

Supplementary Data for
Sources and Distribution of Hexabromocyclododecanes (HBCDs)
in Japanese river Sediment

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Tables

Table S1 Inflow, geographic parameters and chemical parameters

Table S2 Particulate size distribution in river sediments

TableS1 Inflow, geographic parameters and chemical parameters

Parameter	Unit	R. Tsurumi	R. Yodo	R.Kuzuryu
Population	person	1.8.E+06	1.1.E+07	6.6.E+05
Industrial Output				
production quantity of dyeing and finishing processes of fabrics ^a	m ²	n.a.	9.0.E+07	6.6.E+08
production quantity of polystyrene ^a	ton	n.a.	1.3.E+04	n.a.
Regional properties				
total surface area ^b	km ²	235	8240	2930
surface covered by water	%	1.4	0.3	0.7
average air height	km	2	2	2
average water depth ^c	m	2.4	3.3	2.1
average sediment depth ^c	cm	2	2	2
HBCD emission rate into water				
municipal wastewater	kg/year/person		1.8.E-07	
textile wastewater	kg/year/m ² -fabric		3.0E-06	
Inflow				
into Water	kg/year	0.334	1.98	2000
into Air	kg/year	1	1	1
Media composition				
organic carbon in sediment ^c	g/g	0.007	0.19	0.006
organic carbon of particles in water	g/g	0.1	0.1	0.1
organic carbon in soil solids	g/g	0.02	0.02	0.02
temperature conditions ^c	°C	17.2	9.6	8.2
Intermedia transport velocities				
aerosol dry deposition	m/h	10.8	10.8	10.8
sediment deposition	m/h	4.6E-08	4.6E-08	4.6E-08
sediment resuspension	m/h	1.1E-08	1.1E-08	1.1E-08
sediment burial	m/h	3.5E-08	3.5E-08	3.5E-08
rain rate	m/h	1.4E-04	1.4E-04	1.4E-04
HBCD ^c				
molar Mass	g/mol		641.7	
measured log Kow			5.62	
Henry's law constant	atm m ³ /mol		0.75	
reaction Half-lives				
air	h		51.2	
water	h		1440	
soil	h		1440	
sediment	h		5760	

n.a.: not available

a: The data of R. Yodo represents as the data of Osaka prefecture.

The data of R. Kuzuryu represents as the data of Fukui prefecture.

b: Ministry of Land, Infrastructure, Transport and Tourism;

http://www.mlit.go.jp/river/toukei_chousa/kasen/jiten/nihon_kaw_a/index.html

c: average data measured at each of the studied Japanese rivers

Table S2 Particulate Size distribution in river sediments

River	location	Particulate Size (%)							
		19-75 mm	4.75-19 mm	2-4.75 mm	0.850-2 mm	0.250-0.850 mm	0.075-0.250 mm	0.005-0.075 mm	<0.005 mm
R. Tsurumi	T1	0.0	0.0	0.0	1.7	3.0	50.0	34.9	10.4
	T2	0.0	0.0	0.2	0.5	12.6	58.3	17.5	10.9
	T3	0.0	0.0	0.0	0.8	1.1	82.1	12.1	3.9
	T4	0.0	0.0	0.0	1.7	18.7	76.5	3.1	
R. Yodo	Y1	0.0	0.0	0.6	1.0	42.6	42.8	8.1	4.9
	Y2	0.0	0.0	0.0	1.2	6.8	89.2	2.8	
	Y3	0.0	0.0	1.1	1.2	6.1	19.7	39.8	32.1
	Y4	0.0	0.0	4.2	4.5	31.8	47.5	5.3	6.7
	Y5	0.0	0.0	0.0	9.2	19.8	23.7	29.0	18.3
	Y6	0.0	0.0	3.3	24.2	68.1	4.1	0.3	
R.Kuzuryu	K1	0.0	0.0	0.0	3.3	40.2	27.0	22.9	6.6
	K2	0.0	0.0	0.0	0.8	5.6	15.2	52.7	25.7
	K3	0.0	0.0	0.0	0.8	64.0	34.4	0.8	
	K4	0.0	0.0	0.0	1.4	5.6	64.2	24.9	3.9
	K5	0.0	0.0	1.3	5.9	63.9	27.5	1.4	
	K6	0.0	0.0	0.0	1.0	66.5	31.3	1.2	
	K7	0.0	0.0	0.0	0.0	20.0	77.1	2.9	
	K8	0.0	0.0	0.0	1.0	13.6	82.8	2.6	