Supporting Information to the Manuscript

Organic pollutants in compost and digestate; 2. Polychlorinated Dibenzo-*p*-dioxins, and -furans, dioxin-like polychlorinated biphenyls, brominated flame retardants, perfluorinated alkyl substances, pesticides, and other compounds

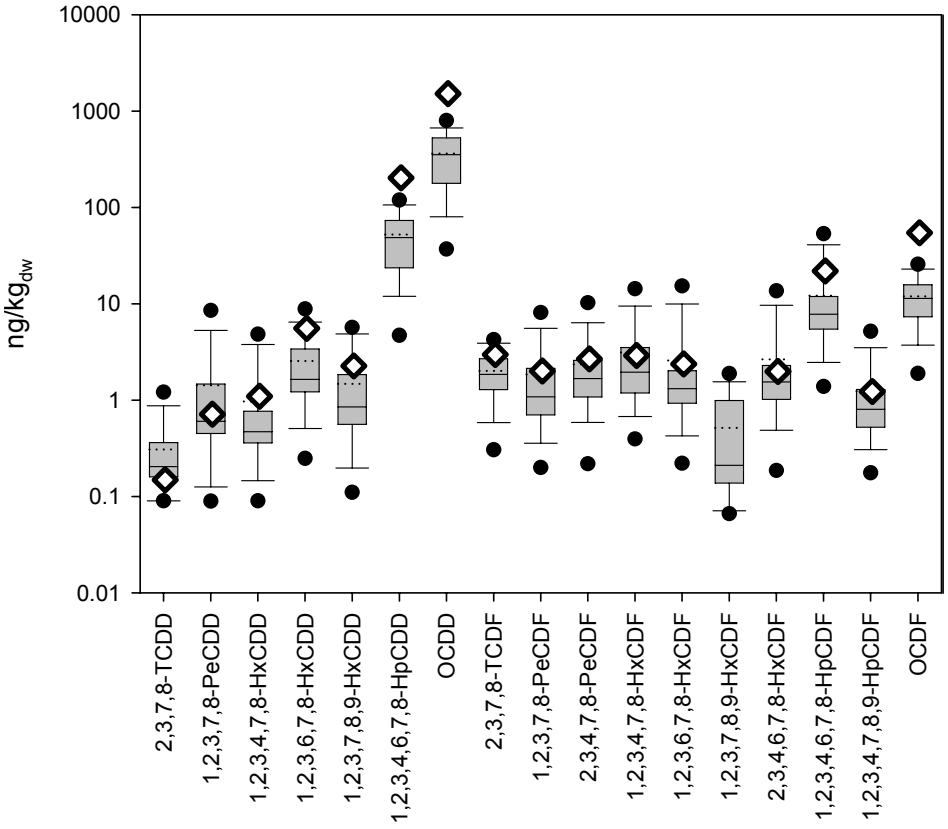

Figure S1: PCDD/F single compounds concentrations in Swiss compost and digestate (line: median, dotted line: mean, box: 25 and 75 percentile, whiskers: 10 and 90 percentile, circles: outliers) and corresponding literature values (diamonds).

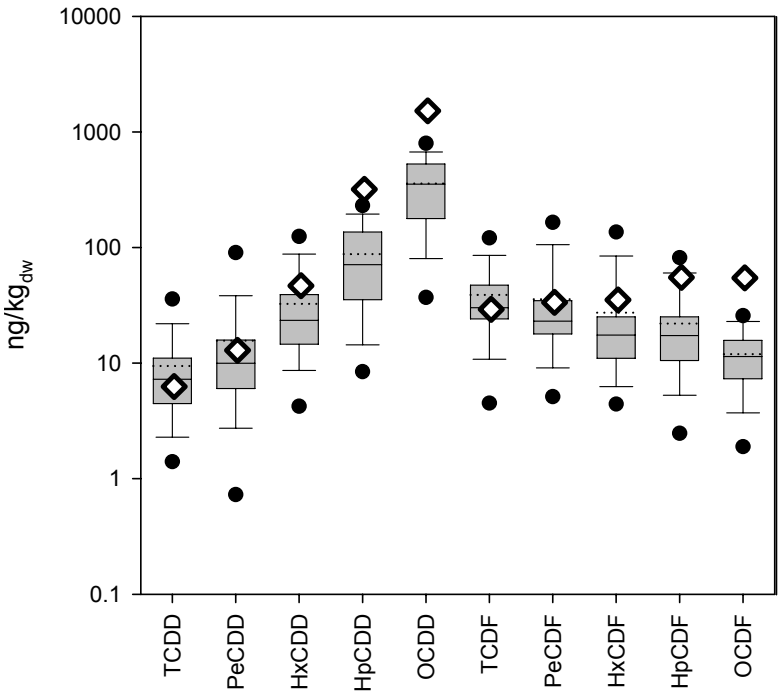

Figure S2: sum all tetra, penta, hexa, hepta, octa PCDD/F in Swiss compost and digestate (line: median, dotted line: mean, box: 25 and 75 percentile, whiskers: 10 and 90 percentile, circles: outliers) and corresponding literature values (diamonds).

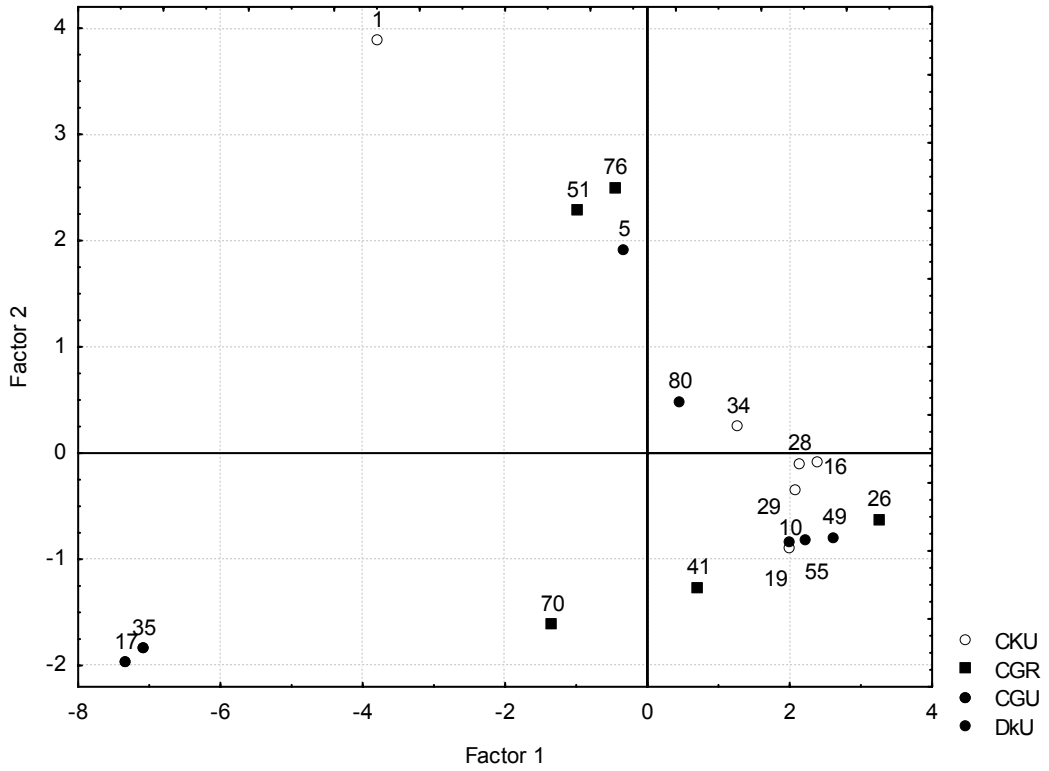

Figure S3: Factor 1 and 2 of the PCA of the PCDD/F ratios (sums of tetra to octa PCDD/Fs to the total sum) in Swiss compost and digestate (CKU: compost containing kitchen waste originating from urban areas, CGR: compost derived from greenwaste originating from rural aeras, CGU: compost derived from greenwaste originating from urban areas, DKU: digestate containing kitchen waste originating from urban areas).

