Supplementary material

Human health ambient water quality criteria for 13 heavy metals and health risk assessment in Taihu Lake

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Table S1. Location and water quality parameters of samples

Time	Sample	Longitude	Latitude	DO (mg/L)	pH	T (℃)	POC (mg/L)	DOC (mg/L)
2019	S1	120.2°E	31.41°N	11.17	7.95	9.5	0.05	4.40
	S2	120.32°E	31.43°N	10.73	8.03	10	1.60	2.54
	S3	120.35°E	31.4°N	11.47	8.66	9.8	1.37	2.31
	S4	120.31°E	31.35°N	11.19	8.40	9.6	1.05	2.63
	S5	120.28°E	31.24°N	11.09	8.59	9.7	0.06	3.66
	S6	120.34°E	31.22°N	11.11	8.41	9.8	0.47	4.13
	S7	120.41°E	31.21°N	11.15	8.44	10.3	0.54	3.65
	S8	120.37°E	31.17°N	11.07	8.43	9.9	0.75	3.53
	S9	120.36°E	31.11°N	11.12	8.50	10	0.27	3.37
	S10	120.12°E	31.24°N	11.20	8.57	9.5	0.38	3.95
	S11	120.04°E	31.41°N	9.38	8.10	9.6	0.41	3.76
	S12	120.05°E	31.44°N	10.06	7.82	9.8	0.83	3.55
	S13	120.05°E	31.46°N	10.66	8.48	9.7	1.31	3.91
	S14	120.13°E	31.45°N	9.73	8.44	9.5	0.86	3.88
	S15	120.14°E	31.48°N	10.40	8.45	9.5	0.74	3.48
	S16	120.15°E	31.51°N	10.80	8.51	9.6	1.45	2.98
	S17	120.19°E	31.51°N	11.14	8.71	9.6	1.54	3.76
	S18	120.19°E	31.53°N	10.72	8.55	9.7	0.56	4.03
	S19	120.21°E	31.5°N	10.58	8.62	9.7	0.02	3.68
	S20	120.2°E	31.46°N	11.17	8.74	9.6	1.13	5.11
	S21	120.18°E	31.45°N	10.91	8.71	9.5	0.63	3.76
	S22	120.17°E	31.42°N	11.10	8.74	9.5	1.08	3.48
	S23	120.13°E	31.39°N	11.00	8.67	9.5	0.88	4.08
	S24	120.11°E	31.36°N	11.04	8.72	9.6	1.78	4.34
	S25	120.08°E	31.35°N	11.17	8.74	9.7	1.42	3.53
	S26	119.95°E	31.3°N	10.38	8.51	9.8	0.04	4.87
	S27	119.97°E	31.25°N	9.62	8.69	9.5	0.67	3.11
	S28	120°E	31.21°N	10.26	8.42	9.7	1.07	4.21
	S29	120.04°E	31.14°N	9.78	8.39	9.6	0.37	4.02
	S30	120.04°E	31.05°N	11.65	8.54	9.8	0.52	3.70
	S31	120.15°E	30.99°N	10.84	7.93	9.8	0.41	4.33
2012/2013	S1	120.18°E	31.52°N					
	S2	120.13°E	31.50°N					
	S3	120.18°E	31.40°N					
	S4	120.21°E	31.49°N					
	S5	120.21°E	31.51°N					
	S6	120.22°E	31.53°N					
	S7	120.18°E	31.49°N					
	S8	120.18°E	31.46°N					
	S9	120.10°E	31.38°N					
	S10	120.13°E	31.45°N					
	S11	120.25°E	31.53°N					
	S12	120.25°E	31.51°N					
	S13	120.22°E	31.36°N					
	S14	120.22°E	31.39°N					
	S15	120.35°E	31.43°N					
	S16	120.24°E	31.37°N					
	S17	120.38°E	31.43°N					
	S18	120.05°E	31.46°N					
	S19	120.03°E	31.43°N					
	S20	120.07°E	31.44°N					
	S21	120.07°E	31.34°N					
	S22	120.29°E	31.05°N					
	S23	120.13°E	30.98°N					
	S24	120.00°E	31.20°N					
	S25	120.08°E	31.21°N					
	S26	120.00°E	31.17°N					
	S27	119.96°E	31.29°N					
	S28	119.99°E	31.26°N					
	S29	120.26°E	31.24°N					
	S30	120.45°E	31.20°N					
	S31	120.31°E	31.18°N					
	S32	120.37°E	31.15°N					

