

Table S1 Treatment processes of the sampling DWTPs in Taihu Lake Basin

Name of DWTP	Processes of DWTP	Daily water supply capacity (kt/d)
XD	Influent—Pre-ozone—Biological contact oxidation— Sedimentation—Sand filter—Post-ozone—Carbon filter— Effluent	600
NQ	Influent—Pre-ozone—Biological contact oxidation—Effluent	200
ZQ	Influent—Sedimentation—Sand filter—Post-ozone—Carbon filter—Effluent	600
XC	Influent—Sand filter—Post-ozone—Carbon filter—Effluent	1000
JB	Influent—Pre-ozone—Sedimentation—Sand filter—Carbon filter—Effluent	300
TH	Influent—Pre-ozone—Flocculation—Sedimentation—Sand filter—Post-ozone—Carbon filter—Effluent	200
TS	Influent—Sedimentation—Sand filter—Post-ozone—Carbon filter—Effluent	300
SX	Influent—Pre-ozone—Flocculation—Sedimentation—Sand filter—Post-ozone—Carbon filter—Effluent	500
JX	Influent—Sedimentation biological filter—Sand filter—Post- sand filter— Post-ozone—Carbon filter—Effluent	500

Table S2 Single reaction monitoring information of 12 BPs targets

Compounds	Molecular	Molecular mass	Parent and product ion (m/Z)	Collision energy(eV)
BPA	C ₁₅ H ₁₆ O ₂	228.29	226.981>211.986* >133.096	21.53
BPS	C ₁₂ H ₁₀ O ₄ S	250.27	248.97>108.111* >92.157	31.64
BPF	C ₁₃ H ₁₂ O ₂	200.23	199.122>93.111* >105.1	25.32
BPB	C ₁₆ H ₁₈ O ₂	242.31	241.152>212* >210.7	21.28
BPE	C ₁₄ H ₁₄ O ₂	214.26	213.122>198* >119.222	19.86
BPP	C ₂₄ H ₂₆ O ₂	346.46	345.183>330.04* >315.001	29.52
BPZ	C ₁₈ H ₂₀ O ₂	268.35	267.152>173.04* >223.009	30.43
BPAF	C ₁₅ H ₁₀ F ₆ O ₂	336.23	335>264.929* >196.906	26.79
BPAP	C ₂₀ H ₁₈ O ₂	290.36	289.091>274* >211.0	23.25
¹³ C ₁₂ -BPA	C ₁₅ H ₁₆ O ₂	240.20	239.2>224* >139.155	21.53
¹³ C ₁₂ -BPF	C ₁₃ H ₁₂ O ₂	212.15	211.122>99.111* >178	25.88
¹³ C ₁₂ -BPS	C ₁₂ H ₁₀ O ₄ S	262.18	261>114.111* >245	32.85

* : Product ions for quantification

Table S3 LODs and LOQs of target BPs

Compounds	Limit of detection (LOD) (ng/L)	Limit of quantification (LOQ) (ng/L)
BPA	0.0180	0.0600
BPS	0.0300	0.100
BPF	0.0900	0.300
BPB	0.0750	0.250
BPE	0.0900	0.300
BPP	0.0360	0.120
BPZ	0.0900	0.300
BPAF	0.0600	0.200
BPAP	0.0540	0.180
¹³ C ₁₂ -BPF	0.0300	0.100
¹³ C ₁₂ -BPS	0.0300	0.100

Table S4 Exposure factors for different populations(1, 2)

Type of people (age: a)	BW (kg)	IR (L/day)
Adult Male (≥ 18)	65.0	2.000
Adult Female (≥ 18)	56.8	1.71
Boy (12-15)	48.7	1.41
Girl (12-15)	45.7	1.35
Boy (6-9)	27.3	1.21
Girl (6-9)	25.5	1.16
Boy (3-4)	15.8	0.863
Girl (3-4)	15.3	0.863

Table S5 EEf values of BPs from different studies

Target compounds	EEF value (E_2)					
	reference		reference		reference	
BPA	1.93E ⁻³	(3)	1E ⁻⁴	(4)	8E ⁻⁵	(5)
BPS	5.5E ⁻⁵	(3)			9E ⁻⁶	(5)
BPF	7.19E ⁻⁴	(3)	6.7E ⁻⁶	(4)	9E ⁻⁶	(5)
BPB	5.93E ⁻³	(3)	1E ⁻⁴	(4)	8.6E ⁻⁴	(5)
BPE	7.15E ⁻⁴	(3)				
BPP	1.18E ⁻³	(3)				
BPZ	2.12E ⁻³	(3)				
BPAF	7.74E ⁻³	(3)				
BPAP	8.03E ⁻⁴	(3)				

