Supporting Information

To

Occurrence, Fate, Behavior and Ecotoxicological State of Phthalates in Different Environmental Matrices

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Table Captions

Table 1S: Acronyms and abbreviations used in the text

Table 2S: Contamination levels of some PAEs in environmental matrices and in in milk, drink and food. "-": no data; nd = not detected (<LOQ)

Table 3S: Contamination levels of some PAEs in biota (fishes, mammals, algae and others species). "-": no data; nd = not detected (<LOQ)

Table 4S: Degradation half-lifes of PAEs in various media

Table 5S: Bioaccumulation (BAF) and bioconcentration (BCF) factors of PAEs for some species

Figure Captions

Figure 1S: General biodegradation pathway for PAEs in the environment according to Staples et al., 1997.

Figure 2S: Worldwide contamination levels of DnBP in fresh and marine water compared to the LOEC, ERLs and PGW values (Detailed values and references are given in Table 2S).

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Figure 4S: Worldwide contamination levels of BBzP in surface water compared to the EQS values (Detailed values and references are given in Table 2S).

Figure 5S: Contamination levels of DMP and DEP in soil compared to the limiting values for the PER and PGW (Detailed values and references are given in Table 2S).

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Table 1S: Acronyms and abbreviations used in the text

Acronym/ abbreviation	Meaning	Acronym/ abbreviation	Meaning
ASE	Accelerated solvent extraction	K_{AW}	Air-water partition coefficient
BAF	Bioaccumulation factor	K_{OA}	Octanol-air partition coefficient
BBzP	Butyl benzyl phthalate	K_{OC}	Organic carbon partition coefficient
BCF	Bioconcentration factor	K_{OW}	Octanol-water partition coefficient
BCP	Butyl cyclohexane phthalate	LC	Lethal concentration
BMEP, DMEP	Bis-(2-methoxyethyl) phthalate	LD/C	Lethal dose/concentration
BMPP, DMPP	Bis-(4-methyl-2-pentyl) phthalate	LLE	Liquid-liquid extraction
BOP	Butyl 2-ethylhexyl phthalate	LOEC	Lowest observed effect concentration
DAlP	Diallyl phthalate	LOD	Limit of detection
DnBEP	Bis-(2-*n*-butoxyethyl) phthalate	LOQ	Limit of quantification
DcHxP	Di-cyclohexyl phthalate	MAEC	Minor adverse effect concentration
DEEP	Bis-(2-ethoxyethyl) phthalate	MnBP	Mono-*n*-butyl phthalate
DEHP	Di(2-ethylhexyl) phthalate	MBzP	Monobenzyl phthalate
DEP	Diethyl phtalate	MEHP	Mono-2-ethylhexyl phthalate
DHxP	Dihexyl phthalate	MEP	Mono-ethyl phthalate
DiBP	Diisobutyl phthalate	MiDP	Mono-iso-decyl phthalate
DiDP	Diisodecyl phthalate	MiHxP	Mono-iso-hexyl phthalate
DiHpP	Di-*n*-heptyl phthalate	MiNP	Mono-isononyl phthalate
DiNP	Diisononyl phthalate	MMP	Mono-methyl phthalate
DiOP	Diisooctyl phthalate	MnOP	Mono-*n*-octyl phthalate
DiPhP	Diisophenyl phthalate	MnBP	Mono-butyl phthalate
DiPrP	Diisopropyl phthalate	MPEs	Mono-alkyl phthalate esters
DMP	Dimethyl phtalate	NOEC	No observed effect concentration
DnBP	Di-*n*-butyl phthalate	NQE	Norme de qualité environnementale
DnDP	Di-*n*-decyl phthalate	PA	Phthalic acid
DnHxP	Di-*n*-hexyl phthalate	PAEs	Phthalic acid esters
DnNP	Di-*n*-nonyl phthalate	PEC	Predicted effect concentration
DNP	Dinonyl phthalate	PER	Protection of ecological resources
DnPeP	Di-*n*-pentyl phthalate	PNEC	Predicted no effect concentration
DnOP	Di-*n*-octyl phthalate	PGW	Protection of groundwater
DnPhP	Di-*n*-phenyl phthalate	PVC	Polyvinyl chloride
DnPrP	Di-*n*-propyl phthalate	SFE	Supercritical fluid extraction
DTDP	Ditridecyl phthalate	SPE	Solid phase extraction
DUP	Diundecyl phthalate	SPME	Solid phase micro-extraction
D711P	Di (heptyl, nonyl, undecyl) phthalate	SSM	Suspended solid matter
EQS	Environmental quality standards	Sw	Solubility in water
ERLs	Environmental risk limits	US EPA	United States Environmental Protection Agency
H	Henry's law or Henry's constant	Vp	Vapor pressure
HEHP	Di(hexyl-2-ethylhexyl) phthalate	610P	Di (*n*-hexyl, *n*-octyl, *n*-decyl) phthalate

Table 2S: Contamination levels of some PAEs in environmental matrices. "-": no data; nd = not detected (<LOQ)

Surface water (µg/L)														
Localization	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**DMEP**	**DEEP**	**DAlP**	**DHxP**	**BBzP**	**DBEP**	**DcHxP**	**DEHP**	**DnOP**	**Ref.**
Arctic	40×10^{-6}	138×10^{-6}	-	51×10^{-6}	22×10^{-6}	-	-	-	-	8×10^{-6}	-	-	448×10^{-6}	-	1
Yangtze River, mainstream, **China**	-	-	-	nd-35.65	-	-	-	-	-	-	-	-	3.9-54.73	-	2
Yellow River, **China**	-	-	-	nd-26.0	-	-	-	-	-	-	-	-	0.347-31.80		3
Second Songhua River, **China**	-	-	-	nd-5616.8	-	-	-	-	-	-	-	-	nd-1752.65		4
Surface water, Jiangsu, **China**	-	-	-	0.016-5.8575	-	-	-	-	-	-	-	-	0.556-15.6707		5
Urban lake, Guangzhou, **China**	0.018	0.059	-	2.03	-	-	-	-	-	nd	-	-	0.24	nd	6
Chaohu Lake, Anhui, **China**	0.425 (0.015-3.67)	0.142 (0.006-0.283)	-	3.226 (0.07-17.529)	-	-	-	-	-	0.071 (nd-0.107)	-	-	0.19 (nd-0.576)	0.036(nd-0,045)	7
Kunming Lake, Beijing, **China**	-	nd	-	17	nd	-	-	-	-	-	-	-	nd	-	8
Xiaojinhe River, Beijing, **China**	-	nd	-	15	nd	-	-	-	-	-	-	-	17	-	
Qinghe River, Beijing, **China**	-	2	-	61	4	-	-	-	-	-	-	-	25	-	
Donghu Lake, Wuhan, **China**	-	nd	-	9	nd	-	-	-	-	-	-	-	14	-	
Changjiang River, Wuhan, **China**	-	nd	-	15	nd	-	-	-	-	-	-	-	6	-	
Haihe River, Tianjin, **China**	-	nd	-	14	nd	-	-	-	-	-	-	-	32	-	
Bohai Sea, Tianjin, **China**	-	nd	-	14	nd	-	-	-	-	-	-	-	78	-	
Daminghu Lake, Jinan, **China**	-	nd	-	51	nd	-	-	-	-	-	-	-	8	-	
Huaihe River, Anhui, **China**	-	nd	-	51	nd	-	-	-	-	-	-	-	8	-	
Huangpujiang, Shanghai,	-	nd	-	10	nd	-	-	-	-	-	-	-	4	-	

China															
Huanghai Sea, Dalian, **China**	-	nd	-	11	nd	-	-	-	-	-	-	-	19	-	
Songhua River, **China**	2.5 (0.98-4.12)	2.35 (1.33-6.67)	-	5.12 (1.69-11.81)	-	-	-	-	-	2.49 (nd-4.39)	-	-	7.01 (2.26-11.55)	2.37 (0.66-6.14)	9
Shichahai Lakes, Beijing, **China**	0.081 (0.047-0.143)	0.009 (0.006-0.013)	nd (nd-0.009)	0.066 (0.009-0.157)	0.179 (0.014-0.436)	0.026 (nd-0.065)	nd	0.009 (nd-0.019)	nd (nd-0.011)	0.183 (nd-0.512)	0.135 (nd-0.381)	nd	0.239 (0.14-0.519)	0.019 (0.015-0.022)	10
Lakes in Summer Palace, **China**	0.062 (0.039-0.082)	0.006 (nd-0.082)	nd	0.335 (0.058-0.515)	0.265 (0.018-0.528)	0.04 (0.028-0.060)	nd	nd (nd-0.012)	nd (nd-0.014)	0.006 nd-0.021	0.06 (nd-0.097)	nd	0.261 (0.139-0.397)	0.019 (0.016-0.024)	
Guanting Reservoir, **China**	0.056 (0.023-0.084)	nd (nd-0.006)	nd (nd-0,013)	0.305 (nd-0.305)	0.307 (0.044-0.664)	0.075 (nd-0.433)	nd	nd (nd-0.013)	nd	0.476 (nd-1.246)	nd	nd	0.087 0.043-0.149	0.017 0.013-0.029	
Seine River estuary, **France**	-	-	-	0.067-0.319	-	-	-	-	-	-	-	-	0.16-0.314	-	11
Seine River estuary, **France**	-	-	-	0.374-0.42	-	-	-	-	-	-	-	-	1.5883-1.655	-	12
Marne River, **France**	0.0303-0.0396	0.0249-0.0917	-	0.140-0.220	-	-	-	-	-	-	-	-	0.307-0.708	nd	
Somme River, **France**	0.1175 (nd-0.25)	2.9858 (nd-6.98)	-	1.9754 (0.22-3.68)	-	-	-	-	-	nd	-	-	10.2267 (5.16-20.76)	nd	13
Brandenburg, Berlin, 1997, **Germany**	-	-	-	0.50 (0.12-8.80)	-	-	-	-	-	-	-	-	2.27 (0.33-97.8)	-	14
Surface water, **Germany**	-	-	-	0.12-8.8	-	-	-	-	-	-	-	-	0.33-97.8	-	15
Rieti District, **Italy**	<0.012	<0.010	-	1.6	0.3	-	-	-	-	<0.010	-	-	4.3	-	16
Velino River, **Italy**	-	-	-	nd–44.3	-	-	-	-	-	-	-	-	nd-6.4		17
Tama River, **Japan**	-	-	-	0.008-0.54	-	-	-	-	-	-	-	-	0.013-3.6		18
King Talal, **Jordanian**	-	-	-	1.20 ± 0.35 (0.55-1.6)	-	-	-	-	-	1.80± 0.45 (0.75-2.1)	-	-	0.75 ± 0.15 (0.45–0.95)	-	19
Zarqa River, **Jordanian**	-	-	-	1.60 ± 0.75 (0.82-	-	-	-	-	-	1.40± 0.66 (0.75-	-	-	0.85 ± 0.35 (0.25–	-	