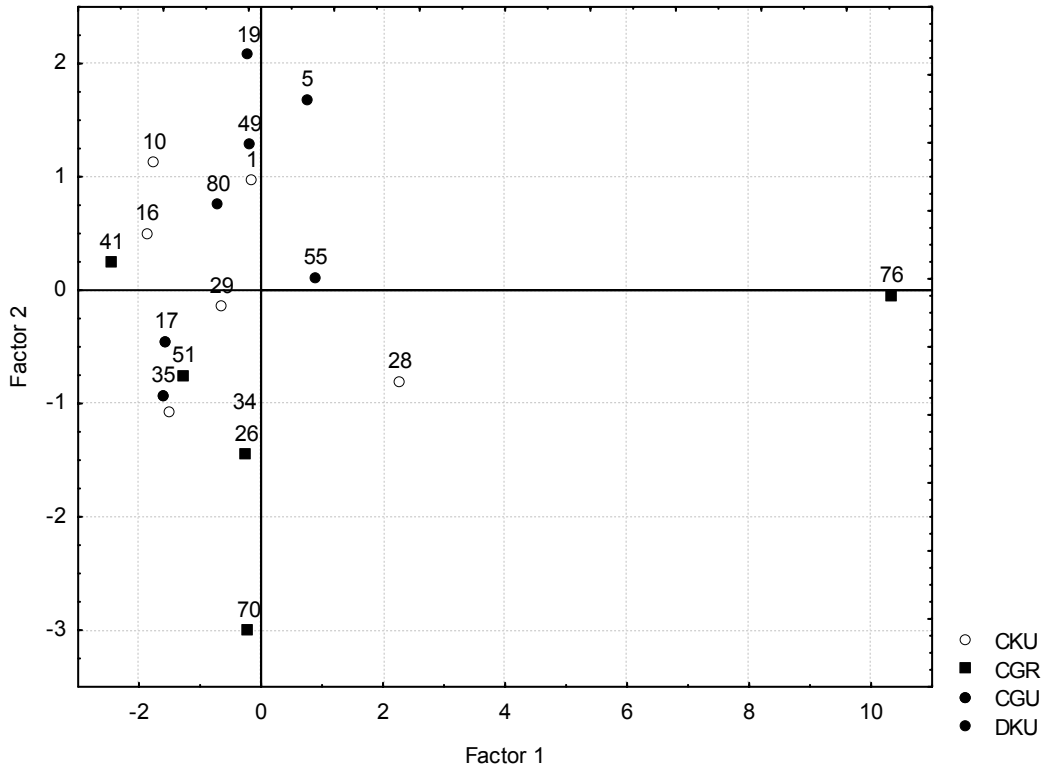

Figure S4: Factor 1 and 2 of the PCA of the dioxin-like PCB ratios (single congeners/total sum) in Swiss compost and digestate (CKU: compost containing kitchen waste originating from urban areas, CGR: compost derived from greenwaste originating from rural aeras, CGU: compost derived from greenwaste originating from urban areas, DKU: digestate containing kitchen waste originating from urban areas).

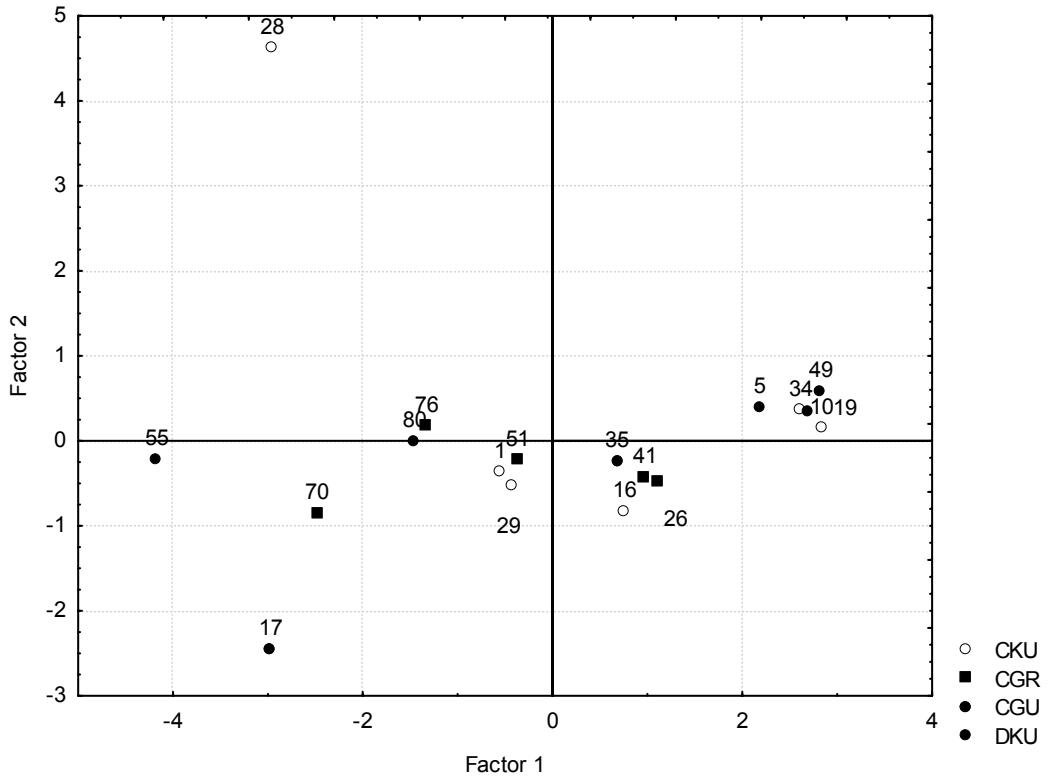

Figure S5: Factor 1 and 2 of the PCA of the polybrominated diphenyl ether ratios (single compound/total sum) in Swiss compost and digestate (CKU: compost containing kitchen waste originating from urban areas, CGR: compost derived from greenwaste originating from rural aeras, CGU: compost derived from greenwaste originating from urban areas, DKU: digestate containing kitchen waste originating from urban areas).