Table S6 BPs in raw water of waterworks from the Taihu Lake Basin in August 2019 and December 2019 (unit: ng/L)

Target compounds	Detection frequency (%)	August				Detection frequency (%)	December			
		maximum	minimum	mean	medium		maximum	minimum	mean	medium
BPS	89	1.19	< LOQ	0.450	0.270	100	2.05	0.0763	0.763	0.729
BPAF	89	0.670	< LOQ	0.390	0.430	100	0.182	0.0842	0.130	0.125
BPF	100	12.5	2.59	8.44	8.22	100	14.0	0.290	2.68	1.14
BPE	100	8.81	3.49	6.18	6.36	100	4.73	1.60	2.35	1.99
BPA	100	27.8	8.60	19.7	20.4	100	10.7	2.44	6.44	7.56
BPB	100	3.78	1.01	2.33	2.56	100	1.62	0.317	0.831	0.747
BPAP	100	4.84	2.62	3.38	3.36	100	3.28	0.990	1.92	1.76
BPZ	100	10.2	2.14	4.82	3.75	100	4.28	1.25	2.50	1.93
BPP	100	4.93	0.260	2.38	2.78	100	1.96	0.570	1.00	0.731
∑BPs		66.8	29.0	48.1	49.0		40.4	10.5	18.6	16.4

< LOQ: below limit of quantitation.

Table S7 BPs in finished water of waterworks from the Taihu Lake Basin in August 2019 and December 2019 (unit: ng/L)

Target compounds	Detection frequency (%)	August				Detection frequency (%)	December			
		maximum	minimum	mean	median		maximum	minimum	mean	median
BPS	56	0.163	<LOQ	0.0406	0.039	67	0.173	<LOQ	0.0498	0.0665
BPAF	44	0.338	<LOQ	0.102	0.195	0	<LOQ	<LOQ	<LOQ	<LOQ
BPF	100	6.08	1.90	4.57	5.00	100	0.494	0.176	0.254	0.205
BPE	100	5.97	0.612	3.42	3.28	100	2.91	0.790	1.44	1.18
BPA	100	16.28	1.68	8.65	8.95	78	5.57	<LOQ	1.75	1.49
BPB	78	1.916	<LOQ	0.713	1.00	100	0.757	0.114	0.380	0.404
BPAP	100	3.13	1.91	2.43	2.43	100	2.95	0.464	1.45	1.39
BPZ	100	3.62	0.521	2.06	1.77	100	3.18	0.679	1.65	1.46
BPP	100	2.98	0.137	0.914	0.539	100	0.954	0.204	0.485	0.410
Σ BPs		39.9	10.6	22.9	21.6		16.3	3.07	7.46	6.21

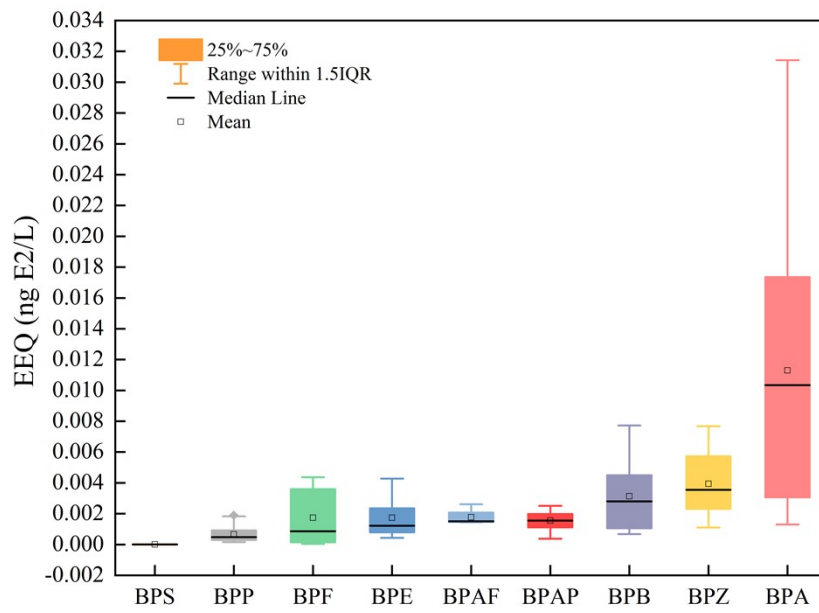
< LOQ: below limit of quantitation.

