Electronic Supplementary Material (ESI) for Environmental Science: Processes & Impacts.

Supplementary Information

A review of microplastic fibres: generation, transport, and vectors for metal(loid)s in terrestrial environments

Table S1: Reported and mean metal(loid)s concentrations of European, municipal sewage sludge from studies published in 2019. Missing values were not quantified in the respective studies.

Reference	Metal(loid) Concentration (mg kg^{-1} dry sludge)																
	As	**Cd**	**Co**	**Cr**	**Cu**	**Hg**	**Mn**	**Mo**	**Ni**	**Pb**	**Sb**	**Se**	**Sn**	**Sr**	**Tl**	**V**	**Zn**
Antonkiewicz et al. (2019)[98]		0.867		47.3	133	0.45	109.7		16.6	33.5							258
Barca et al. (2019)[99]		16	12	140	2500		440		66	200		66				15	2080
Bartkowska et al. (2019)[100]		1.91		258.26	331.97	0.75			33.01	34.67							716.34
		2.28		33.06	287.26	0.8			24.18	52.92							1458.62
		1.33		25.81	209.17	0.6			16.65	17.63							1395.89
		2.12		43.38	203.52	0.41			14.63	22.25							813.1
		1.56		67.36	529.43	7.14			47.25	44.63							1233.41
		1.39		17.33	312.67	2.52			13.37	12.47							1110.67
		1.64		35.68	298.25	1.54			15.31	20.94							1007.33
Bastida et al. (2019)[101]		0.67		46.21	174.88		164.46	12.00	32.42	42.94				669.39			
Černe et al. (2019)[102]		0.7		21.1	103.6	0.9			9.5	32.8							650.0
		0.8		88.6	393.3	1.8			44.2	51.2							1112.7
		1.1		30.3	186.3	0.9			20.6	42.0							917.5
Jaskulak et al. (2019)[74]		7.62								242.84							2471.15
		4.27								64.55							733.36
Kicińska et al. (2019)[103]		6		75	220				17	173							1086
Ledakowicz et al. (2019)[75]		1.37		330	440	1.26	556		153	32.1							757
Regkouzas et al. (2019)[104]				145.2	363.7				99.3	80.7							836.4
				140.3	380.4				93.5	186.6							1842.5
				81.5	219.5				86.3	60							664
Ronda et al. (2019)[32]	4.6	1.9	5.1	73	384		206		106	48	13.7	1	284.8		0.3	59.8	304.4
Turek et al. (2019)[105]		3.85		10.2	132.55				15.8	31.85							875.55
		5.25		7	106.45				19.9	42.1							681.35
		3.6		11.85	124.5				20.3	32.15							886.6
		5.2		9.45	100.8				21.6	50.5							704.05
		2.55		10.7	111.9				13.15	30.75							792.2
		10.7		8.4	86.8				16.9	39.75							601.2
Urra et al. (2019)[106]		3		73	196				40	47							936
Mean	**4.6**	**3.41**	**8.55**	**71.35**	**348.72**	**1.72**	**327.93**	**12.00**	**43.17**	**58.80**	**13.7**	**33.5**	**284.8**	**669.37**	**0.3**	**37.4**	**956.39**

Table S2: UK, EU and USA legislative limits on soil and sludge concentrations of metal(loid)s permissible for use in agriculture, and loading limits to agricultural soils. * = values correspond to residential/allotment/commercial limits respectively. # = if total $CaCO_3$ concentration of soil is ≥ 5%. Sources: GB Parliament (1989),[109] DoE (1996),[110] EU (1986).[111]

Regulatory Body/ Legislation		**Environment Agency (UK)**	**Environmental Protection Agency (USA)**	**EU Sewage Sludge Directive 86/278/EEC Limit Values**			**UK Sludge (Use in Agriculture) Regulations 1989, no 1263**					
Name of Regulation		**Soil Guideline Values (SGVs)***	**Soil Screening Guidance Values**	**Agricultural Soils**	**Sludge applied to agricultural land**	**Annual Loading**	**Soil limit values**					**Maximum Permissible Average over 10 Years**
							pH > 5	**pH 5.0-5.5**	**pH 5.5-6.0**	**pH 6.0-7.0**	**pH > 7.0**	
Units		mg/kg soil	mg/kg soil	mg/kg soil	mg/kg dry matter	g/ha/year	mg/kg soil					kg/ha/year
Element	**As**	32/43/640	0.4	-	-	-	50	-	-	-	-	0.7
	Cd	10/2/230	78	3	40	0.15	3	-	-	-	-	0.15
	Cr	-	390	-	-	-	400	-	-	-	-	15
	Cu	-	-	140	1750	12	-	80	100	135	200	7.5
	Hg	1/26/26	23	5	25	0.1	1	-	-	-	-	0.1
	Ni	130/230/1800	1600	75	400	3	-	50	60	75	110	3
	Pb	-	400	300	1200	15	300	-	-	-	-	15
	Se	350/120/13000	390	-	-	-	3	-	-	-	-	0.15
	Zn	-	23000	300	4000	30	-	200	250	300	450	15