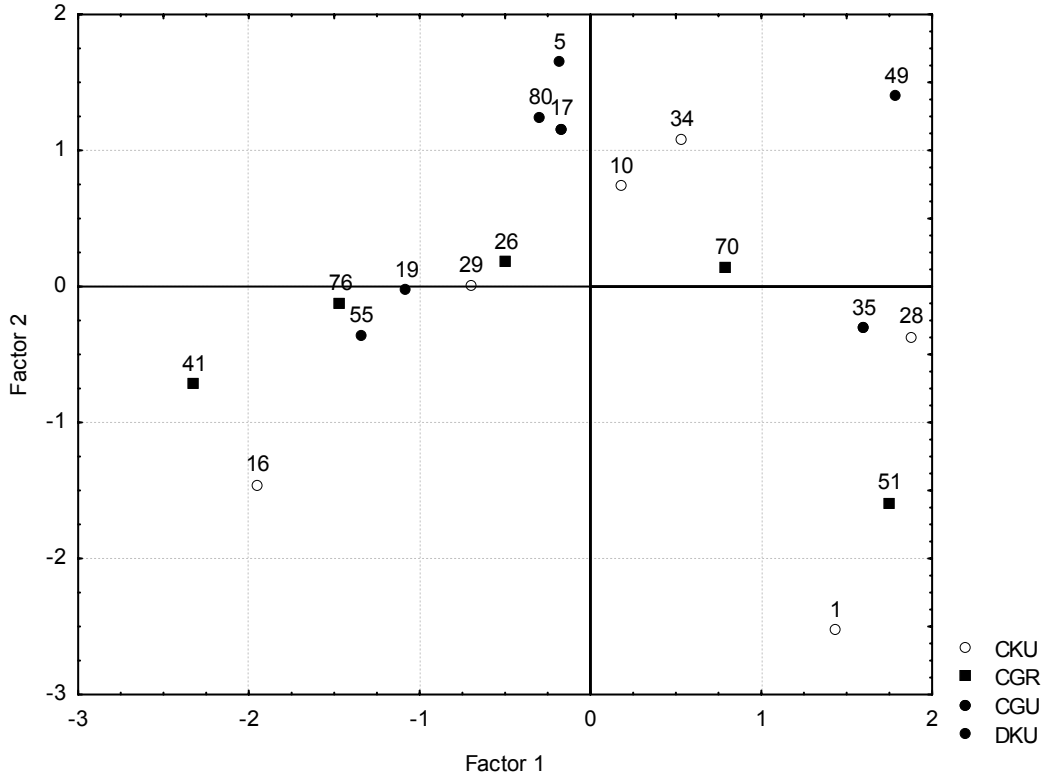

Figure S6: Factor 1 and 2 of the PCA of the polyfluorinated alkyl substances ratios (6:2 fluorotelomer sulfonate, perfluorinated sulfonates, perfluorinated carboxylates, and perfluorooctane sulfonamide to the total sum) of in Swiss compost and digestate (CKU: compost containing kitchen waste originating from urban areas, CGR: compost derived from greenwaste originating from rural aeras, CGU: compost derived from greenwaste originating from urban areas, DKU: digestate containing kitchen waste originating from urban areas).

Table S1: Limit and guide values respectively for organic pollutants in compost in different European countries [1, 2]

	Austria	Denmark	Luxemburg	Switzerland
PCDD/F[a]	50 ng I-TEQ/kg_{dw}		20 ng/kg_{dw}	20 ng I-TEQ/kg_{dw}
AOX[b]	500 mg/kg_{dw}			
Hydrocarbons	3000 mg/kg_{dw}			
LAS[c]		1300 mg/kg_{dw}		
NPE [d]		30 mg/kg_{dw}		
DEHP[e]		50 mg/kg_{dw}		
Remarks	Limit values for mixed municipal solid waste compost	Limit value for biowaste compost	guide value	guide value

[a]PCCD/F: polychlorinated dibenzo-p-dioxins/furans, sum of the 17 2,3,7,8-chlorosubstituted PCDD/F; [b]AOX: absorbable organic halogens;[c]LAS: linear alkylbenzene sulphonates; [d]NPE: nonylphenol and -ethoxylates; [e]DEHP: di (2-ethylhexyl) phthalate

In some countries such as Austria, Germany, the Netherlands, Sweden and Belgium, voluntary quality assurance systems have been established [1]

Table S2: Organic pollutant contents of compost and digestate samples in Switzerland

Sample No.	1	5	10	16	17	19	26	28	29
Product[a]	Com	Dig	Com	Com	Com	Dig	Com	Com	Com
Plant type and number[b]	CKU1	DKU1	CKU2	CKU4	CGU4	DKU2	CGR04	CKU02	CKU01
Input material[c]	kw, gw, iw	kw, gw, iw	kw, gw	kw, gw	gw	kw, gw	gw	kw, gw	kw,gw, iw
Origin of input material[d]	urban	urban	urban	urban	urban	urban	rural	urban	urban
Season[e]	winter	winter	winter	autumn	winter	winter	autumn	summer	summer
Plant type[f]	twl	tad	ab	twh	tbw	tad	twh	ab	twl
Process duration (d)[f]	53	42	77	210	127	105	203	55	50
Water content [% ww]	50	49	45	47	53	45	40	45	49
Org matter content [% dw]	62	46	57	41	40	42	27	51	51
PCDD/F (ng/kg$_{dw}$)									
2,3,7,8-TCDD	0.17	0.14	0.21	0.85	1.2	0.26	0.18	0.22	0.20
1,2,3,7,8-PeCDD	0.33	0.54	0.95	0.83	8.8	1.6	0.58	0.49	0.61
1,2,3,4,7,8-HxCDD	0.22	0.44	0.47	0.69	5.0	0.66	0.41	0.45	0.47
1,2,3,6,7,8-HxCDD	1.0	1.3	2.3	2.8	9.1	3.8	1.3	1.3	1.5
1,2,3,7,8,9-HxCDD	0.37	0.74	1.1	1.5	5.9	1.8	0.87	0.82	0.83
1,2,3,4,6,7,8-HpCDD	13	24	65	70	120	110	39	33	44
OCDD	85	210	410	510	820	660	360	290	310
2,3,7,8-TCDF	1.2	2.0	2.2	2.0	4.4	3.9	1.3	1.9	1.6
1,2,3,7,8-PeCDF	0.76	1.4	1.9	1.6	8.4	3.1	1.0	0.75	0.88
2,3,4,7,8-PeCDF	0.75	1.5	1.7	1.9	11	2.8	1.1	0.96	1.4
1,2,3,4,7,8-HxCDF	1.5	2.4	2.9	3.3	15	4.8	1.0	2.2	1.6
1,2,3,6,7,8-HxCDF	0.66	1.1	1.2	1.7	16	1.9	1.0	1.4	1.3
1,2,3,7,8,9-HxCDF	0.14	0.20	1.2	0.21	1.2	1.9	0.21	0.12	0.22
2,3,4,6,7,8-HxCDF	0.76	1.1	1.4	1.7	14	2.3	1.2	1.6	1.7
1,2,3,4,6,7,8-HpCDF	4.9	6.4	7.5	10	55	12	7.6	5.8	8.0
1,2,3,4,7,8,9-HpCDF	0.32	0.63	0.87	0.96	5.3	1.4	0.77	0.84	0.68
OCDF	6.6	11	12	15	27	19	10	7.6	11
Σ17PCDD/F (I-TEQ)	1.6	2.7	3.9	5.0	21	6.6	2.6	2.7	3.0
Sum TCDD	3.8	4.7	9.6	9.5	37	11	5.5	6.6	11
Sum PeCDD	6.4	9.7	9.9	17	93	16	6.3	5.4	13
Sum HxCDD	11	16	25	40	130	39	17	16	26
Sum HpCDD	24	47	120	140	240	190	65	44	77
Sum TCDF	27	31	36	37	120	57	20	28	34
Sum PeCDF	12	20	23	31	170	36	20	24	27
Sum HxCDF	9.4	11	16	22	140	25	16	17	18
Sum HpCDF	8.3	12	20	19	84	33	14	11	17
DL-PCB (µg/kg$_{dw}$)									
PCB 77	0.067	0.12	0.25	0.29	0.21	0.23	0.058	0.071	0.097
PCB 81	0.0024	0.0041	0.0082	0.0088	0.0073	0.0076	0.0018	0.0030	0.0037
PCB 105	0.77	2.2	2.6	2.5	2.3	3.9	0.65	0.75	1.2
PCB 114	0.034	0.090	0.098	0.12	0.11	0.18	0.032	0.035	0.060
PCB 118	2.1	5.0	5.8	5.6	5.5	9.1	1.6	2.1	3.0
PCB 123	0.15	0.37	0.40	0.49	0.43	0.67	0.060	0.15	0.13
PCB 126	0.012	0.024	0.035	0.047	0.043	0.044	0.013	0.015	0.018
PCB 156	0.36	0.97	0.73	0.88	0.81	1.5	0.28	0.57	0.50
PCB 157	0.07	0.18	0.18	0.18	0.19	0.28	0.060	0.090	0.10
PCB 167	0.16	0.40	0.29	0.40	0.36	0.64	0.14	0.27	0.24
PCB 169	0.0011	0.0024	0.0025	0.0029	0.0049	0.0037	0.0012	0.0016	0.0018
PCB 189	0.039	0.12	0.060	0.075	0.066	0.14	0.039	0.10	0.053
Σ12PCB (WHO-TEQ)	1.8	3.9	5.0	6.3	5.8	6.8	1.7	2.2	2.6
BFR (µg/kg$_{dw}$)									
BDE 28	0.013	0.023	0.030	0.052	0.13	0.031	0.015	0.013	0.022
BDE 47	0.59	0.63	0.84	1.5	1.3	1.3	0.45	0.56	1.0
BDE 99	0.78	0.69	0.84	0.64	0.87	1.3	0.32	0.76	1.3
BDE 100	0.17	0.15	0.18	0.29	0.28	0.32	0.11	0.15	0.29
BDE 153	0.067	0.10	0.074	0.10	0.13	0.16	0.040	0.29	0.11
BDE 154	0.080	0.082	0.090	0.15	0.16	0.17	0.032	0.12	0.10
BDE 183	0.049	0.087	0.056	0.11	0.11	0.11	0.038	1.2	0.042
BDE 209	5.2	10	14	12	6.9	22	4.2	4.8	8.3
HBCD	21	170	190	26	47	110	230	140	35
TBBPA	1.4	1.5	0.51	2.3	1.4	0.63	0.065	0.52	0.57

