

Supplementary Materials

Bisphenol analogues in soils from four circular economy E-waste dismantling parks: emission characteristics and health risks

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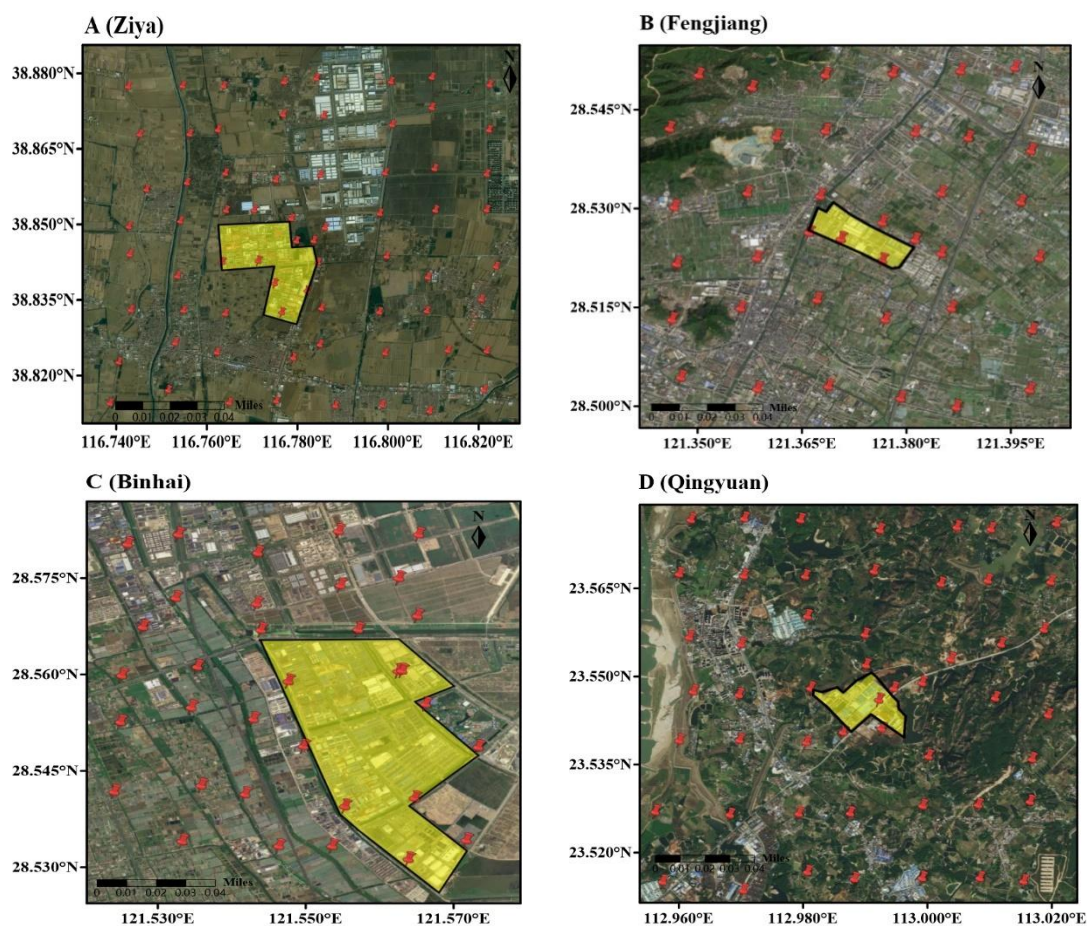
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Supplementary Figure 1. Sampling sites in the four circular economy industrial park and surrounding areas (A: Ziya; B: Fengjiang; C: Binhai; and D: Qingyuan).

Supplementary Table 1. MS/MS parameters for BPs

Compounds	Monitoring ion(m/z)	DP (V)	CE (eV)
BPA	227.0 > 212.0	-92	-26
	227.0 > 133.0	-97	-33
BPS	249.0 > 107.9	-111	-37
	249.0 > 91.9	-114	-49
BPB	241.0 > 212.0	-83	-26
	241.0 > 226.0	-85	-27
BPF	199.0 > 93.0	-91	-30
	199.0 > 105.0	-87	-29
BPP	345.0 > 315.0	-134	-51
	345.0 > 133.0	-137	-43
BPZ	267.0 > 173.0	-124	-36
	267.0 > 145.0	-122	-48
BPAF	335.0 > 264.9	-92	-30
	335.0 > 314.8	-101	-29
BPAP	289.0 > 274.0	-106	-28
	289.0 > 195.0	-97	-34
¹³ C ₁₂ -BPA	238.9 > 224.0	-90	-26
TCBPA	365.0 > 313.8	-129	-36
	365.0 > 285.9	-129	-42
TBBPA	542.8 > 417.8	-124	-54
	542.8 > 445.8	-129	-45
TBBPA-d ₁₀	552.9 > 426.9	-147	-55

DP: Declustering potential; CE: collision energy.

