Supporting Information

Instrumental conditions

For UPLC-MS/MS with positive ESI mode, a Zorbax SBC18 (100 mm × 3 mm, 1.8 μm particle size) column with its corresponding precolumn filter (2.1 mm, 0.2 μm) from Agilent Technologies was used for chromatographic separation. The column was kept at 40 °C and the injection volume was 5.0 μL. The mobile phases used were (A) Milli-Q water (containing 5 mmol/L ammonium acetate and 0.05 % formic acid (v/v)) and (B) methanol. The gradient program was as follows: 50 % B at 0 min, increased to 80 % B in 5 min, stepped to 90 % B in 0.5 min, and held for 5.5 min at a flow rate of 0.30 mL/min; a post run time was set at 4.5 min for column equilibration before the next injection. The whole analysis time for each sample was 15.5 min. For UPLC-MS/MS with negative ESI mode, the column brand, column temperature, and the injection volume were the same as those in positive ESI mode. The mobile phase consisted of Milli-Q water (A) and methanol (B). The gradient elution program was set as follows: 50 % B at 0 min, increased to 56 % B in 3 min, stepped to 90 % B in 1 min, and held for 4.5 min at a flow rate of 0.35 mL/min; a post run time was set at 5 min for column equilibration before the next injection. The whole analysis time for each sample was 13.5 min. The operating conditions (fragmentor voltage, collision energy (CE), precursor ion and product ions for each compound) for mass spectrometry were optimized by Optimizer (Agilent, USA), to maximize the response and increase detection sensitivity. Quantitative analysis of the target compounds was performed in multiple reaction monitoring (MRM) mode. Agilent Mass Hunter V 02.01 software was used for data acquisition.

Table S1 Recoveries, limit of quantification (LOQ) and relative standard deviation (RSD) of target PPCPs in surface water samples.

PPCPs	Water sample		
	Recovery （%）	LODs （ng/L）	RSD （%）
BT	87.2±4.1	0.37	1.7
5-TT	90.0±3.2	0.32	1.9
CBT	91.3±2.3	0.27	1.4
XT	88.4±3.2	0.31	1.8
MP	92.7±4.1	0.06	1.6
EP	91.5±2.9	0.08	1.4
PP	87.1±4.6	0.09	1.3
BP	85.9±3.2	0.08	1.5
TCS	91.8±3.7	0.07	1.7
TCC	91.5±3.6	0.09	1.5

Table S2 Recoveries, limit of quantification (LOQ) and relative standard deviation (RSD) of target PPCPs in sediment samples.

PPCPs	Sediment sample		
	Recovery （%）	LODs （ng/g）	RSD （%）
BT	82.1±3.7	1.19	2.7
5-TT	84.2±4.6	0.48	3.1
CBT	85.3±3.1	1.01	2.8
XT	85.9±3.2	0.53	3.6

MP	84.3±3.9	0.12	2.9
EP	83.9±4.0	0.17	3.4
PP	83.4±3.5	0.14	2.2
BP	85.7±6.7	0.16	2.7
TCS	80.6±5.4	0.21	2.8
TCC	82.8±4.8	0.18	3.0

Table S3 The PPCPs concentration of water in wet season

Sampling sites	BT ng/L	5-TT ng/L	CBT ng/L	XT ng/L	MP ng/L	EP ng/L	PP ng/L	BP ng/L	TCC ng/L	TCS ng/L
YP-L	14.90	5.39	6.61	2.13	1.86	＜LOD	1.16	0.83	1.29	49.93
YP-M	32.20	8.87	9.20	2.68	2.51	＜LOD	0.98	0.83	1.05	52.06
YP-R	34.78	9.58	8.18	2.77	1.97	＜LOD	0.95	0.84	0.85	46.15
ZK-L	37.58	29.91	10.69	5.68	1.20	＜LOD	0.86	0.81	1.06	49.66
ZK-M	33.49	35.07	10.59	5.98	1.15	＜LOD	0.76	0.81	0.85	42.19
ZK-R	50.30	36.91	12.64	6.03	1.12	＜LOD	0.82	0.84	0.80	39.99
QB-L	22.36	11.13	10.09	3.15	1.14	＜LOD	0.93	0.80	0.74	41.03
QB-M	28.47	13.57	7.77	3.66	1.16	＜LOD	0.87	0.83	0.91	54.59
QB-R	26.26	13.97	8.79	3.87	1.14	＜LOD	2.70	0.81	0.77	52.91
ZTJ-L	26.70	11.97	6.95	3.49	1.20	＜LOD	0.84	0.79	0.86	35.98
ZTJ-M	27.38	12.22	6.08	3.81	1.12	＜LOD	0.81	0.77	0.82	54.92
ZTJ-R	22.30	12.88	5.93	3.72	1.22	＜LOD	0.84	1.02	0.32	33.03

