Electronic Supplementary Material (ESI) for Environmental Science: Water Research & Technology.

Supporting Information

Occurrence and fate of benzophenone-type UV filters in aquatic environments: A review

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Table S1. Global occurrence of benzophenones in wastewater treatment plants (WWTPs) and sewage treatment plants (STPs) (in ng L^{-1})

Country/Region	Sample	Detect. Freq.[a]	Median	Lowest conc.[b]	Highest conc.[c]	References
BP-1						
China	WWTP influent	100.0%	1750	-	1750	1
	WWTP influent	100.0%	168.9[d]	23.3	281.3	2
	WWTP effluent	88.2%	89.5[d]	19.6	155	2
	WWTP effluent	100.0%	-	n.d.	n.d.	1
	Wastewater	88.2%	463.2	216	490	3
	Sewage	100.0%	660	-	660	4
Taiwan region	WWTP effluent	100.0%	1.7[d]	1.5	1.7	5
	WWTP effluent	100.0%	12.25[d]	7.7	16.8	6
	WWTP effluent	100.0%	9.45	7.3	11.6	7
Spain	STP influent	100.0%	80[d]	31 ± 2	148 ± 7	8
	WWTP influent	100.0%	283.2[d]	152.4	722	9
	WWTP effluent	60.0%	12.9[d]	2.89	31.1	9
	STP effluent	50.0%	12[d]	<LOQ	13 ± 2	8
Italy	WWTP influent	-	86.9	-	86.9 ± 6.5	10
	WWTP effluent	-	17.6	-	17.6 ± 4.2	10
Czech	WWTP influent	-	-	-	-	11
	WWTP effluent	-	-	-	-	11
United Kingdom	WWTP influent	100%	306[d]	-	306	12
	WWTP influent	100%	258000	51000	700000	13
	WWTP effluent	100%	32[d]	-	32	12
	WWTP effluent	58%	12000	<LOQ	38000	13
Germany	WWTP influent	100%	265.5[d]	43 ± 4	488 ± 19	14
	WWTP effluent	50%	12 ± 1[d]	<LOQ	12 ± 1	14
Portugal	WWTP influent	6.7%	184.4	88.5	480.5	15
	WWTP effluent	0	-	-	-	15
BP-2						
Spain	WWTP influent	0	-	n.d.	n.d.	9
	WWTP effluent	0	-	n.d.	n.d.	9

United Kingdom	WWTP influent	100%	194000	61000	403000	[13]
	WWTP influent	100%	-	-	25	[12]
	WWTP effluent	100%	-	-	1	[12]
	WWTP effluent	42%	4000	<LOQ	13000	[13]
Italy	WWTP influent	-	-	-	-	[10]
	WWTP effluent	-	-	-	-	[10]
Germany	WWTP influent	100%	-	35 ± 6	93 ± 10	[14]
	WWTP effluent	50%	-	<LOQ	14 ± 3	[14]
BP-3						
USA	WWTP influent in dry season	-	6870	5300	8300	[16]
	WWTP influent in wet season	-	6240	110	10400	[16]
	WWTP effluent	16.7%	-	-	840	[16]
Switzerland	WWTP influent	100%	1700[d]	600	7800	[17]
	WWTP effluent	100%	150[d]	<10	700	[17]
Spain	WWTP influent	75%	101[d]	<LOD	127	[18]
	WWTP influent	45%	-	-	-	[19]
	WWTP influent	100%	182.4[d]	75.6	306	[9]
	STP influent	100%	343[d]	184 ± 8	429 ± 23	[8]
	Wastewater	0	-	n.d.	n.d.	[20]
	Raw waste water	66.7%	91.5[d]	<LOD	168 ± 7	[21]
	STP effluent	80%	93[d]	<LOQ	260	[22]
	WWTP effluent	100%	48[d]	42 ± 3	54 ± 6	[23]
	STP effluent	0	-	< LOQ	< LOQ	[18]
	WWTP effluent	0	-	-	-	[19]
	WWTP effluent	-	82	-	82 ± 7	[24]
	STP effluent	75%	83[d]	77 ± 4	84 ± 3	[8]
	WWTP effluent	100%	15.6[d]	7.71	34	[9]
Portugal	WWTP influent	84.4%	64.85	5.4	323.3	[15]
	WWTP effluent	42.2%	22.2	12.3	136	[15]
Slovenia	WWTP influent	0	-	<LOQ	<LOQ	[25]

	(hospital effluent)					
Japan	STP effluent	100%	-	29	164	[26]
United Kingdom	WWTP influent	64%	1195000	61000	3975000	[13]
	WWTP influent	100%	971[d]	-	971	[12]
	WWTP effluent	8%	22000	<LOQ	223000	[13]
	WWTP effluent	100%	143[d]	-	143	[12]
Brazil	WWTP effluent	0	-	<LOQ	<LOQ	[27]
Norway	WWTP effluent	-	293	81	598	[28]
	WWTP effluent	-	233	10	438	[28]
	WWTP effluent	-	721	374	1915	[28]
China	WWTP influent	50%	-	-	258 ± 4	[29]
	WWTP influent	0	-	-	-	[30]
	WWTP influent	100%	271.1[d]	113.8	576.5	[2]
	WWTP influent	-	5590	-	5590	[31]
	WWTP influent	100%	2620	-	2620	[1]
	WWTP influent	0	-	n.d.	n.d.	[32]
	WWTP effluent	100%	237.5[d]	152 ± 28	323 ± 19	[29]
	WWTP effluent	0	-	-	-	[30]
	WWTP effluent	100%	55.2[d]	18.4	541.1	[2]
	WWTP effluent	100%	1380	n.d.	1380	[1]
	WWTP effluent	100%	3070	-	3070	[33]
	WWTP effluent	100%	2830	-	2830	[34]
	WWTP effluent	-	3220	-	3220	[31]
Taiwan region	WWTP effluent	66.7%	2.95[d]	<LOQ	3.6	[5]
	WWTP effluent	100%	16.95[d]	12.5	21.4	[6]
	WWTP effluent	100%	12.2	10.9	13.5	[7]
South Korea	WWTP effluent	71.4%	-	1	30	[35]
	WWTP effluent	41.2%	7.82	n.d.	13.4	[36]
	STP effluent	-	-	-	-	[37]
	WWTP effluent	-	-	-	-	[37]
Australia	WWTP influent	100%	2085.5[d]	1059 ± 99	3112 ± 551	[38]
	WWTP primary	100%	1761[d]	1053 ± 265	2469 ± 101	[38]

	effluent					
	WWTP secondary effluent	100%	271[d]	54 ± 21	488 ± 8	[38]
	WWTP waste stabilization Lagoon effluent	100%	199.5[d]	36 ± 0.2	363 ± 4	[38]
	WWTP final effluent	100%	152.5	32 ± 1	273 ± 8	[38]
	STP effluent	-	32.7 ± 1.7	-	32.7 ± 1.7	[39]
Germany	WWTP influent	100%	356.5[d]	195 ± 31	518 ± 55	[14]
	WWTP influent	-	234 ± 41	-	234 ± 41	[40]
	Effluent ultra-filtration	-	3 ± 0.5	-	3 ± 0.5	[40]
	WWTP effluent	50%	96[d]	< LOQ	96 ± 12	[14]
	Effluent sequential batch reactor	-	19 ± 4	-	19 ± 4	[40]
	Effluent soil filtration	-	18 ± 2	-	18 ± 2	[40]
	Effluent trickle filter	-	45 ± 5	-	45 ± 5	[40]
Italy	WWTP influent	100%	38[d]	32 ± 5	551 ± 10	[41]
	WWTP influent	-	102.8	-	102.8 ± 8.2	[10]
	WWTP influent	-	-	7	30	[42]
	WWTP influent	-	-	23	119	[42]
	WWTP influent	-	-	15	32	[42]
	WWTP influent	-	-	30	163	[42]
	WWTP influent	-	-	6	110	[42]
	WWTP influent	-	-	6	48	[42]
	WWTP effluent	100%	-	5 ± 15	21 ± 3	[41]
	WWTP effluent	-	-	-	5	[42]
	WWTP effluent	-	-	8	28	[42]

