Table S1: Saturated / flowthrough column experiments

Citation	Conditions	Compounds	Column material	Column length [cm]	Column diameter [cm]	Sediment type	Sediment installation	Sediment porosity	Velocities / flowrates	Filter layers	Tubes	Pump	Fluids	Input concentrations	Modelling	Sampling methods
Alidina et al. (2014)	saturated flow through	atenolol, caffeine, diclofenac, gemfibrozil, primidone, trimethoprim	glass	4 x 100 (in series)	5	natural soil	sieved, wet (saturated)	0.32	1.44 m/d (as "loading rate")	n/a	n/a	peristaltic pump	synthetic wastewater with different ratios of different organic carbon sources	300 - 500 ng/L	n/a	sampling ports
Alotaibi et al. (2015)	saturated flow through	5-methylbenzotriazole, benzotriazole	stainless steel	200	14.5	natural sediment	wet (saturated) under flushing nitrogen gas	0.402 (bromide tracer test)	2.86 cm/d (bromide tracer test)	n/a	n/a	gear pump	treated waste water	200 ng/L per compound	Origin v61 (CDE)	sampling ports
Banzhaf et al. (2012)	saturated flow through	carbamazepine, diclofenac, ibuprofen, sulfamethoxazole	stainless steel	35	13.6	natural sediment	dry, compaction by a stamp	0.42 (total) 0.41 (effective from tracer experiment)	14 mL/h / 6.3 - 6.5 cm/d	quartz filter sand / gravel	n/a	peristaltic pump	natural surface water	165 - 295 µg/L	CXTFIT (Toride et al., 1995)	flowthrough cells (physico-chemical parameters), fraction collector
Baumgarten et al. (2011)	saturated flow through	sulfamethoxazole	n/a	200	15.5	artificial sediment (filter sand/technical quartz sand), 0.7 - 1.2 mm grain size	n/a	0.4 ("voidage")	0.13 m/d (v_f)	n/a	n/a	n/a	natural surface water (aerobic & anaerobic)	0.25 - 4.15 µg/L	n/a	sampling ports (online: pH, O2; offline: 0.2 L samples), 0.2 L samples at the influent & effluent
Bertelkamp et al. (2012)	saturated flow through	acetaminophen, atrazine, caffeine, carbamazepine, gemfibrozil, ibuprofen, hydrochlorothiazide, Ketoprofen, lincomycin, phenytoin, propranolol, metoprolol, trimethoprim, sulfamethoxazole	PVC (transparent)	100	3.6	artificial sediment (filter sand/technical quartz sand), 1.4 - 2 mm	n/a	0.31 - 0.4	2.4 - 3.2 m/d (pore velocity, NaCl Tracer)	n/a	dark polyethylene, Marprene® pump tubing	peristaltic pump	natural surface water with sodium acetate or sodium azide, tap water spiked with OMPs	200 ng/L per substance	n/a	bottles

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			Tubes	Pump	Fluids			
Bertelkamp et al. (2014)	saturated flow through	acetaminophen, atrazine, caffeine, carbamazepine, gemfibrozil, ibuprofen, hydrochlorothiazide, ketoprofen, lincomycin, phenytoin, propranolol, metoprolol, trimethoprim, sulfamethoxazole	PVC (transparent)	100	3.6	artificial sediment (filter sand/technical quartz sand), 1.4 - 2 mm	compaction by tapping in 4 - 5 cm increments	0.31 - 0.42	2.4 - 3.2 m/d	perforated PVC plates	dark polyethylene, Marprene® pump tubing	peristaltic pump	natural surface water with sodium acetate or sodium azide, demineralized water	200 ng/L per substance	CXTFIT (Toride et al., 1995)	bottles
Burke et al. (2013)	saturated flow through	1-acetyl-1-methyl-2-dimethyl-oxamoyl-2-phenylhydrazide, 1-acetyl-1-methyl-2-phenylhydrazide, acetylaminoantipyrine, atenolol, diazepam, formylaminoantipyrine, meprobamate, metoprolol, N-methylphenacetine, oxazepam, p-TSA, phenacetine, phenazone, phenylethylmalonamide, primidone, propranolol, propyphenazone, pyrithylidone, sotalol, tolytriazole,	stainless steel	30	10	natural sediment	wet (saturated), compaction by vibration	0.45	0.147 m/d	stainless steel mesh	PTFE	n/a	tap water	0.8 µg/L each compound	Phreeq c-2 (Parkhu rst and Appelo, 1999)	fraction collector
Burke et al. (2014)	saturated flow through	acesulfame, acetylaminoantipyrine, benzotriazole, carbamazepine, diclofenac, formylaminoantipyrine, iopromide, metoprolol, phenazone, tolyltriazole,	aluminum	120	8	natural sediment	undisturbed core	0.3	1.38 m/d (pore water velocity)	n/a	n/a	peristaltic pump	natural surface water	0.07 – 0.72 µg/L	PEST, removal rates (Dohert y, 2005)	sampling ports, by hand