PFAS ($\mu g/kg_{dw}$)[6]									
6:2 FTS	1.4	nd	nd	1.5	nd	nd	nd	1.4	nd
PFHxS	0.070	0.13	0.080	2.2	0.33	0.39	0.090	nd	0.17
PFOS	1.2	2.1	1.4	21	3.6	8.2	2.1	1.0	2.1
PFDcS	nd	0.070	nd	0.31	nd	0.050	nd	nd	nd
PFHxA	0.30	0.68	0.24	2.1	0.97	1.1	0.19	0.33	0.71
PFHpA	nd	0.19	nd	0.81	0.49	0.60	0.50	0.36	nd
PFOA	0.67	1.3	1	3.6	1.6	2.5	1.2	0.77	1.0
PFNA	0.28	0.27	0.29	0.91	0.36	0.60	0.23	nd	0.21
PFDcA	nd	0.66	0.39	1.7	0.85	1.4	nd	0.50	nd
PFUnA	nd	nd	nd	0.31	0.26	0.29	nd	nd	nd
PFDoA	nd	nd	nd	0.37	0.24	0.16	nd	0.20	nd
PFOSA	nd	0.37	nd	0.20	0.34	0.23	nd	0.26	nd
Pesticides ($\mu g/kg_{dw}$)									
atrazine-2-hydroxy	nd	nd	nd	nd	nd	nd	nd	1.1	1.0
azaconazole	nd	nd	nd	nd	nd	nd	nd	nd	6.3
azoxystrobin	6.4	nd	7.5	nd	nd	nd	nd	2.1	3.1
bitertanol	nd	nd	nd	nd	nd	nd	nd	2.1	1.0
bromacil	nd	nd	nd	nd	nd	nd	nd	2.1	nd
buprofezin	nd	1.1	1.1	nd	nd	nd	nd	nd	nd
carbendazim	nd	1.1	nd	nd	nd	nd	nd	nd	nd
cyproconazole	nd	1.1	1.1	3.2	1.1	1.1	1.1	nd	3.1
cyprodinil	1.1	7.4	2.1	1.1	nd	nd	nd	1.1	1.0
difenoconazole	2.2	2.1	3.2	3.2	2.1	2.1	4.2	3.2	3.1
diuron	nd	1.1	nd	5.3	nd	nd	nd	nd	nd
dimethomorph	nd	nd	17	nd	nd	nd	nd	1.1	
dodemorph	nd	nd	nd	nd	nd	nd	nd	2.1	2.1
epoxiconazole	nd	nd	nd	nd	nd	nd	nd	nd	nd
etaconazole	nd	nd	nd	nd	nd	nd	nd	nd	nd
fenbuconazole	1.1	2.1	2.1	5.3	3.2	2.1	2.1	3.2	2.1
fenhexamide	nd	6.3	nd	nd	nd	nd	nd	1.1	1.0
fenoxycarb	nd	nd	nd	nd	nd	nd	nd	nd	nd
fenpropathrin	nd	nd	nd	nd	nd	nd	nd	nd	nd
fenpropimorph	nd	2.1	nd	nd	nd	nd	nd	nd	nd
fenpyroximat	nd	nd	nd	nd	nd	nd	nd	nd	nd
flusilazole	na	na	na	na	na	na	1.1	nd	nd
flutolanil	na	na	na	na	na	na	nd	nd	nd
imazalil	8.6	79	99	17	9.5	8.5	nd	24	5.2
mecoprop	nd	3.2	nd	nd	nd	nd	nd	nd	nd
metamitron	nd	nd	nd	nd	nd	nd	nd	nd	nd
methabenzthiazuron	nd	nd	nd	nd	nd	nd	nd	nd	nd
metolcarb	nd	nd	nd	nd	nd	nd	nd	nd	1.0
myclobutanil	nd	1.1	2.1	6.3	2.1	2.1	nd	1.1	1.0
oryzalin	nd	nd	nd	nd	nd	nd	nd	3.2	nd
oxadiazon	nd	1.1	2.1	1.1	nd	nd	nd	3.2	nd
oxadixyl	nd	nd	nd	nd	nd	nd	nd	nd	nd
prochloraz	nd	3.2	nd	nd	nd	nd	nd	nd	nd
propiconazole	1.1	5.3	2.1	1.1	1.1	4.3	2.1	5.3	3.1
propoxur	nd	nd	nd	nd	nd	nd	7.4	4.2	5.2
propyzamide	nd	1.1	nd	nd	nd	nd	nd	nd	nd
pyridaben	nd	nd	nd	nd	nd	nd	nd	nd	nd
pyrifenox	nd	nd	nd	nd	nd	nd	nd	1.1	nd
pyrimethanil	nd	6.3	nd	nd	nd	nd	nd	nd	nd
pyriproxyfen	nd	nd	nd	nd	nd	nd	nd	nd	nd
simazin	nd	nd	nd	3.2	nd	nd	nd	nd	nd
spiroxamine	nd	3.2	nd	nd	nd	nd	nd	nd	nd
tebuconazole	2.2	5.3	8.6	3.2	1.1	5.3	1.1	3.2	3.1
tebufenpyrad	nd	nd	nd	nd	1.1	nd	nd	nd	nd
terbumeton	nd	nd	nd	nd	nd	nd	nd	1.1	nd
terbuthylazine-2-hydroxy	nd	1.1	1.1	1.1	1.1	nd	nd	1.1	nd
terbutryn	nd	1.1	nd	nd	nd	nd	nd	nd	nd
tetraconazole	nd	nd	nd	nd	nd	nd	nd	nd	nd
thiabendazole	2.2	23	23	5.3	2.1	4.3	nd	13	2.1
thiophanate ethyl	nd	nd	nd	nd	nd	nd	nd	nd	nd
triadimefon	nd	nd	nd	nd	nd	nd	nd	nd	nd
triadimenol	nd	nd	nd	nd	nd	nd	1.1	3.2	2.1
triasulfuron	nd	nd	nd	nd	nd	nd	nd	nd	nd
Phthalates ($\mu g/kg_{dw}$)									
DEHP	270	1980	150	390	160	300	na	na	na
DBP	nd	110	nd	nd	nd	nd	na	na	na
Nonylphenol ($\mu g/kg_{dw}$)	nd	nd	nd	nd	nd	nd	na	na	na

