
Supplementary Information

Priority emerging contaminants in the Taihu Basin (China): occurrence, risk assessment, and control strategies

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Text S1 Methods of keywords analysis

24229 article records were obtained covering the period from 2000 to 2024 with the subjects “emerging contaminants” and “ecology risk assessment”. Then, the keyword co-occurrence analysis revealed the knowledge map and research hotspots by VOSviewer. Ultimately, with the minimum number of occurrences of a term—500 times set, VOSviewer selected, grouped, and clustered the most relevant 178 keywords, and visualized the keyword associations to form a knowledge map. By inputting the topic “Emerging contaminants” “ecology risk assessment” and “PFAS” in WOS, 26569 results were obtained and 357339 keywords were exported. With the minimum number of occurrences of a term-500 times set, VOSviewer selected, grouped, and clustered the most relevant 109 keywords

With the theme selection of “Neonicotinoid insecticides” in WOS, article data was screened to discuss from 2000 to 2024. 27118 keywords were extracted from 5380 articles with a minimum word frequency set at 50 times. Finally, 78 important keywords were retained to form the co-occurrence network diagram. Finally, the keywords of the literature in Lake Taihu were analyzed. The input topics were “Emerging contaminants” and “Taihu”, “insecticides” and “Taihu”. Adjust the word frequency according to the above process to output keywords and sort them in chronological order.

Translation for Fig. 1 and Tables S1–S6

1. “Id”: The ID of an item. Items need to have an ID only if a map file is used in combination with a network file.
2. “Label”: The label of an item.
3. “X”: The horizontal coordinate of an item.
4. “Y”: The vertical coordinate of an item.
5. “Cluster”: The number of the cluster to which an item belongs. This attribute must have an integer value between 1 and 1000.
6. “Weight”: The weight of an item. This attribute must have a nonnegative numerical value. The higher the weight of an item, the more prominently the item is shown in the visualization of a map.
7. “Normalized weight”: The normalized weight of an item. This attribute must have a nonnegative numerical value. The higher the normalized weight of an item, the more prominently the item is shown in the visualization of a map. The default presentation of an item is obtained if the item has a normalized weight of 1. We note that this attribute should be used only in special cases. For most purposes, we recommend not to use it.
8. “Score”: The score of an item. In the overlay visualization of a map, items can be colored based on their score. The red component of the user-defined color of an item. This attribute must have an integer value between 0 and 255. In the overlay visualization of a map, items can be colored based on their user-defined color. The green component of the user-defined color of an item. This attribute must have an integer value between 0 and 255. In the overlay visualization of a map, items can be colored based on their user-defined color. The blue component of the user-defined color of an item. This attribute must have an integer value between 0 and 255. In the overlay visualization of a map, items can be colored based on their user-defined color.
9. “Occurrences”: When working with keywords, the occurrences attribute indicates the number of documents in which a keyword occurs. When working with terms, the definition of the occurrences attribute depends on the counting method that is chosen in the create map wizard. In the case of binary counting, the occurrences attribute indicates the number of documents in which a term occurs at least once. In the case of full counting, the occurrences attribute indicates the total number of occurrences of a term in all documents.

10. “Avg. pub. Year”: The average publication year of the documents in which a keyword or a term occurs or the average publication year of the documents published by a source, an author, an organization, or a country.

11. “Avg. citations”: The average number of citations received by the documents in which a keyword or a term occurs or the average number of citations received by the documents published by a source, an author, an organization, or a country.

12. “Avg. norm. citations”: The average normalized number of citations received by the documents in which a keyword or a term occurs or the average normalized number of citations received by the documents published by a source, an author, an organization, or a country.

13. When a map is created based on text data provided in a VOSviewer corpus file, custom score attributes are made available only if a VOSviewer scores file is provided as well (see Section 4.2 for a discussion of VOSviewer corpus and scores files). In that case, for each score attribute, the score of a term is calculated as the average score of the documents in which the term occurs.

Table S1 The map file exported by VOSviewer with the topic of “emerging contaminants”.

Id	Label	X	Y	Cluster	Weight<Links>	Weight<Total link strength>	Weight<Occurrences>	Score<Avg. pub. year>	Score<Avg. citations>	Score<Avg. norm. citations>
1	acesulfame	-0.4422	-0.3725	2	72	777	122	2018.0082	52.2377	1.1533
2	acetaminophen	-0.7534	0.1261	2	126	2907	393	2019.3308	35.8982	1.2577
3	aflatoxin	1.4514	0.9345	6	29	664	126	2019.3571	42.2698	1.801
4	ahr	0.7531	-0.349	1	36	451	139	2017.2302	29.5612	0.6576
5	alkylphenol	0.3573	-0.4513	3	77	772	113	2016.6018	38.5841	0.8753
6	alpha ethinylestradiol	-0.5461	-0.3014	3	92	1141	119	2019.437	42.5294	1.1084
7	amoxicillin	-0.608	0.4373	5	99	1593	227	2020.1233	38.6432	1.3021
8	amphetamine	-1.0344	0.272	2	52	409	52	2016.3846	74.0962	1.5093
9	ampicillin	-0.4033	0.8057	5	72	637	84	2017.5595	31.7024	0.7822
10	antibiotic resistance gene	-0.2424	1.3681	5	106	5062	619	2020.2084	47.2181	1.4112
11	antibiotics	-0.5076	0.8138	5	61	280	51	2020.2549	36.0392	1.1464
12	arg	-0.3461	1.5165	5	48	1178	134	2019.8507	60.8209	1.5181
13	args	-0.2315	1.229	5	90	8730	1645	2020.5343	49.9313	1.5142
14	atenolol	-0.9268	0.1771	2	112	1909	220	2018.8818	39.8455	1.0399
15	azithromycin	-0.8012	0.5865	5	69	415	59	2019.1864	49.9661	1.4387
16	benzophenone	-0.2197	-0.4949	3	101	1454	215	2019.4744	33.4093	0.9033
17	benzothiazole	-0.3555	-0.9102	8	51	1071	133	2016.0376	48.6842	1.1609
18	benzotriazole	-0.354	-0.8398	8	107	2229	357	2017.3473	40.7815	0.9701
19	beta blocker	-0.8474	0.2571	2	87	855	106	2018.0283	62.8019	1.6169
20	beta estradiol	-0.4067	-0.2137	3	123	2297	222	2018.3964	35.1261	0.9142
21	biphenyl	0.8519	-0.3439	1	71	684	112	2016.0536	30.4286	0.8008
22	bisphenol	0.0732	-0.5386	3	149	5744	888	2019.5518	33.0507	1.0626
23	bisphenol a	-0.1693	-0.4699	3	130	2239	239	2018.6527	36.272	1.0312
24	bps	0.4649	-0.7073	3	64	1082	185	2020.8378	18.773	0.7543
25	bromide	0.1884	-0.5917	4	71	700	113	2018.7168	42.9292	0.9677

26	caffeine	-0.5714	0.1139	2	146	8821	1099	2018.9308	37.8226	1.0148
27	carbamazepine	-0.7108	0.0135	2	146	9985	1241	2018.6527	41.8211	1.0767
28	catalyst	-0.3952	-0.6279	4	128	10011	1958	2020.4816	36.4356	1.5556
29	catchment	0.0034	0.0303	1	105	1269	240	2017.7375	30.1083	0.8408
30	chloramphenicol	-0.5149	0.6914	5	81	1032	142	2017.9014	35.7042	0.9313
31	chloride	0.1987	-0.1687	1	128	1916	425	2018.9318	25.8918	0.9329
32	chloroethyl	0.4696	-0.2661	1	64	476	67	2019.0896	49.6716	1.1598
33	chlorophenol	-0.0714	-0.8583	4	49	509	105	2019.1143	24.4381	0.9404
34	ciprofloxacin	-0.6202	0.4666	5	141	4658	657	2019.9315	35.7778	1.2571
35	clarithromycin	-0.739	0.5164	5	101	1365	141	2019.6312	46.8511	1.3437
36	cocaine	-0.9223	0.2659	2	75	899	130	2016.8385	54.5154	1.17
37	cyclodextrin	0.3817	-0.6984	1	58	605	121	2018.7273	81.7273	1.8932
38	cytotoxicity	0.5522	-0.1617	4	97	1302	257	2018.6187	32.6265	0.9316
39	dbp	0.2774	-0.5369	4	86	2464	700	2018.6114	110.0429	2.5142
40	ddt	0.8681	-0.2062	1	58	581	101	2014.6931	39.4653	0.9299
41	dechlorane	0.8524	-0.371	1	36	308	99	2018.2121	17.2121	0.4553
42	degradation	-0.1841	-0.2308	4	175	29806	6780	2019.9394	31.8515	1.216
43	degradation process	-0.2599	-0.4078	4	106	1423	231	2019.9827	26.3766	1.085
44	deoxynivalenol	1.4812	0.9141	6	30	752	126	2018.3651	39.7619	1.0769
45	determination	0.1308	0.0202	3	172	6908	1665	2017.2426	29.2583	0.7407
46	diazepam	-0.7867	0.3163	2	76	581	86	2017.186	33.3256	0.7523
47	diazinon	-0.0594	-0.0342	3	68	365	63	2017.0476	68.254	1.6349
48	dichlorophenol	-0.0823	-0.793	4	57	357	60	2018.3667	31.6333	0.8485
49	diclofenac	-0.6294	-0.0763	2	154	8695	1194	2019.0318	39.5846	1.0971
50	diclofenac sodium	-0.9198	-0.1333	2	49	282	65	2020.2462	32.6769	1.1509
51	dioxin	0.8385	-0.2728	1	97	1803	320	2014.5156	51.3563	0.9963
52	diphenhydramine	-0.748	-0.0308	2	61	518	62	2018.5161	30.8226	0.7514
53	diphenyl ether	0.9042	-0.2813	1	80	1480	259	2015.8301	31.6409	0.7506