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			Tubes	Pump	Fluids			
Burke et al. (2016)	saturated flow through	atenolol, propranolol, metoprolol, sotalol, iopromide, phenazone, propyphenazone, FAA, AAA, AMPH, AMDOPH, diazepam, oxazepam, primidone, PEMA, carbamazepine, trimethoprim, benzotriazole, tolyltriazole, acesulfame	stainless steel	30	10	natural sediment	wet (saturated), compaction by vibration	0.4	0.16 m/d (pore water velocity)	stainless steel mesh	n/a	peristaltic pump	natural water	1 µg/L	n/a	manual
Casas and Bester (2015)	saturated flow through	diclofenac, iohexol, iomeprol, iopromide, propiconazole, propranolol, tebuconazole	glass	50 (filled up to 29)	2.5	artificial sediment (filter sand/technical quartz sand)	n/a	0.36 (from bromide tracer test)	0.025 -0.2 mL/min	glass-fiber filter (1.2 µm)	n/a	piston pump	treated waste water	0.022 - 20.8 µg/L	n/a	on-line (HPLC-UV) & off-line (HPLC-MS/MS)
Chen et al. (2011)	saturated flow through	ciprofloxacin, sulfamethoxazole	acrylic cylinder	10	2.5	artificial sediment (filter sand / technical quartz sand)	wet, stirring and tapping	0.42	0.2 cm/min	n/a	n/a	peristaltic pump	deionized water with 0.1 mM KBr, pH 9.5 (NaOH)	200 µg/L sulfamethoxazole, 50 µg/L ciprofloxacin	1D-CDE coupled with reaction terms	fraction collector
D'Alessio et al. (2015)	saturated flow through	17-β estradiol, caffeine, carbamazepine, estrone, gemfibrozil, phenazone	stainless steel	14.5	4.75	artificial sediment (filter sand / technical quartz sand)	n/a	0.41	0.2 mL/min	fine stainless steel wire cloth	n/a	peristaltic pump	natural surface water (aerobic & anaerobic)	50 µg/L	n/a	n/a

Citation	Condi-tions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concen-trations	Model-ling	Sampling methods
			material	length [cm]	diameter [cm]	type	instal-lation	porosity			Tubes	Pump	Fluids			
Estrella et al. (1993)	saturated	2,4-dichlorophenoxyace-tic acid (2,4-D)	n/a ("chroma-tography column" →proba-bly glass)	5	2.5	natural soil	n/a	n/a	4.7-6.2 cm/h	n/a	n/a	n/a	artificial (ground)water ($CaCl_2$)	100 mg/L	CDE, incl. first order degra-dation (Van Genuch ten and Wagen et, 1989)	fraction col-lector
Greenhagen et al. (2014)	saturated flow through	acetaminophen, caffeine, methamphetamine	PVC	30	30	natural soil, artifi-cial sedi-ment (filter sand / technical quartz sand)	undis-turbed (soil); n/a for sand	0.28 (un-dis-turbed)	600 mL/d	quartz filter sand / gravel, alumi-num screen	black Tygon, PVC pump tubing, Vinyl, brass (com-pression fittings), Polysul-fone (tees)	peristal-tic pump	natural groundwa-ter	1000 mg/L ac-etamino-phen, 250 mg/L caf-feine, 100 mg/L metham-pheta-mine	CDE, incl. first order degra-dation (Van Genuch ten and Wagen et, 1989)	manual
Gruenheid et al. (2008)	saturated flow through	iopromide, sulfamethoxazole, naphthalenedisulfonic acid (each isomer)	plexiglas	50	14	artificial sediment (filter sand / technical quartz sand)	n/a	n/a	8.3 cm/d (pore water velocity)	quartz filter sand / gravel	n/a	peristal-tic pump	natural surface water	10 µg/L iopromide , 2.5 µg/L sulfa-methoxa-zole, 2.5 µg/L each iso-mer of naphtha-lenedisul-fonic acid	n/a	n/a
Hebig et al. (submitted)	saturated flow through	caffeine, carbamazepine, gemfibrozil, ibuprofen, naproxen, sulfamethoxazole	acrylic glass	41.0 – 41.2	7.6	one natu-ral sedi-ment, two artificial sands (or-ganic car-bon en-riched sand, iron coated sand)	dry, layers of 1 – 2 cm, tamper-ing	0.27 – 0.33	9.0 – 9.7 cm/d (pore water velocity from tracer test)	tech-nical quartz sand (2 cm top and bot-tom); two gauzes	Teflon	peristal-tic pump	synthetic ground-water	1 µg/L of each com-pound	CXTFIT (Toride et al., 1999)	sampling by hand (bot-tles)