	WWTP effluent	-	-	5	10	[42]
	WWTP effluent	-	-	10	26	[42]
	WWTP effluent	-	-	-	13	[42]
	WWTP effluent	-	-	6	10	[42]
	WWTP effluent	-	18.2	-	18.2 ± 1.2	[10]
BP-6						
Portugal	WWTP influent	0	-	-	-	[15]
	WWTP effluent	0	-	-	-	[15]
BP-8						
China	WWTP influent	41.2%	121.7[d]	<LOQ	174.2	[2]
	WWTP effluent	35.3%	40.45[d]	<LOQ	83.5	[2]
Taiwan region	WWTP effluent	50%	3	-	3	[7]
	WWTP effluent	-	-	n.d.	n.d.	[5]
	WWTP effluent	0	-	n.d.	n.d.	[6]
Spain	WWTP influent	50.0%	122[d]	<LOD	185	[18]
	WWTP influent	0	-	n.d.	n.d.	[9]
	Wastewater	100%	272.3	226	383.8	[3]
	STP effluent	25.0%	55	-	55	[18]
	WWTP effluent	0	-	n.d.	n.d.	[9]
2OH-BP						
Spain	WWTP effluent	-	-	-	-	[24]
Taiwan region	WWTP effluent	50%	2.1	-	2.1	[7]
3OH-BP						
Spain	WWTP effluent	-	-	-	-	[24]
Taiwan region	WWTP effluent	50%	2.1	-	2.1	[7]
2,3,4OH-BP						
Portugal	WWTP influent	0	-	-	-	[15]
	WWTP effluent	0	-	-	-	[15]
4OH-BP						
Spain	WWTP influent	0	-	n.d.	n.d.	[9]
	WWTP effluent	0	-	n.d.	n.d.	[9]
	WWTP effluent	-	-	-	-	[24]
Taiwan region	WWTP effluent	0	-	-	-	[7]

Italy	WWTP influent	-	20.1	-	20.1 ± 3.2	[10]
	WWTP effluent	-	-	-	<MDL	[10]
4DHB						
Spain	WWTP influent	0	-	n.d.	n.d.	[9]
	WWTP effluent	0	-	n.d.	n.d.	[9]

[a] detection frequency;
[b] lowest concentration;
[c] highest concentration;
[d] calculated based on reported data.

Table S2. Global occurrence of benzophenones in sewage sludge, benthic sediments, suspended solids (SS) and soil (in ng g^{-1} dry weight (d.w.))

Country/region	Sample	Detect. Freq.[a]	Median	Lowest conc.[b]	Highest conc.[c]	References
BP-1						
China	Sludge from WWTP	100%	-	4.41	91.6	43
	River sediments	0	-	-	-	43
South Korea	Industrial drainage	0	-	<LOQ	<LOQ	44
	Ground soil	0	-	<LOQ	<LOQ	44
	Sediments	0	-	<LOQ	<LOQ	44
Singapore	River SS	44.0%	43.2	<LOQ	119.5	45
	Reservoir SS	46.7%	78.7	<LOQ	103.7	45
	River sediments	86.7%	3.0	<LOQ	22.5	45
	Reservoir sediments	53.3%	1.1	<LOQ	2.5	45
Germany	Sludge (ng g TSS^{-1})	100%	5.1 ± 1.5	-	5.1 ± 1.5	14
USA	River sediments	66.7%	-	0.259	0.607	43
Spain	Raw sludge	-	-	n.d.	n.d.	46
	Treated sludge: sludge (62%) and wheat-straw pellets (38%) (w/w)	-	-	n.d.	n.d.	46
	Raw sludge	-	80	-	80	47
	Sludge after treatment in a bioslurry reactor	-	-	n.d.	n.d.	47
	River Sediments	0	-	-	-	48
	River sediments in winter	0	-	-	-	49
	River sediments in summer	0	-	-	-	49
	River sediments	0	-	n.d.	n.d.	50
	Marine sediments	0	-	n.d.	n.d.	50
	Marine sediments	-	-	n.d.	n.d.	51
	Soil treated with compost from sewage	63.3%	2.95	n.d.	23.9	52

	sludge					
	Soils amended with sludge	0	-	n.d.	n.d.	50
	Industrial soil	100%	-	n.d.	n.d.	50
	Agricultural soil	65%	1.6	n.d.	5.6	52
BP-2						
China	Activated sludge	0	-	-	-	30
	Sludge from WWTP	0	-	-	-	43
	River sediments	0	-	-	-	43
	Suspended Solids	0	-	-	-	30
Singapore	River SS	96.0%	152.6	<LOQ	2773.9	45
	Reservoir SS	80.0%	154.7	<LOQ	672.1	45
	River sediments	100.0%	9.4	4.7	27.5	45
	Reservoir sediments	80.0%	1.7	<LOQ	6.2	45
USA	River sediments	16.7%	-	-	2.65	43
Germany	Sludge (ng g TSS^{-1})	100%	11 ± 2	-	11 ± 2	14
Spain	Agricultural soil	100%	4.7	0.8	9.4	52
	Soil treated with compost from sewage sludge	91.7%	4.1	n.d.	10.3	52
	Marine sediments	-	-	n.d.	n.d.	51
BP-3						
Spain	Raw sludge	-	60	n.d.	60	46
	Raw sludge	-	34	-	34	47
	Sludge	22.2%[d]	194	n.d.	194	53
	Treated sludge: sludge (62%) and wheat-straw pellets (38%) (w/w)	-	-	n.d.	n.d.	46
	Sludge from STPs	13.3%	-	n.d	0.79	54
	Sludge after treatment in a bioslurry reactor	-	19	n.d.	19	47
	River sediments related	0	-	-	-	50

	with bathing or recreational activities					
	River sediments	30%	11.9	< LOQ	27	48
	River sediments	0	-	n.d.	n.d.	50
	River sediments in winter	0	-	-	-	49
	River sediments in summer	0	-	-	-	49
	Marine sediments	100%	1.72	1.55	2.46	51
	Marine sediments	0	-	n.d.	n.d.	50
	Industrial soil	0	-	n.d.	n.d.	50
	Soil from agricultural fields	0	-	-	-	50
	Agricultural soil	96.4%	1.9	0.8	13.7	52
	Soil treated with compost from sewage sludge	88.1%	1.35	n.d.	26.7	52
	Soils amended with sludge	0	-	n.d.	n.d.	50
USA	River sediments	100%	2.34	0.728	4.66	43
Norway	Sludge	-	-	-	<10	28
	Sludge	-	1218	824	2116	28
	Sediment	-	-	-	<5	28
	Sediment	-	-	-	<5	28
China	Sludge	0	-	n.d.	n.d.	55
	Sludge from WWTP	100%	12.8	2.05	13.3	43
	Sludge	100%	12.8	2.05	23.3	43
	River sediments	-	-	0.16	1.07	56
	River sediments	100%	0.38	0.272	0.545	43
Singapore	River SS	100.0%	189.1	68.9	2107.6	45
	Reservoir SS	100.0%	271.4	148.3	593.9	45
	River sediments	100.0%	10.7	7.7	21.3	45
	Reservoir sediments	100.0%	1.5	1.0	3.9	45

South Korea	River and lake sediments	0	-	<LOQ	<LOQ	44
	Ground soil	15.2%	2.65	<LOQ	3.88	44
	Soil from industrial drainage	14.3%	-	<LOQ	0.027	44
Japan	River sediments	0	-	-	-	26
	STP biosolids	0	-	-	-	26
Chile	River sediments	-	-	n.d	1.05	57
	Estuarine sediments	50%	-	n.d	2.96	57
	Coastal sediments	-	-	n.d	1.42	57
	Coastal sediments	0	-	n.d	n.d	57
	Coastal sediments	0	-	n.d	n.d	57
Colombia	Estuarine sediments	-	-	n.d	5.38	57
	Estuarine sediments	-	-	n.d	4.85	57
	Coastal sediments	-	-	n.d	2.52	57
Germany	Lake sediments	-	-	n.d	n.d	58
	Sludge (ng g TSS^{-1})	100%	132	-	132	14
	Sludge from STPs	-	-	-	-	59
Australia	Biosolids from STP	100%	74.0	-	74.0	39
	WWTP influent suspended solids	100%	107.5[e]	104 ± 0.6	111 ± 21	38
	WWWTP primary sludge	100%	160.5[e]	120 ± 3	201 ± 39	38
	WWTP secondary sludge	100%	987[e]	189 ± 5	1785 ± 93	38
	WWTP digested sludge	100%	226[e]	149 ± 13	303 ± 26	38
	WWTP Waste stabilization lagoon sludge	100%	19 ± 0.2	-	19 ± 0.2	38
	WWTP Sludge stabilization lagoon sludge	100%	18 ± 3	-	18 ± 3	38
	WWTP biosolids	100%	16 ± 2	-	16 ± 2	38