54	diuron	-0.1418	-0.0617	3	96	588	96	2017.7708	56.9792	1.2896
55	dom	0.2431	0.073	4	76	899	212	2020.1368	30.2925	1.3006
56	domestic wastewater	-0.5631	-0.0688	2	101	989	132	2019.1818	35.0379	1.0514
57	dye	0.0834	-0.9031	4	104	3198	752	2020.5492	34.9668	1.5792
58	ecosystem health	0.0604	0.1439	1	70	333	73	2018.4384	29.3288	1.0536
59	electron	0.0245	-0.146	4	109	1360	283	2019.1343	33.5724	1.4881
60	enantiomer	-0.93	0.196	2	48	552	96	2018.1458	40.1979	0.924
61	enniatin	1.4905	0.9294	6	26	569	135	2017.3852	55.9778	1.2591
62	enrofloxacin	-0.5543	0.61	5	83	841	115	2019.3217	31.9478	1.2392
63	erythromycin	-0.6129	0.5895	5	107	1909	188	2019.1277	52.5053	1.4542
64	estradiol	-0.4819	-0.3113	3	109	1788	214	2017.6028	26.4486	0.694
65	estrogen	-0.3424	-0.1419	3	123	2744	430	2018.0256	34.4488	0.9158
66	estrone	-0.5249	-0.2587	3	119	2570	239	2018.5063	30.41	0.8066
67	estuary	-0.003	-0.0022	1	129	2995	464	2017.8728	43.403	0.9879
68	ethinylestradiol	-0.635	-0.3881	3	68	661	83	2019.3614	21.8072	0.6327
69	exposure	0.5096	-0.0041	1	175	25065	5897	2018.4333	28.0716	0.8532
70	farm	0.4884	0.8161	6	97	1614	334	2016.9281	48.6377	1.1949
71	farmer	0.9194	0.8515	6	39	359	83	2018.2048	14.3494	0.5654
72	fish	0.2906	-0.0358	1	160	8621	1656	2018.2597	31.7862	0.919
73	fluoxetine	-0.834	0.1364	2	90	1406	188	2018.4468	36.1117	0.9644
74	food	0.9554	0.5378	6	151	9104	2990	2016.9441	37.2605	1.0313
75	fumonisin	1.4963	0.9279	6	25	475	67	2017.4328	38.2985	1.1522
76	fungi	0.9931	0.5633	6	108	2126	483	2017.8923	27.1284	1.0368
77	gemfibrozil	-0.7933	-0.0145	2	109	1987	191	2017.8639	39.3613	1.0133
78	guanylurea	-0.001	-0.7277	4	19	207	72	2019.4722	34.8056	0.8324
79	health	0.4567	0.2784	6	176	17143	3761	2019.1973	28.7062	1.0732
	high resolution									
80	mass spectrometry	0.2161	-0.0236	1	141	1670	432	2019.544	29.5648	0.9475

81	hormone	-0.283	-0.1716	3	139	4831	711	2017.9466	39.443	1.0388
82	human health risk	0.174	0.4991	6	126	1664	236	2019.8686	44.4873	1.4136
83	hydraulic retention time	-0.6559	-0.1621	3	103	1173	145	2019.331	27.8345	0.9288
84	ibuprofen	-0.7412	-0.1686	2	140	5593	747	2019.2209	37.1446	1.0942
85	insect	0.9038	0.6255	6	56	858	241	2019.5892	24.0498	0.9151
86	january	0.5846	0.1193	1	68	371	91	2017.2747	23.8681	0.6349
87	ketoprofen	-0.8377	-0.0072	2	117	1996	234	2019.0214	37.7607	1.0427
88	levofloxacin	-0.6285	0.4299	5	64	508	78	2020.0641	30.1026	1.0576
89	losartan	-0.5521	0.1653	2	65	541	53	2020.2642	32.283	0.8692
90	macrolide	-0.4634	0.8031	5	74	922	105	2019.4857	38.8857	1.2315
91	marine environment	0.1358	-0.0894	1	112	1817	358	2019.0587	38.2374	1.1985
92	methamphetamine e	-1.0549	0.3176	2	39	326	66	2018.6818	34.8939	0.8324
93	methane	0.0592	0.3033	4	44	267	79	2017.7975	30.4937	0.8604
94	methylparaben	-0.3638	-0.455	3	75	819	109	2020.0183	24.9633	0.8001
95	metoprolol	-0.6979	0.163	2	90	1178	140	2018.2	42.5857	1.0635
96	metronidazole	-0.7974	0.5281	5	70	583	80	2019.6875	38	1.1228
97	microcontaminan t	-0.2802	-0.2553	3	93	973	136	2018.1471	42.9191	1.0219
98	nanoparticle	-0.0233	-0.2684	4	141	8071	2174	2019.7185	31.827	1.106
99	naproxen	-0.8365	-0.0609	2	126	2713	311	2017.7942	40.4984	1.1347
100	nonylphenol	-0.06	-0.3804	3	116	1735	203	2016.9507	44.1478	1.0618
101	norfloxacin	-0.5669	0.6105	5	48	282	56	2020.4107	23.0893	1.0859
102	nsaid	-0.7986	-0.1341	2	62	525	95	2018.7368	38.7474	1.1014
103	occurrence	0.1464	0.2344	6	177	22446	3512	2018.885	51.6968	1.4853
104	ochratoxin	1.4792	0.9027	6	24	357	71	2017.6197	43.8028	1.2651
105	ocp	0.9345	-0.2409	1	60	817	103	2018.5922	19.7282	0.6223

106	ofloxacin	-0.4847	0.3931	5	115	1523	169	2019.3195	46.2485	1.4506
107	organic acid	0.3594	-0.017	4	53	334	75	2017.8133	31.32	1.0305
108	organic dye	0.1041	-1.0618	4	29	346	79	2020.7468	26.2278	1.5794
109	organochlorine pesticide	0.9598	-0.2593	1	62	810	109	2017.5872	22.2477	0.9098
110	organophosphate ester	0.6428	-0.2173	1	53	563	100	2020.64	16.7	0.7874
111	organophosphoru s flame retardant	0.7344	-0.267	1	49	298	51	2019.1569	35.3333	0.9637
112	oxybenzone	-0.432	-0.7212	3	61	737	106	2018.434	72.1226	1.5788
113	oxytetracycline	-0.443	0.5534	5	90	951	156	2019.3526	40.7821	1.2942
114	ozonation	-0.5361	-0.1808	4	129	6218	1047	2018.9494	45.1882	1.3253
115	paraben	0.1593	-0.5359	3	88	2236	332	2019.4819	32.4157	1.003
116	parent compound	-0.119	-0.3381	2	114	1154	186	2018.4086	39	1.049
117	pcp	-0.1503	-0.6152	3	97	1463	236	2018.8008	29.9195	1.0404
118	perfluorinated compound	0.6691	-0.4019	7	91	822	127	2015.8268	63.2047	1.337
119	perfluoroalkyl substance	0.9583	-0.1052	7	84	1447	163	2020.135	37.638	1.2046
120	persistent organic pollutant	0.8768	-0.3374	1	110	2086	391	2017.7724	27.8875	0.9007
121	personal care product	-0.4416	-0.2364	3	166	12347	1498	2018.5948	48.2784	1.439
122	pesticide residue	0.9885	0.2204	6	53	734	183	2020.3388	23.2732	1.3058
123	pfas	1.051	-0.0355	7	108	7136	1305	2020.9479	25.9571	1.0597
124	pfoa	1.1685	-0.2948	7	113	5596	773	2019.3545	40.282	1.1805
125	pfos	1.1482	-0.2244	7	123	5449	714	2018.7227	38.1681	1.1229
126	pharmaceutical compound	-0.6387	0.1756	2	129	3027	456	2019.011	43.7456	1.4861
127	phenanthrene	0.5105	-0.3748	1	62	501	93	2017.828	24.8602	0.6872