Citation	Condi-tions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concen-trations	Model-ling	Sampling methods
			material	length [cm]	diameter [cm]	type	instal-lation	porosity			Tubes	Pump	Fluids			
Jia et al. (2007)	saturated flow through	benzotriazole	plastipak tube	12	2.6	natural soil, artifi-cial sedi-ment (zerovalent iron Fe(0))	n/a	0.37 (soil) 0.41 / 0.44 (Fe(0))	different flow rates (from 20 to 27.1 mL/h)	glass wool	tygon	peristal-tic pump	distilled water	10 mg/L	PHREE QC-2 (Parkhu rst and Appelo, 1999)	flow-through bottles
Ke et al. (2012)	saturated flow through	17α-ethynylestradiol, 17β-estradiol, bisphenol A, ibuprofen, naproxen	n/a	8x 100 (series connec-tion)	10	natural sediment	n/a	0.44	22.7 cm/d	n/a	Teflon (PTFE), stainless steel	n/a	treated waste wa-ter	~ 100 µg/L	n/a	glass syringe & three-way valves
Lorphensri et al. (2007)	saturated flow through	17α-ethynylestradiol, acetaminophen, nalidixic acid	glass (borosili-cat)	15	2.5	artificial sediment (alumina Al_2O_3, sil-ica gel) and aqui-fer sand	n/a	0.38 - 0.52	10.5 - 18.8 cm/h	HDPE (20 µm porous bed support)	n/a	peristal-tic pump	artificial (ground)water ($CaCl_2$)	10 mg/L	CXT-FIT, CDE (Toride et al., 1995), UFBTC(Universi ty of Florida, 1989)	fraction col-lector, inline-UV spectro-photometer
Massmann et al. (2008)	*down-ward* sat-urated flow-through	phenazone-type phar-maceuticals and metab-olites: 1-acetyl-1-methyl-2-di-methyloxamoyl-2-phe-nylhydrazide, 1-acetyl-1-methyl-2-phe-nylhydrazide, 1,5-dimethyl-1,2-dehy-dro-3-pyrazolone, 4-acetylaminoantipyrin, 4-formylaminoantipyrin, 4-(2-methylethyl)-1,5-di-methyl-1,2-dehydro-3-pyrazole, dimethylaminophena-zone, phenazone, propyphenazone,	n/a	n/a	n/a	undis-turbed core of sediments from the Lake Wannsee bed	undis-turbed	n/a	$6*10^{-6}$ m/s = 0.52 m/d (pore veloc-ity)	n/a	n/a	pulsating pump at the bot-tom of the col-umn	natural surface (lake) water	0.03 - 0.53 µg/L (median Lake Wannsee)	n/a	redox-condi-tions: oxygen minisensors in the sedi-ment
Mersmann et al. (2002)	saturated flow through	carbamazepine, clofibric acid, diclofenac, ibuprofen, propyphenazone	stainless steel	35	13.59	natural sediment	n/a	0.27 - 0.36	0.33 - 0.36 m/d (mean pore veloc-ity)	n/a	Teflon, glass, polyeth-ylene, stainless steel	peristal-tic pump	natural groundwa-ter	10 µg/L each com-pound	n/a	flowthrough cells, fraction collector