Supplementary Table 2. Validation parameters of BPs analysis method in soil

Compounds	Calibration curve	Regression coefficient (R²)	LOD (ng/g)	LOQ (ng/g)
BPA	y=0.03288x+0.03763	0.9992	0.193	0.642
BPS	y=0.24923x+0.01086	0.9988	0.025	0.082
BPB	y=0.04980x+0.00145	0.9991	0.112	0.373
BPF	y=0.01180x+0.01470	0.9980	0.326	1.087
BPP	y=0.02617x+0.02610	0.9983	0.176	0.588
BPZ	y=0.03634x+0.01637	0.9989	0.156	0.521
BPAF	y=0.6778x-0.01357	0.9987	0.008	0.027
BPAP	y=0.19705x+7.24781e ⁻⁴	0.9989	0.023	0.065
TCBPA	y=0.21803x-0.00644	0.9982	0.097	0.323
TBBPA	y=0.06989x+0.02956	0.9987	0.288	0.962

LOD: Limit of detection, LOQ: limit of quantitation.

Supplementary Table 3. Loading of each BPs compound on PC1 and PC2

Compounds	ZY		FJ		BH		QY	
	PC1	PC2	PC1	PC2	PC1	PC2	PC1	PC2
BPAF	0.089	0.787	-0.025	-0.793	0.580	-0.241	-0.04	-0.594
BPA	0.828	0.090	0.892	0.108	0.890	0.206	0.903	0.067
BPB	-0.138	-0.752	/	/	/	/	/	/
BPF	0.888	0.124	0.927	0.126	0.879	0.39	0.891	-0.049
BPAP	-0.072	0.391	0.127	0.697	0.32	0.831	/	/
BPP	/	/	/	/	-0.085	0.893	-0.008	0.813
TBBPA	0.684	-0.091	0.842	0.046	0.636	0.072	0.987	0.068

Supplementary Table 4. Parameters for estimated daily intake (EDI) assessment

Parameters		Value
IR ¹	Toddlers (2-5 years)	72 mg/d
	Children (6-12 years)	103 mg/d
	Teenagers (13-17 years)	86 mg/d
	Adult (>18years)	50 mg/d
BW ¹	Toddlers (2-5 years)	17.5 kg
	Children (6-12 years)	28.9 kg
	Teenagers (13-17 years)	51.1 kg
	Adult female (>18years)	56.8 kg
	Adult male (>18years)	65.0 kg
AEXP ²	Toddlers (2-5 years)	0.28 m ²
	Children (6-12 years)	
	Teenagers (13-17 years)	0.17 m ²
	Adult (>18years)	
F _m ²		0.15 unitless
DAE ²	Toddlers (2-5 years)	5.1×10 ⁻³ kg soil m ⁻²
	Children (6-12 years)	
	Teenagers (13-17 years)	3.75×10 ⁻² kg soil m ⁻²
	Adult (>18years)	
DAR ²	Toddlers (2-5 years)	0.01 (mg m ⁻²)/ [(mg L ⁻¹)
	Children (6-12 years)	*h]
	Teenagers (13-17 years)	0.005 (mg m ⁻²)/ [(mg
	Adult (>18years)	L ⁻¹) *h]
TB ²	Toddlers (2-5 years)	2.86 h d ⁻¹
	Children (6-12 years)	
	Teenagers (13-17 years)	1.14 h d ⁻¹
	Adult (>18years)	
F _a ²		1 unitless

¹ Reference Exposure Factors Handbook of Chinese population (2013, 2016).

² All parameters used for calculation were recommended values from the National Institute for Public Health and the Environment (RIVM), Dutch.

