Supporting Information

Pollution status and human exposure of Decabromodiphenyl ether (BDE-209) in China

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Table S1 Physical properties and chemical identity of deca-BDE (BDE-209)

	Physical /Chemical Values	Ref
CASRN	1163-19-5	1
Synonyms	2,2',3,3',4,4',5,5',6,6'-decaBDE; BDE-209; deca-BDE; benzene, 1,1'-oxybis[2,3,4,5,6-pentabromo]-; decabromodiphenyl oxide; decabromodiphenyl ether; decabromobiphenyl ether; ether, bis(pentabromophenyl)	1-2
Physical state	Solid	3
Melting point, ℃	290-306	4
Boiling point, ℃	decomposes at >320℃	4
Vapor pressure at 21℃, Pa	4.63×10^{-6}	3
Henry's Law constant, atm m^3/mole	1.93×10^{-8}	3
Density, g/cm^3	3.0	4
Water solubility at 25℃, μg/L	<0.1	3
Henry's Law constant (Pa m^3/mol) at 25℃	0.04	5
$LogK_{ow}$	6.3-12.6	3
$LogK_{oc}$	6.3	3
Molecular weight	959.17	1
Chemical formula	$C_{12}Br_{10}O$	1
Flammability	not applicable	4
Autoflammability	not applicable	4
Explosive properties	none	4
Oxidising properties	none	4

Table S2 Thyroid hormone concentrations measured in human serum samples (n=36)

Thyroid hormones	TSH (μIU mL-1)	T3 (ng mL^{-1})	fT3 (pg mL^{-1})	T4 (μg dL^{-1})	fT4 (ng dL^{-1})
Normal range	0.35-5.29	0.8-1.9	3.0-6.5	5.0-13.0	0.88-1.85
Geometric mean	2.04	1.27	3.89	7.32	1.24
Standard deviation	1.10	0.38	0.90	2.68	0.32
Mid-value	1.59	1.29	3.98	6.38	1.26
5th percentile	0.96	0.73	2.26	4.40	0.91
95th percentile	3.96	1.91	4.79	11.67	1.69

The data is from ref 6.

Table S3 The concentrations of BDE-209 and nona-BDE in influent, effluent and dewatered sludge in three different waste water treatment plants in China

Location	Site description	Collection year	Concentration of BDE-209 Range (mean)		Concentration of nona-BDE Range (mean)	Ref
Hong Kong, south China	Municipal and industrial wastewater	2011-2013	Influent	12.73-71.34 (30) ng L^{-1}	Not detected	7
			Effluent	23-96 (20) ng L^{-1}		
			Sludge	n.d.-66.6 (63) ng g^{-1}		
Hefei, east China	The city's oldest and largest wastewater facility of the surrounding Chaohu Lake basin	2011	Influent	186.010 ng L^{-1}	Not detected	8
			Effluent	36.800 ng L^{-1}		
			Sludge	no data		
Shanghai, south China	A conventional WWTP	2010-2011	Effluent	n.d.-0.16 (0.064) ng L^{-1}	n.d.-0.08 (0.064) ng L^{-1} (BDE-208) n.d.-0.08 (0.094) ng L^{-1} (BDE-207) n.d.-0.29 (0.083) ng L^{-1} (BDE-206)	9
			Effluent	no data		
			Sludge	145.3 ng L^{-1}	6.6 ng L^{-1} (BDE-208) 4.3 ng L^{-1} (BDE-207) 2.8 ng L^{-1} (BDE-206)	