				2.1)						2.1)			1.15)		
Wadi Al-Arab, **Jordanian**	-	-	-	0.35 ± 0.15 (0.23-0.80)	-	-	-	-	-	0.43± 0.23 (0.25-0.70)	-	-	0.25 ± 0.15 (0.05–0.40)	-	
Mujib, **Jordanian**	-	-	-	0.05 ± 0.03 (0.01-0.08)	-	-	-	-	-	0.03± 0.02 (0.01-0.07)	-	-	0.04 ± 0.03 (0.01–0.06)	-	
Klang, River Basin, **Malaysia**	<0.05	<0.05	-	1.6	0.25	-	-	-	-	-	-	-	16.6	-	20
Surface water Dams, **Mexico**	-	-	-	-	-	-	-	-	-	0.005-0.201	-	-	0.075-2.282	-	21
Mixed water Tanks, **Mexico**	-	-	-	-	-	-	-	-	-	0.002-0.047	-	-	0.001-0.314	-	
Fresh water, the **Netherlands**	-	-	-	0.21	-	-	-	-	-	-	-	-	0.33	-	22
Surface water, the **Netherlands**	-	-	-	0.066-3.1	-	-	-	-	-	-	-	-	nd-5.0	-	23
Ohwa River, Ondo state, 1991, **Nigeria**	$(21\pm2)\times10^3$	nd	-	$(409\pm13)\times10^3$	-	-	-	-	-	-	-	-	-	-	24
Oni River, Ondo state, 1991, **Nigeria**	nd	$(329\pm4)\times10^3$	-	$(103\pm2)\times10^3$	-	-	-	-	-	-	-	-	-	-	
Owena River, Ondo state, 1991, **Nigeria**	$(56\pm3)\times10^3$	$(23\pm4)\times10^3$	-	$(1472\pm12)\times10^3$	-	-	-	-	-	-	-	-	-	-	
Ala River, Ondo state, 1991, **Nigeria**	$(70\pm3)\times10^3$	$(71\pm5)\times10^3$	-	$(109\pm8)\times10^3$	-	-	-	-	-	-	-	-	-	-	
Ogun River, Ogun state, 1990, **Nigeria**	$(90\pm16)\times10^3$	$(96\pm14)\times10^3$	-	$(133\pm3)\times10^3$	-	-	-	-	-	-	-	-	-	-	
Imayan River, Ogun state, 1991, **Nigeria**	$(154\pm10)\times10^3$	$(143\pm14)\times10^3$	-	$(199\pm4)\times10^3$	-	-	-	-	-	-	-	-	-	-	
Yemoji River, Ogun state, 1991, **Nigeria**	$(143\pm5)\times10^3$	$(126\pm22)\times10^3$	-	$(125\pm5)\times10^3$	-	-	-	-	-	-	-	-	-	-	
Majidum Greek, Lagos and Delta	nd	$(80\pm6)\times10^3$	-	$(294\pm22)\times10^3$	-	-	-	-	-	-	-	-	-	-	

states, 1991, **Nigeria**															
Iju River, Lagos and Delta states, 1991, **Nigeria**	(120±12)×10^3	(538±4)×10^3	-	nd	-	-	-	-	-	-	-	-	-	-	
Iya Alaro River, Lagos and Delta states, 1991, **Nigeria**	(101±6)×10^3	(108±6)×10^3	-	(820±7)×10^3	-	-	-	-	-	-	-	-	-	-	
Laos Lagoon, Lagos and Delta states, 1991, **Nigeria**	(18±4)×10^3	(26±8)×10^3	-	(123±3)×10^3	-	-	-	-	-	-	-	-	-	-	
Escravos, Lagos and Delta states, 1991, **Nigeria**	(20±3)×10^3	(98±4)×10^3	-	(10±2)×10^3	-	-	-	-	-	-	-	-	-	-	
Ogunpa River, Oyo Osun states, 1990, **Nigeria**	(236±23)×10^3	(265±10)×10^3	-	(203±16)×10^3	-	-	-	-	-	-	-	-	-	-	
Ona River, Oyo Osun states, 1990, **Nigeria**	(138±20)×10^3	nd	-	(53±8)×10^3	-	-	-	-	-	-	-	-	-	-	
Asejire Dam, Oyo Osun states, 1991, **Nigeria**	(256±5)×10^3	(71±4)×10^3	-	(667±15)×10^3	-	-	-	-	-	-	-	-	-	-	
Opa River, Oyo Osun states, 1991, **Nigeria**	(462±13)×10^3	(100±2)×10^3	-	(953±44)×10^3	-	-	-	-	-	-	-	-	-	-	
Osun River Oyo Osun states, 1991, **Nigeria**	(261±15)×10^3	(138±3)×10^3	-	(1382±36)×10^3	-	-	-	-	-	-	-	-	-	-	
Opa River, **Nigeria**	10410±4160	6180±1860	-	19440±12460	-	-	-	-	-	-	-	-	80530±99580	nd	25
Al-Khobar, **SaudiArabia**	6.98			7.9						36.5					26
Marais Dam, 2004-2005, **Venda, South Africa**	nd	(3.16-3.44)×10^3	-	(4.16-5.48)×10^3	-	-	-	-	-	-	-	-	(0.3-0.79)×10^3	-	27
Rietvlei Dam, 2004-2005,	nd	(3.18-3.91)	-		-	-	-	-	-	-	-	-	(0.33-		

Venda, South Africa		$\times 10^3$											1.33)×10^3		
Nzhelele River, 2005, **Venda, South Africa**	nd	(3.28-3.36) $\times 10^3$	-		-	-	-	-	-	-	-	-	(1.39-1.47)×10^3	-	
Nzhelele River, 2008, **Venda, South Africa**	nd	3.17×10^3	-		-	-	-	-	-	-	-	-	1.04×10^3	-	
Mutshindudi River, 2005, **Venda, South Africa**	nd	(3.28-3.86)×10^3	-		-	-	-	-	-	-	-	-	(0.72-1.12)×10^3	-	
Dzwerani River, 2005, **Venda, South Africa**	nd	3.24×10^3	-		-	-	-	-	-	-	-	-	0.43×10^3	-	
Lotanyanda River1, 2005, **Venda, South Africa**	nd	3.56×10^3	-		-	-	-	-	-	-	-	-	1.89×10^3	-	
Xikundu River 2005, **Venda, South Africa**	nd	0.16×10^3	-		-	-	-	-	-	-	-	-	0.33×10^3	-	
Mutale River 2005, **Venda, South Africa**	nd	3.31×10^3	-		-	-	-	-	-	-	-	-	2.18×10^3	-	
Luvuvhu River 2005, **Venda, South Africa**	nd	3.33×10^3	-		-	-	-	-	-	-	-	-	0.69×10^3	-	
Dzindi River 2005, **Venda, South Africa**	nd	3.19×10^3	-		-	-	-	-	-	-	-	-	0.84×10^3	-	
Taiwan	0.5	-	-		-	-	-	-	-	nd	-	-	9.3	-	28
River Irwell, 1984, **U.K.**	-	0.4	-		-	-	-	-	-	-	-	-	nd-0.4	nd-2.3	29
River Etherow 1984, **U.K.**	-	0.4-0.6	-		-	-	-	-	-	-	-	-	nd-1.6	nd-1.6	
New England rivers, **USA**	-	-	-		-	-	-	-	-	-	-	-	-	-	30
Delaware River, **USA**	-	-	-		-	-	-	-	-	-	-	-	-	-	
German Bight, **North Sea**	2×10^{-4}	67×10^{-5}	-		-	-	-	-	-	5×10^{-5}	-	-	22×10^{-4}	-	31