S33	120.34°E	31.11°N
S34	120.12°E	30.96°N
S35	120.01°E	31.03°N
S36	120.00°E	31.12°N
S37	120.13°E	30.96°N

The sample sites collected in 2012 and 2013 were the same

Table S2. The limit of detection (LOD) of 13 heavy metals

	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn
LOD (μg/L)	3.73	0.18	0.40	0.40	0.43	0.46	0.59	0.28	2.99	4.47	3.62	0.73	1.38

Table S3-1. The concentrations (μg/L) of 13 heavy metals in water of Taihu Lake

Time	Sample	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn
2019	S1	1.34	59.02	-	0.14	3.79	189.03	15.20	2.89	0.00	2.15	-	2.12	6.38
	S2	2.52	73.25	-	1.63	8.98	342.41	82.40	6.44	5.19	1.57	0.52	20.90	35.98
	S3	1.89	62.97	-	0.77	12.40	363.97	43.96	4.90	2.44	1.62	1.29	10.46	18.28
	S4	1.17	62.03	-	0.31	8.45	368.31	19.34	3.25	1.16	1.78	1.96	4.48	17.30
	S5	1.25	64.74	-	0.75	7.05	217.47	32.14	3.75	1.07	2.40	-	11.30	12.92
	S6	1.70	67.93	-	0.79	7.51	238.38	32.42	4.03	0.97	2.18	0.16	11.04	16.57
	S7	0.82	58.89	-	0.14	9.68	324.22	9.53	2.93	0.57	2.31	2.18	3.41	16.69
	S8	1.33	67.77	-	0.66	12.08	454.75	28.78	4.38	1.10	1.75	1.66	10.51	20.70
	S9	2.29	93.07	-	2.04	17.77	347.40	98.09	7.42	5.74	2.06	-	26.92	58.06
	S10	1.99	69.92	-	1.14	8.42	302.99	71.65	5.31	2.42	2.36	-	14.48	18.86
	S11	1.81	68.32	-	0.47	11.84	498.11	47.71	9.54	1.69	1.94	0.76	6.35	24.80
	S12	2.60	96.66	0.11	2.44	16.39	591.73	160.28	10.81	6.94	1.68	0.04	33.18	75.35
	S13	3.10	78.48	0.01	2.01	9.98	804.96	143.40	7.18	5.37	1.45	0.47	28.62	38.58
	S14	4.47	115.92	0.17	3.81	25.77	651.82	202.78	11.67	9.23	2.48	-	50.32	48.84
	S15	3.59	93.10	0.02	2.62	14.46	433.83	138.34	8.46	5.82	2.39	3.07	33.84	40.90
	S16	3.36	88.44	0.07	3.02	16.68	496.94	173.64	8.85	7.90	2.07	1.09	41.09	53.00
	S17	2.88	95.02	0.04	2.36	13.34	357.11	119.21	7.95	5.26	2.45	-	31.41	40.92
	S18	1.25	72.98	-	0.73	6.18	228.72	52.76	4.88	1.63	1.60	-	9.74	15.56
	S19	1.31	68.01	-	0.42	5.18	188.86	30.32	3.71	0.43	2.39	-	6.52	9.52
	S20	1.71	63.91	-	0.22	3.52	199.63	25.41	3.30	0.22	1.99	1.59	4.22	8.44
	S21	1.03	62.47	-	0.39	5.32	167.43	28.96	3.67	0.50	2.17	-	6.02	12.39
	S22	1.72	61.86	-	0.41	5.87	214.26	35.48	3.81	0.52	2.12	-	6.09	14.82
	S23	2.14	68.48	-	0.78	13.37	449.80	51.89	5.62	1.77	1.70	1.20	10.51	22.93
	S24	1.27	62.17	-	0.49	7.00	231.61	42.70	5.75	0.99	2.34	-	6.01	28.67
	S25	1.78	62.67	-	0.27	6.63	322.88	28.17	8.77	0.64	1.88	0.76	4.41	16.69
	S26	2.08	66.34	-	0.64	16.66	570.13	42.59	9.69	1.46	2.05	-	8.14	42.77
	S27	1.27	77.35	-	1.17	13.07	455.67	72.84	6.95	3.03	1.75	-	15.52	42.81
	S28	1.30	69.44	-	0.30	8.63	209.73	28.54	3.99	0.61	2.20	-	4.82	11.98
	S29	1.41	64.94	-	0.25	4.55	189.30	35.52	3.74	0.39	2.04	-	4.82	8.30
	S30	1.01	64.41	-	0.29	4.67	177.80	33.74	3.72	0.42	2.64	-	4.99	20.01