Brazil	Sludge	100%	12	12	13	[60]
BP-6						
Singapore	River SS	100.0%	138.5	23.8	657.8	[45]
	Reservoir SS	100.0%	198.9	69.8	469.7	[45]
	River sediments	100.0%	7.9	4.0	41.0	[45]
	Reservoir sediments	100.0%	1.4	0.8	2.3	[45]
Spain	River sediments	60%	-	n.d.	6.1 ± 0.3	[50]
	Marine sediments	0	-	n.d.	n.d.	[50]
	Marine sediments	-	-	n.d.	n.d.	[51]
	Soils amended with sludge	33.3%	-	n.d.	0.6 ± 0.4	[50]
	Soil treated with compost from sewage sludge	31.7%	5.5	n.d.	25.6	[52]
	Industrial soil	0	-	n.d.	n.d.	[50]
	Agricultural soil	84.7%	3.8	0.8	9.7	[52]
BP-8						
China	Sludge from WWTP	0	-	-	-	[43]
	River sediments	0	-	-	-	[43]
USA	River sediments	66.6%	-	n.d.	0.796	[43]
Singapore	River SS	88.0%	153.9	<LOQ	928.9	[45]
	Reservoir SS	100.0%	182.8	116.1	294.9	[45]
	River sediments	100.0%	10.5	5.9	14.1	[45]
	Reservoir sediments	100.0%	2.2	1.0	6.7	[45]
South Korea	Ground soil	15.2%	-	<LOQ	4.17	[44]
	Sediments	80%	0.95	<LOQ	2.14	[44]
	Industrial drainage	0	-	<LOQ	<LOQ	[44]
Spain	River sediments	0	-	n.d.	n.d.	[50]
	River sediments in winter	0	-	-	-	[49]
	River sediments in summer	0	-	-	-	[49]
	Marine sediments	-	-	n.d.	n.d.	[51]

	Marine sediments	0	-	n.d.	n.d.	50
	Industrial soil	0	-	n.d.	n.d.	50
	Agricultural soil	97.2%	3.3	0.8	7.8	52
	Soils amended with sludge	0	-	n.d.	n.d.	50
	Soil treated with compost from sewage sludge	91.7%	3.65	n.d.	26.7	52
4OH-BP						
China	Sludge from WWTP	80%	-	2.66	10.1	43
	River sediments	0	-	-	-	43
USA	River sediments	50%	-	0.312	0.951	43
Singapore	River SS	100.0%	316.7	88.2	1740.6	45
	Reservoir SS	100.0%	363.3	57.6	573.9	45
	River sediments	100.0%	16.0	2.2	39.4	45
	Reservoir sediments	100.0%	4.2	2.1	9.3	45
Spain	Raw sludge	-	-	n.d.	n.d.	46
	Treated sludge: sludge (62%) and wheat-straw pellets (38%) (w/w)	-	-	n.d.	n.d.	46
	Marine sediments	-	-	n.d.	n.d.	51
	Agricultural soil	88.3%	1.5	0.8	10.9	52
	Soil treated with compost from sewage sludge	88.3%	1.8	n.d.	15.1	52
South Korea	Industrial drainage	0	-	<LOQ	<LOQ	44
	Ground soil	9.1%	-	<LOQ	4.61	44
	Sediments	6.7%	-	<LOQ	18.38	44
2,3,4OH-BP						
South Korea	Industrial drainage	0	-	<LOQ	<LOQ	44
	Ground soil	0	-	<LOQ	<LOQ	44
	Sediments	0	-	<LOQ	<LOQ	44
Spain	River sediments	0	-	n.d.	n.d.	50

	River sediments	0	-	-	-	[48]
	River sediments in winter	0	-	-	-	[49]
	River sediments in summer	16.7%	32.8	-	39.5	[49]
	Marine sediments	0	-	n.d.	n.d.	[50]
	Soils amended with sludge	0	-	n.d.	n.d.	[50]
	Industrial soil	0	-	n.d.	n.d.	[50]
4DHB						
Singapore	River SS	100.0%	37.4	6.9	194.5	[45]
	Reservoir SS	80.0%	46.8	<LOQ	106.4	[45]
	River sediments	80.0%	2.3	<LOQ	3.8	[45]
	Reservoir sediments	100.0%	1.7	0.3	9.1	[45]
Spain	Raw sludge	-	51	-	51	[47]
	Sludge after treatment in a bioslurry reactor	-	50	n.d.	50	[47]
	River sediments in winter	0	-	-	-	[49]
	River sediments in summer	0	-	-	-	[49]
	River sediments	15%	20	-	21	[48]
	Raw sludge	-	70	n.d.	70	[46]
	Treated sludge: sludge (62%) and wheat-straw pellets (38%) (w/w)	-	-	n.d.	n.d.	[46]

[a] detection frequency;
[b] lowest concentration;
[c] highest concentration;
[d] not detected;
[e] calculated based on reported data;
[f] unit in wet weight (ww);
[g] MDL: method detection limit.

Table S3. Global occurrence of benzophenones in fresh water samples (in ng L^{-1})

Country/region	Sample	Detect. Freq.[a]	Median	Lowest conc.[b]	Highest conc.[c]	References
BP-1						
China	River water	-	-	n.d.	n.d.	61
	River water	-	-	n.d.	n.d.	61
	Lake water	-	-	n.d.	n.d.	61
	River water	-	-	-	-	62
	River water	81.5%	4.65	n.d.	12.6	63
	River water	0	-	n.d.	n.d.	1
	River water	0	-	n.d.	n.d.	4
	River water	100.0%	129.7	119.6	153.9	3
	Lake water	-	-	n.d.	n.d.	64
	Lake water	-	-	n.d.	n.d.	43
Taiwan region	River water	83.3%	15.1	n.d.	23.8	7
	River water	-	-	-	1.8	5
	Municipal wastewater receiving river water	50%	-	n.d.	6.1	6
South Korea	River water	4%	-	-	47	44
	Lake water	0	-	-	-	44
USA	Surface water	33.3%	<LOD	< LOQ	74	65
Spain	River water	100.0%	-	-	15.6	66
	River water in winter	0	-	-	-	49
	River water in summer	25.0%	2.03	0.008	2.6	49
	River water	0	-	-	-	67
	River water	40.0%	5.88[d]	4.22	7.54	9
	River water	75%	11.2	n.d.	20.9	68
	Lake water	60%	3.8	n.d.	6.4	68
	River water	25.0%	24	<LOQ	24 ± 1	8
Singapore	River water	-	-	n.d.	n.d.	69
	River water	100.0%	5.4	1.0	18.2	45
	Reservoir water	100.0%	3.2	1.4	5.2	45