Dutch coast, the **Netherlands**	0.017	0.42	-		-	-	-	-	-	0.077	-	-	0.32	-	32

Wastewater (µg/L)															
Localization	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**DMEP**	**DEEP**	**DAlP**	**DHxP**	**BBzP**	**DEHP**	**DnOP**	**DiNP**	**DiDP**	**Ref.**
Queensland, **Australia**	-	0.0593	-	0.0247	-	-	-	-	-	63×10^{-4}	2.38	-	-	-	33
Canada	-	-	-	-	-	-	-	-	-	-	41	-	-	-	34
Finland	nd-1	5-74	-	3-9	-	-	-	-	-	<1-5	28–122	<1-2	-	-	35
Paris, WWTP, **France**	nd	3.29 (0.82-5.95)	-	0.18 (nd-0.35)	-	-	-	-	-	nd (nd-0.22)	27 (16-57)	-	-	-	38
Marne Aval, **France**	0.82± 1.13	7.71± 5.21	-	1.10± 0.37	-	-	-	-	-	1.12± 0.54	22.46± 13.22	0.10± 0.16	-	-	12
WWTP inputs, **France**	1.5 ± 1.3	6.0±7.7	-	4.1±1.6	9.6±6.7	-	-	-	-	4.0±3.4	33.3± 15.4	0.7±0.5	27.9± 10.3	23.4± 19.7	39
WWTP outputs, **France**	0.03± 0.03	0.04± 0.05	-	0.14± 0.10	0.31± 0.26	-	-	-	-	0.16± 0.15	2.0±1.2	0.01± 0.01	0.56± 0.61	0.26± 0.22	
WWTP outputs, **Germany**	-	-	-	0.7 (0.2-0.4)	-	-	-	-	-	-	8.8 (1.74-182)	-	-	-	14
WWTP **Netherlands**	<1	4.1-44	-	<10	-	-	-	-	-	<10	13-101	<1	-	-	37
Petersfield, Hampshire, **UK**	0.26± 0.41	25± 16.7	-	2.54± 3.52	2.93± 2.54	-	-	0.22± 0.31	-	1.46± 1.64	23.6± 12.2	-	-	-	40

Drinking water (ng/L)														
Localization	**DMP**	**DEP**	**DnBP**	**DiBP**	**DHxP**	**DcHP**	**BBzP**	**DEHP**	**DnOP**	**DnNP**	**DiNP**	**DiDP**	**DMPP**	**References**
Tap water, **China**	nd	nd	61.3	-	-	40.5	-	nd	-	-	-	-	-	41
Potable water, **China**	23.6	78.9	45.7			nd		nd						42
Evian water (PET and glass bottles), **France**	nd	nd	nd	-	nd	nd	nd	nd	nd	-	-	-	-	
Volvic water (PET bottles), **France**	nd	nd	nd	-	nd	nd	nd	nd	nd	-	-	-	-	
Drinking	-	200	380	-	-	-	20	50	-	-		-	-	43

water, Leipzig, **Germany**														
Tap water, **Greece**	-	300	1040	-	-	-	-	930	-	-	-	-	-	44
JNU campus, 2011, **India**	3	7	nd	21	nd	112	nd	146	13	9	-		nd	45
Okhla, 2011, **India**	380	198	317	433	396	416	633	257	247	219	-		308	
Well water, 1978, **Japan**	-	-	2.49	-	-	-	-	4.82	-	-	-	-	-	46
City water, **Japan**	-	-	2.04	-	-	-	-	nd	-	-	-	-	-	
Tap water, **Japan**	-	-	1.93	-	-	-	-	3.85	-	-	-	-	-	
Ground water, **Mexico**	-	-	-	-	-	-	1-82	19-232	-	-	-	-	-	36
Tap water, Iju 1991, **Nigeria**	$(91\pm2)\times10^6$	$(949\pm9)\times10^6$	nd	-	-	-	-	-	-	-	-	-	-	24
Tap water, Ijebu-Ode 1991, **Nigeria**	$(332\pm2)\times10^6$	$(760\pm22)\times10^6$	nd	-	-	-	-	-	-	-	-	-	-	
Tap water, Abeokuta 1990, **Nigeria**	$(169\pm17)\times10^6$	$(217\pm16)\times10^6$	$(411\pm8)\times10^6$	-	-	-	-	-	-	-	-	-	-	
Tap water, Owena 1991, **Nigeria**	$(99\pm9)\times10^6$	$(101\pm7)\times10^6$	nd	-	-	-	-	-	-	-	-	-	-	
Tap water, Osogbo 1991, **Nigeria**	$(143\pm7)\times10^6$	$(109\pm10)\times10^6$	$(284\pm10)\times10^6$	-	-	-	-	-	-	-	-	-	-	
Tap water, Obafemi Avolowo Univ. Ile-Ife 1991, **Nigeria**	$(323\pm13)\times10^6$	$(369\pm6)\times10^6$	$(1219\pm6)\times10^6$	-	-	-	-	-	-	-	-	-	-	
Drinking water, Katowice, **Poland**	-	160	640	-	-	-	50	60	-	-		-	-	43
Tap water, **Portugal**	40	190	520	-	-	-	30	60	-	-	-	-	-	47
Bottled	nd	40	350	-	-	-	20	170	-	-	-	-	-	

mineral water, **Portugal**													
Potable tap water, **Czech Republic**	80	70	50	-	-	-	2	660	nd	-	-	-	-	
Mineral water, Mattoni (glass bottles), **Czech Republic**	nd	nd	180	-	-	nd	nd	9780	-	-	-	-	-	48
Spring water, HBSW, (PET bottles), **Czech Republic**	100	40	200	-	-	nd	2	2880	-	-	-	-	-	
Tap water, 2011-2012, **Taiwan**	1±2	2±2	35±61	-	-	-	1±2	172± 304	28±77	-	81±162	11±36	-	
Spring water, 2011-2012 Virgin mountain	2±4	2±4	43±74	-	-	-	1±2	260± 636	53±155	-	42±84	9±28	-	49
Ground water, 2011-2012, **Taiwan**	2±3	3±5	34±62	-	-	-	1±2	141± 255	28±63	-	22±35	8±23	-	
Tap water, **Taiwan** -2011	-	-	-	-	-	-	34	131	-	-	447	-	-	
-2012	2	7	94	-	-	-	nd	239	48	-	69	15	-	
-2013	nd	1	103	-	-	-	nd	192	21	-	276	12	-	
Fountain water, **Taiwan**: -2011	-	-	-	-	-	-	33	92	-	-	316	-	-	50
-2012	2	3	47	-	-	-	6	283	46	-	nd	1	-	
-2013	2	1	12	-	-	-	nd	34	13	-	69	2	-	

Seawater (ng/L)												
Localization	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**DMEP**	**DHxP**	**BBzP**	**DEHP**	**DnNP**	**DiDP**	**Ref.**
North Atlantic	-	-	-	nd	-	-	-	-	4.9 (0.1-6.3)	-	-	51
Tyrrhenian sea coast SML, Dissolved/particulate, **Italy**	-	-	nq/140	223/213	188/57	-	-	-	154/1580	3/335	-	52

Tyrrhenian sea coast (Quercianella) **Italy** SSL, dissolved/particulate	-	-	nq/20	65/57	92/15	-	-	-	97/498	2/252	-	
Tyrrhenian sea (Leghorn Harbour) **Italy** SML, dissolved/particulate	-	6/6670	8/ 7760	286/ 21200	110/ 29300	12/ 21200	156/ 41600	-	33000/ 41600	5/6960	nd/ 795	
Tyrrhenian sea (Leghorn Harbour) **Italy** SSL, dissolved/particulate	-	4/55	4/ 350	260/1990	43/ 400	7/220	114/ 365	-	194/187	3/170	nd/ 35	
Coast, Gulf of **Mexico**	-	-	-	74 (3.4-265)	-	-	-	-	130 (6-316)	-	-	51
Mississippi delta	-	-	-	95 (6.5-471)	-	-	-	-	70 (23-225)	-	-	
2004, **North Sea**, dissolved	0.2 (nd-0.68)	0.67 (0.03-4.0)	-	1.7 (0.45-6.6)	-	-	-	0.05 (nd-0.26)	2.2 (0.52-5.3)	-	-	31
2004, **North Sea**, particulate	0.03 (nd-0.07)	0.68 (nd-4.1)	-	0.04 (0.01-0.2)	-	-	-	0.02 (nd-0.03)	1.6 (0.16-5.8)	-	-	

Sludge (mg/kg dw)												
Localization	**DMP**	**DEP**	**DnBP**	**DiBP**	**DEEP**	**DBEP**	**DcHP**	**BBzP**	**DEHP**	**DnOP**	**DMPP**	**Ref.**
WWTP sludge, 1980-1985, **Canada**	-	-	0.2-430	-	-	-	-	-	3-215	-	-	53
Mean of 11 WWTP, **China**	0.45	2.7	1.3	-	-	-	-	3.9	21	0.72	-	54
Foshan sewage sludge, Guangdong, **China**	0.66	4.86	3.06	-	-	-	-	0.548	nd	1.34	-	55
Xi'an sewage sludge, Shanxi, **China**	024	0.077	0.537	-	-	-	-	0.095	10.9	nd	-	
WWTP Sludge Shanghai, **East China**	1.2 (0.065-8.5)	0.023 (0.008-0.1)	22.4 (1.2-111)	0.53 (0.13-1.38)	0.24 (nd-2.7)	0.055 (nd-0.26)	0.10 (0.039-0.19)	0.14 (nd-1.4)	97.4 (17.8-1340)	0.078 (0.01-0.86)	0.069 (nd-0.63)	56
Finland	nd	nd	1	-	-	-	-	<1	91-179	<1	-	35
Sewage sludge, **Finland**	-	-	-	-	-	-	-	-	60	-	-	57
Deshydrated sludges, Marne Aval, **France**	2.7±2.3	0.36±0.24	0.09±0.09	-	-	-	-	0.37±0.20	72.1±22.3	1.9±0.44		12
Sewage sludge, 1989, **Germany**	nd	nd	35.34 (2.3-236)	-	-	-	-	0.29 (nd-0.7)	179.18 (65.8-480.6)	-	-	58
Sewage sludge,	-	-	0.5	-	-	-	-	-	67.3	-	-	14