Supplementary Table 5. Estimated daily intake (EDI, µg/kg-bw/day) and hazard quotient (HQ) of BPA exposure

		P50					P95				
		Toddlers	Children	Teenagers	Adult female	Adult male	Toddlers	Children	Teenagers	Adult female	Adult male
		(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)	(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)
ZY	EDI _{oral}	7.46E-02	6.46E-02	3.05E-02	1.60E-02	1.39E-02	9.53E-01	8.26E-01	3.90E-01	2.04E-01	1.78E-01
	HQ ^a	3.73E+02	3.23E+02	1.53E+02	7.98E+01	6.97E+01	4.77E+03	4.13E+03	1.95E+03	1.02E+03	8.91E+02
	HQ ^b	1.87E-02	1.62E-02	7.63E-03	3.99E-03	3.49E-03	2.38E-01	2.06E-01	9.75E-02	5.10E-02	4.46E-02
	HQ ^c	1.49E-03	1.29E-03	6.10E-04	3.19E-04	2.79E-04	1.91E-02	1.65E-02	7.80E-03	4.08E-03	3.56E-03
	EDI _{dermal}	6.35E-06	3.84E-06	1.93E-06	1.74E-06	1.52E-06	8.11E-05	4.91E-05	2.47E-05	2.22E-05	1.94E-05
	HQ ^a	3.17E-02	1.92E-02	9.67E-03	8.70E-03	7.60E-03	4.06E-01	2.46E-01	1.24E-01	1.11E-01	9.71E-02
	HQ ^b	1.59E-06	9.61E-07	4.84E-07	4.35E-07	3.80E-07	2.03E-05	1.23E-05	6.18E-06	5.56E-06	4.86E-06
	HQ ^c	1.27E-07	7.69E-08	3.87E-08	3.48E-08	3.04E-08	1.62E-06	9.82E-07	4.94E-07	4.45E-07	3.89E-07
FJ	EDI _{oral}	1.97E-01	1.71E-01	8.07E-02	4.22E-02	3.69E-02	1.50E+00	1.30E+00	6.15E-01	3.22E-01	2.81E-01
	HQ ^a	9.87E+02	8.55E+02	4.04E+02	2.11E+02	1.85E+02	7.52E+03	6.51E+03	3.08E+03	1.61E+03	1.41E+03
	HQ ^b	4.93E-02	4.27E-02	2.02E-02	1.06E-02	9.23E-03	3.76E-01	3.26E-01	1.54E-01	8.04E-02	7.03E-02
	HQ ^c	3.95E-03	3.42E-03	1.61E-03	8.45E-04	7.38E-04	3.01E-02	2.60E-02	1.23E-02	6.43E-03	5.62E-03
	EDI _{dermal}	1.68E-05	1.02E-05	5.12E-06	4.60E-06	4.02E-06	1.28E-04	7.75E-05	3.90E-05	3.51E-05	3.06E-05