128	phenol	0.106	-0.6362	4	117	1478	287	2018.9617	30.446	1.06
129	photocatalysis	-0.4755	-0.6966	4	123	4359	778	2019.982	49.7969	1.7574
130	phthalate	0.3806	-0.4576	3	126	3372	555	2018.8685	31.6252	0.9456
131	polychlorinated biphenyl polycyclic	0.893	-0.2529	1	89	1162	184	2016.0217	38.2609	0.9187
132	aromatic hydrocarbon	0.6549	-0.3131	1	121	1528	308	2018.487	33.3864	1.0107
133	polyethylene	0.1731	-0.0716	1	88	1101	244	2021.3975	40.1311	1.7693
134	polystyrene	0.1764	-0.1332	1	82	922	179	2021.7765	37.838	1.7728
135	population	0.5646	0.2388	1	168	7852	1575	2017.1657	34.3702	0.9123
136	potential health risk	0.7137	0.13	6	99	694	102	2020.3039	18.6961	0.947
137	ppcp	-0.6511	0.0135	2	153	15579	1762	2018.7452	57.5545	1.7435
138	ppcps	-0.9815	-0.069	2	120	2395	187	2018.2941	54.5401	1.5106
139	progesterone	-0.4008	-0.1427	3	79	807	71	2016.8592	40.0986	0.9836
140	pvc	0.3232	-0.1511	1	65	648	119	2021.5882	31.2269	1.5142
141	pyrene	0.4805	-0.3188	1	64	465	80	2019.225	17.8125	0.5503
142	pyrethroid	0.8014	-0.0817	1	45	320	62	2016.4355	29.871	0.7834
143	quecher	0.3581	0.129	3	84	353	65	2018.6615	26.2	0.7174
144	quinolone	-0.4496	0.9872	5	53	458	62	2019.0806	41.2097	1.3085
145	radionuclide	0.4914	-0.3005	4	33	227	82	2018.1707	23.2073	0.9717
146	reaction pathway	-0.2406	-0.3817	4	71	551	93	2018.9677	47.2366	1.693
147	reagent	0.1121	-0.4839	4	89	720	172	2018.9244	24.6047	0.7696
148	removal	-0.2708	-0.1481	4	177	43282	10125	2019.6574	38.0605	1.2874
149	resin	0.3245	-0.2888	4	74	1009	217	2018.2488	32.9908	1.0054
150	rhodamine b	-0.1384	-0.9456	4	48	384	72	2021.5694	25.2222	1.1441
151	risk assessment	0.1765	0.1909	1	171	8180	1405	2018.7537	32.8705	1.0203
152	runoff	0.1564	0.1184	1	115	1740	360	2018.3139	25.4528	0.7841
153	sediment	0.3118	-0.0428	1	164	11985	2376	2018.1957	36.6991	1.034

154	sertraline	-0.8665	0.1183	2	64	499	72	2018.9167	30.5972	0.7704
155	steroid	0.0599	-0.2309	3	81	730	120	2016.625	31.0083	1.0705
156	strain	0.4417	0.5276	6	131	5350	1816	2016.19	27.9609	0.6579
157	sulfadiazine	-0.4826	0.5661	5	94	851	95	2020.2105	35.8632	1.3251
158	sulfamethazine	-0.5377	0.5322	5	95	1136	144	2018.6319	38.0694	1.1241
159	sulfamethoxazole	-0.5952	0.3462	5	152	7245	861	2019.324	44.957	1.3387
160	sulfonamide	-0.3755	0.7767	5	93	2068	277	2018.5668	46.4079	1.4417
161	sulfur	0.2279	-0.4404	4	52	325	96	2019.1042	37.5417	1.2371
162	surface water	-0.2983	0.0383	2	167	12185	1914	2018.592	46.7571	1.2327
163	tbbpa	0.9052	-0.5699	1	50	1134	176	2020.0341	17.858	0.604
164	tcpp	0.5386	-0.2694	1	71	487	74	2019.2162	45.8243	1.0968
165	testosterone	-0.3681	-0.2849	3	79	667	69	2018.4928	27.0725	0.7657
166	tetrabromobisphenol	0.9156	-0.5877	1	55	718	87	2019.2184	20.092	0.6165
167	tetracycline	-0.3966	0.6919	5	120	4478	731	2019.5445	41.5321	1.4484
168	titanium dioxide	-0.569	-0.9529	4	67	819	147	2019.2925	46.0408	1.3267
169	triclocarban	-0.0842	-0.1901	3	69	508	76	2018.1447	38.8158	0.9704
170	triclosan	-0.1773	-0.3726	3	148	6594	850	2017.7894	35.3506	1.0098
171	trimethoprim	-0.6542	0.4872	5	125	2920	272	2019.3566	61.5294	1.7064
172	tylosin	-0.4226	0.6568	5	60	643	72	2016.75	48.875	1.2107
173	valsartan	-0.5027	0.177	2	68	585	64	2019.4531	51.0938	1.4227
174	vegetable	0.4157	0.4873	6	111	2021	408	2017.1324	39.4436	1.1447
175	venlafaxine	-0.6178	0.0186	2	95	950	133	2019.8496	36.7143	1.1052
176	wastewater treatment	-0.4092	-0.332	4	153	6576	1426	2019.641	40.9607	1.5397
177	wheat	1.4162	0.866	6	47	663	171	2017.3684	35.4561	0.8305
178	zearalenone	1.4876	0.9244	6	38	609	99	2019.3636	31.0303	1.042

Table S2 The map file exported by VOSviewer with the topic of “emerging contaminants” and “Taihu”.

Id	Label	X	Y	Cluster	Weight<Links>	Weight<Total link strength>	Weight<Occurrences>	Score<Avg. pub. year>	Score<Avg. citations>	Score<Avg. norm. citations>
4	microplastic	-0.358	0.7281	1	6	115	16	2024.4375	16.0000	1.2971
7	pfas	-0.2486	0.7224	1	6	147	19	2023.3158	41.2632	0.8992
5	opes	1.0368	0.059	3	3	131	41	2022.9756	25.6585	1.1254
6	personal care product	-0.6472	-0.431	2	7	80	15	2021.8000	48.2667	1.7233
10	surface water	-0.0243	-0.3422	2	7	198	47	2021.5957	46.3617	1.0487
9	sediment	0.261	0.3157	1	8	332	82	2021.4756	23.8049	0.7859
8	pharmaceutical	-0.6298	-0.3564	2	6	116	35	2020.7429	26.6857	0.9789
1	antibiotic	-0.7621	-0.3367	2	5	43	26	2020.6538	142.5385	1.9129
2	bisphenol	0.9237	-0.226	3	5	137	25	2020.6000	38.2000	0.7666
3	bpa	0.7473	-0.2893	3	6	157	27	2020.2593	39.9259	0.7570
11	taihu lake	-0.2988	0.1564	1	9	188	47	2018.7447	29.3617	0.8177

Table S3 The map file exported by VOSviewer with the topic of “Per- and polyfluoroalkyl substances”.

Id	Label	X	Y	Cluster	Weight<Links>	Weight<Total link strength>	Weight<Occurrences>	Score<Avg. pub. year>	Score<Avg. citations>	Score<Avg. norm. citations>
1	abundance	-0.5785	0.322	1	108	14750	1364	2020.6862	36.4831	1.2198
2	accumulation	-0.5977	0.3757	1	108	14495	1380	2019.6486	39.7014	1.2192
3	adsorbent	0.8968	0.6287	3	107	32744	2529	2020.8185	39.8007	1.5732
4	adsorption	0.755	0.6192	3	107	57485	4563	2020.5249	37.5459	1.3679
5	adsorption capacity	0.8757	0.7558	3	107	19026	1403	2021.0214	35.9031	1.4051
6	advanced oxidation process	1.1664	-0.2475	2	107	16209	1102	2020.382	54.7931	2.0139
7	advantage	0.3569	-0.5353	2	108	15008	1151	2019.6447	39.9687	1.4883
8	adverse effect	-0.6073	0.0752	1	108	9411	797	2019.6223	45.7378	1.3053
10	analytical method	-0.5947	-0.3232	1	107	8629	954	2018.2841	35.6321	0.9764
11	animal	-0.9777	-0.3785	1	108	17216	1563	2017.0141	42.2118	1.0406
12	antibiotic	-0.2225	-0.0179	1	108	47091	3992	2020.0188	48.6072	1.5417
13	application	0.3956	-0.3474	2	108	89169	7813	2019.4075	43.213	1.4826
14	aquatic ecosystem	-0.6192	0.1791	1	108	10717	862	2020.029	29.681	1.091
15	aquatic organism	-0.8624	0.2248	1	108	9927	804	2020.0659	48.2164	1.2818
16	aqueous solution	1.1272	0.4747	3	107	13811	1066	2019.4428	33.9371	1.0722
17	bioaccumulation	-0.8649	0.3877	1	107	10600	903	2020.1196	33.0653	1.095
18	biodegradation	0.1093	0.452	3	108	12396	1127	2018.7649	38.354	1.1237
19	biofilm	-0.2245	-0.0822	3	104	9618	842	2019.0677	38.1971	1.0914
22	case	-0.3843	-0.4308	1	108	19167	1910	2016.9885	32.4869	0.8659
23	catalyst	1.3851	-0.1495	2	107	31641	2424	2020.8837	38.2215	1.5541
24	challenge	0.095	-0.449	2	108	42043	3370	2020.2427	36.7813	1.523
27	cost	0.4864	-0.3787	2	108	26234	1903	2019.5239	35.4603	1.3236
28	country	-0.7755	-0.3735	1	108	17702	1575	2017.6235	41.2571	1.0878
29	degradation	0.9912	0.0599	2	108	93424	8158	2020.2768	35.1754	1.272
30	detection	-0.3841	-0.5044	1	108	37900	4398	2018.4209	27.3861	0.9663
31	diclofenac	0.2763	0.4989	3	107	16582	1430	2019.2762	40.4587	1.0475
32	disinfection	0.6034	-0.4765	2	106	9988	856	2018.9918	50.493	1.4128