	S31	1.25	72.98	-	0.73	6.18	228.72	52.76	4.88	1.63	1.60	-	9.74	15.56
2012	S1	4.88	149.30	-	*	8.13	27.41	9.84	4.20	3.60	4.05	-	*	14.81
	S2	9.73	144.50	-	*	9.74	25.00	-	2.59	2.78	4.01	-	*	18.55
	S3	0.01	155.75	0.20	*	2.52	0.16	12.21	5.18	2.92	29.29	1.46	*	40.12
	S4	2.19	6.01	0.05	*	11.32	5.88	3.25	1.72	-	21.82	0.25	*	3.63
	S5	7.27	196.2	0.10	*	5.65	35.06	15.79	4.31	6.02	49.00	17.66	*	46.51
	S6	9.93	41.82	-	*	61.90	24.86	5.98	7.25	-	8.20	-	*	7.61
	S7	-	116.47	0.03	*	2.66	0.06	4.59	2.30	-	12.38	1.18	*	21.57
	S8	-	145.95	0.15	*	3.34	0.09	5.76	5.08	2.39	12.78	0.02	*	20.46
	S9	4.86	149.30	-	*	6.10	26.80	72.45	4.53	7.97	0.62	-	*	28.35
	S10	14.10	209.53	-	*	14.12	36.24	-	3.75	4.03	5.81	-	*	26.89
	S11	3.63	1.20	-	*	0.45	4.34	2.80	1.94	0.74	1.94	-	*	1.55
	S12	0.54	0.18	-	*	0.07	0.65	0.42	0.29	0.11	0.29	-	*	0.23
	S13	7.63	28.20	0.05	*	82.85	1.59	-	-	-	22.25	0.43	*	15.11
	S14	3.81	219.83	-	*	2.06	26.75	53.06	3.46	4.5	15.56	-	*	19.8
	S15	4.23	130.20	0.38	*	5.02	26.95	137.40	3.98	8.09	55.05	-	*	30.54
	S16	45.05	158.55	-	*	2.33	3.46	13.59	14.61	3.48	8.38	0.06	*	42.41
	S17	4.88	21.72	0.10	*	31.69	19.62	-	15.39	-	40.28	0.04	*	10.81
	S18	18.40	528.00	0.10	*	26.78	133.50	129.50	68.05	22.22	13.29	-	*	176.65
	S19	5.59	29.58	-	*	28.10	19.75	-	15.49	-	1.13	-	*	22.14
	S20	31.03	613.00	0.28	*	43.97	165.70	151.55	72.70	35.14	6.11	-	*	276.85
	S21	4.88	149.30	-	*	8.13	27.41	9.84	4.20	3.60	4.05	-	*	14.81
	S22	9.93	41.82	-	*	61.90	24.86	5.98	7.25	-	8.20	-	*	7.61
	S23	4.88	149.30	-	*	8.13	27.41	9.84	4.20	3.60	4.05	-	*	14.81
	S24	6.63	131.20	-	*	6.45	24.34	26.80	6.94	3.74	1.94	-	*	18.55
	S25	11.10	134.45	-	*	10.68	26.86	3.97	4.33	3.02	3.46	-	*	14.40
	S26	5.59	29.58	-	*	28.10	19.75	-	15.49	-	1.13	-	*	22.14
	S27	16.26	28.45	-	*	91.75	18.23	-	3.77	-	0.82	-	*	21.40
	S28	20.01	33.73	-	*	109.75	25.66	10.03	4.65	-	0.97	-	*	6.00
	S29	-	134.45	0.36	*	10.68	0.17	3.97	4.33	3.02	33.12	0.69	*	120.85
	S30	16.26	28.45	-	*	91.75	18.23	-	3.77	-	0.82	-	*	21.40
	S31	-	33.73	-	*	109.75	-	10.03	4.65	-	0.97	-	*	32.59
	S32	17.66	31.61	-	*	96.85	22.70	26.85	9.66	-	0.69	-	*	12.33
	S33	4.86	149.30	-	*	6.10	26.80	72.45	4.53	7.97	0.62	-	*	28.35
	S34	19.01	22.09	-	*	108.50	18.30	10.27	5.51	-	0.63	-	*	15.23
	S35	31.03	613.00	0.28	*	43.97	165.70	151.55	72.70	35.14	6.11	-	*	276.85
	S36	18.40	528.00	0.10	*	26.78	133.50	129.50	68.05	22.22	13.29	-	*	176.65
	S37	9.73	144.50	-	*	9.74	25.00	-	2.59	2.78	4.01	-	*	18.55
2013	S1	4.78	18.20	-	*	31.78	15.15	4.20	4.14	-	4.68	-	*	6.88
	S2	4.88	65.64	-	*	5.22	15.90	-	1.54	2.21	2.39	-	*	17.52