Table S4 The PPCPs concentration of water in dry season

Sampling sites	BT ng/L	5-TT ng/L	CBT ng/L	XT ng/L	MP ng/L	EP ng/L	PP ng/L	BP ng/L	TCC ng/L	TCS ng/L
YP-L	17.96	8.54	7.89	3.68	2.05	＜LOD	1.56	1.78	3.81	51.39
YP-M	18.84	9.68	8.54	3.74	2.14	＜LOD	1.74	1.94	3.12	54.28
YP-R	19.79	8.67	8.12	4.15	2.23	＜LOD	1.69	1.79	3.96	50.12
ZK-L	25.28	15.66	9.21	6.71	2.41	＜LOD	1.81	1.89	4.71	57.94
ZK-M	26.36	14.91	10.3	7.33	2.34	＜LOD	1.49	2.01	5.56	59.81
ZK-R	31.11	17.13	10.71	6.82	2.29	＜LOD	1.56	2.09	4.92	59.67
QB-L	28.79	14.85	10.44	9.57	2.17	＜LOD	1.89	2.15	6.44	60.27
QB-M	29.65	16.93	10.24	9.43	2.28	＜LOD	1.78	2.34	7.04	63.12
QB-R	30.32	15.57	12.51	10.11	2.26	＜LOD	1.66	2.28	6.28	61.57
ZTJ-L	47.45	31.51	13.58	12.65	2.75	＜LOD	2.03	2.67	8.56	77.35
ZTJ-M	46.58	29.84	14.12	12.43	2.8	＜LOD	2.11	2.45	7.89	79.21
ZTJ-R	45.66	30.45	14.79	13.91	2.66	＜LOD	2.16	2.59	8.12	74.13

Table S5 The PPCPs concentration in sediment of Qiantang river

Sampling sites	BT ng/g	5-TT ng/g	CBT ng/g	XT ng/g	MP ng/g	EP ng/g	PP ng/g	BP ng/g	TCC ng/g	TCS ng/g
Wet season										
YP	2.59	1.95	2.02	0.97	5.31	＜LOD	0.73	0.74	4.00	60.84
ZK	2.78	3.29	2.03	0.83	2.45	＜LOD	0.74	0.73	3.57	46.82
QB	3.08	2.86	1.65	0.89	2.21	＜LOD	0.78	0.75	3.08	65.36
ZTJ	2.59	3.38	1.47	0.91	2.35	＜LOD	0.72	0.74	2.76	50.60
Dry season										
YP	2.47	2.60	2.25	0.86	1.65	＜LOD	0.74	0.73	3.51	60.25
ZK	3.01	3.09	1.85	0.95	2.58	＜LOD	0.73	0.73	5.45	54.15
QB	3.24	2.62	1.82	0.82	2.30	＜LOD	0.75	0.73	3.26	58.33
ZTJ	3.08	4.15	1.24	0.88	2.41	＜LOD	0.77	0.79	4.15	57.29

Table S6 The physicochemical parameters of QTR in wet and dry seasons

Sampling sites	TOC mg/L	TP mg/L	TN mg/L	NH_3-N mg/L
Wet season				
YP-L	2.34	0.03	2.27	0.325
YP-M	1.74	0.04	1.81	0.041
YP-R	2.24	0.03	1.88	0.038
ZK-L	3.02	0.06	2.15	0.046
ZK-M	3.42	0.07	2.35	0.044
ZK-R	3.65	0.11	2.22	0.044
QB-L	2.17	0.04	1.60	0.032
QB-M	2.08	0.04	1.94	0.049
QB-R	2.16	0.03	1.55	0.035
ZTJ-L	2.39	0.05	1.65	0.041
ZTJ-M	2.43	0.05	1.54	0.046
ZTJ-R	2.21	0.03	1.69	0.044
Dry season				
YP-L	2.32	0.07	2.50	0.336
YP-M	2.34	0.08	2.41	0.327
YP-R	2.38	0.08	2.48	0.302
ZK-L	2.43	0.07	2.49	0.404
ZK-M	2.55	0.08	2.47	0.367

ZK-R	2.77	0.08	2.58	0.330
QB-L	2.49	0.07	2.15	0.247
QB-M	2.67	0.08	2.43	0.231
QB-R	2.79	0.08	2.28	0.259
ZTJ-L	3.56	0.08	2.27	0.451
ZTJ-M	3.53	0.08	2.30	0.439
ZTJ-R	3.56	0.08	2.28	0.461

Table S7 The total organic carbon (TOC) content of the sediment in QTR

Sampling sites	TOC %(Wet season)	TOC %(Dry season)
YP	0.376	0.384
ZK	0.337	0.347
QB	0.178	0.187
ZTJ	0.242	0.245