CP (µg/kg$_{dw}$)									
SCCP									
C10Cl5	nd	na	nd	nd	na	na	na	na	na
C10Cl6	1.1	na	1.3	1.0	na	na	na	na	na
C10Cl7	4.5	na	5.7	1.9	na	na	na	na	na
C10Cl8	2.1	na	4.9	1.0	na	na	na	na	na
C10Cl9	0.79	na	0.78	0.53	na	na	na	na	na
C10Cl10	0.02	na	0.66	nd	na	na	na	na	na
C10Cl11	nd	na	nd	nd	na	na	na	na	na
C11Cl5	1.3	na	2.4	nd	na	na	na	na	na
C11Cl6	28	na	4.8	2.5	na	na	na	na	na
C11Cl7	16	na	20	8.7	na	na	na	na	na
C11Cl8	11	na	17	3.7	na	na	na	na	na
C11Cl9	3.1	na	6.2	1.2	na	na	na	na	na
C11Cl10	0.85	na	2.2	0.52	na	na	na	na	na
C12Cl5	2.4	na	nd	nd	na	na	na	na	na
C12Cl6	2.8	na	3.3	3.8	na	na	na	na	na
C12Cl7	7.6	na	9.8	5.6	na	na	na	na	na
C12Cl8	10	na	15	4.7	na	na	na	na	na
C12Cl9	5.2	na	11	1.7	na	na	na	na	na
C12Cl10	1.2	na	4.3	1.3	na	na	na	na	na
C13Cl5	2.2	na	2.5	2.6	na	na	na	na	na
C13Cl6	2.5	na	3.3	4.2	na	na	na	na	na
C13Cl7	5.4	na	8.1	5.6	na	na	na	na	na
C13Cl8	4.5	na	9.9	3.9	na	na	na	na	na
C13Cl9	2.7	na	5.4	1.6	na	na	na	na	na
C13Cl10	0.78	na	1.8	0.51	na	na	na	na	na
MCCP									
C14Cl5	nd	na	nd	nd	na	na	na	na	na
C14Cl6	3.0	na	12	15	na	na	na	na	na
C14Cl7	7.4	na	51	39	na	na	na	na	na
C14Cl8	9.8	na	79	43	na	na	na	na	na
C14Cl9	6.2	na	50	23	na	na	na	na	na
C14Cl10	nd	na	17	nd	na	na	na	na	na
C15Cl5	nd	na	0.46	0.50					
C15Cl6	0.57	na	2.5	2.2	na	na	na	na	na
C15Cl7	0.85	na	6.5	3.5	na	na	na	na	na
C15Cl8	0.48	na	5.8	2.0	na	na	na	na	na
C15Cl9	nd	na	2.9	0.69	na	na	na	na	na
C15Cl10	nd	na	0.62	nd	na	na	na	na	na
C16Cl5	nd	na	0.48	nd	na	na	na	na	na
C16Cl6	nd	na	1.2	1.2	na	na	na	na	na
C16Cl7	0.36	na	3.0	2.3	na	na	na	na	na
C16Cl8	0.24	na	3.3	1.7	na	na	na	na	na
C16Cl9	nd	na	1.8	0.65	na	na	na	na	na
C16Cl10	nd	na	0.63	nd	na	na	na	na	na
C17Cl5	nd	na	nd	nd	na	na	na	na	na
C17Cl6	nd	na	1.0	0.83	na	na	na	na	na
C17Cl7	nd	na	1.6	1.0	na	na	na	na	na
C17Cl8	0.13	na	2.1	0.92	na	na	na	na	na
C17Cl9	nd	na	1.2	0.35	na	na	na	na	na
C17Cl10	nd	na	0.41	nd	na	na	na	na	na

a) Com: compost, Dig: digestate, all digestate samples were submitted to subsequent aerobic treatment except for samples 80
b) plant code: C: compost, K: organic kitchen waste and green waste as input materials, G: pure green waste compost, U: urban area of input material collection, R: rural area of input material collection
c) kw: kitchen waste, gw: green waste, iw: industrial waste including paper sludge, coffee ground, tea leaves, residues from potato chips production, biodegradable plastics, edible oil, cacao
d) characterisation of the area where the input material was collected
e) season of input material collection
f) plant type: ab: aerated boxes, tad: thermophilic aerobic digestion, tbw: table windrows, twh: triangle windrows higher than 2 meters, twl: triangle windrows lower than 2 meters
g) duration of the degradation process in days

6 FTS: fluorotelomer sulfonate, PFHxS: perfluorohexane sulfonate, PFOS: perfluorooctane sulfonate, PFDcS: perfluorodecane sulfonate, PFHxA: perfluorohexanoate, PFHpA: perfluoroheptanoate, PFOA: perfluorooctanoate, PFNA: perfluorononanoate, PFDcA:

perfluorodecanoate, PFUnA: perfluoroundecanoate, PFDcA: perfluorododecanoate, PFOSA: perfluorooctane sulphonamide, na: not available, nd: not detected, ww: wet weight, dw: dry weight

PFAS below detection limit not listed, dedection limit for 6:2 fluorotelomer unsaturated carboxylate (FTUCA): 0.37µg/kg dw, 8:2 FTUCA: 0.4 µg/kg, 6:2 fluorotelomer carboxylate (FTCA): 0.37µg/kg, 8:2 FTCA: 0.4 µg/kg, perfluorobutane sulfonate: 0.33 µg/kg, n-Methyl-heptadecafluorooctane sulphonamide: <0.18 µg/kg dw, n-Ethyl-heptadecafluorooctane sulfonamide: <0.14 µg/kg dw, n-Methyl-heptadecafluorooctane sulfonamidoethanol: <0.14 µg/kg dw, n-Ethyl-heptadecafluorooctane sulfonamidoethanol: <0.28 µg/kg dw

Table S2: (cont.) Organic pollutant contents of compost and digestate samples in Switzerland