S3	0.01	72.54	0.14	*	1.38	0.11	9.18	3.17	2.38	17.90	0.89	*	38.85
S4	1.13	2.80	-	*	6.22	3.84	2.45	1.05	0.00	13.34	0.16	*	3.52
S5	3.74	91.38	0.07	*	3.11	22.86	11.88	2.64	4.91	29.95	10.79	*	45.04
S6	5.01	19.08	-	*	33.31	15.88	4.41	4.34	-	4.91	-	*	7.21
S7	0.00	57.71	0.02	*	1.82	0.04	4.30	1.41	0.00	7.56	0.72	*	20.88
S8	0.00	67.97	0.10	*	1.84	0.06	4.33	3.10	1.95	7.81	0.01	*	19.81
S9	2.45	68.11	-	*	3.28	17.12	53.39	2.71	6.36	0.37	-	*	26.89
S10	3.55	98.76	-	*	7.03	23.43	-	2.63	9.23	0.54	-	*	38.99
S11	1.78	0.53	-	*	0.24	2.69	2.00	1.13	0.57	1.13	-	*	1.43
S12	0.26	0.07	-	*	0.03	0.39	0.22	0.16	0.08	0.18	-	*	0.25
S13	3.93	13.13	0.03	*	45.52	1.04	0.00	0.00	0.00	13.60	0.27	*	14.63
S14	1.96	102.38	0.00	*	1.13	17.44	39.92	2.12	3.67	9.51	0.00	*	19.18
S15	2.18	60.64	0.27	*	2.76	17.57	103.37	2.44	6.59	33.65	0.00	*	29.57
S16	23.19	73.84	0.00	*	1.28	2.26	10.22	8.93	2.84	5.12	0.03	*	41.06
S17	2.51	10.12	0.07	*	17.41	12.79	0.00	9.40	0.00	24.62	0.03	*	10.46
S18	9.56	248.16	0.07	*	14.85	87.84	98.32	41.98	18.27	8.20	-	*	172.63
S19	2.90	13.90	-	*	15.58	12.99	-	9.55	-	0.70	-	*	21.63
S20	15.58	278.48	0.19	*	23.56	105.39	111.21	43.35	27.94	3.64	-	*	261.50
S21	14.93	266.78	-	*	22.58	100.96	-	41.53	-	3.49	-	*	250.52
S22	5.20	19.82	0.00	*	34.60	16.49	4.58	4.51	0.00	5.10	0.00	*	7.49
S23	2.55	70.74	0.00	*	4.54	18.18	7.53	2.61	2.99	2.52	0.00	*	14.59
S24	3.34	59.85	0.00	*	3.47	15.55	19.75	4.16	2.99	1.16	-	*	17.60
S25	5.60	61.34	-	*	5.75	17.16	2.93	2.59	2.41	2.07	-	*	13.66
S26	2.82	13.49	-	*	15.13	12.61	0.00	9.27	-	0.68	-	*	21.00
S27	8.20	12.98	-	*	49.38	11.65	-	2.26	-	0.50	-	*	20.30
S28	7.86	12.44	-	*	47.31	11.16	0.00	2.17	0.00	0.48	-	*	19.45
S29	0.00	63.26	0.25	*	5.93	0.12	3.02	2.67	2.48	20.45	0.43	*	118.22
S30	8.43	13.34	0.00	*	50.77	11.97	0.00	2.32	0.00	0.51	0.00	*	20.87
S31	0.00	15.87	0.00	*	60.92	0.00	7.62	2.87	0.00	0.60	0.00	*	31.88
S32	9.15	14.82	0.00	*	53.59	14.91	20.34	5.94	0.00	0.43	0.00	*	12.02
S33	2.52	70.03	0.00	*	3.38	17.60	54.90	2.79	6.54	0.38	0.00	*	27.65
S34	9.96	10.46	0.00	*	60.65	12.14	7.86	3.43	0.00	0.39	0.00	*	15.00
S35	16.25	290.45	0.20	*	24.58	109.92	115.99	45.21	29.14	3.80	0.00	*	272.74
S36	9.64	250.17	0.07	*	14.97	88.56	99.12	42.32	18.42	8.27	0.00	*	174.03
S37	5.09	68.47	0.00	*	5.45	16.58	0.00	1.61	2.31	2.49	0.00	*	18.27