Table S8 The correlation between PPCPs in water and sediment

Correealtions in wet season			
		PPCPs concentration in water	PPCPs concentration in sediment
PPCPs concentration in water	Pearson Correlation	1	.778**
	Sig.（2-tailed）		.000
	N	36	36
PPCPs concentration in sediment	Pearson Correlation	.778**	1
	Sig.（2-tailed）	.000	
	N	36	36
**. Correlation is significant at the 0.01 level (2-tailed)			
Correaltions in dry season			
		PPCPs concentration in water	PPCPs concentration in sediment
PPCPs concentration in water	Pearson Correlation	1	.858**
	Sig.（2-tailed）		.000
	N	36	36
PPCPs concentration in sediment	Pearson Correlation	.858**	1
	Sig.（2-tailed）	.000	
	N	36	36
**. Correlation is significant at the 0.01 level (2-tailed)			

Table S9 Summary of the worldwide occurrence of PPCPs in surface water

Compound	Detected concentration	River	Country	Reference
PPCPs	1-500 ng/L	Jinsha River Basin	China	Anthropogenic disturbances on distribution and sources of pharmaceuticals and personal care products throughout the Jinsha River Basin, China
TCC	23 ng/g in sediment	Cau River	Vietnam	Occurrence of pharmaceutical and personal care products in Cau River, Vietnam
MP	170.87 μg/L	Lobo reservoir	Brazil	Occurrence of PPCPs in a Brazilian water reservoir and their removal efficiency by ecological filtration
MP	8μg/L	the river Mogi Guaçu	Brazil	Determination of parabens in surface water from Mogi Guaçu River (S~ao Paulo, Brazil) using dispersive liquid-liquid microextraction based on low density solvent and LC-DAD
TCS	8.87-91.74 ng/L	sewage treatment plant	India	Occurrence, seasonal variation, mass loading and fate of pharmaceuticals and personal care products (PPCPs) in sewage treatment plants in cities of upper Ganges bank, India
TCS	98.62 ng/L	River Ganges	India	Occurrence, seasonal variations, and ecological risk of pharmaceuticals and personal care products in River Ganges at two holy cities of India
BT	0.1-100ng/L	Kumho River	Korea	Occurrences of microorganic pollutants in the Kumho River by a comprehensive target analysis using LC-Q/TOF-MS with sequential window acquisition of all theoretical fragment ion spectra (SWATH)
XT	0.1-10ng/L	Kumho River	Korea	Occurrences of microorganic pollutants in the Kumho River by a comprehensive target analysis using LC-Q/TOF-MS with sequential window acquisition of all theoretical fragment ion spectra (SWATH)

BT TCS	1210 ng/L 103 ng/L	surface water	New Zealand	The removal of metformin and other selected PPCPs from water by poly(3,4-ethylenedioxythiophene) photocatalyst
BT TCS CBT TCC MP	286 ng/L 80 ng/L 31.9 ng/L 20 ng/L 10 ng/L	surface water	China	Suitability of pharmaceuticals and personal care products (PPCPs) and artificial sweeteners (ASs) as wastewater indicators in the Pearl River Delta, South China
TCC	2.37-210 ng/L	Pearl River	China	Occurrence and ecological risk assessment of emerging organic chemicals in urban rivers: Guangzhou as a case study in china.
TCS	35-1023 ng/L	Pearl River	China	Simulation of three ppcps existed in major pearl river with an asm model including a separate degrading microorganism
PBs	3.31–55.2 ng/L in water, 13.3–37.2 ng/g in sediment	Yellow River	China	Parabens and their metabolite in surface water and sediment from the Yellow River and the Huai River in Henan Province: Spatial distribution, seasonal variation and risk assessment
PBs	15.0–164 ng/L, 16.1–31.6 ng/g in sediment	Huai River		

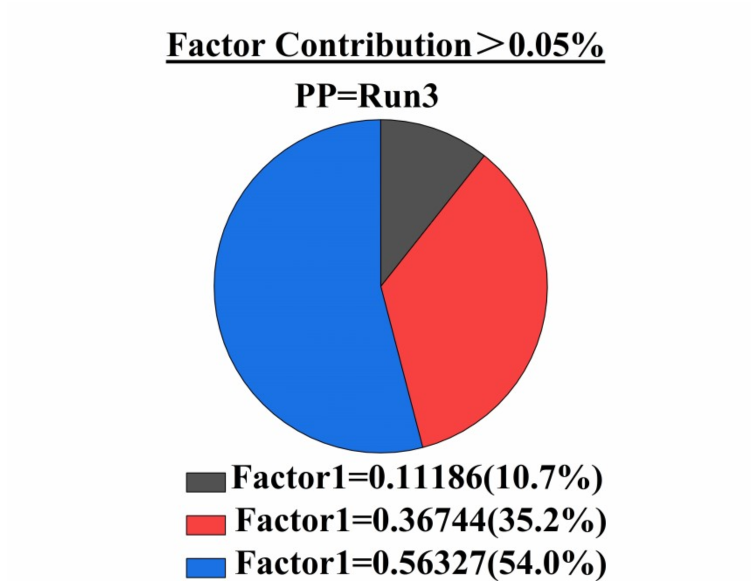

Fig S1 Contributions from six different sources to the total PPCPs