33	distribution	-0.7856	0.2596	1	108	28646	2609	2019.4235	32.3714	1.0366
34	ecosystem	-0.5256	0.1938	1	108	29441	2432	2019.9021	38.6554	1.3852
35	effectiveness	0.4448	-0.2636	2	108	13251	1015	2019.7655	24.8857	1.106
36	efficiency	0.9332	0.0344	2	108	49817	3901	2020.264	30.9639	1.2181
37	effluent	0.1893	0.0595	3	108	39910	3260	2018.6837	42.3169	1.1095
38	elimination	0.6934	0.1242	2	108	12279	927	2019.0852	38.3517	1.2796
40	energy	0.7761	-0.1609	2	108	17432	1262	2019.7274	32.3114	1.1944
41	evidence	-0.7546	-0.153	1	108	14461	1350	2017.7859	46.3	1.2232
42	experiment	0.4028	0.388	3	108	33084	2857	2018.7231	26.21	0.855
43	exposure	-0.8243	0.0174	1	108	67839	7377	2019.003	29.278	0.8427
44	fish	-1.0519	0.1141	1	107	21335	2043	2018.5864	34.3206	0.9587
45	food	-0.7712	-0.6185	1	108	32404	3490	2017.0175	39.7037	1.0824
46	generation	0.5253	-0.3121	2	108	19141	1488	2020.381	33.6519	1.2967
47	groundwater	-0.361	0.2976	1	108	21391	2027	2018.1801	45.8964	1.1946
48	h2o2	1.2947	-0.1667	2	106	13260	934	2019.8201	39.4625	1.2641
49	health	-0.5579	-0.1461	1	108	53136	4509	2019.7392	31.2644	1.1343
50	human	-0.9135	-0.2989	1	108	25611	2132	2018.4414	45.4869	1.2783
52	identification	-0.4276	-0.4336	1	108	18177	1911	2017.7415	34.9655	0.9712
53	industry	-0.1425	-0.4707	1	108	20096	1747	2018.4505	33.3532	1.0784
54	infection	-0.9471	-0.6175	1	105	12820	1580	2015.0639	43.6316	0.8757
55	interaction	0.0449	0.4324	3	108	40139	3380	2019.6719	30.2645	1.109
57	isolate	-1.0396	-0.6214	1	89	10318	1443	2016.6299	26.2793	0.5779
58	light	0.8155	-0.2126	2	108	20051	1565	2019.678	40.5355	1.368
59	management	-0.3928	-0.2792	1	108	20425	1736	2019.1705	26.6423	1.0329
60	mechanism	0.2954	0.1981	2	108	72254	5834	2020.1385	35.4141	1.3527
61	membrane	0.8652	-0.3135	2	108	32784	2774	2020.2311	28.8241	1.0605
62	metabolite	-0.4766	-0.0458	1	108	17044	1865	2018.304	44.4477	1.0501
63	microplastic	-0.5536	0.3491	1	107	39962	3747	2021.9957	50.786	2.0181
64	monitoring	-0.5176	-0.3636	1	108	21841	2196	2018.6307	31.8456	0.9445
65	occurrence	-0.7933	0.1227	1	108	47899	4355	2019.1619	55.1621	1.4811

66	organic matter	0.5096	0.2944	2	108	13874	1106	2019.2514	35.9557	1.0476
67	organism	-0.7396	-0.0303	1	108	28289	2545	2018.7874	38.8868	1.1008
68	oxidation	1.0883	-0.115	2	108	29759	2314	2019.6867	34.6793	1.1507
69	ozonation	1.1735	-0.2842	2	107	17494	1238	2018.9968	49.8271	1.3199
70	ozone	1.133	-0.3712	2	106	10333	685	2018.5299	39.2058	1.0355
71	performance	0.8616	0.1057	2	108	52062	4095	2020.4518	28.7639	1.1947
73	pfa	-0.8611	0.6027	1	106	13140	864	2021.9606	26.4826	1.2684
74	pfas	-0.8235	0.5506	1	107	25147	1725	2021.4545	25.6012	1.0333
75	pfoa	-0.6864	0.6691	1	104	13122	940	2019.9096	41.2553	1.2492
76	pfos	-0.7651	0.6643	1	105	11607	863	2019.3673	37.7822	1.0696
77	pharmaceutical	-0.1702	0.1999	1	108	65811	5869	2018.6872	53.4801	1.3584
78	photocatalysis	1.2854	-0.0653	2	107	13413	925	2020.1578	51.3103	1.7253
79	photocatalyst	1.3229	0.0252	2	107	20139	1523	2021.0703	35.9468	1.6072
80	photodegradation	1.045	0.2508	2	105	8527	738	2020.2927	24.164	0.9968
81	plastic	-0.6063	0.2604	1	106	10451	938	2021.1962	42.9861	1.8991
82	polyfluoroalkyl substance	-0.8793	0.5807	1	107	9901	669	2021.8401	24.2586	1.0665
83	population	-0.867	-0.2125	1	108	21337	1964	2017.4995	34.3966	0.8858
84	potential risk	-0.7665	0.0854	1	108	8237	651	2020.1982	37.2688	1.322
85	prevalence	-1.0221	-0.455	1	107	9228	908	2018.4438	27.6905	0.8301
86	process	0.6685	0.0077	2	108	150101	12228	2019.3812	34.5408	1.1684
87	project	-0.1425	-0.0689	1	108	32187	2034	2017.116	3.9376	0.0937
88	property	0.4122	0.14	2	108	49086	4023	2020.1683	38.0922	1.39
90	reaction	0.7876	-0.3157	2	108	27325	2279	2018.6757	36.7705	1.1568
91	recovery	0.0535	-0.2902	1	108	16702	1650	2018.7491	26.6745	0.8542
92	reduction	0.4193	-0.2219	2	108	24149	2110	2019.1057	28.654	0.8963
93	region	-0.8164	-0.132	1	108	20815	1978	2018.5364	31.6658	0.8883
94	regulation	-0.6086	-0.1821	1	108	11807	1055	2018.9204	31.7469	1.1044
95	remediation	0.4906	0.0884	2	108	28118	2255	2019.7144	39.0098	1.4666
96	removal	0.7715	0.3032	3	108	148143	12448	2019.8833	38.8584	1.2573
97	removal efficiency	0.6596	0.4717	3	108	25697	1953	2020.2386	33.5704	1.0709

98	response	-0.5938	-0.0308	1	108	22216	2317	2018.4644	26.6155	0.7723
99	risk	-0.8858	-0.0267	1	108	80028	7176	2019.7032	29.5488	1.0195
100	risk assessment	-1.0516	0.02	1	108	20570	1772	2019.0243	35.0006	1.0416
101	river	-0.9848	0.2465	1	108	31067	2772	2019.0054	39.6032	1.0566
102	safety	-0.4843	-0.6447	1	108	18707	1805	2018.6875	30.959	1.1233
103	sediment	-0.7494	0.3643	1	108	31561	2963	2018.6355	37.5778	0.9923
104	sensitivity	-0.3795	-0.5597	1	108	10430	1173	2018.5456	24.8806	0.8284
106	solution	0.6097	-0.0517	2	108	36595	2878	2019.5744	26.5407	0.9971
107	sorption	0.0277	0.6597	3	108	12910	1030	2018.4456	46.7369	1.2051
108	stability	0.8528	-0.1119	2	108	18460	1399	2020.7605	26.7327	1.237
109	structure	0.5001	0.1566	2	108	30948	2575	2019.781	31.8342	1.1987
110	surface	0.3506	0.0059	2	108	33238	2783	2018.4003	33.5609	1.0879
111	surface water	-0.4535	0.2898	1	108	27220	2286	2018.8189	47.4759	1.198
112	synthesis	0.9275	-0.0408	2	108	16110	1319	2020.3457	32.4503	1.359
113	technology	0.2952	-0.4229	2	108	87547	7086	2018.814	39.9523	1.3775
114	temperature	0.3507	0.2892	3	108	25682	2336	2018.9979	29.8806	1.0047
116	threat	-0.4513	-0.2075	1	108	20199	1713	2019.9942	37.6497	1.3528
117	transformation product	0.1885	-0.1066	2	108	11067	979	2019.189	36.8284	1.0126
119	wastewater treatment	0.7369	-0.2845	2	108	24647	1859	2020.1275	40.6794	1.5047
120	wastewater treatment plant	-0.0075	0.138	3	108	24035	1966	2019.4751	42.1551	1.2015
121	water treatment	0.9518	-0.2535	2	107	16363	1177	2019.8284	42.5166	1.385
122	wetland	0.0508	0.5429	3	108	11314	910	2019.1714	43.0209	1.1352

Table S4 The map file exported by VOSviewer with the topic of “pesticide ecological risk assessment”.