	HQ ^a	8.40E-02	5.08E-02	2.56E-02	2.30E-02	2.01E-02	6.40E-01	3.87E-01	1.95E-01	1.75E-01	1.53E-01
	HQ ^b	4.20E-06	2.54E-06	1.28E-06	1.15E-06	1.01E-06	3.20E-05	1.94E-05	9.74E-06	8.77E-06	7.66E-06
	HQ ^c	3.36E-07	2.03E-07	1.02E-07	9.21E-08	8.05E-08	2.56E-06	1.55E-06	7.80E-07	7.01E-07	6.13E-07
BH	EDI _{oral}	9.57E-02	8.29E-02	3.91E-02	2.05E-02	1.79E-02	9.91E-01	8.58E-01	4.05E-01	2.12E-01	1.85E-01
	HQ ^a	4.78E+02	4.14E+02	1.96E+02	1.02E+02	8.94E+01	4.95E+03	4.29E+03	2.03E+03	1.06E+03	9.26E+02
	HQ ^b	2.39E-02	2.07E-02	9.78E-03	5.12E-03	4.47E-03	2.48E-01	2.15E-01	1.01E-01	5.30E-02	4.63E-02
	HQ ^c	1.91E-03	1.66E-03	7.83E-04	4.09E-04	3.58E-04	1.98E-02	1.72E-02	8.11E-03	4.24E-03	3.70E-03
	EDI _{dermal}	8.14E-06	4.93E-06	2.48E-06	2.23E-06	1.95E-06	8.43E-05	5.10E-05	2.57E-05	2.31E-05	2.02E-05
	HQ ^a	4.07E-02	2.46E-02	1.24E-02	1.12E-02	9.75E-03	4.21E-01	2.55E-01	1.28E-01	1.16E-01	1.01E-01
	HQ ^b	2.04E-06	1.23E-06	6.20E-07	5.58E-07	4.88E-07	2.11E-05	1.28E-05	6.42E-06	5.78E-06	5.05E-06
	HQ ^c	1.63E-07	9.86E-08	4.96E-08	4.46E-08	3.90E-08	1.69E-06	1.02E-06	5.14E-07	4.62E-07	4.04E-07
QY	EDI _{oral}	9.08E-02	7.87E-02	3.72E-02	1.94E-02	1.70E-02	1.94E+00	1.68E+00	7.94E-01	4.15E-01	3.63E-01
	HQ ^a	4.54E+02	3.93E+02	1.86E+02	9.72E+01	8.49E+01	9.71E+03	8.41E+03	3.97E+03	2.08E+03	1.81E+03
	HQ ^b	2.27E-02	1.97E-02	9.29E-03	4.86E-03	4.25E-03	4.85E-01	4.20E-01	1.99E-01	1.04E-01	9.07E-02
	HQ ^c	1.82E-03	1.57E-03	7.43E-04	3.89E-04	3.40E-04	3.88E-02	3.36E-02	1.59E-02	8.31E-03	7.26E-03
	EDI _{dermal}	7.73E-06	4.68E-06	2.35E-06	2.12E-06	1.85E-06	1.65E-04	1.00E-04	5.03E-05	4.53E-05	3.96E-05
	HQ ^a	3.86E-02	2.34E-02	1.18E-02	1.06E-02	9.26E-03	8.26E-01	5.00E-01	2.52E-01	2.26E-01	1.98E-01
	HQ ^b	1.93E-06	1.17E-06	5.89E-07	5.30E-07	4.63E-07	4.13E-05	2.50E-05	1.26E-05	1.13E-05	9.89E-06
	HQ ^c	1.55E-07	9.36E-08	4.71E-08	4.24E-08	3.70E-08	3.30E-06	2.00E-06	1.01E-06	9.06E-07	7.91E-07

- ^a The calculation of HQ were based on the TDI of BPA (0.2 ng/kg-bw/day) recommended by EFSA (EFSA, 2023);
- ^b The calculation of HQ were based on the t-TDI of BPA (4 µg/kg-bw/day) recommended by EFSA (EFSA, 2015);
- ^c The calculation of HQ were based on the RfD of BPA (50 µg/kg-bw/day) recommended by USEPA (USEPA, 1988).

Supplementary Table 6. Estimated daily intake (EDI, µg/kg-bw/day) and hazard quotient (HQ) of BPF exposure

		P50					P95				
		Toddlers	Children	Teenagers	Adult female	Adult male	Toddlers	Children	Teenagers	Adult female	Adult male
		(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)	(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)
ZY	EDI _{oral}	1.30E-02	1.10E-02	5.00E-03	3.00E-03	2.00E-03	1.25E-01	1.08E-01	5.10E-02	2.70E-02	2.30E-02
	HQ	1.62E+00	1.41E+00	6.63E-01	3.47E-01	3.03E-01	1.54E+01	1.33E+01	6.30E+00	3.29E+00	2.88E+00
	EDI _{dermal}	1.12E-06	6.76E-07	3.40E-07	3.06E-07	2.67E-07	1.06E-05	6.42E-06	3.23E-06	2.90E-06	2.54E-06
	HQ	1.38E-04	8.35E-05	4.20E-05	3.78E-05	3.30E-05	1.31E-03	7.93E-04	3.99E-04	3.59E-04	3.14E-04
FJ	EDI _{oral}	4.40E-02	3.80E-02	1.80E-02	9.00E-03	8.00E-03	3.22E-01	2.79E-01	1.32E-01	6.90E-02	6.00E-02
	HQ	5.44E+00	4.71E+00	2.23E+00	1.16E+00	1.02E+00	3.99E+01	3.45E+01	1.63E+01	8.53E+00	7.45E+00
	EDI _{dermal}	3.75E-06	2.27E-06	1.14E-06	1.03E-06	8.97E-07	2.74E-05	1.66E-05	8.36E-06	7.52E-06	6.57E-06
	HQ	4.63E-04	2.80E-04	1.41E-04	1.27E-04	1.11E-04	3.39E-03	2.05E-03	1.03E-03	9.30E-04	8.12E-04
BH	EDI _{oral}	1.40E-02	1.30E-02	6.00E-03	3.00E-03	3.00E-03	2.42E-01	2.10E-01	9.90E-02	5.20E-02	4.50E-02
	HQ	1.79E+00	1.55E+00	7.32E-01	3.83E-01	3.35E-01	3.00E+01	2.60E+01	1.23E+01	6.41E+00	5.60E+00
	EDI _{dermal}	1.23E-06	7.46E-07	3.76E-07	3.38E-07	2.95E-07	2.06E-05	1.25E-05	6.28E-06	5.65E-06	4.94E-06
	HQ	1.52E-04	9.23E-05	4.64E-05	4.18E-05	3.65E-05	2.55E-03	1.54E-03	7.77E-04	6.99E-04	6.11E-04
QY	EDI _{oral}	7.00E-03	6.00E-03	3.00E-03	1.00E-03	1.00E-03	1.85E-01	1.61E-01	7.60E-02	4.00E-02	3.50E-02