Sample No.	34	35	41	49	51	55	70	76	80
Product[a]	Com	Com	Com	Dig	Com	Dig	Com	Com	Dig
Plant code and number[b]	CKU04	CGU04	CGR02	DKU01	CGR04	DKU02	CGR03	CGR01	DKU03
Input material[c]	kw, gw, iw	gw	gw	kw, gw, iw	gw	kw, gw	gw	gw	kw, gw
Origin of input material[d]	urban	urban	rural	urban	rural	urban	rural	rural	urban
Season[e]	summer	summer	summer	summer	summer	summer	autumn	winter	summer
Plant type[f]	tbw	twh	twh	tad	twh	tad	twh	twl	tad
Process duration (d)[g]	91	96	70	20	105	126	72	21	16
Water content [% ww]	37	43	51	44	32	34	53	39	52
Org. matter content [% dw]	36	45	33	51	39	47	29	24	29
PCDD/F (ng/kg$_{dw}$)									
2,3,7,8-TCDD	0.17	0.49	0.32	0.21	0.09	0.09	0.49	0.10	0.17
1,2,3,7,8-PeCDD	0.72	4.93	1.4	0.60	0.09	0.24	2.5	0.13	0.58
1,2,3,4,7,8-HxCDD	0.68	3.66	1.0	0.52	0.09	0.15	2.0	0.20	0.47
1,2,3,6,7,8-HxCDD	2.4	6.2	3.3	1.8	0.25	0.92	5.0	0.53	1.3
1,2,3,7,8,9-HxCDD	1.0	4.8	1.9	0.62	0.11	0.37	3.1	0.21	0.74
1,2,3,4,6,7,8-HpCDD	68	74	73	53	4.7	24	99	13	22
OCDD	520	560	450	350	37	140	590	100	190
2,3,7,8-TCDF	1.8	3.5	2.5	1.5	0.31	0.62	3.4	1.1	1.4
1,2,3,7,8-PeCDF	0.99	5.3	1.8	1.2	0.20	0.37	3.1	0.51	0.56
2,3,4,7,8-PeCDF	2.0	5.9	2.5	1.7	0.22	0.63	4.2	1.7	1.2
1,2,3,4,7,8-HxCDF	1.6	8.9	2.4	1.2	0.39	0.71	4.2	1.7	0.95
1,2,3,6,7,8-HxCDF	1.4	9.4	2.4	1.5	0.22	0.45	4.0	0.54	1.0
1,2,3,7,8,9-HxCDF	0.38	1.5	0.42	0.21	0.066	0.071	0.93	0.13	0.19
2,3,4,6,7,8-HxCDF	1.4	9.2	2.5	1.8	0.19	0.52	5.0	0.56	1.1
1,2,3,4,6,7,8-HpCDF	9.7	40	12	9.2	1.4	2.9	21	2.6	5.67
1,2,3,4,7,8,9-HpCDF	1.2	3.3	1.3	0.56	0.18	0.47	2.8	0.45	0.54
OCDF	14	23	13	11	1.9	5.0	18	3.9	8.1
Σ17PCDD/F (I-TEQ)	4.0	13	5.3	3.3	0.5	1.3	8.6	1.8	2.3
Sum TCDD	7.9	20	13	5.0	1.4	3.1	16	2.4	5.1
Sum PeCDD	10	33	15	14	0.7	2.9	23	3.0	6.4
Sum HxCDD	25	84	37	22	4.2	10	63	9.1	18
Sum HpCDD	120	140	15	89	8.4	39	170	23	42
Sum TCDF	30	81	44	28	4.5	11	72	15	25
Sum PeCDF	28	99	34	22	5.1	9.5	53	18	18
Sum HxCDF	23	79	26	20	4.4	6.5	42	12	11
Sum HpCDF	19	58	23	18	2.5	6.4	37	5.6	12
DL-PCB (µg/kg$_{dw}$)									
PCB 77	0.12	0.13	0.22	0.14	0.011	0.047	0.061	0.047	0.14
PCB 81	0.0040	0.0050	0.0085	0.0046	0.00048	0.0018	0.0022	0.0013	0.0049
PCB 105	1.2	1.6	1.7	1.9	0.14	0.77	0.62	0.95	1.8
PCB 114	0.054	0.072	0.090	0.089	0.0080	0.036	0.027	0.041	0.098
PCB 118	2.8	3.7	3.8	4.5	0.36	1.9	1.5	3.7	4.3
PCB 123	0.10	0.15	0.20	0.34	0.026	0.13	0.055	0.19	0.21
PCB 126	0.023	0.026	0.019	0.025	0.0028	0.018	0.013	0.0089	0.023
PCB 156	0.42	0.52	0.6	0.79	0.057	0.43	0.29	2.2	0.70
PCB 157	0.091	0.11	0.12	0.16	0.011	0.072	0.057	0.26	0.14
PCB 167	0.19	0.24	0.25	0.33	0.030	0.19	0.14	1.0	0.32
PCB 169	0.0015	0.0027	0.0016	0.0023	0.00034	0.00093	0.0016	0.0014	0.0018
PCB 189	0.038	0.049	0.057	0.077	0.0069	0.057	0.040	0.44	0.078
Σ12PCB (WHO-TEQ)	3.0	3.5	2.9	3.7	0.38	2.4	1.8	2.7	3.4
BFR (µg/kg$_{dw}$)									
BDE 28	0.018	0.022	0.013	0.027	0.0031	0.0079	0.031	0.0073	0.031
BDE 47	0.63	1.1	0.58	1.4	0.068	0.36	1.2	0.36	0.63
BDE 99	0.51	1.2	0.46	2.0	0.070	0.50	1.3	0.51	0.66
BDE 100	0.13	0.27	0.13	0.43	0.015	0.10	0.36	0.091	0.13
BDE 153	0.067	0.11	0.048	0.25	0.0079	0.063	0.16	0.069	0.11
BDE 154	0.051	0.095	0.046	0.22	0.007	0.043	0.19	0.035	0.064
BDE 183	0.14	0.071	0.037	0.13	0.019	0.081	0.060	0.046	0.19
BDE 209	9.0	10	5.2	31	0.55	1.7	7.8	2.6	4.3
HBCD	17	45	100	98	22	180	67	140	370
TBBPA	0.22	0.50	0.11	1.0	0.36	0.44	0.10	0.38	0.98

PFAS ($\mu g/kg_{dw}$)[6]									
6:2 FTS	0.46	1.2	nd	0.48	1.5	0.36	0.97	nd	nd
PFHxS	0.41	0.080	0.16	0.11	0.10	0.35	0.16	0.14	0.12
PFOS	4.0	1.8	4.0	2.1	1.3	3.7	2.5	6.0	1.9
PFDcS	0.050	nd	nd	0.10	nd	0.070	nd	0.080	nd
PFHxA	1.3	0.44	0.46	1.1	0.42	0.69	1.3	1.0	0.67
PFHpA	0.69	0.47	nd	0.42	0.32	0.25	0.38	0.63	0.32
PFOA	2.8	1.4	1.1	2.2	1.2	1.3	1.2	1.7	1.1
PFNA	0.56	0.34	0.23	0.74	nd	0.31	0.40	nd	0.26
PFDcA	0.84	0.70	nd	1.3	nd	nd	0.42	0.48	nd
PFUnA	nd	nd	nd	0.25	nd	nd	nd	nd	nd
PFDoA	0.55	nd	nd	nd	0.16	nd	nd	0.24	nd
PFOSA	0.33	nd	0.20	nd	nd	0.3	0.19	0.28	0.22
Pesticides ($\mu g/kg_{dw}$)									
atrazine-2-hydroxy	nd	nd	nd	nd	nd	nd	nd	nd	nd
azaconazole	1.0	nd	nd	nd	nd	nd	nd	nd	nd
azoxystrobin	3.1	3.2	nd	nd	2.1	nd	nd	1.0	5.1
bitertanol	nd	2.1	nd	2.1	nd	1.0	nd	nd	1.0
bromacil	nd	nd	nd	nd	nd	nd	nd	nd	nd
buprofezin	nd	nd	nd	nd	nd	nd	nd	nd	nd
carbendazim	nd	nd	nd	nd	nd	nd	nd	nd	5.1
cyproconazole	3.1	8.4	nd	1.1	1.0	2.1	1.1	1.0	1.0
cyprodinil	1.0	2.1	nd	3.2	6.2	2.1	1.1	nd	4.1
difenoconazole	5.2	6.3	2.1	5.3	4.1	4.1	4.2	2.1	5.1
diuron	nd	nd	nd	nd	nd	nd	nd	nd	1.0
dimethomorph	2.1	1.1	nd	nd	nd	nd	nd	nd	nd
dodemorph	nd	3.2	nd	9.5	1.0	1.0	1.1	nd	26
epoxiconazole	nd	nd	nd	nd	nd	nd	nd	1.0	nd
etaconazole	nd	1.1	nd	nd	1.0	nd	nd	nd	nd
fenbuconazole	7.3	11	16	2.1	1.0	4.1	4.2	2.1	3.1
fenhexamide	nd	1.1	nd	1.1	nd	nd	nd	nd	13
fenoxycarb	nd	1.1	nd	nd	nd	nd	nd	nd	nd
fenpropathrin	nd	nd	nd	nd	nd	nd	1.1	nd	nd
fenpropimorph	nd	1.1	nd	1.1	nd	nd	nd	nd	3.1
fenpyroximat	nd	nd	nd	nd	nd	nd	2.1	nd	nd
flusilazole	1.0	1.1	nd	1.1	1.0	1.0	nd	1.0	2.0
flutolanil	nd	1.1	nd	1.1	nd	1.0	nd	nd	nd
imazalil	3.1	7.4	nd	12	nd	8.3	2.1	nd	103
mecoprop	nd	nd	nd	nd	nd	nd	nd	nd	nd
metamitron	nd	9.5	nd	nd	nd	nd	nd	nd	nd
methabenzthiazuron	nd	nd	nd	nd	nd	nd	nd	nd	1.0
metolcarb	nd	nd	nd	nd	nd	nd	nd	nd	nd
myclobutanil	3.1	1.1	2.1	1.1	nd	3.1	1.1	nd	2.1
oryzalin	11	2.1	nd	nd	nd	1.0	nd	nd	1.0
oxadiazon	10	2.1	nd	nd	nd	1.0	nd	nd	1.0
oxadixyl	15	18	nd	nd	nd	nd	nd	nd	nd
prochloraz	nd	nd	nd	nd	nd	nd	nd	nd	3.1
propiconazole	2.1	5.3	3.1	5.3	2.1	6.2	2.1	2.1	10
propoxur	4.2	3.2	4.2	4.2	4.1	4.1	4.2	4.1	5.1
propyzamide	nd	nd	nd	nd	nd	nd	nd	nd	4.1
pyridaben	nd	nd	nd	nd	nd	nd	2.1	nd	nd
pyrifenox	2.1	1.1	nd	nd	1.0	nd	1.1	nd	nd
pyrimethanil	nd	nd	nd	nd	nd	nd	nd	nd	nd
pyriproxyfen	nd	nd	nd	nd	nd	nd	1.1	nd	nd
simazin	nd	nd	nd	nd	nd	nd	nd	nd	nd
spiroxamine	nd	nd	nd	2.1	nd	nd	nd	nd	6.1
tebuconazole	2.1	2.1	3.1	5.3	2.1	5.2	8.4	1.0	4.1
tebufenpyrad	nd	nd	nd	nd	nd	nd	nd	nd	nd
terbumeton	nd	nd	nd	nd	nd	nd	nd	nd	nd
terbuthylazine-2-hydroxy	1.0	1.1	nd	nd	nd	nd	1.1	nd	nd
terbutryn	nd	nd	nd	1.1	nd	nd	nd	nd	1.0
tetraconazole	nd	nd	nd	nd	nd	nd	nd	nd	1.0
thiabendazole	2.1	3.2	nd	7.4	nd	7.2	nd	nd	19
thiophanate ethyl	nd	nd	nd	nd	12	nd	nd	nd	nd
triadimefon	nd	nd	nd	1.1	nd	1.0	nd	nd	3.1
triadimenol	2.1	2.1	1.0	16	1.0	13	2.1	2.1	23
triasulfuron	nd	4.2	nd	nd	nd	nd	nd	nd	nd
Phthalates ($\mu g/kg_{dw}$)	na	na	na	na	na	na	na	na	na
Nonylphenol ($\mu g/kg_{dw}$)	na	na	na	na	na	na	na	na	na