Id	Label	X	Y	Cluster	Weight<Links>	Weight<Total link strength>	Weight<Occurrences>	Score<Avg. pub. year>	Score<Avg. citations>	Score<Avg. norm. citations>
1	acute toxicity	-0.5898	0.0789	1	44	181	86	2014.4651	31.1395	0.845
2	antibiotic	0.7625	-0.5206	2	32	210	134	2019.4776	58.6418	3.1628
3	antibiotic resistance gene	0.8493	-0.5775	2	14	61	79	2020.4304	42.6076	2.5402
4	atrazine	0.0509	0.2852	3	50	1090	153	2015.8562	33.1634	1.3232
5	australia	-0.6684	-0.2069	1	36	165	89	2014.1461	34.7079	1.173
6	bee	-1.1514	-0.0604	1	41	1086	177	2018.8588	45.8023	2.0384
7	bioaccumulation	0.4727	-0.2087	4	43	391	123	2017.2439	31.6423	1.1966
8	biodiversity	-0.3714	-0.0104	1	56	375	85	2015.6471	59.8824	2.1909
9	biological control	-0.8047	-0.2802	1	16	45	85	2017.2	32.6353	1.1638
10	bird	-0.5917	0.2312	1	42	701	164	2014.878	22.4024	0.6906
11	brazil	-0.5999	-0.0867	1	43	341	95	2016.4105	20.5895	0.8163
12	china	0.7035	-0.306	2	61	1963	594	2016.9108	31.1953	1.2502
13	chlorpyrifos	-0.137	0.2932	3	56	1007	132	2016.053	24.9773	1.0359
14	coleoptera	-0.7968	-0.2837	1	21	53	157	2015.6624	14.0764	0.4454
15	concentration	0.1305	0.1185	3	67	6990	960	2016.3458	31.9292	1.1833
16	contamination	0.4142	0.0105	2	61	1585	303	2015.6832	33.67	1.1197
17	cypermethrin	0.0535	0.3779	3	41	627	82	2015.9146	30.0732	1.296
18	ddts	1.5088	-0.0424	2	38	837	82	2015.3415	31	1.0787
19	diazinon	0.4006	0.7161	3	45	651	68	2015.5	36.1912	1.2794
20	diptera	-0.6953	-0.268	1	18	30	100	2016.64	20.78	0.6384
21	diuron	-0.1611	0.4755	3	34	311	57	2016.4386	32.9123	1.11
22	ecological risk	0.5845	0.0826	3	60	2283	314	2016.7516	24.551	1.1181
23	endosulfan	0.6742	0.3203	3	52	1067	89	2014.8202	30.0787	1.1598
24	europe	-0.766	-0.1347	1	41	292	116	2016.0172	35.2586	1.1825
25	exposure	-0.5473	-0.004	1	68	3668	994	2015.5362	29.508	1.0201
26	fish	0.5072	0.1342	3	61	2276	381	2015.8268	39.21	1.2901
27	fungicide	-0.5651	0.4042	1	47	948	176	2017.5511	41.6023	1.5114

28	glyphosate	-0.412	0.0868	1	44	462	185	2017.2595	38.1297	1.5987
29	groundwater	1.1638	0.0167	2	39	656	75	2018.16	37.2267	1.5465
30	health risk	1.1045	-0.0244	2	46	1023	153	2017.634	27.8824	1.038
31	hemiptera	-0.7832	-0.2816	1	23	66	136	2016.9926	14.3309	0.4721
32	herbicide	-0.4241	0.2571	1	55	1445	323	2015.5913	33.6997	1.0826
33	high risk	0.1975	0.3692	3	53	840	69	2018.4783	49.5072	2.5332
34	honey bee	-1.2115	-0.0725	1	31	547	83	2017.5542	34.6627	1.4065
35	honeybee	-1.2052	0.0041	1	22	166	55	2018.1636	32.7455	1.261
36	human health	0.925	0.2045	2	49	726	81	2018.5556	24.642	1.4262
37	hymenoptera	-0.9108	-0.2625	1	26	212	102	2016.9706	20.8529	0.7011
38	india	0.7506	-0.0589	2	43	471	80	2017.45	26.5625	1.4432
39	insect	-0.8286	-0.0577	1	57	403	149	2016.8591	27.1007	1.1363
40	insecticide	-0.7365	0.0919	1	66	2110	457	2016.0744	38.0197	1.2503
41	lepidoptera	-0.7755	-0.2937	1	19	58	127	2016.7638	11.8425	0.4449
42	malathion	0.1717	0.6091	3	44	564	59	2017.1017	21.9322	1.0179
43	mechanism	-0.2649	-0.2007	1	45	274	124	2016.6935	27.7419	1.1604
44	mortality	-0.7743	-0.1091	1	46	375	101	2014.4554	27.0396	0.8751
45	neonicotinoid	-1.0355	-0.0423	1	35	289	59	2018.0847	40.8814	2.0209
46	ocp	1.322	-0.0975	2	39	2784	244	2018.3566	20.2951	1.0853
47	organochlorine pesticide	1.4289	-0.1458	2	45	1700	249	2016.3414	25.4257	0.9779
48	persistent organic pollutant	1.0955	-0.1965	2	37	219	114	2015.6579	35.9825	1.072
49	pesticide exposure	-0.9061	0.0098	1	54	968	166	2016.1446	39.2229	1.4058
50	pesticide residue	0.3834	0.2141	3	59	1415	188	2016.25	33.1702	1.3941
51	pesticide risk assessment	-1.0711	-0.0065	1	44	626	126	2016.9127	25.246	1.0386
52	pollutant	0.7839	-0.1991	2	54	1006	193	2016.7358	31.5751	1.1038
53	polychlorinated biphenyl	1.5143	-0.2771	2	32	365	85	2015.6118	25.7765	0.8733
54	polycyclic aromatic hydrocarbon	1.0339	-0.282	2	39	290	81	2016.3086	46.5062	1.575
55	reproduction	-0.9645	-0.1686	1	29	179	87	2014.9195	19.3563	0.6766
56	residue	0.2547	-0.0349	2	62	1201	219	2015.5388	27.1553	1.0115

57	resistance	-0.6418	-0.2941	1	42	252	221	2017.1357	33.7014	1.5267
58	risk quotient	0.2986	0.3333	3	57	934	77	2017.6364	35.039	1.5086
59	river	0.8203	0.1026	2	56	3564	462	2017.0022	30.5195	1.2158
60	sediment	0.9096	0.0628	2	57	3706	547	2016.1627	36.0402	1.3304
61	sensitivity	-0.6987	0.1375	1	56	693	226	2014.9071	30.0664	0.9113
62	south africa	-0.2749	-0.2673	1	42	213	67	2016.2388	27.1194	1.1949
63	spatial distribution	0.6331	-0.3015	2	49	423	98	2018.3469	18.7551	1.0417
64	species sensitivity distribution	-0.4313	0.5036	3	47	514	82	2015.5854	32.0854	0.9525
65	sublethal effect	-0.9224	-0.1209	1	34	263	74	2016.3108	30.9054	1.2043
66	surface sediment	1.5228	-0.1548	2	33	437	80	2016.3375	26.55	0.9633
67	surface water	0.4235	0.3314	3	58	1970	244	2016.2705	46.1885	1.6997
68	toxic effect	-0.3585	0.0362	4	44	253	78	2017.1154	25.2821	1.025
69	usa	-0.3715	-0.1341	1	40	195	77	2011.7792	29.3896	0.8189
70	water	0.5654	0.2615	3	62	3696	485	2016.1979	34.2763	1.2413
71	zebrafish	0.034	-0.0863	4	18	61	83	2018.8916	23.7108	1.1335

Table S5 The map file exported by VOSviewer with the topic of “Neonicotinoide insecticide”.

Id	Label	X	Y	Cluster	Weight<Links>	Weight<Total link strength>	Weight<Occurrences>	Score<Avg. pub. year>	Score<Avg. citations>	Score<Avg. norm. citations>
1	acute toxicity	-0.5898	0.0789	1	44	181	86	2014.4651	31.1395	0.845
2	antibiotic	0.7625	-0.5206	2	32	210	134	2019.4776	58.6418	3.1628
3	antibiotic resistance gene	0.8493	-0.5775	2	14	61	79	2020.4304	42.6076	2.5402
4	atrazine	0.0509	0.2852	3	50	1090	153	2015.8562	33.1634	1.3232
5	australia	-0.6684	-0.2069	1	36	165	89	2014.1461	34.7079	1.173
6	bee	-1.1514	-0.0604	1	41	1086	177	2018.8588	45.8023	2.0384
7	bioaccumulation	0.4727	-0.2087	4	43	391	123	2017.2439	31.6423	1.1966
8	biodiversity	-0.3714	-0.0104	1	56	375	85	2015.6471	59.8824	2.1909
9	biological control	-0.8047	-0.2802	1	16	45	85	2017.2	32.6353	1.1638
10	bird	-0.5917	0.2312	1	42	701	164	2014.878	22.4024	0.6906
11	brazil	-0.5999	-0.0867	1	43	341	95	2016.4105	20.5895	0.8163
12	china	0.7035	-0.306	2	61	1963	594	2016.9108	31.1953	1.2502
13	chlorpyrifo	-0.137	0.2932	3	56	1007	132	2016.053	24.9773	1.0359
14	coleoptera	-0.7968	-0.2837	1	21	53	157	2015.6624	14.0764	0.4454
15	concentration	0.1305	0.1185	3	67	6990	960	2016.3458	31.9292	1.1833
16	contamination	0.4142	0.0105	2	61	1585	303	2015.6832	33.67	1.1197
17	cypermethrin	0.0535	0.3779	3	41	627	82	2015.9146	30.0732	1.296
18	ddts	1.5088	-0.0424	2	38	837	82	2015.3415	31	1.0787
19	diazinon	0.4006	0.7161	3	45	651	68	2015.5	36.1912	1.2794
20	diptera	-0.6953	-0.268	1	18	30	100	2016.64	20.78	0.6384
21	diuron	-0.1611	0.4755	3	34	311	57	2016.4386	32.9123	1.11
22	ecological risk	0.5845	0.0826	3	60	2283	314	2016.7516	24.551	1.1181
23	endosulfan	0.6742	0.3203	3	52	1067	89	2014.8202	30.0787	1.1598
24	europe	-0.766	-0.1347	1	41	292	116	2016.0172	35.2586	1.1825
25	exposure	-0.5473	-0.004	1	68	3668	994	2015.5362	29.508	1.0201
26	fish	0.5072	0.1342	3	61	2276	381	2015.8268	39.21	1.2901
27	fungicide	-0.5651	0.4042	1	47	948	176	2017.5511	41.6023	1.5114

