

Table S1.

Contaminant	Species	Location	Tissue Type	Mean \pm SD (Range)
PCBs (total)	<i>F. virsoides</i>	Venice Lagoon, Italy	NS	3.0 \pm 1.7 (1.7-4.2) ^w
BaP	<i>F. serratus</i>	Norway	thallus except stipe & holdfast	(2-20) ^q
	<i>F. vesiculosus</i>	Gulf of Finland	NS	0.7 ^p
	<i>F. vesiculosus</i>	Norway	thallus except stipe & holdfast	(trace - 64) ^q
Arsenic (inorganic)	<i>F. spiralis</i>	New Hampshire, USA	NS	0.04 \pm 0.05 ^{hh}
	<i>F. vesiculosus</i>	Spain	commercial samples	0.34 \pm 0.04 ^a
		New Hampshire, USA Maine, USA	NS NS	0.06 \pm 0.04 ^{hh} < detection limit ^{hh}
Arsenic (total)	<i>Fucus sp.</i>	Greenland	NS	26.6 \pm 6.6 ^r
	<i>F. ceranoides</i>	SW England	whole thallus	18.8-77.1 ^{jj}
	<i>F. distichus</i>	Greenland	NS	40.1 \pm 5.9 ^r
	<i>F. distichus</i> *	Vancouver BC, Canada	receptacles (Jul)	8.9 \pm 0.5 ^s
		Vancouver BC, Canada	non-reproductive thallus (Jul)	9.0 \pm 0.5 ^s
		Vancouver BC, Canada	non-reproductive apices (Feb)	17.1 \pm 0.8 ^s
		Vancouver BC, Canada	non-meristematic thallus (Feb)	16.2 \pm 0.9 ^s
	<i>F. evanescens</i>	Denmark	NS	14.08 ^{cc}
	<i>F. serratus</i>	Denmark	NS	30.3-9.58 (105-961) ^{cc}
	<i>F. spiralis</i>	Denmark	NS	8.94 ^{cc}
	<i>F. vesiculosus</i>	New Hampshire, USA	NS	16.3 \pm 1.4 ^{hh}
		Spain	commercial samples	50 \pm 0.03 ^a
		West Greenland	NS	**35.2-35.8 ^c
		Italy	commercial samples	34.3 \pm 6.9 ^h
		France	commercial samples	47 \pm 2 ^l
		NW Spain	apices	(28.1-55.6) ^m
		Galicia, NW Spain	dichotomies	(15.9-207) ⁿ
		Greenland	NS	33.3 \pm 7.6 ^r
		West Greenland	apices	25.1-30.7 ^{bb}
		Denmark	NS	28.4-19.7 (10.4-117) ^{cc}
		North Sea	NS	46.5 ^{gg}
		Baltic Sea	NS	21.7 ^{gg}
		New Hampshire, USA Maine, USA	NS NS	28.9 \pm 2.16 ^{hh} 32.8 \pm 3.73 ^{hh}
Norway	commercial samples		20 ⁱⁱ	
<i>F. virsoides</i>	Venice Lagoon, Italy	whole thallus	40 \pm 45 (8-73) ^f	
Cadmium	<i>Fucus spp.</i>	Barents Sea	whole thallus	1.9 \pm 0.5 (1.3-2.7) ^g