Italy	River water	-	19.4	-	19.4 ± 6.2	[10]
	Lake water	0	-	n.d.	n.d.	[70]
United	River water	0	-	<0.3	<0.3	[71]
Kingdom	River water	33%	1	<0.3	6	[71]
	River water	38%	3	<0.3	17	[71]
	River water	38%	3	<0.3	9	[71]
	River water	27%	2	<0.3	3	[71]
	River water	27%	2	<0.3	9	[71]
	River water	22%	2	<0.3	8	[71]
	River water	31%	2	<0.3	9	[71]
	River water	54%	4	<0.3	13	[71]
	River water	38%	2	<0.3	10	[71]
	River water	3/3	7[d]	6	9	[12]
	River water	40%	3000	<LOQ	9000	[13]
	River water	30%	5000	<LOQ	13000	[13]
Germany	River water	100%	2.2[d]	0.9 ± 0.3	29 ± 2	[14]
	River water	11%	2.2	<LOD	2.8	[72]
Switzerland	River water	0/3	-	<LOD	<LOD	[73]
Japan	River water	0	<LOQ	<LOQ	<LOQ	[74]
Thailand	River water	100%	127	-	166	[65]
BP-2						
Spain	River water	0	-	-	-	[67]
	River water	0	-	<LOQ	<LOQ	[66]
	River water	0	-	n.d.	n.d.	[68]
	Lake water	40%	3.55	n.d.	4.7	[68]
	River water	0	-	n.d.	n.d.	[9]
China	River water	51.9%	4.65	n.d.	34.7	[63]
	River water	-	-	-	-	[62]
Sigapore	River water	100.0%	7.9	0.8	109.2	[45]
	Reservoir water	100.0%	3.3	1.6	12.3	[45]
United	River water	0	-	<0.5	<0.5	[71]
Kingdom	River water	0	-	<0.5	<0.5	[71]
	River water	25%	1	<0.5	15	[71]

	River water	6%	18	<0.5	284	[71]
	River water	45%	1	<0.5	5	[71]
	River water	9%	<0.5	<0.5	1	[71]
	River water	0	-	<0.5	<0.5	[71]
	River water	8%	-	<0.5	<0.5	[71]
	River water	31%	4	<0.5	26	[71]
	River water	25%	1	<0.5	6	[71]
	River water	33.3%	4[d]	-	4	[12]
	River water	0	-	<LOQ	<LOQ	[13]
	River water	40%	5000	<LOQ	26000	[13]
Italy	River water	-	-	-	-	[10]
	Lake water	0	-	n.d.	n.d.	[70]
Germany	River water	66.7%	4.25[d]	<LOQ	6.7 ± 2.4	[14]
	River water	0	-	<LOD	<LOD	[72]
Switzerland	River water	0	-	<LOD	<LOD	[73]
BP-3						
Switzerland	River water	33.3%	-	< LOD	96 ± 93 (ng/POCIS)	[73]
	River water	100.0%	-	56	68	[75]
	River water (ng POCIS^{-1})	80.8%	52.5[d]	12	178	[75]
	Lake water	-	-	< 2	4	[76]
	Lake water	-	-	5	125	[76]
	Lake water	100.0%	14[d]	<2	35	[17]
Spain	River water	25.0%	-	<LOD	27 ± 3	[21]
	River water	50%	-	< LOD	30 ± 3	[23]
	Lake water	75.0%	17 ± 2	<LOD	27 ± 4	[23]
	River water	0	-	<LOQ	<LOQ	[66]
	River water	36.7%	-	<LOQ	71	[22]
	River water	100.0%	8[d]	6	28	[18]
	River water	-	428	-	428	[77]
	River water	0	-	n.d.	n.d.	[78]
	River water	0	-	-	-	[19]

	River water	-	66	-	66 ± 1	[24]
	River water	100%	30.9	n.d.	58	[68]
	Lake water	60%	12.4	n.d.	29.6	[68]
	River water	0	-	n.d.	n.d.	[79]
	River water	100%	115.4	97.3	242.6	[3]
	River water	50.0%	230	-	230	[80]
	River water after extreme rainfall	25.0%	-	n.d.	35 ± 2	[81]
	River water in winter	33.3%	12.8	-	14.3	[49]
	River water in summer	100%	52.65	30.5	5720	[49]
	River water	50.0%	70.5[d]	<LOQ	87 ± 8	[8]
	River water	-	-	<LOD	<LOD	[82]
	River water	40.0%	21.32	4.84	37.8	[9]
	River water	100.0%	34	24.9	58	[67]
Slovenia	River water	50%	-	<LOD	114	[25]
	Lake water	80%	62[d]	<LOD	85	[25]
Japan	Industrial and domestic WW polluted river water	16.7%	-	<LOQ	4	[26]
	Polluted river water	66.7%	-	<LOQ	12	[26]
	Domestic wastewater receiving stream water	100%	-	16	41	[26]
	Background sites (two little contaminated rivers and three lakes)	40%	-	<LOQ	10	[26]
	River water	100%	14	-	-	[74]
Singapore	River water	-	-	n.d.	n.d.	[83]
	River water	-	-	n.d.	n.d.	[84]
	River water	100.0%	8.4	2.3	122.6	[45]
	River water	-	-	n.d.	n.d.	[69]

	Reservoir water	100.0%	6.9	4.5	56.1	45
	Reservoir water	100%	10	2.45	331	85
Thailand	River water	100%	86	-	116	65
United	River water	0	-	<15	<15	71
Kingdom	River water	0	-	<15	<15	71
	River water	19%	7	<15	43	71
	River water	19%	8	<15	44	71
	River water	18%	8	<15	44	71
	River water	18%	6	<15	36	71
	River water	0	-	<15	<15	71
	River water	0	-	<15	<15	71
	River water	0	-	<15	<15	71
	River water	0	-	<15	<15	71
	River water	100%	36[d]	28	37	12
	River water	0	-	<LOQ	<LOQ	13
	River water	0	-	<LOQ	<LOQ	13
Brazil	River water	0	-	< 2	< 2	86
	River water	0	-	<LOQ	<LOQ	27
China	River water	-	-	n.d.	n.d.	61
	Lake water	-	-	n.d.	n.d.	61
	Lake water	-	-	-	1620	87
	River water	-	-	-	1700	87
	River water	-	59	-	59	88
	River water	-	-	n.d.	n.d.	89
	River water	70.4%	13.2	n.d.	30	63
	River water	0	-	n.d.	n.d.	90
	River water	37.5%	2210	n.d.	2580	31
	River water	100%	100	870	2580	1
	River water	50%	2325[d]	n.d.	4010	32
	River water	100%	2020	620	3080	34
	River water	100%	1820	580	3350	33
	River water	100%	-	n.d.	n.d.	4
	Lake water	-	-	n.d.	n.d.	91

	Lake water	-	-	n.d.	n.d.	64
Taiwai region	Municipal wastewater receiving river water	100%	13.85[d]	12.3	15.4	6
	River water	100%	13.7	1.6	39.7	7
South Korea	River water	25%	-	1.2	2.7	35
	River water	50%	3.06	n.d.	5.50	36
	River water	0	-	-	-	44
	Lake water	0	-	-	-	44
	River	-	-	-	-	37
Germany	Lake water	-	83 ± 11	-	83 ± 11	92
	River water	11%	6.7	<LOD	11.4	72
	River water	33.3%	47[d]	< LOQ	47 ± 29	14
	Recreational lake water	-	40 ± 3	-	40 ± 3	40
Italy	River water	80%	21.5[d]	< LOD	69 ± 13	41
	River water	-	9.9	-	9.9 ± 3.2	10
	Lake water	33.3%	-	n.d.	<MLOQ	70
Czech	River water under the source of pollution	-	-	12	67	93
	River and production ponds without bathing activities (background sites)	-	-	14	20	93
Colombia	River water	37.5%	98	-	162	94
	River water	-	-	n.d.	n.d.	94
	Reservoir water	96%	-	n.d.	502	94
	Reservoir water	-	-	n.d.	n.d.	94
	Reservoir water	-	-	n.d.	n.d.	94
	Reservoir water	-	-	n.d.	n.d.	94
	Reservoir water	-	-	n.d.	n.d.	94
	Reservoir water	-	-	n.d.	n.d.	94
	Reservoir water	-	-	n.d.	n.d.	94
	Reservoir water	-	-	n.d.	n.d.	94