28	glyphosate	-0.412	0.0868	1	44	462	185	2017.2595	38.1297	1.5987
29	groundwater	1.1638	0.0167	2	39	656	75	2018.16	37.2267	1.5465
30	health risk	1.1045	-0.0244	2	46	1023	153	2017.634	27.8824	1.038
31	hemiptera	-0.7832	-0.2816	1	23	66	136	2016.9926	14.3309	0.4721
32	herbicide	-0.4241	0.2571	1	55	1445	323	2015.5913	33.6997	1.0826
33	high risk	0.1975	0.3692	3	53	840	69	2018.4783	49.5072	2.5332
34	honey bee	-1.2115	-0.0725	1	31	547	83	2017.5542	34.6627	1.4065
35	honeybee	-1.2052	0.0041	1	22	166	55	2018.1636	32.7455	1.261
36	human health	0.925	0.2045	2	49	726	81	2018.5556	24.642	1.4262
37	hymenoptera	-0.9108	-0.2625	1	26	212	102	2016.9706	20.8529	0.7011
38	india	0.7506	-0.0589	2	43	471	80	2017.45	26.5625	1.4432
39	insect	-0.8286	-0.0577	1	57	403	149	2016.8591	27.1007	1.1363
40	insecticide	-0.7365	0.0919	1	66	2110	457	2016.0744	38.0197	1.2503
41	lepidoptera	-0.7755	-0.2937	1	19	58	127	2016.7638	11.8425	0.4449
42	malathion	0.1717	0.6091	3	44	564	59	2017.1017	21.9322	1.0179
43	mechanism	-0.2649	-0.2007	1	45	274	124	2016.6935	27.7419	1.1604
44	mortality	-0.7743	-0.1091	1	46	375	101	2014.4554	27.0396	0.8751
45	neonicotinoid	-1.0355	-0.0423	1	35	289	59	2018.0847	40.8814	2.0209
46	ocp	1.322	-0.0975	2	39	2784	244	2018.3566	20.2951	1.0853
47	organochlorine pesticide	1.4289	-0.1458	2	45	1700	249	2016.3414	25.4257	0.9779
48	persistent organic pollutant	1.0955	-0.1965	2	37	219	114	2015.6579	35.9825	1.072
49	pesticide exposure	-0.9061	0.0098	1	54	968	166	2016.1446	39.2229	1.4058
50	pesticide residue	0.3834	0.2141	3	59	1415	188	2016.25	33.1702	1.3941
51	pesticide risk assessment	-1.0711	-0.0065	1	44	626	126	2016.9127	25.246	1.0386
52	pollutant	0.7839	-0.1991	2	54	1006	193	2016.7358	31.5751	1.1038
53	polychlorinated biphenyl	1.5143	-0.2771	2	32	365	85	2015.6118	25.7765	0.8733
54	polycyclic aromatic hydrocarbon	1.0339	-0.282	2	39	290	81	2016.3086	46.5062	1.575
55	reproduction	-0.9645	-0.1686	1	29	179	87	2014.9195	19.3563	0.6766
56	residue	0.2547	-0.0349	2	62	1201	219	2015.5388	27.1553	1.0115

57	resistance	-0.6418	-0.2941	1	42	252	221	2017.1357	33.7014	1.5267
58	risk quotient	0.2986	0.3333	3	57	934	77	2017.6364	35.039	1.5086
59	river	0.8203	0.1026	2	56	3564	462	2017.0022	30.5195	1.2158
60	sediment	0.9096	0.0628	2	57	3706	547	2016.1627	36.0402	1.3304
61	sensitivity	-0.6987	0.1375	1	56	693	226	2014.9071	30.0664	0.9113
62	south africa	-0.2749	-0.2673	1	42	213	67	2016.2388	27.1194	1.1949
63	spatial distribution	0.6331	-0.3015	2	49	423	98	2018.3469	18.7551	1.0417
64	species sensitivity distribution	-0.4313	0.5036	3	47	514	82	2015.5854	32.0854	0.9525
65	sublethal effect	-0.9224	-0.1209	1	34	263	74	2016.3108	30.9054	1.2043
66	surface sediment	1.5228	-0.1548	2	33	437	80	2016.3375	26.55	0.9633
67	surface water	0.4235	0.3314	3	58	1970	244	2016.2705	46.1885	1.6997
68	toxic effect	-0.3585	0.0362	4	44	253	78	2017.1154	25.2821	1.025
69	usa	-0.3715	-0.1341	1	40	195	77	2011.7792	29.3896	0.8189
70	water	0.5654	0.2615	3	62	3696	485	2016.1979	34.2763	1.2413
71	zebrafish	0.034	-0.0863	4	18	61	83	2018.8916	23.7108	1.1335

Table S6 The map file exported by VOSviewer with the topic of “insecticide” and “Taihu”.

Id	Label	X	Y	Cluster	Weight<Links >	Weight<Total link strength>	Weight<Occu rrences>	Score<Avg. pub. year>	Score<Avg. citations>	Score<Avg. norm. citations>
1	alpha endosulfan	0.9187	0.1467	3	4	86	5	2007.6000	102.4000	2.3338
3	chlorantraniliprole	0.2587	-0.0135	6	2	112	7	2012.0000	0.0000	0.0000
4	ddt concentration	1.0453	-0.0928	4	3	25	8	2009.2500	13.1250	1.2323
5	ddt residue	1.0614	-0.0942	4	2	23	5	2005.8000	70.6000	1.9787
6	degradation	0.7425	-0.0512	2	6	71	9	2008.3333	20.5556	0.9210
7	endosulfan	0.8112	0.1455	3	4	162	17	2009.8235	31.3529	2.1330
8	hcb	0.9314	0.059	2	3	17	7	2011.8571	62.4286	1.0289
10	neonicotinoid pesticide	0.8253	-0.0777	2	2	66	7	2012.7143	3.4286	0.1459
11	organophosphorus pesticide	-0.8221	0	1	4	32	6	2016.0000	43.0000	1.3800
14	pyrethroid insecticide	-1.0211	0.0062	1	2	27	9	2023.0000	18.0000	3.8182

15	soil	0.7005	-0.0095	2	11	439	100	2010.8100	33.5200	0.9839
16	surface water	-0.9567	-0.0002	1	7	61	23	2017.8696	75.3043	1.3690
17	taihu	-0.38	-0.0082	5	6	37	10	2010.0000	15.7000	1.1380
18	taihu lake basin	-0.9979	0.0053	1	4	26	5	2016.8000	38.6000	1.2485
19	toxicity	-0.7257	-0.0003	1	4	22	7	2017.2857	24.7143	2.1033

Text S2 Survey of emerging contaminants in Lake Taihu

2.1 Materials

According to the List of ECs for Key Control (2023 edition) (Wang et al., 2024). 21 ECs detected in samples were as follows: perfluorooctane sulphonate (PFOS), perfluorooctanoic acid (PFOA), dicofol, perfluorohexane-1-sulphonic acid (PFHxS), dichloromethane, trichloromethane, 4-nonylphenol, hexabromocyclododecane (HBCD), chlordane, hexachlorobenzene (HCB), lindane, azithromycin, clarithromycin, chlortetracycline hydrochloride, oxytetracycline, doxycycline, ofloxacin, enrofloxacin, ciprofloxacin, norfloxacin, sulfamethoxazole. Chemical standards with chromatographic purity were purchased from ANPEL (Shanghai, China). HPLC-grade solvents from Sigma-Aldrich (USA) and ultrapure water from a CascadaTMIX-water (Pall Corporation, USA) were used for all analyses. Stock solutions were prepared in methanol (MeOH) and stored at 4°C in amber-glass bottles.

2.2 Sampling

In July 2023, sampling points were set up around Lake Taihu in China. The latitude and longitude of the sampling points are shown in Table S8. Before sampling, stainless-steel buckets and sampling bottles were rinsed three times with water from the sampling point. Then, 3 L of water samples were collected from each location approximately 20 m from the shore and 1 m below the water surface. The water samples were transferred to clean amber-glass bottles for storage. After sampling, the water samples were immediately transported back to the laboratory and stored in a refrigerator at 4°C.