"-" no detected, "*" no measured (the same below)

Table S3-2. The concentrations (mg/kg) of 13 heavy metals in sediments of Taihu Lake

Time	Sample	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn
2019	S1	1.93	137.53	0.23	8.51	46.41	14.63	494.86	26.21	12.44	1.71	8.93	111.05	60.05
	S2	5.82	128.04	3.66	10.98	38.30	17.70	284.44	31.24	14.84	1.33	11.63	106.13	100.04
	S3	2.46	118.86	0.29	7.96	32.33	-	272.20	28.59	12.02	1.19	8.49	99.09	113.64
	S4	3.53	141.84	0.22	8.76	33.17	13.55	304.17	24.16	14.14	1.24	9.14	113.61	249.86
	S5	2.68	108.30	0.14	6.38	23.48	8.56	236.17	19.54	9.02	1.04	7.99	87.26	44.54
	S6	6.93	128.87	0.19	9.01	29.20	12.37	400.64	21.18	11.91	1.59	10.59	123.17	48.67
	S7	11.81	158.21	0.15	10.06	29.14	10.84	540.04	21.23	12.35	1.54	11.52	136.28	130.25
	S8	5.99	88.31	0.10	5.71	19.52	8.23	236.34	14.46	7.37	0.69	-	71.94	49.05
	S12	2.09	167.74	0.43	11.16	55.57	58.38	605.18	62.66	17.79	1.66	10.48	127.52	174.34
	S13	3.83	165.54	0.53	11.55	91.62	73.60	557.22	61.22	18.37	2.14	10.64	141.07	172.23
	S14	0.93	90.63	0.18	6.33	25.07	12.65	288.74	18.70	8.91	0.91	6.77	75.40	56.65
	S15	0.90	126.21	0.22	7.82	30.61	15.55	353.75	24.97	11.40	1.02	7.77	89.37	109.42
	S16	2.73	127.70	0.28	8.17	43.31	32.19	468.45	29.80	12.96	1.33	8.84	102.49	98.77
	S18	0.57	133.29	0.17	8.42	27.93	18.10	329.01	26.43	11.20	1.34	8.97	108.19	66.35
	S19	0.69	137.94	0.19	8.83	31.50	20.23	377.22	26.74	12.60	1.34	10.22	109.12	64.41
	S20	2.51	140.97	0.26	9.78	29.51	18.27	455.95	28.99	15.42	1.52	10.61	129.64	131.41
	S21	3.81	132.00	0.18	8.19	28.37	14.13	307.03	23.54	11.61	0.99	-	101.95	76.14
	S22	1.11	135.98	0.21	8.05	28.12	14.61	343.37	23.34	11.49	1.20	9.32	100.54	50.08
	S23	-	127.50	0.23	8.78	31.83	13.95	351.85	25.29	12.89	1.20	9.24	105.60	69.42
	S25	-	117.91	0.23	7.80	32.30	13.92	345.39	26.84	11.67	1.16	8.50	96.25	57.57
	S26	3.97	109.94	0.95	7.56	33.40	17.24	379.89	25.31	10.74	0.76	-	91.53	183.97
	S27	1.17	113.55	0.33	7.22	30.32	9.22	355.34	17.76	9.93	1.17	7.88	90.80	48.62
	S28	5.42	101.48	0.18	6.82	19.25	8.70	305.36	15.24	9.56	0.72	-	80.94	148.56
	S29	0.24	73.27	0.12	6.23	21.37	6.99	266.27	14.20	6.27	0.81	6.94	78.40	35.09
	S30	3.54	120.67	0.24	8.29	22.56	11.36	386.65	18.90	12.53	1.05	9.11	97.36	70.27
	S31	1.77	140.38	0.22	8.06	27.32	10.53	360.48	19.01	12.31	1.05	8.27	93.94	117.40
2012	S1	0.63	39.98	0.01	*	18.20	0.96	1802.23	15.26	2.45	-	0.02	*	0.55
	S3	15.39	409.75	0.44	*	56.50	30.70	5410.58	42.90	73.48	0.18	0.64	*	92.40
	S5	89.71	492.58	0.36	*	61.49	41.65	8211.20	3.54	59.11	0.03	14.94	*	29.80
	S6	0.44	274.82	0.10	*	39.92	0.65	4237.78	15.54	37.35	0.02	0.18	*	0.19
	S11	1.70	2.23	-	*	6.75	2.83	28.41	0.75	0.28	-	0.59	*	2.24
	S12	-	2.59	0.30	*	1.38	23.87	7.35	32.05	0.03	0.12	3.80	*	89.18
	S13	-	264.25	0.09	*	38.39	1.04	4074.79	1.74	35.91	0.01	-	*	-
	S15	0.93	17.14	-	*	10.78	3.37	63.49	237.37	1.21	-	0.27	*	0.26
	S16	21.72	1.08	-	*	7.55	88.52	10.93	20.53	0.07	-	237.37	*	62.63
	S18	178.42	284.00	0.20	*	36.71	60.33	7698.38	2.17	43.19	0.01	15.26	*	46.01
	S19	-	361.39	2.86	*	64.70	0.68	6305.99	0.97	81.57	0.03	-	*	-