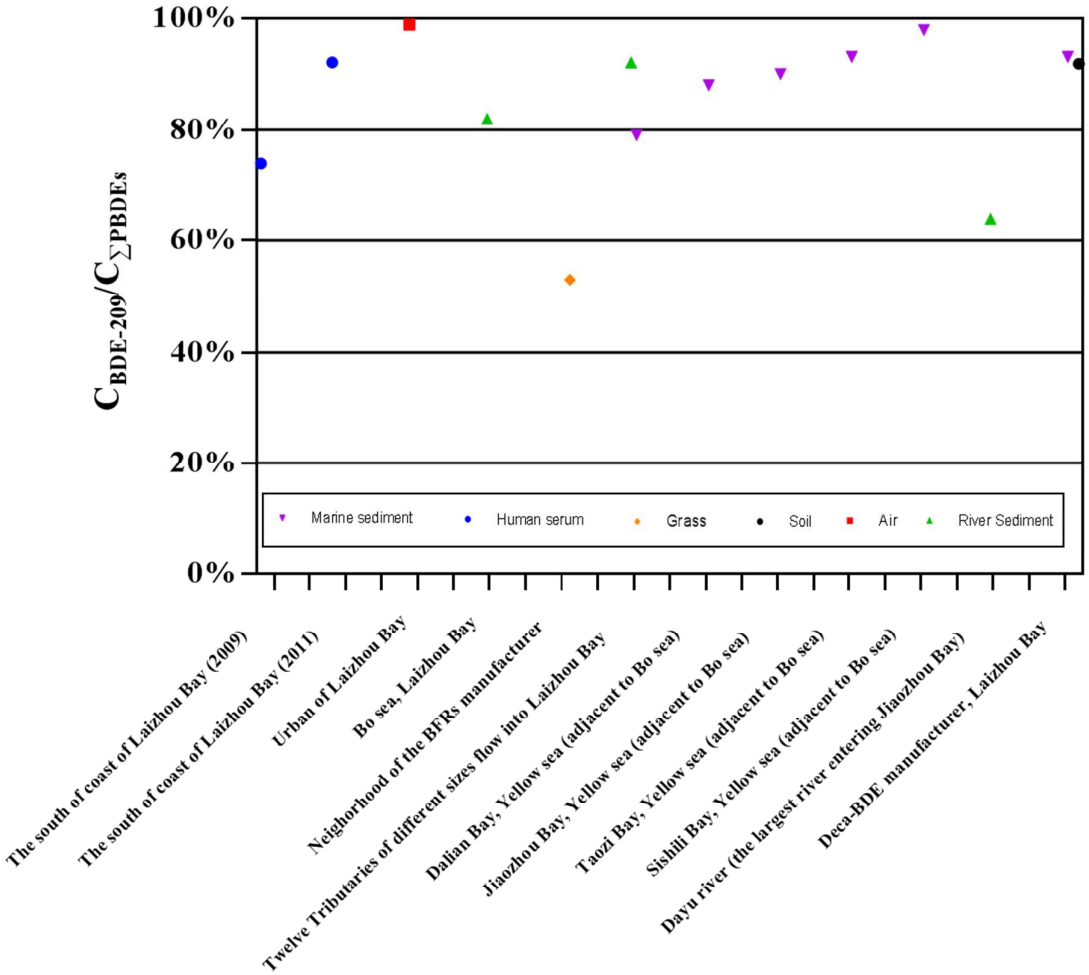


Figure S1. Relative abundances of BDE-209 in media from the areas surrounding deca-BDE manufacturers in China. [10-17]