Germany			(0.2-1.7)						(27.9-154)			
Sewage sludge, **Greece**	-	-	-	-	-	-	-	-	55.1-227	-	-	59
After 62 days composting, **Greece**	-	-	-	-	-	-	-	-	1.64-74.3	-	-	
Lagooning sludge, Marrakech, **Morocco**	nd	nd	1.66	-	-	-	-	nd	8.67	-	-	60
Activated sludge, Khouribga, **Morocco**	0.54	nd	0.39	-	-	-	-	nd	6.26	-	-	
Nigeria	24.02± 21.98	25.08± 24.87	46.25± 22.39	-	-	-	-	-	139.25± 138.52	33.68± 11.36		25
Spain	-	-	-	-	-	-	-	-	182	-		61
Spain	-	-	-	-	-	-	-	-	26	-		62
Municipal sewage treatment plan (MSTP), **Taiwan** E1; E2; E3	-	-	-	-	-	-	-	-	296; 250; 213	-	-	63
MSTP after composting, **Taiwan** E1; E2; E3	-	-	-	-	-	-	-	-	44; 32; 26	-	-	

Sediment (µg/kg dw)													
Localization	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**DMEP**	**DEEP**	**DBEP**	**DAlP**	**BBzP**	**DEHP**	**DnOP**	**Ref.**
Lakes Shichahai, Beijing, **China**	83.6 (21.5-132.5)	11.3 (2.4-20)	4.8 (nd-8.8)	501.6 (10.2-1113.5)	338 (16.4-651.6)	119.7 (4.4-226.6)	103 (0.9-325.8)	75.1 (nd-366.9)	28.5 (nd-137.7)	90.1 (nd-286.7)	2531.9 (83.8-5754.7)	822.7 (14.5-2621.8)	10
Lakes in Summer Palace, Beijing, **China**	47.3 (32.2-60.6)	8.1 (2.3-15.2)	1.6 (0.5-2.7)	132 (44.9-224.5)	118.1 (77.7-147.2)	29.3 (17.1-43.3)	8.3 (nd-24.1)	nd	35.8 (nd-83.9)	116(8.4-223.8)	998.5 (254.3-2083.9)	299.9 (nd-599.8)	
Guanting Reservoir, Beijing, **China**	40.3 (nd-94.5)	13.7 (nd-89.5)	2.6 (nd-17.6)	130.5 (nd-570.6)	159.7 (nd-1370.3)	187.6 (nd-1773)	44.6 (1.9-374.1)	50.4 (nd-182.2)	75.3 (nd-626.7)	52 (nd-379.5)	55.4 (nd-278.4)	80.5 (6.9-257.6)	
Guangzhou, **China**	88 (1-430)	330 (28-1050	-	370 (82-1260)	16010 (970-71200)	-	83 (nd-617)	50 (nd-100)	22 (nd-61)	80 (nd-280)	3640 (210-14160)	78 (nd-629)	6
Brandenburg, Berlin, **Germany**	-	-	-	450 (60-2080)	-	-	-	-	-	-	700 (210-8440)	-	14
Coast, Gulf of **Mexico**	-	-	-	7.6 (nd-15.3)	-	-	-	-	-	-	6.6 (3.4-14.2)	-	51

Open gulf of **Mexico**	-	-	-	3.4 (1.6-5.6)	-	-	-	-	-	-	2.0	-	
Mississippi delta of **Mexico**	-	-	-	13 (nd-52.1)	-	-	-	-	-	-	69 (nd-248)	-	
Marais Dam, 2004-2005, **Venda, South Africa**	nd	160-180	-	230-720	-	-	-	-	-	-	30-600	-	27
Rietvlei Dam, 2004-2005, **Venda, South Africa**	nd	160-200	-	230-400	-	-	-	-	-	-	20	-	
Vley Dam 2004-2005, **Venda, South Africa**	nd	160-270	-	210-710	-	-	-	-	-	-	20-160	-	
Nzhelele River, 2005, **Venda, South Africa**	nd	160	-	330-530	-	-	-	-	-	-	30	-	
Nzhelele River, 2008, **Venda, South Africa**	nd	160	-	190	-	-	-	-	-	-	50	-	
Mutshindudi River, 2005, **Venda, South Africa**	nd	170-320	-	290-890	-	-	-	-	-	-	30-1120	-	
Dzwerani River, 2005, **Venda, South Africa**	nd	160	-	220	-	-	-	-	-	-	40	-	
Lotanyanda River1, 2005, **Venda, South Africa**	nd	120	-	320	-	-	-	-	-	-	20	-	
Xikundu River 2005, **Venda, South Africa**	nd	170	-	310	-	-	-	-	-	-	20	-	
Mutale River 2005, **Venda, South Africa**	nd	160	-	290	-	-	-	-	-	-	60	-	
Luvuvhu River 2005, **Venda,**	nd	220	-	200	-	-	-	-	-	-	20	-	

South Africa													
Dzindi River 2005, **Venda, South Africa**	nd	160	-	360	-	-	-	-	-	-	20	-	
Taiwan	-	200 (100-1100)	100 (nd-1100)	6300 (300-30300)	-	-	-	-	-	200 (nd-1800)	4600 (500-23900)	-	28

Air gas phase (ng/m^3)								
Localization	**DMP**	**DEP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**DnOP**	**Ref.**
North Atlantic	-	-	1.0 (0.4-2.3)	-	-	2.9 (1.4-4.1)	-	51
German Bight, **North Sea**	0.3	1.6	0.53	-	0.02	0.29	-	51
Arctic	0.107 (0.04-0.223)	0.406 (0.177-895)	0.287 (0.158-0.432)	0.250 (0.096-0.549)	0.043 (0.017-0.068)	0.221 (0.075-0.460)	-	1
Inside Huachang, Pearl River Delta, **China**	-	-	409.8 ±23.4	515.8 ±30.4	-	13.2± 2.3		67
Outside Huachang, Pearl River Delta, **China**	-	-	126.2 ±10.6	105.3 ±11.2	-	34.7 ±3.4	-	
Inside Xinsheng, **China**	-	-	282.0 ±21.7	330.3 ±23.4	-	12.4 ±2.4	-	
Outside, Xinsheng, **China**	-	-	66.3±7.4	68.5±6.3	-	9.8 ±1.2	-	
Daliang Courtyard, **China**	-	-	11.0 ±1.6	8.5±1.1	-	8.1 ±1.4	-	
Xi'an, **China**	501 (nd-2460)	-	590 (nd-2150)	1000 (nd-6170)	-	470 (50-1860)	-	68
Indoor, Berlin, **Germany**	919 (92-5426)	722.7 (62-2189)	1081.4 (73-2793)	744.9 (45-5887)	26.6 (5-159)	155.5 (14-462)	-	64
Gulf of **Mexico**	-	-	0.3 (0.08-0.7)	-	-	0.4 (<0.4-2.3)	-	51
Urban, Tarragona, **Spain**	nd-30	-	-	nd	nd-50	nd-114000	80-400	66
Harbour, Tarragona, **Spain**	nd	-	-	nd	nd-30	nd-136400	60-350	
Home, **Sweden**	18 (7.4-47)	1598 (680-3900)	925 (300-2300)	296 (140-560)	28 (6.6-97)	208 (92-530)	-	65
Day care, **Sweden**	6.2 (2.3-14)	1246 (650-2600)	682 (330-1700)	239 (46-810)	19 (9.1-33)	267 (130-480)	-	
Work, **Sweden**	-	4.6 (2.8-7.9)	310 (110-950)	667 (420-1400)	599 (190-1200)	118 (15-320)	-	

Air particulate phase (ng/m^3)							
Localization	**DMP**	**DEP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**Ref.**
German Bight, **North Sea**	nd	0.06	0.53	-	0.05	1	31
Arctic	0.004 (0.001-0.008)	0.02 (0.005-0.041)	0.139 (0.075-0.189)	0.053 (0.02-0.074)	0.034 (0.018-0.056)	0.543 (0.264-0.735)	1
Inside Huachang, Pearl River Delta, **China**	-	-	114.3±10.5	50.9±5.6	-	98.2±7.3	67
Outside Huachang, Pearl River Delta, **China**	-	-	34.9±4.3	12.6±2.1	-	47.2±5.6	
Inside Xinsheng, **China**	-	-	118.1±13.4	89.3±7.6	-	72.3±5.6	
Outside, Xinsheng, **China**	-	-	18.6±3.5	17.7±2.3	-	32.6±5.9	
Daliang Courtyard, **China**	-	-	14.9±2.8	10.9±1.3		15.1±3.2	
Xi'an, **China**	100 (nd-1750)	-	1060 (nd-4920)	1620 (nd-7970)	-	1040 (90-4160)	68