	Reservoir water	-	-	n.d.	n.d.	94
	Reservoir water	-	-	n.d.	n.d.	94
BP-6						
China	River water	-	-	-	-	62
Singapore	River water	96.0%	2.0	<LOQ	27.6	45
	Reservoir water	77.8%	1.8	<LOQ	4.3	45
BP-8						
China	River water	-	-	n.d.	n.d.	5
	River water	-	-	-	-	62
	River water	33.3%	11.45	n.d.	19.7	7
	Municipal wastewater receiving river water	100%	9.95[d]	9.8	10.1	6
Italy	Lake water	33.3%	-	n.d.	<MLOQ	70
Singapore	River water	100.0%	3.6	2	10.3	45
	Reservoir water	100.0%	3.1	2.1	4.5	45
South Korea	River water	0	-	-	-	44
	Lake water	0	-	-	-	44
Thailand	River water	100%	63	-	71	65
Spain	River water	0	-	-	-	67
	River water	25%	3.2	n.d.	3.2	68
	Lake water	0	-	n.d.	n.d.	68
	River water	100%	33	17.5	34.3	3
	River water	0	-	<LOQ	<LOQ	66
	River water in winter	0	-	-	-	49
	River water in summer	16.7%	20.45	-	22.1	49
	River water	0	-	n.d.	n.d.	9
	River water	0	-	-	-	18
2OH-BP						
Spain	River water after extreme rainfall	0	-	-	-	81
	River water	-	-	-	-	24
Taiwan region	River water	50%	8.1	n.d.	14.7	7

Japan	River water	0	<LOQ	<LOQ	<LOQ	74
3OH-BP						
Spain	River water after extreme rainfall	0	-	-	-	81
	River water	-	-	-	-	24
Taiwan region	River water	0	-	-	-	7
Japan	River water	100%	7	-	-	74
2,3,4OH-BP						
South Korea	River water	0	-	-	-	44
	Lake water	0	-	-	-	44
China	River water	0	4.65	n.d.	n.d.	63
4OH-BP						
Spain	River water	0	-	-	-	67
	River water	0	-	<LOQ	<LOQ	66
	River water in winter	0	-	-	-	49
	River water in summer	0	-	-	-	49
	River water	-	-	-	-	24
	River water	50%	1.75	n.d.	2.1	68
	Lake water	40%	1.6	n.d.	1.6	68
	River water	0	-	n.d.	n.d.	9
Japan	River water	100%	6	-	-	74
Singapore	River water	88.0%	8.6	<LOQ	15.2	45
	Reservoir water	100.0%	6.4	3.8	9.7	45
South Korea	River water	0	-	-	-	44
	Lake water	16.7%	-	-	85	44
China	River water	-	-	n.d.	n.d.	61
	River water	-	-	n.d.	n.d.	61
	Lake water	-	-	n.d.	n.d.	61
	River water	63%	3.2	n.d.	4.7	63
	Lake water	-	-	n.d.	n.d.	91
	Lake water	-	-	n.d.	n.d.	64

Taiwan region	River water	0	-	-	-	[7]
Italy	River water	-	2.6	-	2.6 ± 1.2	[10]
	Lake water	0	-	n.d.	n.d.	[70]
4DHB						
Spain	River water	0	-	-	-	[67]
	River water	0	-	n.d.	n.d.	[9]
	River water	0	-	n.d.	n.d.	[68]
	Lake water	40%	22.95	n.d.	31.2	[68]
	River water	0	-	<LOQ	<LOQ	[66]
	River water in winter	0	-	-	-	[49]
	River water in summer	0	-	-	-	[49]
Singapore	River water	100.0%	6.1	0.2	26.7	[45]
	Reservoir water	93.3%	3.7	<LOQ	8.2	[45]
Germany	River water	0	-	<LOD	<LOD	[72]
Switzerland	River water	0	-	<LOD	<LOD	[73]
Italy	Lake water	0	-	n.d.	n.d.	[70]

[a] detection frequency;
[b] lowest concentration;
[c] highest concentration;
[d] calculated based on reported data.

Table S4. Global occurrence of benzophenones in sea water, swimming pools, ground water and other types of water samples (in ng L^{-1})

Country/region	Sample	Detect. Freq.[a]	Median	Lowest conc.[b]	Highest conc.[c]	References
BP-1						
China	Sea water	76.7%	82	<LOD	135	65
	Sea water	0	-	LOD	LOD	65
	Sea water	50.0%	22	LOD	58	65
	Sea water	0	-	<MDL	<MDL	95
	Swimming pool	-	8700	-	8700	61
	Ground water	66.7%	4.45	n.d.	5	3
	Rainwater	100.0%	1140	-	1410	1
	Tap water	-	-	-	-	62
	Tap water	0	-	n.d.	n.d.	3
	Ultrapure water	-	-	-	-	62
Taiwan region	Groundwater	-	-	n.d.	n.d.	5
USA	Sea water	75.0%	100	< LOQ	117	65
Spain	Sea water	33.3%	280[d]	-	280 ± 30	96
	Ground water	16.1%	0.9 ± 3.5	<LOQ	19.4	66
	Ground water	0	-	-	-	67
	Ground water	40.0%	17.5[d]	15.6	19.4	9
Italy	Tap water	-	-	n.d.	n.d.	70
Japan	Sea water	62.5%	52	<LOD	95	65
	Swimming pool and spa	2.9%	1.2	n.d.	1.2	97
BP-2						
Spain	Ground water	0	-	<LOQ	<LOQ	66
	Ground water	0	-	-	-	67
	Ground water	0	-	n.d.	n.d.	9
	Ultrapure water	-	-	-	-	62
	Tap water	-	-	-	-	62
Italy	Tap water	-	-	n.d.	n.d.	70

Japan	Swimming pool and spa	3.9%	24.3	n.d.	27.2	97
BP-3						
USA	Sea water	100%	23	-	178	65
	Sea water	100%	227	-	601	65
	Sea water	-	-	n.d.	n.d.	98
	Sea water	-	-	75000	95000	98
	Sea water	-	-	580000	1395000	98
	Sea water	-	-	<5000	19200	98
	Sea water	-	-	<5000	<5000	98
Spain	Sea water	-	254	-	254	77
	Sea water	-	60	-	60 ± 8	24
	Sea water	-	-	-	-	99
	Seawater	0	-	n.d.	n.d.	20
	Sea water	100.0%	692	-	692	80
	Beach water	0	-	n.d.	n.d.	78
	Sea water	50.0%	0.62	n.d.	0.75 ± 0.16	100
	Sea water	-	603	-	603 ± 50	82
	Spa water	0	-	n.d.	n.d.	79
	Sea water	0	-	n.d.	n.d.	79
	Sea water	100.0%	1440[d]	1340 ± 60	3300 ± 200	96
	Sea water	56%	4.6	<1.4	27.1	101
	Sea water	100%	238.7	32.7	979.8	101
	Sea water	100%	91.0	12.7	2675.7	101
	Sea water	100%	343.2	54.2	3316.7	101
	Sea water	61%	3.7	<1.4	158.0	101
	Sea water	72%	9.6	<1.4	182.6	101
	Swimming pool	14.3%	0.775	n.d.	0.8	79
	Swimming pool	10.0%	-	n.d.	10	80
	Swimming pool	0	-	n.d.	n.d.	78
	Swimming pool	0	-	-	-	102
	Swimming pool	0	-	n.d.	n.d.	20
	Swimming pool	-	538	-	538 ± 50	82

	Swimming pool	0	-	n.d.	n.d.	100
	Ground water	66.7%	4.45	n.d.	5	3
	Ground water	32.3%	2.3 ± 4.9	<LOQ	19.2	66
	Ground water	-	63	-	63 ± 5	24
	Ground water	40.0%	19.18[d]	4.36	34	9
	Ground water	0	-	-	-	67
	Ground water under extreme rainfall	63.6%	-	n.d.	482 ± 60	81
	Ground water under extreme rainfall	0	-	n.d.	n.d.	81
	Tap water	33.3%	3.9	n.d.	3.9	3
	Tap water	-	-	<LOQ	<LOQ	77
	Tap water	0	-	n.d.	n.d.	20
	Tap water	42.9%	55 ± 3	n.d.	295 ± 68	103
	Tap water	42.9%	66 ± 31	n.d.	98 ± 19	103
	Tap water	42.9%	70 ± 32	n.d.	130 ± 14	103
	Drinking water	0	-	-	-	19
	Bath water	0	-	n.d.	n.d.	104
	Spa	0	-	n.d.	n.d.	80
	Ionic-exchange resin-treated water	50.0%	35 ± 3	n.d.	54 ± 13	103
	Aquapark water	0	-	n.d.	n.d.	80
	Aquapark water	0	-	n.d.	n.d.	79
Slovenia	Swimming pool water	100%	251.5[d]	103	400	25
Japan	Sea water	100%	24	-	86	65
	Sea water (beach sites)	87.0%	62.5[d]	n.d.	1258	105
	Sea water (river and reef sites)	7/58.3%	101[d]	n.d.	216	105