CP (µg/kg$_{dw}$)	na	na	na	na	na	na	na	na	na

a) Com: compost, Dig: digestate, all digestate samples were submitted to subsequent aerobic treatment except for samples 80
b) plant code: C: compost, K: organic kitchen waste and green waste as input materials, G: pure green waste compost, U: urban area of input material collection, R: rural area of input material collection
c) kw: kitchen waste, gw: green waste, iw: industrial waste including paper sludge, coffee ground, tea leaves, residues from potato chips production, biodegradable plastics, edible oil, cacao
d) characterisation of the area where the input material was collected
e) season of input material collection
f) plant type: ab: aerated boxes, tad: thermophilic aerobic digestion, tbw: table windrows, twh: triangle windrows higher than 2 meters, twl: triangle windrows lower than 2 meters
g) duration of the degradation process in days

6 FTS: fluorotelomer sulfonate, PFHxS: perfluorohexane sulfonate, PFOS: perfluorooctane sulfonate, PFDcS: perfluorodecane sulfonate, PFHxA: perfluorohexanoate, PFHpA: perfluoroheptanoate, PFOA: perfluorooctanoate, PFNA: perfluorononanoate, PFDcA: perfluorodecanoate, PFUnA: perfluoroundecanoate, PFDcA: perfluorododecanoate, PFOSA: perfluorooctane sulphonamide, na: not available, nd: not detected, ww: wet weight, dw: dry weight

PFAS below detection limit not listed, dedection limit for 6:2 fluorotelomer unsaturated carboxylate (FTUCA): 0.37µg/kg dw, 8:2 FTUCA: 0.4 µg/kg, 6:2 fluorotelomer carboxylate (FTCA): 0.37µg/kg, 8:2 FTCA: 0.4 µg/kg, perfluorobutane sulfonate: 0.33 µg/kg, n-Methyl-heptadecafluorooctane sulphonamide: <0.18 µg/kg dw, n-Ethyl-heptadecafluorooctane sulfonamide: <0.14 µg/kg dw, n-Methyl-heptadecafluorooctane sulfonamidoethanol: <0.14 µg/kg dw, n-Ethyl-heptadecafluorooctane sulfonamidoethanol: <0.28 µg/kg dw

Table S3: Aerial deposition rates of organic pollutants and their content in manure and sewage sludge

	deposition rate (min, max)	ref	manure (min, max)	ref	sewage sludge (min, max)	ref
Σ17PCDD/F	22 µg I-TEQ/ha/y (7, 40)	3, 4	3.77 ng I-TEQ/kg_{dw} (0.36, 21)	5	15 ng I-TEQ/kg_{dw} (6.1, 120[a])	6
DL-PCB	9 µg WHO-TEQ/ha/y (7;10)	4	na		4.2 ng WHO-TEQ/kg_{dw} (1.9, 6.6)	7
ΣBDE	6.2 mg/ha/y (only one datapoint)	8	na		1170 µg/kg_{dw} (250, 1800)	9
HBCD	284 mg/ha/y (0.073-1340)	10	na		1730 µg/kg_{dw} (1, 5200)	11
PFS	na		na		395 µg/kg_{dw} (31, 3040)	12
PFCA	na		na		30 µg/kg_{dw} (5, 150)	12
DEHP	0.19 g/ha/y (0-2.5)	13	6.8 mg/kg_{dw} (0.41, 26)	14, 15	51 mg/kg_{dw} (21, 110)	16

na: not available

a) highest value not taken into account

Table S4: Pesticides analysed and detected in Swiss compost and digestate

Pesticides analysed		detection[a]	Pesticides analysed		detection[a]
Acephate	Insecticide	2	Haloxyfop-methyl	Herbicide	2
Acetamiprid	Insecticide	2	Hexachlorbenzene	Fungicide	2
Acetochlor	Herbicide	2	Hexaconazole	Fungicide	2
Alachlor	Herbicide	2	Hexaflumuron	Insecticide	2
Aldicarb	Insecticide	2	Hexythiazox	Insecticide	2
Aldicarb sulfoxide	Insecticide	2	Imazalil	Fungicide	1
Aldoxycarb	Insecticide	2	Imidacloprid	Insecticide	2
alpha Endosulfan	Insecticide	2	Indoxacarb	Insecticide	2
Amidosulfuron	Herbicide	2	Iodosulfuron	Herbicide	2
Amitrole	Herbicide	2	Ioxynil	Herbicide	2
Anilazine	Fungicide	2	Iprodione	Fungicide	2
Asulam	Herbicide	2	Iprovalicarb	Fungicide	2
Atrazine	Herbicide	2	Isazophos	Insecticide	2
Atrazine-2-hydroxy	Herbicide	1	Isoproturon	Herbicide	2
Atrazine-desethyl	Herbicide	2	Kresoxym methyl	Fungicide	2
Atrazine-desisopropyl	Herbicide	2	Lenacil	Herbicide	2
Azaconazole	Fungicide	1	Lindane and isomers	Insecticide	2
Azamethiphos	Insecticide	2	Linuron	Herbicide	2
Azinphos methyl	Insecticide	2	Lufenuron	Insecticide	2
Aziprotryne	Herbicide	2	Malathion	Insecticide	2
Azoxystrobin	Fungicide	1	MCPA	Herbicide	2
Benalaxyl	Fungicide	2	MCPB	Herbicide	2
Bendiocarb	Insecticide	2	Mecarbam	Insecticide	2
Benfuracarb	Insecticide	2	Mecoprop	Herbicide	1
Benodanil	Fungicide	2	Mepanipyrim	Fungicide	2
Benomyl	Fungicide	2	Metalaxyl	Fungicide	1
Bentazone	Herbicide	2	Metamitron	Herbicide	2
Benthiavalicarb isopropyl	Fungicide	2	Metconazole	Fungicide	2
Benzoximate	Acaricide	2	Methabenzthiazuron	Herbicide	1
beta Endosulfan	Insecticide	2	Methidathion	Insecticide	2
Bifenox	Herbicide	2	Methiocarb	Insecticide	2
Bitertanol	Fungicide	1	Methomyl	Insecticide	2
Boscalid	Fungicide	2	Methoxyfenozide	Insecticide	2
Bromacil	Herbicide	1	Metobromuron	Herbicide	2
Bromophos ethyl	Insecticide	2	Metolachlor	Herbicide	2
Bromopropylate	Insecticide	2	Metolcarb	Insecticide	1
Bromuconazole	Fungicide	2	Metoxuron	Herbicide	2
Bupirimate	Fungicide	2	Metribuzin	Herbicide	2
Buprofezin	Insecticide	1	Metsulfuron-methyl	Herbicide	2
Butocarboxim	Insecticide	2	Mevinphos	Insecticide	2
Captan	Fungicide	2	Monocrotophos	Insecticide	2
Carbaryl	Insecticide	2	Monolinuron	Herbicide	2
Carbendazim	Fungicide	1	Monuron	Herbicide	2
Carbofuran	Insecticide	2	Myclobutanil	Fungicide	1
Carboxin	Fungicide	2	Napropamid	Herbicide	2
Chlorbromuron	Herbicide	2	Norflurazon	Herbicide	2
Chlorfenapyr	Insecticide	2	Nuarimol	Fungicide	2
Chlorfenvinphos	Insecticide	2	Omethoate	Insecticide	2
Chlorfluazuron	Insecticide	2	Orbencarb	Herbicide	2
Chloridazon	Herbicide	2	Orthosulfamuron	herbicide	2
Chlorothalonil	Fungicide	2	Oryzalin	Herbicide	1
Chlorotoluron	Herbicide	2	Oxadiazon	Herbicide	1
Chloroxuron	Herbicide	2	Oxadixyl	Fungicide	1
Chlorpropham	Herbicide	2	Oxamyl	Insecticide	2
Chlorpyrifos	Insecticide	2	Parathion	Insecticide	2
Chlorpyrifos methyl	Insecticide	2	Parathion methyl	Insecticide	2
Chlozolinate	Fungicide	2	Penconazole	Fungicide	2
Clofentezine	acaricide	2	Pencycuron	Fungicide	2
Clopyralid	Herbicide	2	Pendimethalin	Herbicide	2