Air dust phase (µg/g)											
Localization	**DMP**	**DEP**	**DnBP**	**DiBP**	**DcHxP**	**BBzP**	**DEHP**	**DnOP**	**DiNP**	**DiDP**	**Ref.**
Belgium	1.5 (0.3-13.7)	10 (0.2-36.9)	32.4 (12.7-113.4)	74.6 (23-231)	1.7 (50.1-968.2)	195.8 (9.7-968.2)	339 (63-841)	3.3 (nd-15.5)	162.9 (20-1561)	66 (13-172)	72
Bulgaria	260 (210-320)	350 (290-420)	7860 (5590-9360)	-	-	320 (280-380)	960 (790-1170)	250 (200-300)	-	-	75
Xi'an, **China**	5.66 (nd-68.84)	-	447.78 (3.6-4357.3)	900.98 (nd-7228.34)	-	-	798.61 (67.1-475.7)	-	-	-	68
Indoor, Beijing, **China**	nd-1.6	0.1-0.6	7.0-31.5	7.2-83.2	nd	0.1-1.1	47.6-883	nd-0.5	-	-	69
Indoor, Guan-gzhou, **China**	0.2-0.9	0.2-0.8	9.2-58.7	4.5-63.9	nd	0.1-12.0	56.6-949	nd-2.7	-	-	
Indoor, Jinan, **China**	nd-0.7	nd-0.3	2.3-128	2.6-19.7	nd-0.3	nd-0.1	9.9-252	nd-1.3	-	-	
Indoor Qiqihaer, **China**	0.1-0.8	nd-45.5	1.5-96.2	7.0-85.9	nd-0.1	nd-7.4	117-1380	nd-0.6	-	-	
Indoor, Urumchi, **China**	0.3-8.2	0.3-1.0	77.9-1160	6.5-87.9	nd	0.2-1.2	204-8400	0.2-45.7	-	-	
Denmark	-	-	-	-	-	-	3214 (400-8500)	-	-	-	73
France	<0.1	6.87 (nd-49.4)	55.3 (11.6-624)	118.8 (16.7-488)	-	28.2 (nd-3551)	505 (15-3505)	-	115.3 (nd-466)	<0.1 (nd-170)	71
Germany	1.42 (<0.1-2.83)	12.9 (1.86-368)	44.1 (22.3-511)	36.5 (27.9-358)	-	82.2 (4.4-218)	996 (547-1586)	-	113 (nd-250)	<0.1 (nd-67.7)	71
Indoor, Berlin, **Germany**	10.8 (0.25-158)	44.6 (1.4-632)	55.5 (12-141)	54.6 (11-161)	-	85.8 (4.8-816)	775.4 (231-1763)	-	-	-	64

Roma, **Italy**	<0.1 (<0.1-1.5)	6.78 (1.92-23.6)	42.8 (22.8-46.8)	180.1 (158.2-370.7)		23.6 (9-308)	434.3 (314-933)		<0.1 (nd-532)	<0.1 (nd-380)	71
Slovakia	<0.1	1.22-4.84	600-1029	137-149	-	3.8-5.4	1290-2124	-	146-173	<0.1	71
Spain	<0.1 (<0.1-0.92)	5.33 (0.09-64.6)	79.4 (48.6-201)	148.9 (66.1-409)	-	4.54 (0.81-153)	317.2 (113-2151)	-	<0.1 (nd-717)	<0.1 (nd-98.8)	71
Home, **Sweden**	0.1 (0.03-0.1)	11 (1.3-63)	130 (17-260)	6 (nd-18)	-	31 (3.1-110)	980 (130-3200)	-	-	-	65
Day care, **Sweden**	0.3 (0.01-1.5)	6.9 (1-23)	190 (38-560)	9.1 (nd-32)	-	47 (9-120)	2000 (260-5800)	-	-	-	
Work, **Sweden**	0.4 (0.05-1.2)	37 (3.7-180)	130 (20-450)	43 (nd-106)	-	19 (1.4-110)	1500 (57-3700)	-	-	-	
Sweden	-	31 (nd-2425)	226 (nd-5446)	97 (nd-3810)	-	319 (nd-45549)	1310 (nd-40459)	-	639 (nd-40667)	-	74
UK	<0.1 (<0.1-1.1)	3.5 (0.6-114.8)	52.8 (0.1-106.4)	43.2 (0.2-157.4)	-	24.5 (nd-238.9)	195.4 (0.5-416.4)	-	<0.1 (nd-337.2)	<0.1 (nd-156.6)	71
Indoor, Albany, **USA**	nd-3.3	0.7-11.8	4.5-94.5	0.7-34.4	nd-0.3	0.6-393	37.2-9650	nd-14.1	-	-	69
Indoor, California, **USA**	-	-	-	-	-	-	611 (104-2050)	-	-	-	70

PAE in milks and drinks (ng/L dw)								
Country	**Milk/drinks**	**DMP**	**DEP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**Ref.**
Sweden	Raw milk			7300-50000		1100-2900	7000-30000	86
Canada	Raw cow milk	nd	600-630	5790-6390	na	nd	16000-215000	88
South Korea	Raw cow milk	na	nd	na	na	nd	57000	89
Canada	Human milk	na	310	870	na	na	2220	90
Germany	Human milk	na	na	800	1200	nd	3900	91
Sweden	Human milk	na	1220	1500	na	490	9000	92
Canada	Bottle water	nd	65-100	75-1717	133-481	na	52-338	94
China	Bottle water	nd	nd	46	11	nd	150	95
Italy	Drinking water	20-60	20-220	40-230	30-320	na	nd	96
China	Mineral water	230	580	5620	na	1250	930	97
France	Mineral water	nd-42	15-81	75-185		nd-27	46-358	12
France	Mineral gaseous water	10-20	19-51	65-131		nd-5	90-248	12

France	Spring water	nd-42	24-54	85-182		nd-10	90-132	12
France	Tap water	8-12	nd-30	40-51		nd-3	51-59	12
China	Soft drink	140	30	410	560	nd	800	95
China	Wine	3340	70	31800	26000	nd	3560	95
Italy	Wine	nd	nd	nd-115000	76000-119000	nd-40000	57000-76000	98
Italy	Wine	nd	nd	7300-23000	na	nd-7000	2400-16000	99
Spain	Wine	na	5500	4700	na	na	<2000	100
Italy	Commercial wine (red)	-	-	nd-5300	-	-	nd-12300	101
Italy	Commercial wine (white)	-	-	nd-6500	-	-	6500-8900	101
Italy	Vodka	-	-	13600	8200	6300	22400	101

*na: not analyzed; nd: not detected

PAE in foods (ng/g dw)								
Country	**Matrix**	**DMP**	**DEP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**Ref.**
	Green vegetables	-	nd-6.7	nd-30		-	nd-140	83
	Chews	nd	nd	31.47		nd	348.7	12
	Radishes	nd	nd	130.6		nd	138.0	12
	Ham	1.1	-	260		17	3300	84
	Chicken	4.9	24	760		11	670	84
	Chicken thigh	nd		126.9		nd	644.8	12
China	Sausage	1.25	1.27	6.99	12.8	nd	95.3	85
China	Sausage	na	na	na	na	na	155	85
	Fish	nd-17	nd-8.5	5-380		nd-5	2.3-290	83
	Fish terrine	nd	nd	4.82		nd	453.2	12
China	Rice	0.12	0.83	5.53	6.21	nd	19.2	85
	Basmati rice	nd	nd	9.14		0.68	156.2	12
	Sheep cheese	-	-	780		25	890	84
	Cow cheese	-	nd-7	nd-300		nd-39	41-1230	83
	Fruits	-	-	16-50		-	30-120	83
	Granny apple	17.83	23.11	35.27		nd	169.9	12
	Black raisin	2.78	12.77	35.84		nd	210.5	12
	Fruit salad	12.62	nd	36.70		2.37	146.4	12
Sweden	Yoghurt with fruit	na	na	<9	na	<4	15-37	86
	Olive oil	nd	nd	96-490		nd-1730	nd-4700	87
	Olive oil	-	-	-		340	24000	84

Table 3S: Contamination levels of some PAEs in biota (fishes, mammals, algae and other species). "-": no data; nd = not detected (<LOQ)

Freshwater fish (µg/g dw)														
Localization	**Species**	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**DMEP**	**DHxP**	**DcHxP**	**BBzP**	**DEHP**	**DnOP**	**DNP+ DiDP**	**Ref.**
Hong-Kong	Bighead carp	0.001	0.01	0.03	0.97	0.32	0.01	0.04	0.26	0.08	0.99	0.04	0.04	76
Hong-Kong	Grass carp	0.001	0.01	0.03	0.53	0.21	nd	0.05	0.19	0.07	0.56	0.06	0.03	
Hong-Kong	Mud carp	0.003	0.01	0.04	1.13	0.36	nd	nd	0.30	0.08	0.71	0.06	0.09	
Hong-Kong	Catfish	0.002	0.01	0.04	0.76	0.40	nd	0.05	0.39	0.10	0.45	0.04	0.04	
Hong-Kong	Grey mullet	0.002	0.01	0.02	0.58	0.22	0.05	0.04	0.16	0.07	0.45	0.02	0.05	
Hong-Kong	Mandarin fish	0.001	0.01	0.02	1.13	0.35	nd	0.03	0.15	0.06	0.20	0.03	0.03	
Hong-Kong	Rice field eel	nd	0.01	0.01	0.95	0.31	0.01	0.03	0.15	0.05	0.29	0.05	0.04	
Hong-Kong	Snakehead	0.001	0.03	0.02	1.25	0.43	nd	0.05	0.24	0.07	0.39	0.03	0.08	
Hong-Kong	Spotted snakehead	nd	0.01	0.03	1.53	0.40	0.02	0.04	0.20	0.08	0.69	0.07	0.07	
Hong-Kong	Tilapia	0.001	nd	0.02	0.64	0.24	0.01	0.04	0.19	0.05	1.56	0.03	0.04	
France	Bream Abramis brama		0.72-0.80								1.90-3.12			12
Ketu, Lagos, **Nigeria**	*Chrysichthys* sp.		0.31-0.86		0.40-1.17						0.04-0.11			77
Ketu, Lagos, **Nigeria**	*Synodontis* sp.		0.32-0.81		0.40-3.97						0.03-0.30			
Ketu, Lagos, **Nigeria**	*Tilapia* sp.		0.32-0.81		0.38-1.08						0.04-0.15			
Taiwan	Oreochromis miloticus niloticus	Muscle : nd-0.17 (0.026)	Muscle : nd-0.32 (0.110)		Muscle : nd-0.67 (0.225)					Muscle : nd-3.8 (0.741)	Muscle : 1.4-129.5 (33.6)	Muscle : nd-0.4 (0.078)		78
Taiwan	Liza subviridis	Muscle : nd-1.8 (0.267)	Muscle : nd-0.2 (0.052)		Muscle : nd-0.31 (0.098)					Muscle : nd-26.8 (6.37)	Muscle : 1.7-253.9 (61.8)	Muscle : nd-0.58 (0.109)		
Taiwan	Acanthopagrus schlegeli	Muscle : <0.05	Muscle : 0.33		Muscle : 0.24					Muscle : 2	Muscle : 7.7	Muscle : 0.086		
Taiwan	Zacco platypus	Muscle : nd	Muscle : <0.05		Muscle :					Muscle :	Muscle : 50.5	Muscle :		