	Swimming pool and spa	11.8%	24.3	n.d.	16.57	97
Singapore	Swimming pool	-	-	n.d.	n.d.	106
	Swimming pool	-	-	n.d.	n.d.	83
	Tap water	-	-	n.d.	n.d.	106
	Tap water	-	-	n.d.	n.d.	83
	Tap water	-	-	n.d.	n.d.	69
Brazil	Chlorinated water	0	-	n.d.	<LOQ	27
Sweden	Ground water	11.1%	6.9	n.d.	6.9	107
Norway	Landfill leachate	-	18	< 10	372	28
	Landfill leachate	-	114	32	646	28
China	Sea water	100%	24.4	12.9	31.9	95
	Sea water	95%	39	<LOD	5429	65
	Sea water	100%	55	-	188	65
	Sea water	100%	37	-	49	65
	Swimming pool	-	4500	-	4500	61
	Rain water	0	-	n.d.	n.d.	90
	Rainwater	100%	1210	-	1210	1
Taiwan region	Groundwater	-	-	n.d.	n.d.	5
Australia	Ground water	-	-	<LOQ	<LOQ	39
Italy	Sea water	60%	8 ± 4[d]	< LOD	13 ± 10	41
	Sea water	58.3%	101[d]	25	216	108
	Tap water	-	-	n.d.	n.d.	70
Pacific Ocean	Sea water (pg $SPMD^{-1}$)	60%	5940	<510	34310	109
	Sea water (microlayer)	100%	5.5[d]	5	6	109
Greece	Sea water	100%	-	-	1.8 ± 0.4	110
	Sea water	0	-	n.d.	n.d.	111
	Shower wastes	100%	-	-	10.0	110
	Shower wastes	100%	9050[d]	8200	9900	111
	Bathing water	100%	7.35[d]	6.5 ± 1.4	8.2 ± 1.6	112
	Swimming pool	100%	2850[d]	2400	3300	111

	Swimming pool	100%	4.2 ± 0.9	-	4.2 ± 0.9	110
	Game pool water	100%	5.7 ± 0.9	-	5.7 ± 0.9	110
	Distilled water	-	-	n.d.	n.d.	112
Czech	Swimming pool	-	-	26	620	93
	Recreational ponds	-	-	21	550	93
BP-6						
China	Ultrapure water	-	-	-	-	62
	Tap water	-	-	-	-	62
BP-8						
China	Sea water	88%	64	<LOD	117	65
	Sea water	0	-	<LOD	<LOD	65
	Sea water	0	-	-	-	65
	Sea water	0	-	<MDL	<MDL	95
	Tap water	-	-	-	-	62
	Ultrapure water	-	-	-	-	62
Taiwan region	Groundwater	-	-	n.d.	n.d.	5
Japan	Sea water	100%	76	-	96	65
	Swimming pool and spa	42.2%	2.7	n.d.	59.1	97
USA	Sea water	100%	72	-	92	65
	Sea water	50%	29	<LOD	96	65
Italy	Tap water	-	-	n.d.	n.d.	70
Spain	Sea water	0	-	-	-	96
	Ground water	0	-	-	-	67
	Ground water	0	-	<LOQ	<LOQ	66
	Ground water	0	-	n.d.	n.d.	9
	Ground water	0	-	n.d.	n.d.	3
	Tap water	0	-	n.d.	n.d.	3
2OH-BP						
Spain	Sea water	-	-	-	-	24
	Ground water	-	-	-	-	24
	Ground water	0	-	-	-	81

	under extreme rainfall					
	Ground water under extreme rainfall	0	-	-	-	81
3OH-BP						
Spain	Sea water	-	-	-	-	24
	Ground water under extreme rainfall	0	-	-	-	81
	Ground water under extreme rainfall	0	-	-	-	81
	Ground water	-	-	-	-	24
2,3,4OH-BP						
Spain	Sea water	0	-	-	-	96
Japan	Swimming pool and spa	8.8%	49.2	n.d.	53.8	97
4OH-BP						
Spain	Sea water	-	-	-	-	24
	Ground water	0	-	-	-	67
	Ground water	6.5%	0.2	<LOQ	3.5	66
	Ground water	-	-	-	-	24
	Ground water	0	-	n.d.	n.d.	9
Japan	Swimming pool and spa	0	-	n.d.	n.d.	97
China	Swimming pool	-	15400	-	15400	61
Italy	Tap water	-	-	n.d.	n.d.	70
4DHB						
Spain	Ground water	0	-	n.d.	n.d.	9
	Ground water	0	-	-	-	67
	Ground water	6.5%	0.13	<LOQ	4.1	66
Japan	Swimming pool	44.1%	2.97	n.d.	31.97	97

Italy	and spa Tap water	-	-	n.d.	n.d.	[70]

[a] detection frequency;
[b] lowest concentration;
[c] highest concentration;
[d] calculated based on reported data.

Table S5. Global occurrence of benzophenones in aquatic biota (in ng g^{-1} d.w. unless specified specifically).

Country/region	Sample	Detect. Freq.[a]	Median	Lowest conc.[b]	Highest conc.[c]	References
BP-1						
China	Coral (*Favites abdita*)[d]	0	-	<MDL	<MDL	95
	Coral (*Porites sp.*)[d]	28.6%	14.2	<MDL	22.5	95
	Coral (*Pavona decussata*)[d]	0	-	<MDL	<MDL	95
	Coral (*Acropora valida*)[d]	0	-	<MDL	<MDL	95
	Coral (*Platygyra acuta*)[d]	0	-	<MDL	<MDL	95
	Seafood	0	-	-	-	37
Taiwan region	Fish (*Striped bass*)	-	-	-	1.7	113
	Fish (*Tilapia*)	-	-	-	0.7	113
	Fish (*Code*)	-	-	-	1.0	113
New Zealand	Clams (*Laternula elliptica*)	0	-	-	-	114
	Sea urchins (*Sterichinus neumayeri*)	-	-	-	-	114
	Fish (*Trematomus bernachii*)	0	-	-	-	114
	Liver of fish (*Trematomus bernachii*)	0	-	-	-	114
Europe	Canned Mackerel	100%	-	5	41.8	115
	Canned Sardine	0	-	n.d.	n.d.	115
	Canned Tuna	100%	-	5	39	115
	Crustacean Shrimp	100%	-	-	23.8	115
	Bivalves Mussels	81.8%	-	n.d.	94.2	115
	Cephalopod Octopus	0	-	n.d.	n.d.	115
	Crustacean crab	0	-	n.d.	n.d.	115
	Fish Pangasius	0	-	n.d.	n.d.	115
	Fish Salmon	33.3%	-	n.d.	5	115
	Fish Seabream	50%	-	n.d.	98.9	115
	Fish perch	100%	-	-	17.2	115
	Fish cod	0	-	n.d.	n.d.	115
	Fish Mackerel	44.4%	-	n.d.	5.0	115
	Fish Monkfish	75%	-	n.d.	36.1	115