	S21	0.36	397.81	0.42	*	54.86	0.07	5253.00	15.70	71.34	0.18	0.03	*	0.15
	S23	0.70	8.54	-	*	9.51	2.29	41.40	19.31	0.59	-	0.10	*	0.59
	S26	1.78	1.10	-	*	7.70	2.63	11.15	0.64	0.07	-	1.06	*	1.57
	S27	21.02	404.76	0.59	*	89.42	69.74	6713.67	58.21	105.56	0.07	0.65	*	222.48
	S28	272.98	3185.96	1.07	*	21.23	72.02	1028.09	101.80	2078.65	0.31	3.87	*	246.85
	S31	21.36	489.18	1.80	*	113.63	59.39	1422.98	102.70	115.44	1.15	2.14	*	235.33
	S32	0.09	5234.93	0.70	*	125.01	-	9491.41	7.94	114.14	0.10	0.01	*	0.09
	S33	1.55	14.50	-	*	352.64	3.31	599.14	3.10	0.84	-	0.10	*	5.54
	S34	9.00	207.88	1.76	*	34.22	17.45	5897.53	24.20	39.97	0.07	0.01	*	63.55
	S36	0.70	0.31	-	*	5.18	1.33	16.06	20.63	-	-	0.11	*	0.55
	S37	0.20	0.21	-	*	3.45	-	10.71	11.73	-	-	0.01	*	0.09
2013	S1	0.66	0.29	-	*	0.97	1.25	10.06	9.70	-	-	0.10	*	0.51
	S3	-	346.94	2.76	*	12.42	0.66	4035.84	0.47	78.32	0.04	-	*	-
	S5	20.19	388.58	0.58	*	17.17	66.96	4296.75	27.95	101.35	0.08	0.63	*	213.59
	S6	262.07	3058.53	1.04	*	4.08	69.15	657.98	48.87	1995.51	0.31	3.73	*	236.99
	S7	0.35	381.91	0.42	*	10.53	0.08	3361.92	7.54	68.50	0.18	0.03	*	0.15
	S8	20.52	469.62	1.74	*	21.82	57.02	910.71	49.30	110.83	1.11	2.06	*	225.93
	S9	1.50	13.93	0.01	*	67.71	3.19	383.45	1.50	0.82	0.01	0.11	*	5.33
	S11	0.18	0.19	-	*	0.65	-	6.71	5.51	-	-	0.01	*	0.08
	S12	-	248.40	0.09	*	7.22	0.98	2553.54	0.82	33.76	0.01	-	*	-
	S13	256.60	2994.80	1.01	*	3.99	67.70	644.27	47.85	1953.93	0.29	3.64	*	232.04
	S15	0.87	16.11	-	*	2.03	3.16	39.79	111.56	1.14	-	0.25	*	0.24
	S16	0.68	0.31	-	*	1.00	1.28	10.29	9.91	0.01	-	0.11	*	0.54
	S17	1.72	1.07	0.01	*	1.48	2.53	7.14	0.31	0.08	0.01	1.03	*	1.52
	S19	0.68	8.21	0.01	*	1.83	2.21	26.50	9.27	0.58	0.01	0.11	*	0.58
	S20	14.78	393.37	0.43	*	10.85	29.48	3462.78	20.60	70.55	0.18	0.62	*	88.71
	S22	0.10	5025.54	0.68	*	24.00	0.01	6074.51	3.81	109.58	0.11	0.02	*	0.09
	S23	86.13	472.88	0.35	*	11.81	39.99	5255.18	1.70	56.75	0.03	14.35	*	28.62
	S24	0.41	258.33	0.09	*	7.50	0.61	2655.68	7.30	35.11	0.02	0.17	*	0.18
	S26	171.30	272.65	0.20	*	7.05	57.93	4926.97	1.04	41.48	0.02	14.66	*	44.18
	S27	206.08	1.05	0.01	*	1.45	84.99	7.00	9.86	0.07	0.01	227.89	*	60.13
	S28	8.65	199.57	1.70	*	6.57	16.76	3774.43	11.62	38.38	0.08	0.02	*	61.02
	S30	0.43	263.84	0.11	*	7.67	0.63	2712.19	7.46	35.87	0.03	0.18	*	0.19
	S31	1.64	2.15	0.01	*	1.30	2.73	18.19	0.37	0.28	0.01	0.58	*	2.16
	S32	1.60	2.10	-	*	1.27	2.66	17.80	0.35	0.26	-	0.55	*	2.11
	S33	0.01	2.50	0.30	*	0.27	22.93	4.71	15.39	0.04	0.13	3.66	*	85.62
	S34	0.90	16.46	0.01	*	2.07	3.24	40.64	113.94	1.18	0.01	0.27	*	0.26
	S35	0.59	37.58	0.01	*	3.42	0.90	1129.40	7.17	2.31	-	0.02	*	0.51
	S36	1.64	2.15	0.01	*	1.30	2.73	18.19	0.37	0.28	0.01	0.58	*	2.16
	S37	0.61	38.39	0.02	*	3.50	0.93	1153.44	7.33	2.37	0.01	0.03	*	0.53