					0.17					nd		0.14		
Taiwan	Accrossocheilus paradoxus	Muscle : nd	Muscle : nd		Muscle : 0.79					Muscle : 0.15	Muscle : 0.57	Muscle : <0.05		

Marine fish (µg/g ww)														
Localization	**Species**	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**DMEP**	**DHxP**	**DcHxP**	**BBzP**	**DEHP**	**DnOP**	**DNP+ DiDP**	**Ref.**
Black Sea	*Engraulis encrasicolus*				Flesh: nd; Digest. tract : detected	Flesh, digest. tract : nd						Flesh: detected ; Digest. tract : detected		79
Black Sea	*Merlangius merlangus*				Flesh, digest. tract : nd	Flesh, digest. tract : nd						Flesh, digest. tract : nd		
Black Sea	*Mullus surmuletus*				Flesh, digest. tract : nd	Flesh: nd; Digest. tract : detected						Flesh, digest. tract : nd		
Black Sea	*Sarda sarda*				Flesh, digest. tract : nd	Flesh: nd; Digest. tract : detected						Flesh, digest. tract : nd		
France	Flounder *Platichtys flesus*		0.10-0.20								0.04-0.07			12
Hong-Kong	Bigeye	nd	0.01	0.02	0.43	0.16	0.01	0.04	0.26	0.05	0.79	0.03	0.06	76
Hong-Kong	Bleeker's grouper	nd	nd	0.02	0.83	0.27	nd	nd	0.16	0.06	0.68	0.04	0.05	
Hong-Kong	Golden threadfin bream	0.002	0.02	0.04	1.65	0.71	0.01	nd	0.25	0.10	0.39	0.04	0.06	
Hong-Kong	Yellow croaker	0.002	0.01	0.04	1.45	0.50	0.03	0.05	0.33	0.10	4.26	0.12	0.20	
Hong-Kong	Bartail flathead	nd	0.02	0.03	0.88	0.28	0.01	0.07	0.30	0.12	0.52	0.17	0.27	
Hong-Kong	Snubnose	nd	0.01	0.02	2.08	0.94	nd	nd	0.12	0.04	0.42	0.02	0.11	

	pompano													
Hong-Kong	Orange-spotted grouper	nd	nd	0.02	0.72	0.28	nd	0.03	0.22	0.06	0.69	0.04	0.06	
Hong-Kong	Goldspotted rabbitfish	0.002	0.01	0.02	0.75	0.32	nd	nd	0.16	0.07	0.20	0.02	0.04	
Hong-Kong	Yellow seafin	0.003	nd	0.04	0.57	0.23	nd	nd	0.22	0.11	0.27	0.04	0.08	
Hong-Kong	Tongue sole	0.001	0.01	0.03	0.88	0.29	0.01	nd	0.50	0.10	2.20	0.07	0.09	

Marine shellfish (ng/g ww)											
Localization	**Species**	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**DnOP**	**DNP+ DiDP**	**Ref.**
Sea of Marmara	Shrimp *Parapenaus longirostris*				Flesh, digest. tract : nd	Flesh, digest. tract : nd			Flesh, digest. tract : nd		79
Hudson's Bay, **Quebec**	Arctic cod *Boreogadus saida*	0.0469-1.03	0.957-7.58	-	1.20-25.2	0.211-1.78	0.657-2.86	10.5-128	nd-5.08	DnNP : nd-7.65	80

Marine mammal (ng/g ww)											
Localization	**Species**	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**DnOP**	**DNP+ DiDP**	**Ref.**
Italian coasts, **Italy**	Basking shark							Muscle : MEHP 12.97			81
Italian coasts, **Italy**	Fin whales *Balaenoptera physalus*							Blubber : MEHP 57.97			
Hudson's Bay, **Quebec**	Beluga whale *Delphinapterus leucas*	Liver : 1.05-4.50	Liver : 11.8-50.6	-	Liver : 40.1-140	Liver : 3.15-19.8	Liver : 3.59-28.1	Liver : 6.04-4150	Liver : 0.86-23.30	Liver : DnNP nd-48.0	80

Plankton and alge (ng/g)											
Localization	**Species**	**DMP**	**DEP**	**DPrP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**DnOP**	**DNP+ DiDP**	**Ref.**
Ligurian Sea	Neustonic/ planktonic samples							DEHP : 18.38±44.39 MEHP : 61.93±124.26			81
Sardinian Sea								DEHP :			

								23.42±32.46 MEHP : 0.30±41.55				
Neighbor coast, northern **Taiwan**	Algae *Enteromorpha intestinalis*				16230-21830			5030-26270				
Neighbor coast, northern **Taiwan**	Algae *Ulva fasciata*				14530-19830			9580-14430				82
Neighbor coast, northern **Taiwan**	Algae *Porphyra angusta*				8170-17950			800-15790				
Hudson's Bay, **Quebec**	Lichen *Cladina rangiferina*	0.218-0.450	4.00-6.39	-	8.21-25.6	1.28-4.37	1.60-4.25	84.6-534	0.772-3.03	DnNP : nd-3.91		80

* gastrointestinal model

Table 4S: Degradaton half-lifes of PAEs in various media.

Medium	**Process**	**DMP**	**DEP**	**DAlP**	**DPrP**	**DnBP**	**DiBP**	**BBzP**	**DEHP**	**DnOP**	**DiOP**	**610P**	**DiNP**	**711P**	**DUP/ DTDP**	**BCP**	**ΣPAEs**	**Ref.**
Air	OH•		22.2 h													23 h		33, 102
Atmosphere	Photooxidation	9.3-93 d	1.8-18 d	0.04-0.4 d	0.9-9 d	0.6-6 d	0.6-6 d	0.5-5 d	0.2-2 d	0.3-3 d	0.3-3 d	0.2-4 d	0.2-2 d	0.2-4 d	0.2-2 d			103
Atmosphere	Photooxidation								1 d									104
Mural painting	UV																< 8 h	11, 36
Pure culture of *Penicillium liliacum*	Biodegradation								30 d									105
Water (neutral pH)	Hydrolysis	3.2 yr	8.8 yr			22 yr		> 0.3 yr	2000 yr	107 yr	157 yr							43
Marine microcosm									12-67 d									94
Water	Photolysis		2.4-12 yr			2.4-12 yr			0.12-1.5 yr									115
Water	Biodegradation (mineralization)								360 h				900 h					47, 106
River water	Biodegradation								4.5									105

									weeks									
Mangrove sediment	Biodegradation (aerobic)					1.6-2.9 d			5.0-8.3 d									54, 55
River sediment	Biodegradation (anaerobic, 30°C, pH7)		15.4 d			9.4 d			25.7 d									56
Sediment	Primary biodegradation					3-4 weeks			3 months									57, 58
Sediment	Biodegradation								3240 h				8100 d					106
Sediment									135 d				337.5 d					47
Sediment	Biodegradation								14 d									105
Soil	Biodegradation								31-98 d									105
Soil	Biodegradation								720 h				1800 h					106
Activated sludge	Biodegradation								0.8-17 d									105
Sludge	Biodegradation (anaerobic)	<4 d				<7 d				>10 d								116
Lagooning sludge	Biodegradation (anaerobic)								45.4 d									60
Soil									30 d				75 d					47
Black soil						7.8±0.1 d			26.3±0.7 d									40
Fluvo-aquic soil						8.3±0.2 d			30.8±0.7 d									40
Fish tissue	Biodegradation		1-2 d															52, 53

h: hour ; d: day, yr: year

Table 5S: Bioaccumulation (BAF) and bioconcentration (BCF) factors of PAEs for some species

Species	Compound	Bioaccumulation factor (BAF)	Bioconcentration factor (BCF)	Time of exposition (day)	Ref.
Mammals (3 species)	DEP	0.05		-	107
	DnBP	0.05			
	BBzP	0.05			
	DEHP	0.05			
	DnOP	0.05			
Invertebrates (5 species)	DEP	0.0024		-	107
	DnBP	0.24			
	BBzP	0.12			
	DEHP	0.19			
	DnOP	2400			
Chironomus plumosus (mudworm)	DnBP	-	714	7	108
	DEHP		350		
Chironomus (larva)	DnBP		0.7		109
	DEHP		264		
Fishes (5 species)	DEP		120	-	107
	DnBP		5100		
	BBzP		660		
	DEHP		310		
	DnOP		9300		
Lepomis macrochirus (blue perch sun)	DMP	-	57	28	110
	DEP		117		
	BBzP		663		
	DEHP		114		
Sunfish	DnBP		172		109
	BBzP		663		
Cyprinid	DnBP		1		109
	BBzP		3.6		
Salmonid	DEHP		1.6		109
Physa (mollusc)	BBzP		100		109
	DEHP		315		
Daphnia magna (shellfish)	DEHP	-	190-330	21	111
Gammarus pseudolimnaes (shellfish)	DnBP	-	6700	14	108
Pimephales promelas (fathead minnow)	DEHP	-	553	200	112
Oedogonium species (green algae)	DEHP	-	53890	33	113
Selenastrum capricornutum (green algae)	DnBP	-	5475	1	114

Figure 1S: General biodegradation pathway for PAEs in the environment according to Staples et al., 1997.