	Fish Plaice/Sole	0	-	n.d.	n.d.	[115]
	Fish Tuna	100%	-	5	34.2	[115]
Switzerland	Fish (*Leuciscus cephalus*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Dreissena polymorpha*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Barbus barbus*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Salmo trutta*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Anguilla anguilla*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Phalacrocorax sp.*)[e]	0	-	<LOD	<LOD	[75]
Spain	Mussels	0	-	n.d.	n.d.	[116]
	Clams	0	-	n.d.	n.d.	[116]
	Andalusian barbel (*Luciobarbus sclateri*)	0	-	n.d.	n.d.	[117]
	Ebro barbel (*Luciobarbus graellsii*)	0	-	n.d.	n.d.	[117]
	Common carp (*Cyprinus carpio*)	0	-	n.d.	n.d.	[117]
	Ebro barbel (*Barbus graellsii*)	0	-	n.d.	n.d.	[117]
	Wels catfish (*Silurus glanis*)	0	-	n.d.	n.d.	[117]
	Brown trout (*Salmo trutta*)	0	-	n.d.	n.d.	[117]
	Iberian nase (*Pseudochondrostoma polylepis*)	0	-	n.d.	n.d.	[117]
	Iberian gudgeon (*Gobio lozanoi*)	0	-	n.d.	n.d.	[117]
	Black bass (*Micropterus salmoides*)	0	-	n.d.	n.d.	[117]
	Black bass (*Alburnus alburnus*)	0	-	n.d.	n.d.	[117]
	European eel (*Anguila anguila*)	0	-	n.d.	n.d.	[117]
	Pike (*Esox lucius*)	0	-	n.d.	n.d.	[117]
	Pumpkinseed (*Leponis*	0	-	n.d.	n.d.	[117]

	gibbosus)					
	Mediterranean barbel (*Barbus guiraonis*)	0/2	-	n.d.	n.d.	[117]
	Fish (*Luciobarbus sclateri*)	0	-	n.d.	n.d.	[118]
	Fish (*Cyprinus carpio*)	0	-	n.d.	n.d.	[118]
	Marine echinoderms (*Holothuria tubulosa*)	0	-	n.d.	n.d.	[51]
Italy	Mussels	0	-	n.d.	n.d.	[116]
Portugal	Mullet	0	-	n.d.	n.d.	[116]
Netherlands	Flounder	0	-	n.d.	n.d.	[116]
Brazil	Liver of lebranche mullet (*Mugil liza*)	100%	-	3.71	17.1	[119]
	Muscle of lebranche mullet (*Mugil liza*)	91%	-	<LOQ	<LOQ	[119]
	Gills of lebranche mullet (*Mugil liza*)	100%	-	<LOQ	<LOQ	[119]
BP-2						
China	Seafood	0	-	-	-	[37]
BP-3						
Spain	Andalusian barbel (*Luciobarbus sclateri*)	50%	-	n.d.	24.3	[117]
	Ebro barbel (*Luciobarbus graellsii*)	0	n.d.	n.d.	n.d.	[117]
	Common carp (*Cyprinus carpio*)	10%	n.d.	n.d.	11.2	[117]
	Ebro barbel (*Barbus graellsii*)	10%	n.d.	n.d.	2.2	[117]
	Wels catfish (*Silurus glanis*)	50%	-	n.d.	<LOQ	[117]
	Brown trout (*Salmo trutta*)	100%	-	-	4.6	[117]
	Iberian nase (*Pseudochondrostoma polylepis*)	0	-	n.d.	n.d.	[117]
	Iberian gudgeon (*Gobio lozanoi*)	0	-	n.d.	n.d.	[117]

	Black bass (*Micropterus salmoides*)	0	-	n.d.	n.d.	[117]
	Black bass (*Alburnus alburnus*)	0/2	-	n.d.	n.d.	[117]
	European eel (*Anguila anguila*)	0	-	n.d.	n.d.	[117]
	Pike (*Esox lucius*)	0	-	n.d.	n.d.	[117]
	Pumpkinseed (*Leponis gibbosus*)	0	-	n.d.	n.d.	[117]
	Mediterranean barbel (*Barbus guiraonis*)	0	-	n.d.	n.d.	[117]
	Fish (*Luciobarbus sclateri*)	50%	-	n.d.	24.3	[118]
	Fish (*Cyprinus carpio*)	100%	-	-	11.2	[118]
	Mussels	0	-	n.d.	n.d.	[116]
	Clam	0	-	n.d.	n.d.	[116]
	Marine echinoderms (*Holothuria tubulosa*)	100%	2.03	1.66	53.9	[51]
Italy	Mussels	0	-	n.d.	n.d.	[116]
Portugal	Mullet	0	-	n.d.	n.d.	[116]
	Mussels	0	-	n.d.	n.d.	[120]
	Mussels	40%	-	n.d.	662.1	[120]
	Mussels	67%	-	n.d.	106.9	[120]
	Mussels	75%	-	n.d.	121.4	[120]
	Mussels	20%	-	n.d.	51.2	[120]
	Mussels	0	-	n.d.	n.d.	[120]
	Mussels	0	-	n.d.	n.d.	[120]
Netherlands	Flounder	0	-	n.d.	n.d.	[116]
New Zealand	Clams (*Laternula elliptica*)	100%	72.9	9.2	112	[114]
	Sea urchins (*Sterichinus neumayeri*)	100%	-	-	8.6	[114]
	Fish (*Trematomus bernachii*)	100%	9.1	<6.6	14.1	[114]
	Liver of fish (*Trematomus bernachii*)	100%	-	-	41.0	[114]

Europe	Canned Mackerel	50%	-	n.d.	5	[115]
	Canned Sardine	100%	-	-	55.72	[115]
	Canned Tuna	50%	-	n.d.	27.6	[115]
	Crustacean Shrimp	100%	-	-	14.7	[115]
	Bivalves Mussels	63.6%	-	n.d.	85.5	[115]
	Cephalopod Octopus	0	-	n.d.	n.d.	[115]
	Crustacean crab	0	-	n.d.	n.d.	[115]
	Fish Pangasius	0	-	n.d.	n.d.	[115]
	Fish Salmon	33.3%	-	n.d.	2.5	[115]
	Fish Seabream	50%	-	n.d.	5.0	[115]
	Fish perch	100%	-	-	32.3	[115]
	Fish cod	0	-	n.d.	n.d.	[115]
	Fish Mackerel	77.8%	-	n.d.	82.2	[115]
	Fish Monkfish	100%	-	5	98.7	[115]
	Fish Plaice/Sole	0	-	n.d.	n.d.	[115]
	Fish Tuna	50%	-	n.d.	2.5	[115]
France	Mussels	0	-	n.d.	n.d.	[121]
USA	Eastern crayfish	57.1%	23.7	n.d.	51.4	[122]
	Red swamp crayfish	100%	-	-	42.8	[122]
	Eastern oyster	100%	40.6	36.8	51.7	[122]
	Hooked mussel	100%	-	-	35.4	[122]
Norway	Codfish (liver) *Gadus morhua*	46.7%	<20	<20	1037	[28]
	Codfish (liver) *Gadus morhua*	53.3%	45.2	<30	68.9	[28]
	Crab *Carcinus maenas*	0	-	<30	<30	[28]
	Fish burbot (*Lota lota*)	0	-	<5	<5	[28]
	Fish perch (*Perca fluviatilis*)	6.7%	-	<5	6.5	[28]
	Fish whitefish (*Coregonus lavaretrus*)	26.7%	<20	<20	182	[28]
Switzerland	Fish	0	-	<LOD	<LOD	[73]
	Fish (Roach)[e]	100%	92	66	118	[17]

	White fish[e]	50%	-	<15	<120	17
	Fish (perch)[e]	100	-	-	123	17
	Fish (*Leuciscus cephalus*)[e]	0	-	<LOD	<LOD	75
	Fish (*Dreissena polymorpha*)[e]	0	-	<LOD	<LOD	75
	Fish (*Barbus barbus*)[e]	0	-	<LOD	<LOD	75
	Fish (*Salmo trutta*)[e]	-	-	<LOD	151	75
	Fish (*Anguilla anguilla*)[e]	0	-	<LOD	<LOD	75
	Fish (*Phalacrocorax sp.*)[e]	0	-	<LOD	<LOD	75
China	Seafood	0	-	-	-	37
	Pomfret (marine, Wild species)	-	-	ND	ND	123
	Goby (marine, Wild species)	-	-	-	0.276	123
	Flounder (marine, Wild species)	-	-	ND	ND	123
	Osteomugil (marine, Wild species)	-	-	ND	ND	123
	Hairtail (marine, Wild species)	-	-	-	0.106	123
	Anchovy (marine, Wild species)	-	-	ND	ND	123
	Arrow fish (marine, Wild species)	-	-	-	1.068	123
	Collichthys (marine, Wild species)	-	-	-	0.797	123
	Sleeve-fish (marine, Wild species)	-	-	-	0.408	123
	Squilla (marine, Wild species)	-	-	-	1.520	123
	Whelk (marine, Wild species)	-	-	ND	ND	123
	Filet (marine, farmed red snapper)	-	-	-	0.59	123
	Belly (marine, farmed red	-	-	-	0.80	123