Cyanazin	Herbicide	2	Phenmedipham	Herbicide	2
Cycloxydim	Herbicide	2	Phenthoate	Insecticide	2
Cymoxanil	Fungicide	2	Phosalone	Insecticide	2
Cyproconazole	Fungicide	1	Phosphamidon	Insecticide	2
Cyprodinil	Fungicide	1	Pirimicarb	Insecticide	2
DDT and isomers	Insecticide	2	Pirimiphos methyl	Insecticide	2
Demeton-S-methyl	Insecticide	2	Prochloraz	Fungicide	1
Diafenthiuron	Insecticide	2	Procymidone	Fungicide	2
Diazinon	Insecticide	2	Promecarb	Insecticide	2
Dichlofenthion	Insecticide	2	Prometryn	Herbicide	2
Dichlofluanid	Fungicide	2	Propachlor	Herbicide	2
Dichlorprop-methyl ester	Herbicide	2	Propamocarb	Fungicide	2
Dichlorprop-P	Herbicide	2	Propanil	Herbicide	2
Diclobutrazol	Fungicide	2	Propaquizafop	Herbicide	2
Dicofol	Insecticide	2	Propazine	Herbicide	2
Dicrotophos	Insecticide	2	Propetamphos	Insecticide	2
Diethofencarb	Fungicide	2	Propham	Herbicide	2
Difenoconazol	Fungicide	1	Propiconazole	Fungicide	1
Difenoxuron	Herbicide	2	Propoxur	Insecticide	1
Diflubenzuron	Insecticide	2	Propyzamide	Herbicide	1
Dimefuron	Herbicide	2	Prosulfocarb	Herbicide	2
Dimethachlor	Herbicide	2	Pymetrozine	Insecticide	2
Dimethenamid	Herbicide	2	Pyridaben	Insecticide	1
Dimethoate	Insecticide	2	Pyridate	Herbicide	2
Dimethomorph	Fungicide	1	Pyrifenox	Fungicide	1
Dimetilan	Insecticide	2	Pyrimethanil	Fungicide	1
Diniconazole	Fungicide	2	Pyriproxyfen	Insecticide	1
Dinocap	Fungicide	2	Quinalphos	Insecticide	2
Dinoseb	Herbicide	2	Quintozene	Fungicide	2
Dinoterb	Herbicide	2	Quizalofop-P-Ethyl	Herbicide	2
Dioxacarb	Insecticide	2	Simazin	Herbicide	1
Diphenylamine	Fungicide	2	Simazin-2-hydroxy	Herbicide	2
Disulfoton	Insecticide	2	Soufre	Fungicide	2
Diuron	Herbicide	1	Spinosad	Insecticide	2
Dodemorph	Fungicide	1	Spirodiclofen	Insecticide	2
Endosulfan sulfate	Insecticide	2	Spiroxamine	Fungicide	1
Epoxiconazole	Fungicide	1	Tebuconazole	Fungicide	1
Etaconazole	Fungicide	1	Tebufenozide	Insecticide	2
Ethiofencarb	Insecticide	2	Tebufenpyrad	Insecticide	1
Ethion	Insecticide	2	Tebutam	Herbicide	2
Ethoxyquin	Fungicide	2	Teflubenzuron	Insecticide	2
Ethoxysulfuron	herbicide	2	Tepraloxydim	Herbicide	2
Etrimfos	Insecticide	2	Terbacil	Herbicide	2
Fenamidone	Fungicide	2	Terbufos	Insecticide	2
Fenamiphos	nematicide	2	Terbumeton	Herbicide	1
Fenarimol	Fungicide	2	Terbuthylazine-2-hydroxy	Herbicide	1
Fenazaquin	Acaricide	2	Terbuthylazine-desethyl	Herbicide	2
Fenbuconazole	Fungicide	1	Terbutryn	Herbicide	1
Fenhexamide	Fungicide	1	Tetraconazole	Fungicide	1
Fenitrothion	Insecticide	2	Thiabendazole	Fungicide	1
Fenoxycarb	Insecticide	1	Thiacloprid	Insecticide	2
Fenpiclonil	Fungicide	2	Thiamethoxam	Insecticide	2
Fenpropathrin	Fungicide	1	Thifensulfuron-methyl	Herbicide	2
Fenpropidin	Fungicide	2	Thiobencarb	Herbicide	2
Fenpropimorph	Insecticide	1	Thiocyclam	Insecticide	2
Fenpyroximat	Acaricide	1	Thiodicarb	Insecticide	2
Fenthion	Insecticide	2	Thiofanox	Insecticide	2
Fenuron	Herbicide	2	Thiometon	Insecticide	2
Fipronil	Insecticide	2	Thiophanate ethyl	Fungicide	1
Fluazifop-butyl	Herbicide	2	Thiophanate methyl	Fungicide	2
Fluazinam	Fungicide	2	Tolclofos-methyl	Fungicide	2

Flucycloxuron	Acaricide	2	Tolylfluanid	Fungicide	2
Fludioxonil	Fungicide	2	Triadimefon	Fungicide	1
Flufenoxuron	Insecticide	2	Triadimenol	Fungicide	1
Fluquinconazole	Fungicide	2	Triasulfuron	Herbicide	1
Fluroxypyr	herbicide	2	Triclopyr	Herbicide	2
Flurprimidol	Fungicide	2	Tricyclazole	Fungicide	2
Flusilazole	Fungicide	1	Tridemorph	Fungicide	2
Flutolanil	Fungicide	1	Trifloxystrobin	Fungicide	2
Flutriafol	Fungicide	2	Triflumizole	Fungicide	2
Folpet	Fungicide	2	Triflumuron	Insecticide	2
Foramsulfuron	Herbicide	2	Trifluralin	Herbicide	2
Formothion	Insecticide	2	Triforine	Fungicide	2
Fuberidazole	Fungicide	2	Vamidothion	Insecticide	2
Furalaxyl	Fungicide	2	Vinclozolin	Fungicide	2
Furathiocarb	Insecticide	2			

a) 1: detected at least once in compost and/or digestate, 2: not detected in compost and/or digestate, detection limit 1.0 $\mu g/kg_{dw}$

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