Table S8 mean and median removal efficiency by different water treatment processes for two seasons in 2019

water treatment processes	BPS		BPAF		BPF		BPE		BPA		BPB		BPAP		BPZ		BPP	
	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median
Sedimentation (N=12)	- 25.33% ±164.67 %	0.57%	- 1.79%± 41.39%	0.00%	18.82% ±72.53 %	25.26%	1.16% ±15.57 %	4.61%	17.29% ±30.28 %	11.49%	21.60% ±31.41 %	16.38%	8.19%± 25.23%	12.89%	10.93% ±26.22 %	6.42%	- 0.84%± 30.84%	0.37%
Sand filtration (N=16)	3.75%± 94.49%	0.00%	4.77%± 17.23%	0.00%	22.02% ±35.53 %	27.64%	- 0.50% ±21.87 %	1.02%	12.73% ±28.05 %	16.78%	- 7.88%± 41.97%	3.45%	- 2.94%± 22.33%	0.75%	- 8.63%± 45.22%	-1.12%	8.24%± 38.99%	0.69%
Carbon filtration (N=15)	24.64% ±42.13 %	0.00%	36.11% ±40.75 %	20.55%	36.39% ±33.49 %	44.93%	31.10% ±22.30 %	26.71%	39.08% ±24.72 %	37.26%	39.75% ±22.25 %	46.05%	15.88% ±20.82 %	15.96%	16.20% ±45.71 %	19.50%	15.84% ±49.17 %	22.93%
Pre-ozone (N=7)	27.12% ±76.85 %	53.77%	32.97% ±46.05 %	16.69%	46.20% ±40.63 %	52.03%	6.68% ±18.45 %	6.79%	18.75% ±19.35 %	22.31%	6.15%± 54.89%	14.96%	- 10.42% ±44.65 %	0.38%	- 19.62% ±44.14 %	-2.92%	23.87% ±21.53 %	21.71%
Biological contact oxidation (N=4)	30.17% ±50.92 %	31.84%	11.85% ±15.17 %	5.16%	1.17%± 1.77%	0.23%	7.12% ±4.94 %	5.81%	6.06% ±14.70 %	7.41%	- 18.17% ±28.84 %	-9.31%	- 11.07% ±17.22 %	-8.49%	- 5.93%± 5.83%	-6.77%	- 14.88% ±49.19 %	11.08%
Post-ozone (N=13)	20.10% ±84.15 %	47.07%	7.09%± 20.79%	0.00%	- 32.67% ±81.53 %	-6.33%	6.20% ±15.53 %	9.58%	- 0.13% ±25.77 %	2.04%	- 13.26% ±77.15 %	19.15%	- 5.55%± 34.56%	0.81%	- 1.98%± 36.07%	4.85%	- 14.66% ±59.48 %	-1.72%
Flocculation (N=4)	- 3.68%± 48.12%	13.73%	14.72% ±55.74 %	7.53%	- 40.66% ±38.53 %	-39.79%	3.13% ±15.32 %	8.53%	- 2.34% ±4.88 %	-2.87%	- 11.17% ±13.22 %	-7.32%	6.54%± 8.30%	6.61%	12.52% ±40.51 %	-1.87%	19.51% ±31.42 %	4.57%

Chlorination (N=18)	28.80% ±36.19 %	21.49%	26.68% ±39.44 %	11.50%	- 11.48% ±39.22 %	0.00%	0.80% ±34.50 %	0.34%	10.98% ±47.76 %	11.28%	22.05% ±38.49 %	6.43%	4.48%± 24.13%	3.89%	14.43% ±20.39 %	9.82%	0.62%± 50.85%	8.82%
Sedimentation biological filter (N=2)	- 2.19%± 2.19%	-	- 16.97% ±15.54 %	-	3.92%± 12.20%	-	9.91% ±7.00 %	-	- 6.63% ±25.82 %	-	10.57% ±33.17 %	-	11.37% ±3.60%	-	15.56% ±4.51%	-	41.38% ±44.48 %	-

Figure S1 EEQs of BPs in finished water from the Taihu Lake Basin



Reference:

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