	Sea of Okhotsk	whole thallus	3.3 ± 1.9 (1-9) ^g
	Sea of Japan	whole thallus	2.5 ± 1.9 (1-7.8) ^{ge}
	White Sea	whole thallus	0.48 (0.1-1.2) ^g
	Greenland	NS	36.7 ± 4.1 ^r
	UK & Ireland	whole thallus	**1.1-2.5 (0.05-21) ^y
	SW Spain & Portugal	NS	1.7-3.2 ^{ff}
<i>F. ceranoides</i>	SW England	whole thallus	0.20-1.01 ^{jj}
	NW Spain	apices	0.19-1.74 ^{kk}
<i>F. distichus</i>	Greenland	NS	0.95 ± 0.37 ^r
	Murmansk Coast, Russia	whole thallus	0.25-0.88 ^v
<i>F. evanescens</i>	Denmark	NS	0.52 ^{cc}
<i>F. serratus</i>	Severn Estuary, UK	mature thallus	10.6-35.9 ^u
	Murmansk Coast, Russia	whole thallus	0.31-1.27 ^v
	Denmark	NS	1.04-0.34 (0.63-1.56) ^{cc}
<i>F. spiralis</i>	Canary Islands	whole thallus	0.62 ± 0.18 ^t
	NW Portugal	soft tissues	0.07-3.58 (0.4-20.8) ^z
	Denmark	NS	0.46 ^{cc}
	Azores	NS	0.86-1.46 ^{mm}
<i>F. vesiculosus</i>	Spain	commercial samples	0.55 ± 0.01 ^a
	Humber Estuary, England	fronds	5.0-5.2 (1.6-10.5) ^b
	Italy	commercial samples	1.1 ± 0.2 ^h
	NE England	NS	**1.1 (0.5-2.7) ⁱ
	Stockholm Archipelago	older tissues	4.2-14.7 ^j
	Stockholm Archipelago	apices	6.8-13.3 ^j
	Bristol Channel, England	fronds	3.82-25.6 ^k
	NW Spain	apices	0.47-0.82 ^m
	Galicia, NW Spain	dichotomies	142-5107 ⁿ
	NE England	top 8-10 cm of thallus	0.02-10.03 ^m
	Greenland	NS	1.42 ± 1.01 ^r
	Öresund Sound, Sweden/Denmark	apices	1.9-3.9 ^x
	Murmansk Coast, Russia	whole thallus	0.30-0.72 ^v
	West Greenland	apices	**3.30 (2.25-4.81) ^{aa}
	Denmark	NS	0.78-0.37 (0.30-1.97) ^{cc}
	Bothnian & Baltic Seas, Sweden	older tissues	4.1-17.2 ^{ee}
	Bothnian & Baltic Seas, Sweden	apices	4.4-12.9 ^{ee}
	North Sea	NS	0.56 ^{gg}
	Bothnian & Baltic Seas, Sweden	apices	4.4-12.9 ^{ee}
	Bothnian & Baltic Seas, Sweden	old thallus	4.1-17.2 ^m
	Norway	commercial samples	0.34 ⁱⁱ
	NW Spain	apices	0.59-1.20 ^{ff}