Table S3-3. The concentrations (mg/kg) of 13 heavy metals in fish and aquatic vegetable of Taihu Lake

Sample	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn
Hemisalanx prognathus	0.0502	0.1488	0.0061	0.0008	0.1431	0.3719	0.2948	0.0533	0.0359	0.0372	0.5941	0.0555	6.0238
Culter erthropterus	0.0443	0.0963	0.0092	0.0009	0.0732	0.3563	0.1607	0.0158	0.0048	0.0084	0.5179	0.0317	4.1110
Cyprinus carpio	0.1404	0.1544	0.0230	0.0209	0.3283	0.3816	0.2333	0.2250	0.0286	0.0131	0.8474	0.0627	5.6823
Coilia nasus	0.0811	0.4373	0.0126	0.0115	0.7219	0.5305	0.7195	0.4777	0.0581	0.0341	0.6856	0.1139	8.7853
Brasenia schreberi	0.0018	0.1325	0.0023	0.0026	0.0767	15.3371	0.2039	0.0259	0.0373	0.0032	0.0027	0.0347	3.2621

Table S4-1. The concentrations (μg/L) of 13 heavy metals in water of 7 River basins and this study

River	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn	Sampling time	Reference
Yangtze River	15.12	-	0.39	16.73	94.95	44.86	-	40.8	34.10	2.07	-	-	122.49	2013-2014	Yin et al., 2016
Pearl River	4.95	-	0.48	-	-	12.07	-	-	4.35	-	-	-	24.02	2006-2012	Zhen et al., 2016
Yellow River	6.36	-	0.52	-	11.79	14.58	103.27	-	19.87	-	-	-	38.97	2014	Tian, 2017
Haihe River	36.71	-	0.14	1.27	20.76	19.02	117.16	19.83	0.56	-	-	-	30.16	2012-2013	Shi, 2014
Huaihe River	5.11	63.13	-	0.57	2.75	-	104.57	3.95	2.01	-	1.46	0.66	325.32	2016	Yang et al., 2018
Songhua River	-	-	0.26	-	12.01	4.27	-	1.68	3.02	-	-	-	64.25	2015	Li et al., 2020
Liaohe River	8.59	-	0.50	-	2.00	5.00	-	-	-	-	-	-	25.00	2009-2010	Wang et al., 2017
Taihu lake	1.86	65.80	0.07	0.94	7.96	5.70	54.29	5.12	1.16	1.91	3.00	12.73	11.57	2019	This study