HQ	8.57E-01	7.42E-01	3.51E-01	1.83E-01	1.60E-01	2.29E+01	1.98E+01	9.37E+00	4.90E+00	4.28E+00
EDI _{dermal}	5.90E-07	3.57E-07	1.80E-07	1.62E-07	1.41E-07	1.58E-05	9.55E-06	4.80E-06	4.32E-06	3.78E-06
HQ	7.29E-05	4.42E-05	2.22E-05	2.00E-05	1.75E-05	1.95E-03	1.18E-03	5.94E-04	5.34E-04	4.67E-04

The calculation of HQ was based on the TDI of BPF (8.09 ng/kg-bw/day).

Supplementary Table 7. Estimated daily intake (EDI, µg/kg-bw/day) and hazard quotient (HQ) of BPAF exposure

		P50					P95				
		Toddlers (2-5 years)	Children (6-12 years)	Teenagers (13-17 years)	Adult female (>18years)	Adult male (>18years)	Toddlers (2-5 years)	Children (6-12 years)	Teenagers (13-17 years)	Adult female (>18years)	Adult male (>18years)
ZY	EDI _{oral}	3.00E-04	2.60E-04	1.23E-04	6.43E-05	5.62E-05	8.58E-04	7.43E-04	3.51E-04	1.83E-04	1.60E-04
	HQ	7.51E+00	6.50E+00	3.07E+00	1.61E+00	1.40E+00	2.14E+01	1.86E+01	8.77E+00	4.59E+00	4.01E+00
	EDI _{dermal}	2.56E-08	1.55E-08	7.79E-09	7.01E-09	6.12E-09	7.17E-08	4.34E-08	2.18E-08	1.97E-08	1.72E-08
	HQ	6.39E-04	3.87E-04	1.95E-04	1.75E-04	1.53E-04	1.79E-03	1.09E-03	5.46E-04	4.91E-04	4.29E-04
FJ	EDI _{oral}	2.48E-04	2.15E-04	1.02E-04	5.31E-05	4.64E-05	8.02E-04	6.94E-04	3.28E-04	1.71E-04	1.50E-04
	HQ	6.21E+00	5.38E+00	2.54E+00	1.33E+00	1.16E+00	2.00E+01	1.74E+01	8.20E+00	4.29E+00	3.75E+00
	EDI _{dermal}	2.11E-08	1.28E-08	6.44E-09	5.79E-09	5.06E-09	6.82E-08	4.13E-08	2.08E-08	1.87E-08	1.63E-08
	HQ	5.28E-04	3.20E-04	1.61E-04	1.45E-04	1.27E-04	1.70E-03	1.03E-03	5.20E-04	4.67E-04	4.08E-04
BH	EDI _{oral}	2.45E-04	2.12E-04	1.00E-04	5.23E-05	4.57E-05	1.91E-03	1.66E-03	7.83E-04	4.10E-04	3.58E-04
	HQ	6.12E+00	5.30E+00	2.50E+00	1.31E+00	1.14E+00	4.79E+01	4.15E+01	1.96E+01	1.02E+01	8.95E+00
	EDI _{dermal}	2.08E-08	1.26E-08	6.34E-09	5.71E-09	4.99E-09	1.63E-07	9.86E-08	4.96E-08	4.46E-08	3.90E-08
	HQ	5.20E-04	3.15E-04	1.59E-04	1.43E-04	1.25E-04	4.07E-03	2.47E-03	1.24E-03	1.12E-03	9.75E-04
QY	EDI _{oral}	1.24E-04	1.08E-04	5.08E-05	2.66E-05	2.32E-05	3.84E-03	3.33E-03	1.57E-03	8.23E-04	7.19E-04