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			Tubes	Pump	Fluids			
Müller et al. (2013)	saturated flow through	carbamazepine, primidone, sulfamethoxazole	n/a	35	13.5	natural sediment (un- and heat pre-treated)	n/a	0.35	1.20 - 1.56 cm/h (pore velocity)	n/a	n/a	peristaltic pump	natural surface water (ozonated and not-ozonated)	0.73 - 0.8 µg/L primidone, 0.80 µg/L carbamazepine, 0.87 - 0.90 µg/L sulfamethoxazole	CXTFIT, CDE (Toride et al., 1999)	flowthrough cells, fraction collector
Patterson et al. (2010)	saturated flow through	17α-ethynylestradiol, 17β-estradiol, bisphenol A, carbamazepine, iodipamide, iohexol, N-nitrosomorpholine, N-nitrosodimethylamine oxazepam	stainless steel	200	14.5	anaerobic natural sediment	n/a	0.42 (bromide tracer test)	0.052 m/d	stainless steel mesh and grate	n/a	peristaltic pump	treated waste water	130 – 700 µg/L	fitting using Origin® v7 (Microcal Software Inc., 1995)	hypodermic syringe
Patterson et al. (2011)	saturated flow through	17α-ethynylestradiol, 17β-estradiol, bisphenol A, carbamazepine, iodipamide, iohexol, N-nitrosomorpholine, N-nitrosodimethylamine oxazepam	stainless steel	200	14.5	aerobic natural sediment	wet (saturated)	0.46 (bromide tracer test)	0.047 m/d	stainless steel mesh and grate, silicone polymer mat	n/a	peristaltic pump	treated waste water	130 – 700 µg/L	fitting to CDE using Origin® v7 (Microcal Software Inc., 1995)	hypodermic syringe
Preuss et al. (2001)	(probably) saturated *upward* and *downward* flow through (various experiments)	bezafibrat, diclofenac, carbamazepine, gemfibrozil, clofibric acid	glass	80	20	natural sediment	n/a	n/a	5 cm/h (Darcy velocity)	n/a	n/a	n/a	natural groundwater (aerobic & anaerobic), natural surface water	100 µg/L each compound	n/a	n/a

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			Tubes	Pump	Fluids			
Rauch-Williams et al. (2010)	saturated flow through	carbamazepine, diclofenac sodium, gemfibrozil, ibuprofen, ketoprofen, naproxen, phenacetine, primidone, propyphenazone, tris(2-chloroethyl)phosphate	plexiglass	4x 100 (in series connection)	15	natural sediment	n/a	n/a	0.065 m/d (loading rate)	n/a	n/a	n/a	treated waste water	23-1,503 ng/L	CXT-FIT,CDE (Toride et al., 1995)	n/a
Schaffer et al. (2012b)	saturated flow through	atenolol, metoprolol	stainless steel	25	3.4	natural sediment	n/a	0.29 - 0.38 (chloride tracer test)	0.62 - 0.75 m/d (Darcy velocity) 1.91 - 2.43 m/d (pore velocity)	n/a	n/a	piston pump	tap water	1 – 30,000 µg/L atenolol 500 µg/L metoprolol	CXT-FIT, CDE (Toride et al., 1995)	fraction collector
Schaffer et al. (2012a)	saturated flow through	atenolol, carbamazepine, cetirizine, diazepam, naproxen, phenobarbital, primidone, trimethoprim	stainless steel	25	3.4	natural sediment	n/a	0.34 (chloride tracer test)	1.28 m/d (Darcv velocity), 3.77 m/d (pore velocity)	n/a	n/a	n/a	natural surface water	500 µg/L	fitting to CDE	n/a
Scheytt et al. (1998)	saturated flow through	clofibric acid	stainless steel (personal communication)	30	9	natural sediment	n/a	0.34	0.26 m/d (Darcy velocity)	n/a	n/a	peristaltic pump	natural groundwater (anaerobic)	0.7 µg/L	n/a	flowthrough cells, fraction collector
Scheytt et al. (2004)	saturated flow through	clofibric acid, diclofenac, propyphenazone	stainless steel	35	13.6	natural sediment	dry	0.32	0.30 m/d (dominant linear velocity)	glass (?) globes and gauze net	n/a	n/a	natural groundwater	10 µg/L	graphical analysis of BTCs	flowthrough cells, fraction collector