	snapper)					
	Coral (*Favites abdita*)[d]	100%	14.1	8	21.8	95
	Coral (*Porites sp.*)[d]	100%	11.3	4.7	38.4	95
	Coral (*Pavona decussata*)[d]	100%	6.8	1	26.6	95
	Coral (*Acropora valida*)[d]	100%	11.1	9.9	12.3	95
	Coral (*Platygyra acuta*)[d]	100%	4.8	1	6.1	95
	Fish	100%	2.96	0.68	9.99	124
	Cephalopoda	100%	5.72	2.4	9.04	124
	Crustacean	100%	113	69	406	124
Taiwan region	Fish (*Striped bass*)	-	-	-	5.7	113
	Fish (*Tilapia*)	-	-	-	5.4	113
	Fish (*Code*)	-	-	-	3.3	113
	Fish (*Salmon*)	-	-	-	6.9	113
Germany	Rainbow trout	20%	-	n.d.	21.0	125
Brazil	Liver of lebranche mullet (*Mugil liza*)	100%	-	7.55	74.4	119
	Muscle of lebranche mullet (*Mugil liza*)	100%	-	3.5	15.4	119
	Gills of lebranche mullet (*Mugil liza*)	100%	-	3.07	24	119
BP-6						
Spain	Mussels	0	-	n.d.	n.d.	116
	Clams	0	-	n.d.	n.d.	116
	Marine echinoderms (*Holothuria tubulosa*)	0	-	n.d.	n.d.	51
Europe	Canned Mackerel	50%	-	n.d.	6	115
	Canned Sardine	0	-	-	-	115
	Canned Tuna	50%	-	n.d.	6	115
	Crustacean Shrimp	0	-	n.d.	n.d.	115
	Bivalves Mussels	54.5%	-	n.d.	6	115
	Cephalopod Octopus	0	-	n.d.	n.d.	115
	Crustacean crab	0	-	n.d.	n.d.	115
	Fish Pangasius	0	-	n.d.	n.d.	115

	Fish Salmon	33.3%	-	n.d.	6	[115]
	Fish Seabream	0	-	n.d.	n.d.	[115]
	Fish perch	0	-	n.d.	n.d.	[115]
	Fish cod	0	-	n.d.	n.d.	[115]
	Fish Mackerel	44.4%	-	n.d.	6	[115]
	Fish Monkfish	50%	-	n.d.	90.7	[115]
	Fish Plaice/Sole	0	-	n.d.	n.d.	[115]
	Fish Tuna	25%	-	n.d.	6	[115]
Italy	Mussels	0	-	n.d.	n.d.	[116]
Portugal	Mullet	0	-	n.d.	n.d.	[116]
Netherlands	Flounder	0	-	n.d.	n.d.	[116]
BP-8						
China	Coral (*Favites abdita*)[d]	100%	7.55	2.3	17.7	[95]
	Coral (*Porites sp.*)[d]	100%	11.3	4.4	19.9	[95]
	Coral (*Pavona decussata*)[d]	100%	6.3	1.3	15.3	[95]
	Coral (*Acropora valida*)[d]	100%	24.75	17.2	32.3	[95]
	Coral (*Platygyra acuta*)[d]	33.3%	<MDL	<MDL	5.7	[95]
Taiwan region	Fish (*Striped bass*)	-	-	-	1.7	[113]
	Fish (*Tilapia*)	-	-	-	1.5	[113]
	Fish (*Code*)	-	-	-	0.5	[113]
	Fish (*Salmon*)	-	-	-	2.4	[113]
Spain	Marine echinoderms (*Holothuria tubulosa*)	0	-	n.d.	n.d.	[51]
4DHB						
Spain	Andalusian barbel (*Luciobarbus sclateri*)	0	-	n.d.	n.d.	[117]
	Ebro barbel (*Luciobarbus graellsii*)	0	-	n.d.	n.d.	[117]
	Common carp (*Cyprinus carpio*)	0	-	n.d.	n.d.	[117]
	Ebro barbel (*Barbus graellsii*)	0	-	n.d.	n.d.	[117]
	Wels catfish (*Silurus glanis*)	0	-	n.d.	n.d.	[117]
	Brown trout (*Salmo trutta*)	0	-	n.d.	n.d.	[117]

	Iberian nase (*Pseudochondrostoma polylepis*)	0	-	n.d.	n.d.	[117]
	Iberian gudgeon (*Gobio lozanoi*)	0	-	n.d.	n.d.	[117]
	Black bass (*Micropterus salmoides*)	0	-	n.d.	n.d.	[117]
	Black bass (*Alburnus alburnus*)	0	-	n.d.	n.d.	[117]
	European eel (*Anguila anguila*)	0	-	n.d.	n.d.	[117]
	Pike (*Esox lucius*)	0	-	n.d.	n.d.	[117]
	Pumpkinseed (*Leponis gibbosus*)	0	-	n.d.	n.d.	[117]
	Mediterranean barbel (*Barbus guiraonis*)	0	-	n.d.	n.d.	[117]
	Fish (*Luciobarbus sclateri*)	0	-	n.d.	n.d.	[118]
	Fish (*Cyprinus carpio*)	0	-	n.d.	n.d.	[118]
Switzerland	Fish (*Leuciscus cephalus*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Dreissena polymorpha*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Barbus barbus*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Salmo trutta*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Anguilla anguilla*)[e]	0	-	<LOD	<LOD	[75]
	Fish (*Phalacrocorax sp.*)[e]	0	-	<LOD	<LOD	[75]
Brazil	Liver of lebranche mullet (*Mugil liza*)	100%	-	5.8	451	[119]
	Muscle of lebranche mullet (*Mugil liza*)	100%	-	4.3	17.4	[119]
	Gills of lebranche mullet (*Mugil liza*)	100%	-	3.29	23.5	[119]
4OH-BP						
Brazil	Liver of lebranche mullet	100%	-	5.47	139	[119]

	(*Mugil liza*)					
	Muscle of lebranche mullet (*Mugil liza*)	100%	-	3.02	22.6	[119]
	Gills of lebranche mullet (*Mugil liza*)	100%	-	5.28	31.6	[119]
Spain	Andalusian barbel (*Luciobarbus sclateri*)	0	-	n.d.	n.d.	[117]
	Ebro barbel (*Luciobarbus graellsii*)	0	-	n.d.	n.d.	[117]
	Common carp (*Cyprinus carpio*)	0	-	n.d.	n.d.	[117]
	Ebro barbel (*Barbus graellsii*)	0	-	n.d.	n.d.	[117]
	Wels catfish (*Silurus glanis*)	0	-	n.d.	n.d.	[117]
	Brown trout (*Salmo trutta*)	0	-	n.d.	n.d.	[117]
	Iberian nase (*Pseudochondrostoma polylepis*)	0	-	n.d.	n.d.	[117]
	Iberian gudgeon (*Gobio lozanoi*)	0	-	n.d.	n.d.	[117]
	Black bass (*Micropterus salmoides*)	0	-	n.d.	n.d.	[117]
	Black bass (*Alburnus alburnus*)	0	-	n.d.	n.d.	[117]
	European eel (*Anguila anguila*)	0	-	n.d.	n.d.	[117]
	Pike (*Esox lucius*)	0	-	n.d.	n.d.	[117]
	Pumpkinseed (*Leponis gibbosus*)	0	-	n.d.	n.d.	[117]
	Mediterranean barbel (*Barbus guiraonis*)	0	-	n.d.	n.d.	[117]
	Fish (*Luciobarbus sclateri*)	0	-	n.d.	n.d.	[118]
	Fish (*Cyprinus carpio*)	0	-	n.d.	n.d.	[118]
	Marine echinoderms	0	-	n.d.	n.d.	[51]

(*Holothuria tubulosa*)

[a] detection frequency;
[b] lowest concentration;
[c] highest concentration;
[d] unit in wet weight (w.w.);
[e] unit in ng g^{-1} lipid weigh.

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