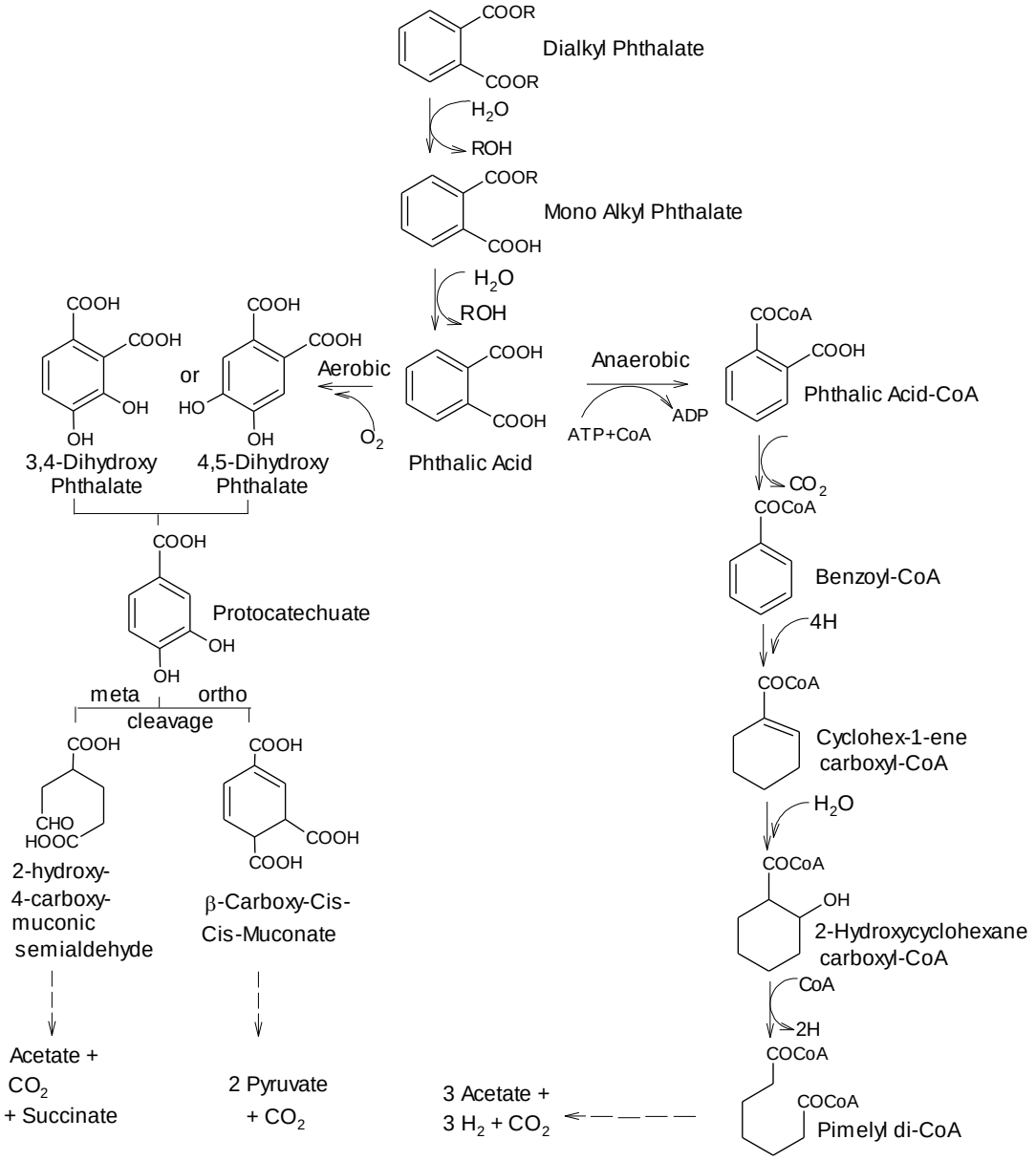


Figure 2S: Worldwide contamination levels of DnBP in fresh and marine water compared to the LOEC, ERLs, NOEC and PGW values (Detailed values and references are given in Table 2S).

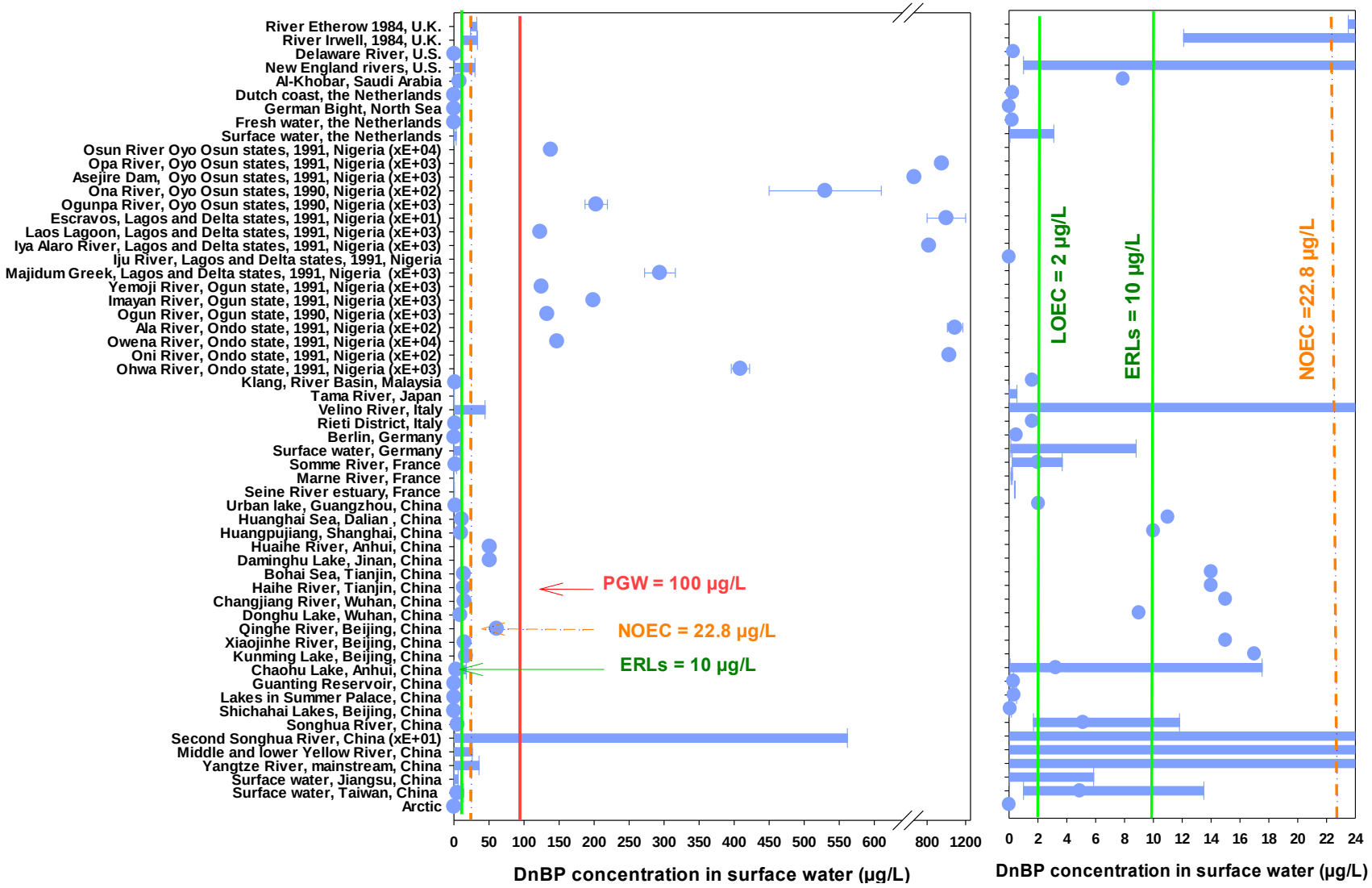


Figure 3S: Worldwide contamination levels of DMP and DEP in surface water compared to the EQS and EQS (max) values (Detailed values and references are given in Table 2S).