2.3 Sample pretreatment and analysis

The water samples were filtered using 0.45- μm glass-fiber filters and adjusted to approximately pH 3.0. The extraction was performed using the solid-phase extraction (SEP) system (Autotrace 280, Thermo Scientific, USA). Water samples were enriched by SPE using the Oasis HLB cartridges (200 mg, Waters, Millford, MA, USA). First, a SEP column was activated with 5 mL of methanol and ultrapure water, and then vacuum dried for 5 min. Next, 1 L of the water sample was extracted at a flow rate of 10 mL/min. Subsequently, the target compounds were eluted using 4 mL each of methanol, dichloromethane, ethyl acetate, and a mixture of dichloromethane and ethylacetate (1:1, v:v). The eluate was collected and evaporated to near dryness using nitrogen. Then, the sample was finally concentrated 1000 \times by reconstituting it to 1 mL. Finally, after the filtration of the suspended solids using a 0.22 μm organic filter, the sample was stored at -20°C for analysis. The solvent was exchanged for dichloromethane for GC-MS analysis or methanol for LC-MS analysis (1.0 mL). Some chemical substances were detected using UPLC-TQ-MS (Waters ACQUITY UPLC I-Class/Xevo TQ-S micro IVD System, Waters, USA). A C18 column (1.7 μm , 2.1 \times 100 mm, Waters, USA) was used with a column temperature of 35°C. The mobile phases were ultrapure water (mobile phase A) and methanol (mobile phase B). The injection volume was 10 μL . Substance separation was carried out using gradient elution at a flow rate of 0.3 mL/min.

Mass spectrometry detection was performed in positive or negative electrospray ionization mode using Multiple Reaction Monitoring (MRM). Others were tested using Trace (GC)-ISQ (MS) (Thermo Scientific, USA) in selected ion monitoring mode. Chromatographic conditions: injection port temperature at 200°C; injection volume of 1 µL; split injection mode with a split ratio of 12; the column used was a DB-5MS UI capillary column (30 m × 0.25 mm × 0.25 µm, Agilent); the carrier gas was 99.999% ultra-high purity helium; flow rate was 0.8 mL/min; the temperature program was an initial temperature of 35°C held for 5 min, then increased at a rate of 10°C/min to 100°C, and further increased at a rate of 40°C/min to 280°C and held for 2 min. Mass spectrometry conditions: transfer line temperature at 280°C; ion source temperature at 280°C; ionization mode was electron impact ionization; ionization energy was 70 eV.

2.4 Ecological risk assessment

The risk quotient (RQ) for each chemical is calculated using Eq. (1). The hazard index (HI) at each sampling point is the sum of the RQ values for each substance. According to ecological risk assessment standards, HI less than 0.1, between 0.1 and 1.0, and greater than 1.0 indicates low, moderate, and high combined risk, respectively (Wang et al., 2021).

$$RQ = MEC/PNEC, \quad (1)$$

MEC and PNEC stand for Measured Environmental Concentration (MEC) and Predicted No-Effect Concentration (PNEC), respectively. The assessment of PNEC is conducted by dividing the toxicity value by the Assessment Factor (AF). According to the European Technical Guidance Document, when there is NOEC data for one, two, or three trophic levels, the AF equals 100, 50, or 10, respectively. When using EC₅₀ or LC₅₀ as the toxicity value, the AF is 1000 (Wang et al., 2021). The toxicity data primarily comes from the United States EPA website. The toxicity data used in this study can be found in Table S9. The calculated ecological risk values can be found in the Tables S10, S11, and S12.

2.5 Statistical analysis

Data analysis was performed using the statistical software Microsoft Excel 2016 (Microsoft Corporation). The values were considered significant when $p < 0.05$. The chart (Fig. 1) was drawn using Origin Pro 2023 (b) (Origin Laboratory, USA). Inverse Distance Weighting was chosen as the method for the generation of the ecological risk maps using ArcMap 10.8 (ESRI, Redlands, USA) (Zhou et al., 2020).

2.6 Computational analysis

The optimizations and computations were performed using the Gaussian 09 software (Akram et al., 2023). The optimization of the molecular structures was carried out by a hybrid exchange-correlation Becke, 3-parameter, Lee-Yang-Parr (B3LYP) functional (Dindorkar et al., 2022). The

DFT simulations were carried out using the 6-311 + G (d, p) basis set. The computations were performed in water media.

Table S7 Concentrations of polycyclic aromatic hydrocarbons and estrogens in Lake Taihu in previous reports.

Polycyclic aromatic hydrocarbons			Estrogens		
Year	Concentration (ng/g)	Reference	Year	Concentration (ng/L)	Reference
2010	209.00–1003.00	(Zhang et al., 2012)	2019	^a)ND–16.84	(Zhao et al., 2024)
2015	382.50–2230.90	(Zhao et al., 2015)	2016	ND–20.11	(Bao et al., 2020)
2004	643.60	(Yuan, 2004)	2016	ND–6.02	(Jia et al., 2019)
2015	770.00–4200.00	(Kang et al., 2017)	2014	ND–103.73	(Zhou et al., 2016)
2011	262.00–1087.00	(Yu et al., 2013)	2013	ND–155.00	(Zhou et al., 2016)
2007	286.86–1087.22	(Yu et al., 2013)	2011	ND–47.46	(Yan et al., 2014)
2021	124.00–592.00	(Wen et al., 2024)	2009	ND–37.80	(Lu et al., 2011)
2018	294.00–1243.00	(Kong et al., 2023)			

Notes: a) ND: Non detected.

Table S8 The latitude and longitude of the sampling points.

Sites	Longitude	Latitude
TH1	120.228456	31.548484
TH2	120.346495	31.468994
TH3	120.406185	31.445273
TH4	120.463439	31.22081
TH5	120.482091	31.011324
TH6	120.338856	30.939628
TH7	120.245166	30.925944
TH8	120.126994	30.940272
TH9	120.011058	31.01936
TH10	119.938247	31.105362
TH11	119.892611	31.228644
TH12	119.936546	31.33736
TH13	120.008161	31.453156
TH14	120.026373	31.49193
TH15	120.110927	31.501044

Table S9 Acute toxicity data (mg/L) for ECs.

Name	CAS Number	Fish	Invertebrates	Algae
		LC ₅₀ /EC ₅₀	LC ₅₀ /EC ₅₀	LC ₅₀ /EC ₅₀
Perfluorooctane sulphonate	1763-23-1	2.2000	49.2700	76.4000
Perfluorooctanoic acid	335-67-1	24.6000	15.5000	44.0000
Dicofol	115-32-2	0.0160	0.3900	—
Perfluorohexane-1-sulphonic acid	355-46-4	—	—	—
Dichloromethane	<u>75-09-2</u>	97.0000	177.0000	33.0900
Trichloromethane	67-66-3	1.2400	29.0000	13.3000
Nonyl Phenol	104-40-5	0.1300	0.0580	0.1100
Hexabromocyclododecane	3194-55-6	0.0025	0.0110	0.0037
Chlordane	57-74-9	0.0570	0.0200	0.3380
Hexachlorobenzene	118-74-1	0.0070	0.00045	0.0100
Lindane	58-89-9	0.0073	0.0455	1.2800
Azithromycin	76801-85-9	—	—	—
Clarithromycin	81103-11-9	33.6400	18.6600	0.0020
Chlortetracycline Hydrochloride	57-62-5	78.9000	88.0000	—
Oxytetracycline	79-57-2	110.1000	126.7000	0.1700
Doxycycline	564-25-0	—	—	—
Ofloxacin	82419-36-1	—	3.1300	1.4100
Enrofloxacin	112732-17-9	—	—	—
Ciprofloxacin	85721-33-1	100.0000	4.0000	—
Norfloxacin	70458-96-7	—	4.0000	0.0380
Sulfamethoxazole	723-46-6	27.3500	35.3600	0.5200

Clarithromycin	0.0020	0.0021	0.0022	0.0017	0.0009	0.0013	0.0010	0.0000	0.0204	0.0000	0.0015	0.0018	0.0014	0.0018	0.0011	0.0026
Chlortetracycline Hydrochloride	0.0008	0.0008	0.0008	0.0009	0.0008	0.0009	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
Oxytetracycline	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Doxycycline	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ofloxacin	0.0416	0.0430	0.0412	0.0428	0.0469	0.0467	0.0431	0.0423	0.0442	0.0410	0.0436	0.0415	0.0419	0.0516	0.0516	0.0442
Enrofloxacin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ciprofloxacin	0.0280	0.0252	0.0254	0.0254	0.0253	0.0268	0.0291	0.0260	0.0249	0.0250	0.0265	0.0294	0.0289	0.0276	0.0325	0.0271
Norfloxacin	0.0652	0.0692	0.0724	0.0590	0.0656	0.0680	0.0711	0.0600	0.0651	0.0601	0.0632	0.0644	0.0686	0.0594	0.0609	0.0648
Sulfamethoxazole	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000
Cumulative ecological risks	23.5233	29.1009	25.8249	21.3745	76.8581	8.8461	5.9400	20.1419	26.4835	19.1172	21.9351	28.1558	14.2217	17.3000	0.6923	22.6343

Oxytetracycline	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
e																
Doxycycline	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ofloxacin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Enrofloxacin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ciprofloxacin	0.0011	0.0010	0.0010	0.0010	0.0010	0.0011	0.0012	0.0010	0.0010	0.0010	0.0011	0.0012	0.0012	0.0011	0.0013	0.0011
Norfloxacin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sulfamethoxazole	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000
Cumulative ecological risks	22.6716	23.0376	18.8612	6.2290	19.0858	40.0977	17.2468	38.4339	62.1185	26.2483	47.1014	53.2763	23.9279	18.5455	6.0918	29.7772

Table S12 Risk quotient values for algae.