	<i>F. virsoides</i>	Venice Lagoon, Italy	whole thallus	0.6 ± 0.3 (0.4-0.8) ^f
Lead	<i>Fucus</i> spp.	Greenland	NS	1.59 ± 2.18 ^r
		SW Spain & Portugal	NS	5-13 ^{ff}
	<i>F. ceranoides</i>	SW England	whole thallus	2.93-14.3 ^{jj}
		NW Spain	apices	0.38-7.45 ^{kk}
	<i>F. distichus</i>	Galicia, Spain	whole thallus	4.40 ^{ll}
		Greenland	NS	0.24 ± 0.07 ^r
	<i>F. evanescens</i>	Murmansk Coast, Russia	whole thallus	0.31-0.97 ^v
	<i>F. gardneri</i>	Denmark	NS	0.51 ^{cc}
	<i>F. serratus</i>	Raritan Bay, NJ, USA	NS	0.22-230 ^d
	<i>F. spiralis</i>	Severn Estuary, UK	mature thallus	6.4-7.9 ^u
		Murmansk Coast, Russia	whole thallus	0.13-1.05 ^v
	<i>F. vesiculosus</i>	Denmark	NS	0.47-0.18 (0.24-0.87) ^{cc}
		Canary Islands	whole thallus	4.96 ± 2.44 ^t
	<i>F. vesiculosus</i>	Denmark	NS	0.96 ^{cc}
		Galicia, Spain	whole thallus	5.71 ^{ll}
	<i>F. vesiculosus</i>	Azores	NS	0.16-0.38 ^{mm}
		Spain	commercial samples	0.51 ± 0.04 ^a
	<i>F. vesiculosus</i>	Humber Estuary, England	fronds	5-8.1 (2.7-21.5) ^b
		Italy	commercial samples	4 ± 0.3 ^h
	<i>F. vesiculosus</i>	NE England	NS	**4.5 (3.1-10) ⁱ
		Stockholm Archipelago	older tissues	0.9-6.9 ^j
	<i>F. vesiculosus</i>	Stockholm Archipelago	apices	1.7-6.6 ^j
		NW Spain	apices	0.25-1.62 ^m
	<i>F. vesiculosus</i>	Galicia, NW Spain	dichotomies	0.18-1.68 ⁿ
		NE England	upper 8-10 cm of fronds	0.1-12.1 ^o
	<i>F. vesiculosus</i>	Greenland	NS	0.10 ± 0.06 ^r
		Öresund Sound, Sweden/Denmark	apices	14.0-27.4 ^x
	<i>F. vesiculosus</i>	Ireland & UK	whole thallus	2.1-4.0 (0.5-9.0) ^y
		West Greenland	apices	**0.25 (0.047-0.70) ^{aa}
	<i>F. vesiculosus</i>	Murmansk Coast, Russia	whole thallus	0.12-0.77 ^v
		Raritan Bay, New York, USA	NS	(1.3-2.4) ^{dd}
	<i>F. vesiculosus</i>	Bothnian & Baltic Seas, Sweden	older tissues	2.1-7.2 ^{ee}
		Bothnian & Baltic Seas, Sweden	apices	2.0-11.7 ^{ee}
	<i>F. vesiculosus</i>	North Sea	NS	1.86 ^{gg}
		Baltic Sea	NS	1.04 ^{gg}
	<i>F. vesiculosus</i>	Denmark	NS	0.90-1.73 (0.19-9.60) ^{cc}
		Norway	commercial samples	0.38 ⁱⁱ
	<i>F. vesiculosus</i>	NW Spain	apices	0.35-3.56 ^{kk}
		Venice Lagoon, Italy	whole thallus	1.6 ± 0.6 (1.2-2.0) ^f

Mercury	<i>Fucus</i> spp.	NW Portugal	receptacles	(0.012-0.061) ^e
		Greenland	NS	<0.023 ^r
	<i>F. distichus</i>	Greenland	NS	<0.023 ^r
	<i>F. evanescens</i>	Denmark	NS	0.008 ^{cc}
	<i>F. gardneri</i>	Raritan Bay, NJ, USA	NA	0.0068 ^d
	<i>F. ceranoides</i>	NW Spain	apices	0.020-0.027 ^{kk}
	<i>F. serratus</i>	Denmark	NS	0.009-0.003 (0.005-0.015) ^{cc}
	<i>F. spiralis</i>	Denmark	NS	0.019 ^{cc}
	<i>F. vesiculosus</i>	NW Spain	commercial samples	0.036 ± 0.006 ^a
		NW Spain	apices	0.015-0.056 ^m
		Galicia, NW Spain	dichotomies	0.004-0.060 ⁿ
		Greenland	NS	<0.023 ^r
		North Sea	NS	0.010 ^{gg}
		Baltic Sea	NS	0.0018 ^{gg}
		Denmark	NS	0.012-0.007 (0.003-0.042) ^{cc}
		Norway	commercial samples	1.08 ⁱⁱ
	NW Spain	apices	0.020 – 0.031 ^{kk}	

*Reported as *F. gardneri*

** Reported as a geometric mean

^a[1]; ^b[2]; ^c[3]; ^d[4]; ^e[5]; ^f[6]; ^g[7]; ^h[8]; ⁱ[9]; ^j[10]; ^k[11]; ^l[12]; ^m[13]; ⁿ[14]; ^o[15]; ^p[16]; ^q[17]; ^r[18]; ^s[19]; ^t[20]; ^u[21]; ^v[22]; ^w[23]; ^x[24]; ^y[25]; ^z[26]; ^{aa}[27]; ^{bb}[28]; ^{cc}[29]; ^{dd}[30]; ^{ee}[31]; ^{ff}[32]; ^{gg}[33]; ^{hh}[34]; ⁱⁱ[35]; ^{jj}[36]; ^{kk}[37]; ^{ll}[38]; ^{mm}[39]