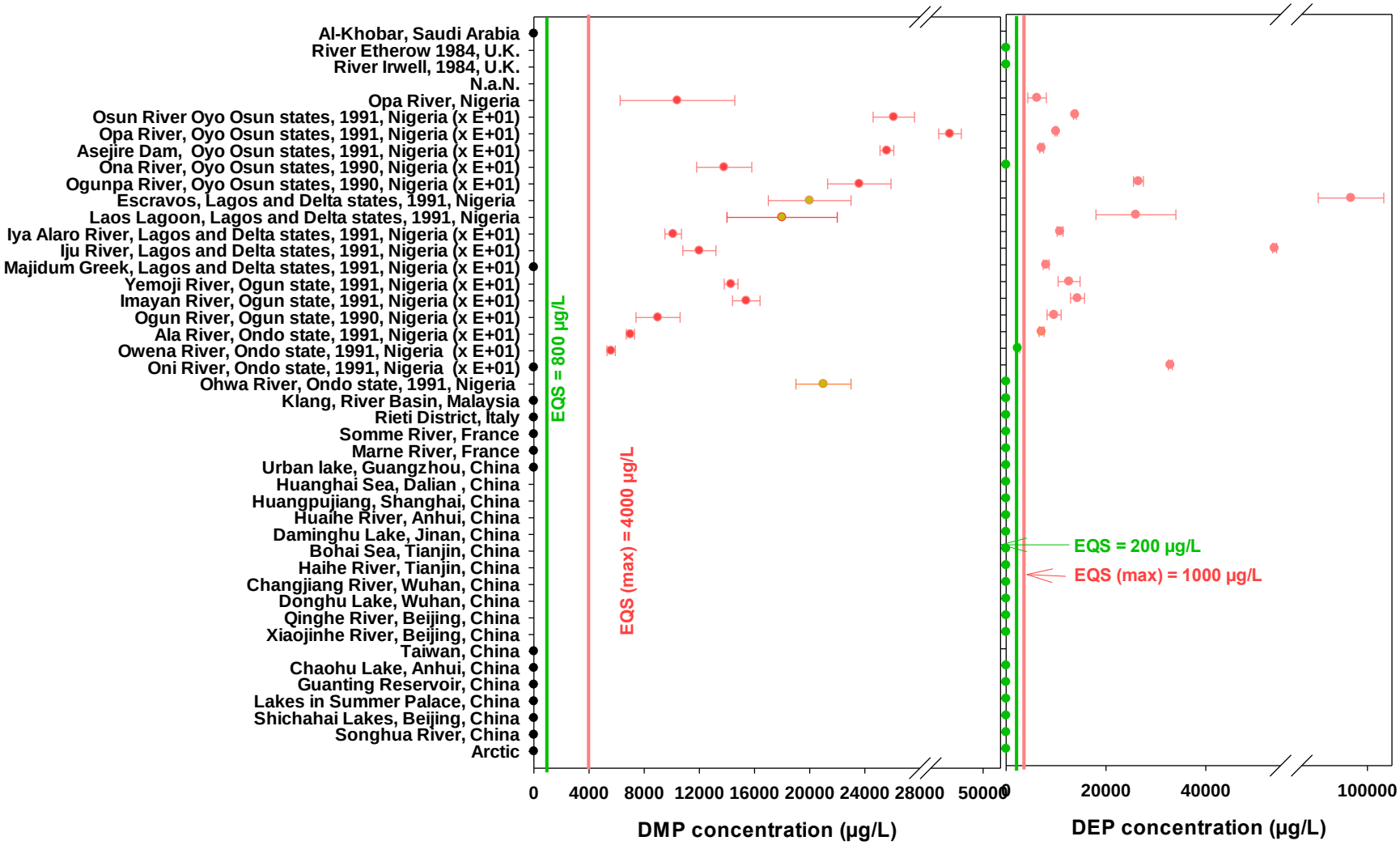


Figure 4S: Worldwide contamination levels of BBzP in surface water compared to the EQS values (Detailed values and references are given in Table 2S).

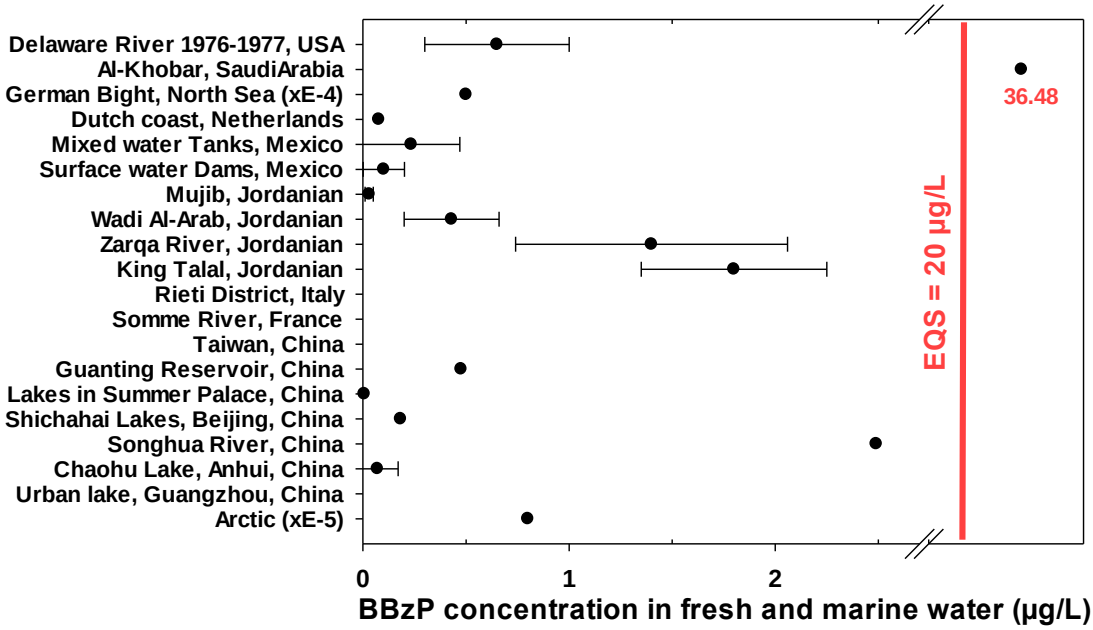


Figure 5S: Contamination levels of DMP and DEP in soil compared to the limiting values for the PER and PGW (Detailed values and references are given in Table 2S).

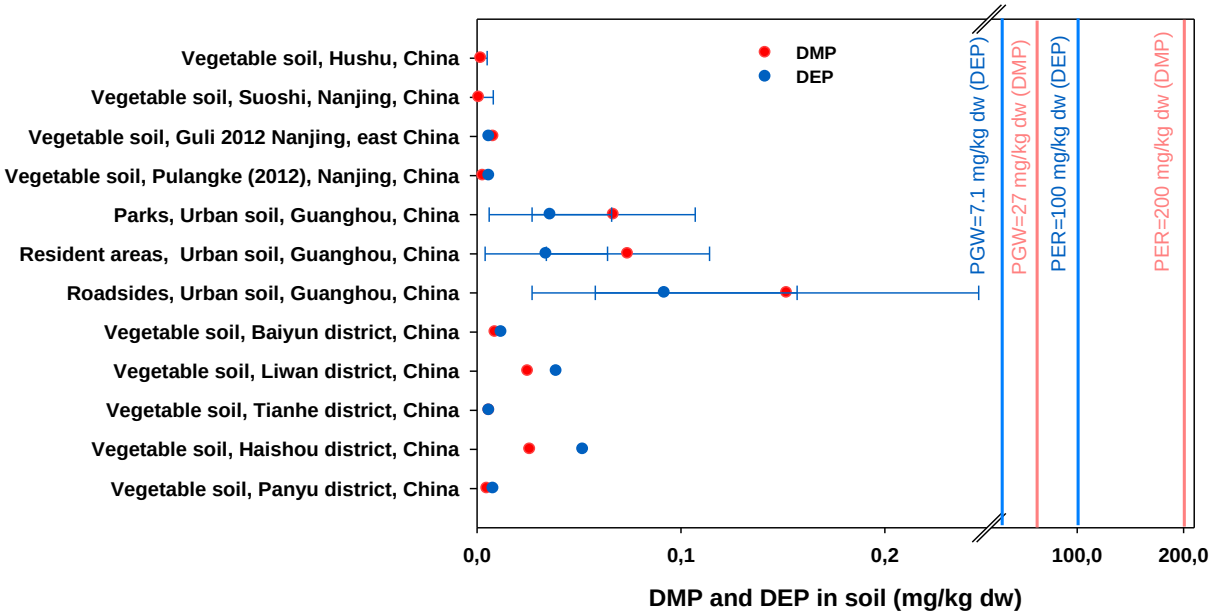
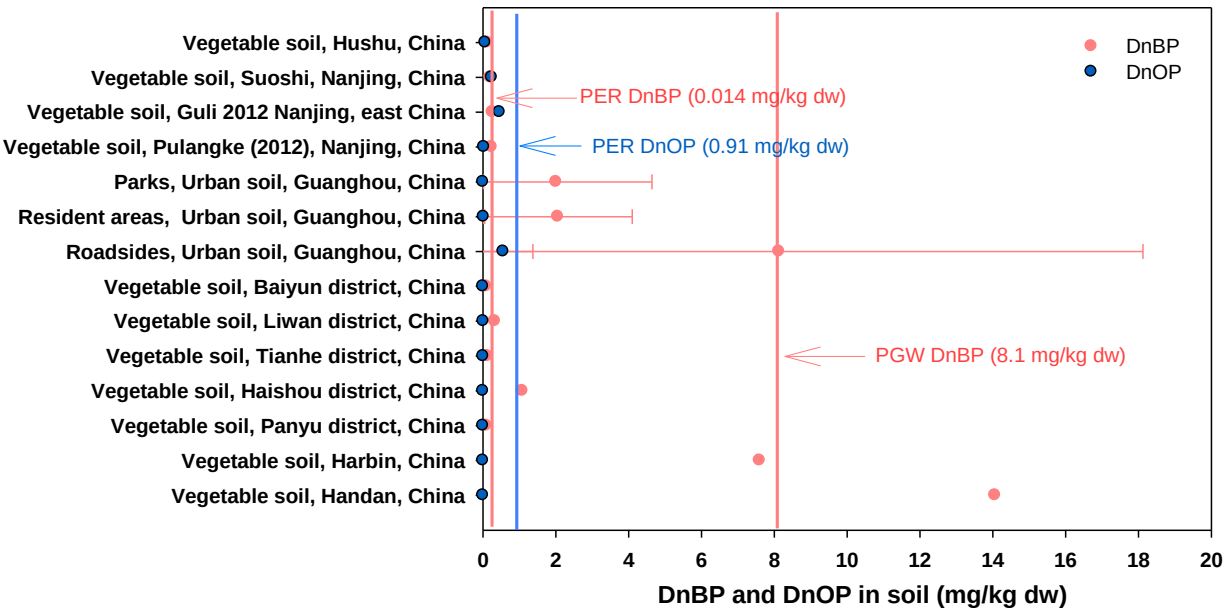


Figure 6S: Contamination levels of DMP and DEP in soil compared to the limiting values for the PER and PGW (Detailed values and references are given in Table 2S).



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