Sample	TH1	TH2	TH3	TH4	TH5	TH6	TH7	TH8	TH9	TH10	TH11	TH12	TH13	TH14	TH15	Average
Longitude	120.2284	120.3464	120.4061	120.4634	120.4820	120.3388	120.2451	120.1269	120.0110	119.9382	119.8926	119.9365	120.0081	120.0263	120.1109	—
	56	95	85	39	91	56	66	94	58	47	11	46	61	73	27	—
Latitude	31.54848	31.46899	31.44527	31.22081	31.01132	30.93962	30.92594	30.94027	31.01936	31.10536	31.22864	31.33736	31.45315	31.49193	31.50104	—
	4	4	3		4	8	4	2		2	4		6		4	—
Perfluorooctane sulphonate	0.0002	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Perfluorooctanoic acid	0.0027	0.0018	0.0030	0.0022	0.0016	0.0007	0.0013	0.0025	0.0009	0.0009	0.0021	0.0012	0.0012	0.0008	0.0011	0.0017
Dicofol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Perfluorohexane-1-sulphonic acid	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dichloromethane	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0018	0.0000	0.0000	0.0003	0.0000	0.0000	0.0020	0.0000	0.0001	0.0003
Trichloromethane	0.0000	0.0000	0.0000	0.0041	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0316	0.0000	0.0000	0.0000	0.0000	0.0025
Nonyl Phenol	0.4764	0.0000	0.4209	0.3609	0.0000	0.0000	0.4655	0.4145	0.5155	0.3809	0.4218	0.4291	0.0000	0.3755	0.0000	0.2675
Hexabromocyclododecane	5.4378	3.3514	2.5730	0.0000	4.0514	24.0838	8.4703	22.8486	37.9405	5.3946	22.6027	29.6730	5.8378	5.1432	0.0000	9.9620
Chlordane	0.0000	0.0000	0.0000	0.0000	0.0886	0.0000	0.0929	0.0000	0.0000	0.0000	0.0000	0.0846	0.0000	0.0000	0.0000	0.0190
Hexachlorobenzene	0.9100	1.2070	1.0380	0.9210	3.3140	0.0000	0.0000	0.4980	0.5370	0.6930	0.5630	0.6810	0.5050	0.6310	0.0000	0.7829
Lindane	0.0000	0.0214	0.0246	0.0000	0.0000	0.0254	0.0214	0.0202	0.0271	0.0218	0.0226	0.0217	0.0193	0.0193	0.0193	0.0169
Azithromycin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Clarithromycin	18.9500	20.0000	20.3500	15.6500	8.8500	11.9500	9.6500	0.0000	190.0500	0.0000	13.9500	16.5000	12.7500	16.6500	10.2500	12.5357
Chlortetracycline Hydrochloride	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Oxytetracycline	0.2035	0.2006	0.1994	0.1971	0.1959	0.2006	0.2000	0.1976	0.2000	0.1971	0.2018	0.2024	0.1976	0.2029	0.2000	0.1997
Doxycycline	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ofloxacin	0.0924	0.0954	0.0915	0.0951	0.1041	0.1037	0.0957	0.0939	0.0982	0.0911	0.0967	0.0921	0.0930	0.1146	0.1145	0.0981
Enrofloxacin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ciprofloxacin	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Norfloxacin	6.8658	7.2816	7.6184	6.2079	6.9053	7.1553	7.4816	6.3158	6.8500	6.3211	6.6553	6.7816	7.2237	6.2474	6.4132	6.8195

Sulfamethoxazole	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0312	0.0000	0.0000	0.0022
Cumulative ecological risks	25.9806	24.7822	24.6090	17.1354	16.5017	36.2605	18.9032	23.9816	229.2710	6.6886	37.7956	47.5929	19.3129	23.0228	10.4705	23.788	

4

References

- Akram W, Zahid W A, El Maati L A, Altujri R, Hossain I, Akhter M S, Iqbal J (2023). Engineering push–pull structural versatility in highly functional carbazole-based hole transporting materials design for efficient perovskites solar devices. *Journal of Photochemistry and Photobiology A Chemistry*, 444: 114991 doi:10.1016/j.jphotochem.2023.114991
- Bao Y, Huang W, Hu X, Yin D (2020). Distribution of 31 endocrine-disrupting compounds in the Taihu Lake and application of the fish plasma model. *Environmental Sciences Europe*, 32: 80 doi:10.1186/s12302-020-00347-0
- Dindorkar S S, Patel R V, Yadav A (2022). Unravelling the interaction between boron nitride nanosheets and organic pesticides through density functional theory studies. *Colloids and Surfaces. A, Physicochemical and Engineering Aspects*, 649: 129550 doi:10.1016/j.colsurfa.2022.129550
- Jia Y, Hammers-Wirtz M, Crawford S E, Chen Q, Seiler T B, Schaffer A, Hollert H (2019). Effect-based and chemical analyses of agonistic and antagonistic endocrine disruptors in multiple matrices of eutrophic freshwaters. *Science of the Total Environment*, 651: 1096–1104 doi:10.1016/j.scitotenv.2018.09.199
- Kang J, Hu J, Zhu Z, Liu X, Zhongliang W, Bai L, Li J (2017). Distribution, source and risk assessment of PAHs in surface sediments from Taihu Lake and its surrounding rivers. *Zhongguo Huanjing Kexue*, 37(3): 1162–1170 (in Chinese)
- Kong J, Han M, Cao X, Cheng X, Yang S, Li S, Sun C, He H (2023). Sedimentary spatial variation, source identification and ecological risk assessment of parent, nitrated and oxygenated polycyclic aromatic hydrocarbons in a large shallow lake in China. *Science of the Total Environment*, 863: 160926 doi:10.1016/j.scitotenv.2022.160926
- Lu G, Yan Z, Wang Y, Chen W (2011). Assessment of estrogenic contamination and biological effects in Lake Taihu. *Ecotoxicology (London, England)*, 20(5): 974–981 doi:10.1007/s10646-011-0660-y
- Wang B, Sui Q, Liu H, Yu G, Qu J (2024). Promoting environmental risk assessment and control of emerging contaminants in China. *Engineering (Beijing)*, 37: 13–17 doi:10.1016/j.eng.2024.03.010
- Wang T, Zhong M, Lu M, Xu D, Xue Y, Huang J, Blaney L, Yu G (2021). Occurrence, spatiotemporal distribution, and risk assessment of current-use pesticides in surface water: A case study near Taihu Lake, China. *Science of the Total Environment*, 782: 146826 doi:10.1016/j.scitotenv.2021.146826
- Wen J, Li Y, Li Y, Zhang H, Cheng X, Li N, You X, Zhu Q, Liu M (2024). The spatial distribution, source and risk of polycyclic aromatic hydrocarbon in surface sediments of Lake Taihu. *Hupo Kexue*, 36(4): 1082–1095 (in Chinese) doi:10.18307/2024.0422
- Yan Z, Yang X, Lu G, Liu J, Xie Z, Wu D (2014). Potential environmental implications of emerging organic contaminants in Taihu Lake, China: comparison of two ecotoxicological assessment approaches. *Science of the Total Environment*, 470–471(0): 171–179 doi:10.1016/j.scitotenv.2013.09.092
- Yu Y, Li Y, Lin T, Hua Z (2013). Distribution and sources of polycyclic aromatic hydrocarbons in surface sediments from Taihu Lake. *Environmental Chemistry*, 32(12): 2336–2341 (in Chinese)
- Yuan X, Li A, Wang Y, Sun C (2004). Polycyclic aromatic hydrocarbons in sediments from Taihu Lake and their toxicity evaluation. *Journal of Hohai University*, 32(6): 607–610 (Natural Sciences) (in Chinese)

Zhang Y, Guo C S, Xu J, Tian Y Z, Shi G L, Feng Y C (2012). Potential source contributions and risk assessment of PAHs in sediments from Taihu Lake, China: comparison of three receptor models. *Water Research*, 46(9): 3065–3073 doi:10.1016/j.watres.2012.03.006

Zhao L, Wang C, Sun F, Liao H, Chang H, Jia X (2024). Assessment of occurrence, partitioning and ecological risk for 144 steroid hormones in Taihu Lake using UPLC-MS/MS with machine learning model. *Chemosphere*, 354: 141598 doi:10.1016/j.chemosphere.2024.141598

Zhao X, Yuan X, Li T, Wang B, Chen H (2015). Spatial distribution, toxicity and source apportionment of PAHs in sediments from rivers around Taihu Lake. *Nongye Huanjing Kexue Xuebao*, (2): 345–351 (in Chinese)

Zhou L, Zhang B, Zhao Y, Wu Q L (2016). Occurrence, spatiotemporal distribution, and ecological risks of steroids in a large shallow Chinese lake, Lake Taihu. *Science of the Total Environment*, 557–558: 68–79 doi:10.1016/j.scitotenv.2016.03.059

Zhou Y, Wu J, Wang B, Duan L, Zhang Y, Zhao W, Wang F, Sui Q, Chen Z, Xu D, Li Q, Yu G (2020). Occurrence, source and ecotoxicological risk assessment of pesticides in surface water of Wujin District (northwest of Taihu Lake), China. *Environmental Pollution*, 265: 114953