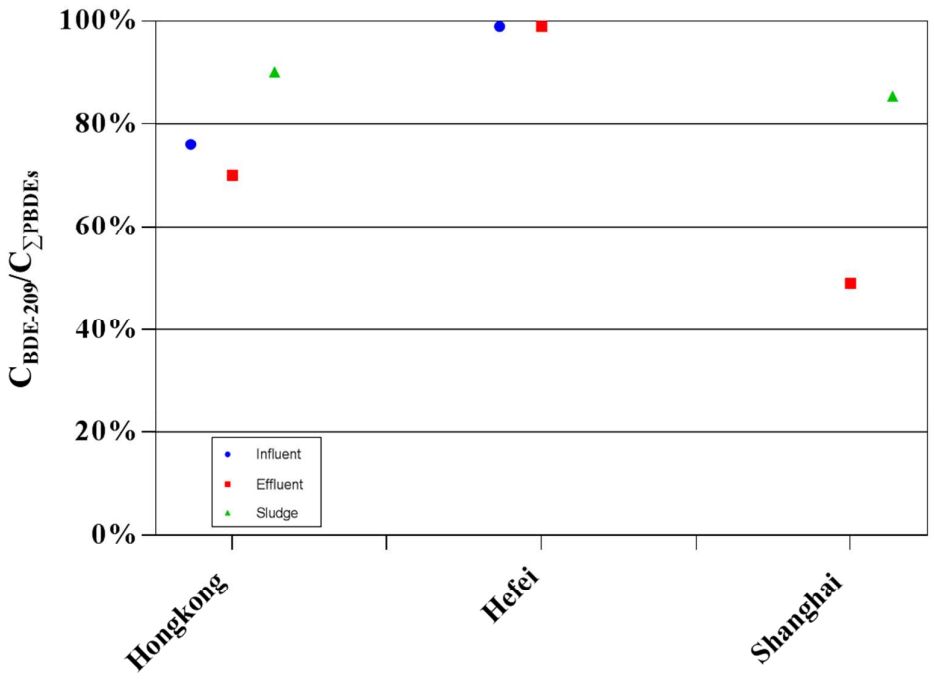
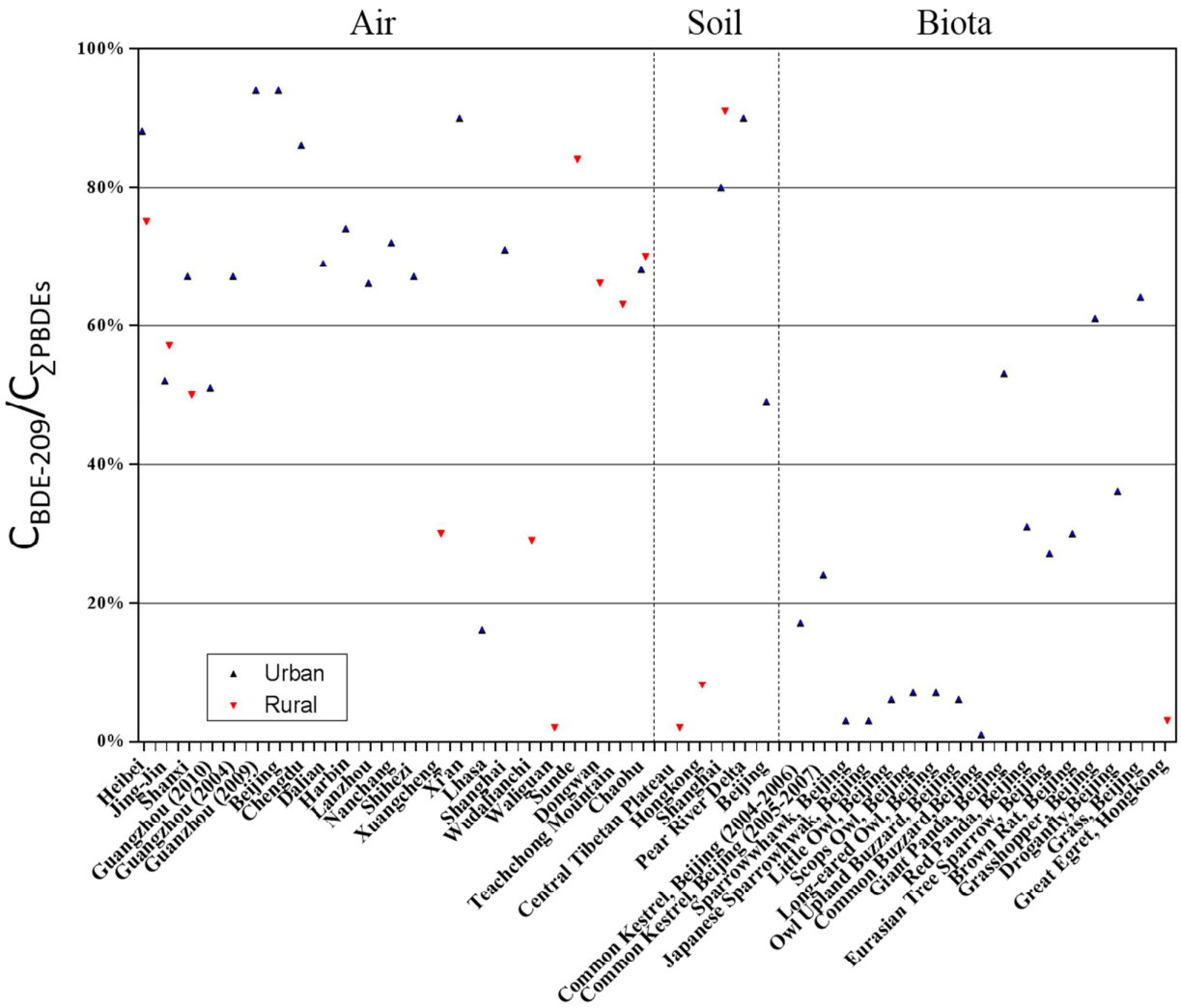
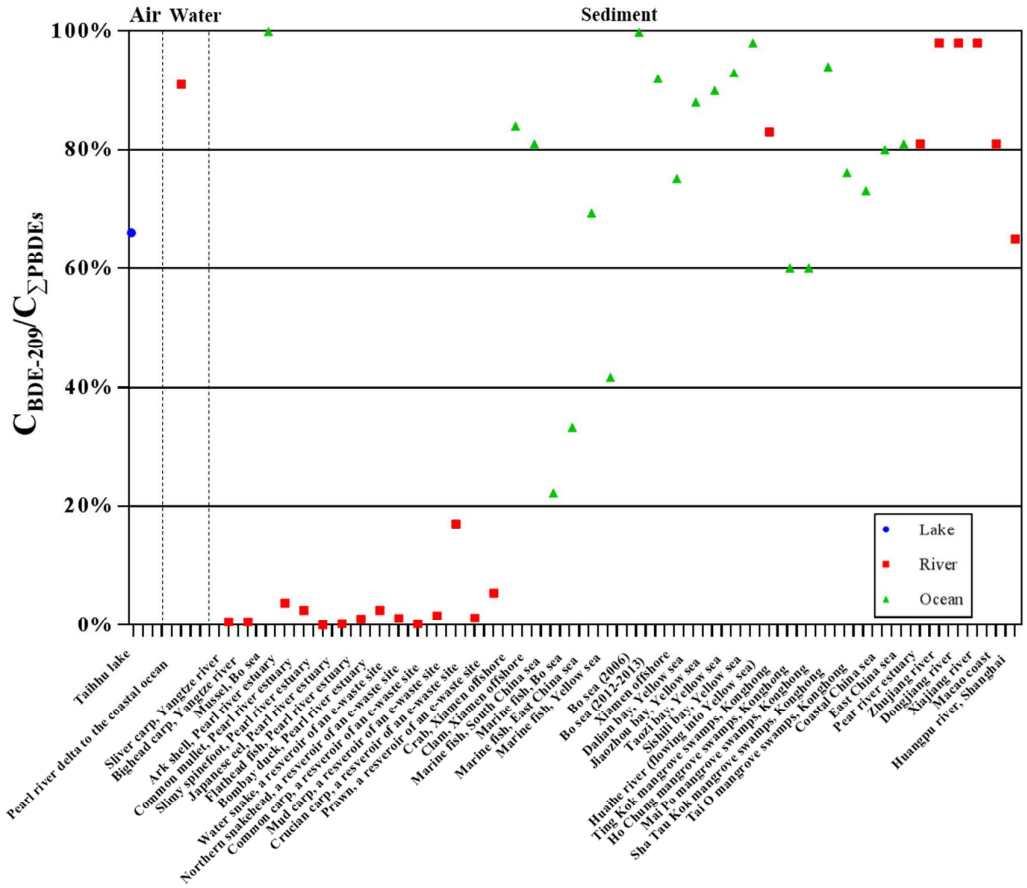


Figure S2. Relative abundances of BDE-209 in media from wastewater treatment plants in China. [7-9]



SI Figure 3. Relative abundances of BDE-209 in media from urban and rural areas in China.
18-32



SI Figure 4. Relative abundances of BDE-209 in media from lakes, rivers and oceans in China. [17, 33-47]

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