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			Tubes	Pump	Fluids			
Simon et al. (2000)	saturated flow through	p-cyanonitrobenzene	glass	62	5	natural sediment	wet (saturated)	0.47 (tracer test)	2.5 mL/min (=16.25 cm/h) in the tracer test; 0.5 mL/min during the experiment	n/a	n/a	Rabbit-HP, Rainin Instrument Co. Inc (mobile phase), syringe pump (injection of compound)	ultrapure water (air-saturated)	25 µM	CDE model	fraction collector (tracer) syringe (compound)
Srivastava et al. (2009)	saturated flow through	ormetoprim, sulfadimethoxine	glass	10 and 4	5	natural soil, artificial sediments (filter sand / technical quartz sand)	dry	n/a	0.27 - 0.48 cm/min (pore water velocity)	cheese-cloth, paper filter, Teflon end cap	polypropylene, silicone	peristaltic pump	artificial (ground)water ($CaCl_2$)	100 µg/L	CXT-FIT, CDE (Toride et al., 1999)	fraction collector
Strauss et al. (2011)	saturated flow through	sulfadimethoxine, sulfamethazine, sulfamethoxazole	stainless steel	30	5.2	natural soil	dry, compaction by tapping with rubber hammer	0.38 - 0.40 (porosity as water content)	3.99 - 4.15 cm/h (Darcy velocity)	perforated stainless steel plates, glass fiber filter	Teflon (PTFE), pharmed	peristaltic pump	artificial (ground)water ($CaCl_2$), liquid manure	500 µg/L	HYDRUS-1D, CDE (Šimůnek and Van Genuchten, 2008)	fraction collector
Teijón et al. (2014)	saturated flow through	naproxen	stainless steel, the internal wall was covered with Teflon	10	1.6	natural sediment	dry, compaction by vibration	0.27	0.19 - 0.7 cm/min (pore water velocity)	n/a	PTFE, stainless steel	peristaltic pump	artificial (ground)water ($CaCl_2$)	10 µg/L	HYDRUS-1D, CDE (Šimůnek and Van Genuchten, 2008)	fraction collector

Citation	Condi-tions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concen-trations	Model-ling	Sampling methods
			material	length [cm]	diameter [cm]	type	instal-lation	porosity			Tubes	Pump	Fluids			
Teijón et al. (2014)	saturated flow through	naproxen	stainless steel, the internal wall was covered with Tef-lon	5	2	natural sediment	dry, com-paction by vi-bration	0.25	0.08 cm/min	n/a	PTFE, stainless steel	peristal-tic pump	artificial (ground)water ($CaCl_2$)	10 µg/L	HY-DRUS-1D, CDE (Šimůnek and Van Genuchten, 2008)	fraction col-lector

n/a = not applicable

Table S2: Unsaturated / leaching column experiments

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			tubes	pump	fluids			
Aga et al. (2003)	leaching	tetracycline	irrigation pipes with metal screen and porous tin cover	approx. 152	approx. 20	natural soil	undisturbed	n/a	n/a	n/a	n/a	n/a	distilled water	n/a	n/a	n/a
Cabrera-Lafaurie et al. (2015)	leaching	caffeine, carbamazepine, clofibric acid, salicylic acid	glass	30	0.8	artificial sediment (inorganic-organic pillared clays modified with transition metals)	n/a	n/a	2 and 7.5 mL/min	n/a	n/a	by gravity	distilled & deionized water	14 mg/L	fitted to analytical	n/a
Cordy et al. (2004)	leaching (saturated)	131 organic waste water compounds and pathogens, e.g. antibiotics, steroids, reproductive hormones	stainless steel	240	32.5	natural soil	hand packed	0.38	16.5 to 4.5 cm/d	sand layer at the bottom	n/a	n/a	treated waste water	26 µg/L (total concentration of all compounds)	n/a	by hand
De Wilde et al. (2009)	leaching (unsaturated)	bentazone, isoproturon, linuron, metalaxyl	glass	15	10	artificial soil	compaction by a weight on top of the column	n/a	1.74 cm/d (Darcy flux)	glass filter	PTFE	peristaltic pump	artificial (ground)water ($CaCl_2$)	10 mg/L each compound	HYDRUS-1D, CDE (Simunek et al., 2005)	fraction collector
Dusek et al. (2015)	Leaching (saturated)	atrazine, imazaquin, sulfometuron methyl, S-metolachlor, imidacloprid	n/a	20	15	natural soil	undisturbed	n/a	15 cm/d	glass wool	n/a	high pressure liquid chromatography pump	artificial water ($CaCl_2$)	5-10 mg/L	S1D (Vogel et al., 2007)	fraction collector
Estrella et al. (1993)	leaching	2,4-dichlorophenoxyacetic acid (2,4-D)	glass	30.5	5	natural soil	n/a	n/a	0.7 cm/h	porous stainless steel plate at the bottom of the glass column	n/a	vacuum chamber	artificial (ground)water ($CaCl_2$)	100 mg/L	numerical solution of the CDE, incl. first order degradation (Van Genuchten and Wagenet, 1989)	fraction collector