Table S4-2. The concentrations (mg/kg) of 13 heavy metals in sediment of 7 River basins and this study

River	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn	Sampling time	Reference
Yangtze River	13.88	-	2.40	-	91.28	74.65	-	52.95	409.21	-	-	-	164.76	2011	Fu et al., 2013
Pearl River	21.97	-	0.55	3.73	27.02	20.70	-	17.06	-	0.67		12.89	69.42	2016	Zhuang et al., 2018
Yellow River	-	-	0.20	9.20	100.4	17.34	-	22.42	17.18	-	-	-	22.42	2014	Ma et al., 2016
Haihe River	25.23	-	0.359	13.4	81.9	69.038	453.00	27.80	41.271	-	-	-	158.70	2009	Zeng et al., 2013
Huaihe River	12.60	-	0.29	-	63.7	29.9	719.00	-	29.5	-	-	-	79.20	2009	Zhang et al., 2011
Songhua River	-	-	-	9.97	49.42	23.58	-	18.75	23.76	-	-	-	90.29	2005	Lin et al., 2008
Liaohe River	9.88	-	1.20	-	35.06	17.82	-	17.73	10.57	-	-	-	50.24	2013	Ke et al., 2017
Taihu Lake	2.93	125.87	0.39	8.32	33.14	18.22	369.46	25.98	11.99	1.22	7.33	102.64	97.18	2019	This study

Table S4-3. The concentrations (mg/kg) of 13 heavy metals in fish of 7 River basins and this study

River	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn	Sampling time	Reference
Yangtze River	3.64	-	0.54	-	2.29	-	-	0.83	4.93	-	-	-	90.11	2011	Fu et al., 2013
Pearl River	0.53	-	0.38	-	0.44	1.26	2.70	2.90	1.76	-	-	-	22.30	2011	Leung et al., 2014
Yellow River	-	-	0.003	0.03	1.31	0.96	0.33	0.40	0.05	-	-	-	5.98	2014	Ge et al., 2020
Haihe River	0.13	-	0.08	-	0.21	5.57	-	-	1.11	-	-	-	63.97	2013	Wang, 2015
Huaihe River	-	2.15	0.03	0.15	1.62	2.09	-	0.52	0.85	-	-	0.07	39.88	2011	Ma, 2012
Songhua River	0.05	-	0.10	-	32.40	8.79	-	-	0.23	-	-	-	17.76	2011	Zhu et al., 2016
Liaohe River	0.02	-	0.003	-	0.07	0.51	-	-	-	-	-	-	17.70	2012	Xu, 2013
Taihu Lake	0.08	0.21	0.01	0.01	0.32	0.41	0.35	0.19	0.03	0.02	0.66	0.07	6.15	2019	This study

Table S5 Sensitivity analysis of health risk factors for 13 heavy metals

Parameter	As	Ba	Cd	Co	Cr	Cu	Mn	Ni	Pb	Sb	Se	Sn	Zn
C_f	9.5%	1.0%	11.4%	6.5%	18.3%	0.0%	1.9%	26.7%	1.7%	6.0%	2.0%	0.9%	2.4%
FI	64.0%	4.1%	66.1%	11.0%	45.5%	0.1%	7.8%	45.9%	6.6%	30.3%	90.3%	3.8%	38.3%
C_w	2.9%	4.0%	1.2%	27.6%	3.2%	0.0%	26.1%	2.0%	5.9%	1.6%	0.0%	32.7%	0.0%
DI	11.6%	71.5%	0.5%	39.4%	9.5%	0.0%	43.2%	9.4%	7.9%	43.0%	0.0%	47.2%	0.1%
C_v	0.0%	0.0%	0.2%	0.3%	0.4%	0.1%	0.1%	0.0%	0.7%	0.1%	0.0%	0.1%	0.6%
VI	0.2%	5.0%	8.2%	2.9%	9.0%	91.6%	7.6%	3.1%	61.0%	2.0%	0.0%	4.2%	42.3%
BW	-11.5%	-14.1%	-12.3%	-12.1%	-13.9%	-8.1%	-13.2%	-12.7%	-16.0%	-16.8%	-7.5%	-10.9%	-16.1%

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