

Table 1 Names, abbreviations, structures, properties, and applications of the seven OPFRs analyzed in this study.

Compound	Abbr.	Formula	M _w (g/mol)	CAS No.	logK _{ow}	Solubility (mol/L)	Application
Tributyl phosphate	TBP	C ₁₂ H ₂₇ O ₄ P	266.31	126-71-6	3.54 ^a	4.20E-3 ^a	Antifoam agent, hydraulic fluids, lacquers, extractant for metal complexes, plastic
Tris (1,3-dichloro-2-propyl) phosphate	TDCPP	C ₉ H ₁₅ Cl ₆ O ₄ P	430.90	13674-87-8	3.65 ^b	1.62E-5 ^b	Plastic, textile, polyurethane foam
Tri (2-butoxyethyl) phosphate	TBEP	C ₁₈ H ₃₉ O ₇ P	398.47	78-51-3	3.75 ^b	2.76E-3 ^b	Flame retardant, plasticizer, floor finish, wax, lacquer, paint, glue, anti-foam agent
Triphenyl phosphate	TPP	C ₁₈ H ₁₅ O ₄ P	326.28	115-86-6	4.59 ^b	5.86E-6 ^b	Hydraulic fluids, PVC, electronic equipment, casting resins, glues, phenylene-oxide-based resins, phenolics resins
Tri-o-cresyl phosphate	<i>o</i> -TCP	C ₂₁ H ₂₁ O ₄ P	368.36	78-30-8	5.41 ^a	7.37E-7 ^a	Plastics, resins, synthetic fibers, rubber, engineering thermoplastics, oil additive
Tri-m-cresyl phosphate	<i>m</i> -TCP	C ₂₁ H ₂₁ O ₄ P	368.36	563-04-2	5.41 ^a	8.12E-7 ^a	Hydraulic fluids, PVC, cellulose, plastic, polystyrene, thermoplastics, transmission fluids
Tri-p-cresyl phosphate	<i>p</i> -TCP	C ₂₁ H ₂₁ O ₄ P	368.36	78-32-0	5.41 ^a	8.14E-7 ^b	Hydraulic fluids, PVC, cellulose, cutting oils, plastic, thermoplastics

Abbr: abbreviation, CAS No.: chemical abstract service number, *K_{ow}*: octanol-water partition coefficient, *K_{OC}*: soil-adsorption coefficient.

^a Predicted average acquired from USEPA website: <https://comptox.epa.gov/dashboard/dsstoxdb/>.

^b Experimental average acquired from USEPA website: <https://comptox.epa.gov/dashboard/dsstoxdb/>.

Table 2 The information of the sampling station.

station	longitude (°)	latitude (°)	depth of the water (m)
SCS1	1,161.10	2,019.7	757
SCS2	1,167.00	1,952.0	1540
SCS3	11,643.7	2,147.4	131
SCS4	11,717.6	1,912.5	3661
SCS5	11,545.3	1,959.2	1424
SCS6	11,830.1	2,029.9	2351
SCS7	1,170.10	180.10	3980
SCS8	11,759.9	210.00	1660.6
SCS9	11,525.1	2,037.5	345
SCS10	1,180.00	220.00	342
SCS11	11,959.9	2,045.5	3645
SCS12	1,190.00	1,937.1	3390
SCS13	11,455.3	205.40	268
SCS14	11,340.2	2,158.3	20
SCS15	11,727.8	2,220.9	45

Table 3 Comparison of OPFRs concentrations (ng/g dw) in sediments of this study and other areas in the world.

Sampling area	Sampling no.	Sampling year	TBP	TDCPP	TPP	<i>o</i> -TCP	<i>m</i> -TCP	<i>p</i> -TCP	ΣOPFRs	Reference
South China Sea, China	15	2020	3.6	3.5	6.4	12.8	7.5	8.6	16.2	This study
Taiwan Strait, China	32	2016	7.92	0.11	0.55		0.09		8.52	(Zeng et al., 2020)
Pearl River Delta, China	48	2015	3.53	1.31	14.3					(Hu et al., 2017)
Pearl River Delta, China	15	/	7.31	1.41	15.44		0.83		22.8	(Zeng et al., 2018b)
the Bohai Sea and northern part of the East China Sea, China	91	2011, 2012, 2016	4.21	4.44 ^a	3.95		1.33		5.01	(Liao et al., 2020)
Korean coast, Korean	50	2016	1.73	1.78	1.83	3.94	1.33	7.92	8.81	(Choi et al., 2020)
San Francisco Bay, USA	10	2014	0.57	0.96	1.9			3.4		(Sutton et al., 2019)
Hainan Island, China	49	2015	0.73	0.53	0.39		4.41		6.06	(Mo et al., 2019)

^a Only detectable in one sample.

Table 4 HQ values of OPFRs in sediments of the SCS

HQ	TBP	TDCPP	TPP	<i>o</i> -TCP	<i>m</i> -TCP	<i>p</i> -TCP
Median	1.5E-03	1.7E-02	8.6E-03	1.8E-02	1.0E-02	1.4E-02
Max	2.0E-03	3.2E-02	1.0E-02	2.5E-02	1.3E-02	1.5E-02