HQ	3.11E+00	2.69E+00	1.27E+00	6.60E-01	5.80E-01	9.61E+01	8.33E+01	3.93E+01	2.06E+01	1.80E+01
EDI _{dermal}	1.06E-08	6.40E-09	3.22E-09	2.90E-09	2.53E-09	3.27E-07	1.98E-07	9.97E-08	8.97E-08	7.84E-08
HQ	2.64E-04	1.60E-04	8.06E-05	7.25E-05	6.33E-05	8.18E-03	4.95E-03	2.49E-03	2.24E-03	1.96E-03

The calculation of HQ was based on the TDI of BPAF (0.04 ng/kg-bw/day).

Supplementary Table 8. Estimated daily intake (EDI, µg/kg-bw/day) and hazard quotient (HQ) of BPS exposure

		P95				
		Toddlers	Children	Teenagers	Adult female	Adult male
		(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)
ZY	EDI _{oral}	1.76E-03	1.53E-03	7.21E-04	3.77E-04	3.29E-04
	HQ	4.80E+00	4.10E+00	1.90E+00	1.00E+00	9.00E-01
	EDI _{dermal}	1.48E-07	8.98E-08	4.52E-08	4.06E-08	3.55E-08
	HQ	4.01E-04	2.43E-04	1.22E-04	1.10E-04	9.60E-05
FJ	EDI _{oral}	1.76E-03	1.52E-03	7.20E-04	3.76E-04	3.29E-04
	HQ	4.80E+00	4.10E+00	1.90E+00	1.00E+00	9.00E-01
	EDI _{dermal}	1.50E-07	9.07E-08	4.56E-08	4.10E-08	3.59E-08
	HQ	4.05E-04	2.45E-04	1.23E-04	1.11E-04	9.69E-05
BH	EDI _{oral}	9.28E-03	8.04E-03	3.80E-03	1.99E-03	1.74E-03
	HQ	2.51E+01	2.17E+01	1.03E+01	5.40E+00	4.70E+00
	EDI _{dermal}	7.90E-07	4.78E-07	2.41E-07	2.16E-07	1.89E-07
	HQ	2.13E-03	1.29E-03	6.50E-04	5.85E-04	5.11E-04
QY	EDI _{oral}	4.34E-03	3.76E-03	1.77E-03	9.28E-04	8.11E-04
	HQ	1.17E+01	1.02E+01	4.80E+00	2.50E+00	2.20E+00
	EDI _{dermal}	3.69E-07	2.24E-07	1.12E-07	1.01E-07	8.84E-08
	HQ	9.98E-04	6.04E-04	3.04E-04	2.73E-04	2.39E-04

The calculation of HQ was based on the TDI of BPS (0.37 ng/kg-bw/day).

Supplementary Table 9. Estimated daily intake (EDI, µg/kg-bw/day) and hazard quotient (HQ) of BPAP exposure

