00E-06	constant	
IR _{soil}	soil ingestion rate (mg/day)	118	50	constant	2, 4
HR	air inhalation rate (m ³ /day)	A (12.1, 2.1)	A (14.3, 1.1)	log normal	2, 3
PEF _{soil}	soil particle emission factor (m ³ /kg)	1.32E+09	1.32E+09	constant	5
SA	surface area of skin that contacts soil (cm ² /day)	A (2938, 1171)	A (4271, 440)	log normal	2, 3
AF	relative skin adherence factor (mg/cm ²)	0.10	0.08	constant	4, 6
ABS	dermal absorption factor	G (0.13, 1.26)	G (0.13, 1.26)	log normal	7
CSF _{ingestion}	cancer slope factor for BaP (mg/kg/day)	12	12	constant	8
CSF _{inhalation}	cancer slope factor for BaP (mg/kg/day)	3.9	3.9	constant	8
CSF _{dermal}	cancer slope factor for BaP (mg/kg/day)	37.5	37.5	constant	9

^a G (gm, gsd): Geometric mean and standard deviation. ^b U (min, max). ^c A (m, sd): Arithmetic mean and standard deviation.

Table S2. Concentrations (ng/g) of individual and total PAHs in roadside soils collected at 10 sites in Ulsan, Korea.

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10
Nap	61	71	68	63	66	78	73	77	78	91
Acy	45	39	48	42	32	44	41	42	48	49
Ace	14	18	18	17	11	17	14	15	17	23
Flu	10	15	12	16	9	16	12	13	19	23
Phe	24	64	51	53	30	71	67	83	101	137
Ant	ND*	26	31	26	20	30	31	31	40	41
Flt	53	63	92	103	51	91	109	148	154	199
Pyr	59	65	94	116	65	111	188	178	237	354
BaA	93	83	112	90	66	97	88	94	103	103
Chr	26	40	62	51	28	57	114	91	105	100
BbF	45	55	91	59	38	63	79	81	112	99
BkF	ND	20	37	23	14	28	28	27	36	29
BaP	ND	70	104	81	60	90	88	93	113	113
IcdP	ND	50	74	70	37	64	67	67	96	92
DahA	ND	38	46	51	32	48	39	44	47	46
BghiP	34	69	63	175	82	112	220	184	346	323
Σ_{16} PAHs	310	784	1,004	1,037	639	1,016	1,258	1,270	1,652	1,820

*ND: Not Detected.

Table S3. Concentrations of Σ_{16} PAHs in roadside soils collected from other cities in previous studies and this study.

Country	City	Period	Mean ($\mu\text{g/g}$)	Range ($\mu\text{g/g}$)	Reference
China	Xi'an	NA*	2.6	0.4–9.9	10
China	Xi'an	December 2016	1.3	NA–2.5	11
Mexico	Tijuana	NA	0.3	0.05–1.9	12
Serbia	Novi Sad	Winter 2014–2015	0.7	single sample	13
UK	London	April 2009	65	single sample	14
Korea	Ulsan	October 2011	1.1	0.3–1.8	This study

*NA: Not Available.

Text S1. References.

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