		P50					P95				
		Toddlers	Children	Teenagers	Adult female	Adult male	Toddlers	Children	Teenagers	Adult female	Adult male
		(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)	(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)
ZY	EDI _{oral}	2.75E-04	2.38E-04	1.12E-04	5.88E-05	5.14E-05	4.56E-03	3.95E-03	1.86E-03	9.75E-04	8.52E-04
	HQ	1.20E-01	1.00E-01	5.00E-02	3.00E-02	2.00E-02	1.97E+00	1.71E+00	8.10E-01	4.20E-01	3.70E-01
	EDI _{dermal}	2.34E-08	1.42E-08	7.12E-09	6.41E-09	5.60E-09	3.84E-07	2.33E-07	1.17E-07	1.05E-07	9.21E-08
	HQ	1.01E-05	6.13E-06	3.08E-06	2.77E-06	2.42E-06	1.66E-04	1.01E-04	5.07E-05	4.56E-05	3.99E-05
FJ	EDI _{oral}	5.51E-04	4.77E-04	2.25E-04	1.18E-04	1.03E-04	2.25E-03	1.95E-03	9.21E-04	4.81E-04	4.21E-04
	HQ	2.40E-01	2.10E-01	1.00E-01	5.00E-02	4.00E-02	9.70E-01	8.40E-01	4.00E-01	2.10E-01	1.80E-01
	EDI _{dermal}	4.69E-08	2.84E-08	1.43E-08	1.28E-08	1.12E-08	1.91E-07	1.16E-07	5.83E-08	5.25E-08	4.59E-08
	HQ	2.03E-05	1.23E-05	6.18E-06	5.56E-06	4.86E-06	8.29E-05	5.02E-05	2.53E-05	2.27E-05	1.99E-05
BH	EDI _{oral}	2.95E-04	2.55E-04	1.21E-04	6.31E-05	5.51E-05	2.94E-03	2.55E-03	1.20E-03	6.30E-04	5.50E-04
	HQ	1.30E-01	1.10E-01	5.00E-02	3.00E-02	2.00E-02	1.27E+00	1.10E+00	5.20E-01	2.70E-01	2.40E-01
	EDI _{dermal}	2.51E-08	1.52E-08	7.64E-09	6.88E-09	6.01E-09	2.50E-07	1.52E-07	7.63E-08	6.87E-08	6.00E-08
	HQ	1.09E-05	6.57E-06	3.31E-06	2.98E-06	2.60E-06	1.08E-04	6.57E-05	3.30E-05	2.97E-05	2.60E-05
QY	EDI _{oral}	6.64E-05	5.75E-05	2.71E-05	1.42E-05	1.24E-05	2.74E-03	2.37E-03	1.12E-03	5.86E-04	5.12E-04

HQ	3.00E-02	2.00E-02	1.00E-02	1.00E-02	1.00E-02	1.19E+00	1.03E+00	4.80E-01	2.50E-01	2.20E-01
EDI _{dermal}	5.65E-09	3.42E-09	1.72E-09	1.55E-09	1.35E-09	2.33E-07	1.41E-07	7.10E-08	6.39E-08	5.58E-08
HQ	2.44E-06	1.48E-06	7.45E-07	6.70E-07	5.86E-07	1.01E-04	6.11E-05	3.07E-05	2.76E-05	2.42E-05

The calculation of HQ was based on the TDI of BPAP (2.31 ng/kg-bw/day).

Supplementary Table 10. Hazard Index (HI) of ΣHQ

			P50					P95				
			Toddlers	Children	Teenagers	Adult female	Adult male	Toddlers	Children	Teenagers	Adult female	Adult male
			(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)	(2-5 years)	(6-12 years)	(13-17 years)	(>18years)	(>18years)
ZY	oral	HI ^a	3.85E+02	3.34E+02	1.58E+02	8.20E+01	7.20E+01	4.80E+03	4.16E+03	1.96E+03	1.03E+03	8.98E+02
		HI ^b	1.10E+01	1.00E+01	5.00E+00	2.00E+00	2.00E+00	3.80E+01	3.30E+01	1.60E+01	8.00E+00	7.00E+00
		HI ^c	1.10E+01	1.00E+01	5.00E+00	2.00E+00	2.00E+00	3.80E+01	3.30E+01	1.60E+01	8.00E+00	7.00E+00
	dermal	HI ^a	3.28E-02	1.98E-02	9.99E-03	8.98E-03	7.85E-03	4.08E-01	2.47E-01	1.24E-01	1.12E-01	9.79E-02
		HI ^b	9.77E-04	5.92E-04	2.98E-04	2.68E-04	2.34E-04	3.24E-03	1.96E-03	9.87E-04	8.88E-04	7.76E-04
		HI ^c	9.76E-04	5.91E-04	2.97E-04	2.68E-04	2.34E-04	3.23E-03	1.96E-03	9.84E-04	8.85E-04	7.74E-04
FJ	oral	HI ^a	1.04E+03	8.99E+02	4.24E+02	2.22E+02	1.94E+02	1.08E+04	9.36E+03	4.42E+03	2.31E+03	2.02E+03
		HI ^b	1.30E+01	1.10E+01	5.00E+00	3.00E+00	2.00E+00	8.50E+01	7.40E+01	3.50E+01	1.80E+01	1.60E+01
		HI ^c	1.30E+01	1.10E+01	5.00E+00	3.00E+00	2.00E+00	8.50E+01	7.40E+01	3.50E+01	1.80E+01	1.60E+01
	dermal	HI ^a	8.83E-02	5.34E-02	2.69E-02	2.42E-02	2.11E-02	9.20E-01	5.57E-01	2.80E-01	2.52E-01	2.20E-01
		HI ^b	1.08E-03	6.53E-04	3.29E-04	2.96E-04	2.58E-04	7.27E-03	4.40E-03	2.21E-03	1.99E-03	1.74E-03
		HI ^c	1.08E-03	6.52E-04	3.28E-04	2.95E-04	2.58E-04	7.24E-03	4.39E-03	2.21E-03	1.99E-03	1.74E-03
BH	oral	HI ^a	5.18E+02	4.49E+02	2.12E+02	1.11E+02	9.70E+01	5.02E+03	4.35E+03	2.06E+03	1.08E+03	9.39E+02
		HI ^b	8.00E+00	7.00E+00	3.00E+00	2.00E+00	2.00E+00	1.37E+02	1.19E+02	5.60E+01	2.90E+01	2.60E+01
		HI ^c	8.00E+00	7.00E+00	3.00E+00	2.00E+00	2.00E+00	1.37E+02	1.18E+02	5.60E+01	2.90E+01	2.60E+01

QY	dermal	HI ^a	4.41E-02	2.67E-02	1.34E-02	1.21E-02	1.06E-02	4.27E-01	2.59E-01	1.30E-01	1.17E-01	1.02E-01
		HI ^b	7.11E-04	4.30E-04	2.17E-04	1.95E-04	1.70E-04	1.17E-02	7.08E-03	3.56E-03	3.21E-03	2.80E-03
		HI ^c	7.10E-04	4.30E-04	2.16E-04	1.94E-04	1.70E-04	1.16E-02	7.05E-03	3.55E-03	3.19E-03	2.79E-03
	oral	HI ^a	5.45E+02	4.72E+02	2.23E+02	1.17E+02	1.02E+02	9.75E+03	8.45E+03	3.99E+03	2.09E+03	1.82E+03
		HI ^b	6.00E+00	5.00E+00	2.00E+00	1.00E+00	1.00E+00	1.01E+02	8.70E+01	4.10E+01	2.20E+01	1.90E+01
		HI ^c	5.00E+00	5.00E+00	2.00E+00	1.00E+00	1.00E+00	1.00E+02	8.70E+01	4.10E+01	2.10E+01	1.90E+01
	dermal	HI ^a	4.64E-02	2.81E-02	1.41E-02	1.27E-02	1.11E-02	8.30E-01	5.02E-01	2.53E-01	2.27E-01	1.99E-01
		HI ^b	4.75E-04	2.87E-04	1.45E-04	1.30E-04	1.14E-04	8.56E-03	5.18E-03	2.61E-03	2.35E-03	2.05E-03
		HI ^c	4.68E-04	2.83E-04	1.43E-04	1.28E-04	1.12E-04	8.54E-03	5.17E-03	2.60E-03	2.34E-03	2.05E-03

^a The calculation of HQ were based on the TDI of BPA (0.2 ng/kg-bw/day) recommended by EFSA (EFSA, 2023); The calculation of HQ was based on the TDI of BPF (8.09 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPAF (0.04 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPS (0.37 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPAP (2.31 ng/kg-bw/day).

^b The calculation of HQ were based on the RfD of BPA (4µg/kg-bw/day) recommended by USEPA (USEPA, 2015); The calculation of HQ was based on the TDI of BPF (8.09 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPAF (0.04 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPS (0.37 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPAP (2.31 ng/kg-bw/day).

^c The calculation of HQ were based on the RfD of BPA (50 µg/kg-bw/day) recommended by USEPA (USEPA, 1988); The calculation of HQ was based on the TDI of BPF (8.09 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPAF (0.04 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPS (0.37 ng/kg-bw/day); The calculation of HQ was based on the TDI of BPAP (2.31 ng/kg-bw/day).