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			tubes	pump	fluids			
Fan et al. (2011)	leaching	sulfamethazine	glass	15	8.4	natural soil (garden soil), artificial sediment (filter sand / technical quartz sand)	dry, wetted from the bottom	0.37 - 0.67 (volumetric water content)	19.8 - 39.5 cm/h	stainless steel mesh, cheesecloth	Teflon (PTFE)	n/a	artificial (ground)water ($CaCl_2$)	8 µg/L	CXTFIT, CDE (Toride et al., 1995), libSRES (Ji and Xu, 2006)	fraction collector
Kamra et al. (2001)	leaching (unsaturated)	atrazine, isoproturon	n/a	10	5.7	natural soil	undisturbed	n/a	0.8 cm/d (Darcy flux) 1.92 - 2.48 cm/d (pore water velocity)	porous glass plate with nylon membrane	n/a	vacuum pump	artificial rain	n/a	CXTFIT, CDE (Toride et al., 1995), time moment analysis (Jury and Sposito, 1985)	fraction collector
Kay et al. (2005)	leaching (unsaturated)	oxytetracycline, sulphachloropyridazine, tylosin	n/a	30	5	natural soil, partly pig farm slurry on top	undisturbed & disturbed (air dried & sieved)	n/a	45000 L/ha	nylon mesh	HDPE funnel	n/a	artificial (ground)water ($CaCl_2$)	18.85 - 25.58 m g/L	n/a	amber glass bottles
Lopez-Blanco et al. (2005)	leaching (unsaturated)	α-endosulfan	PVC	80	1.5	natural sediment, natural soil	n/a	0.49	1.14 cm/h	washed quartz sand, 0.25 - 0.5 mm	PTFE, fluoroelastomer	peristaltic pump	artificial (ground)water (KCl)	100 mg/L	CXTFIT, CDE (Toride et al., 1999), CHAIN (Van Genuchten, 1985)	n/a
Maeng et al. (2011)	n/a (probably leaching)	bezafibrate, caffeine, carbamazepine, clofibric acid, gemfibrozil, diclofenac, fenoprofen, ibuprofen, ketoprofen, naproxen, paracetamol, pentoxifylline, phenacetine	n/a (“XK50/30; Amersham Pharmacia Biotech, Sweden”)	30	5	artificial sediment (filter sand / technical quartz sand)	n/a	n/a	0.64 m/d (hydraulic loading rate)	n/a	n/a	n/a	surface water, tap water, treated waste water, demineralized water	1.2 - 8.1 µg/L	n/a	n/a
Murillo-Torres et al. (2012)	leaching (unsaturated)	4-nonylphenol, di-2-ethyl(hexyl)phthalate	n/a	15	3	natural soil	moist	na	0.013 mL/s	n/a	n/a	peristaltic pump	artificial (ground)water ($CaCl_2$)	n/a	temporal moments (Pang et al., 2003)	by gravity in pre-cleaned glass flask

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			tubes	pump	fluids			
Nkedi-Kizza et al. (1987)	leaching (saturated)	atrazine, diuron	glass (HPLC-column)	30	2.5	natural soil (Eustis soil)	air-dry	0.33 - 0.41 (as water content)	5.18 - 6.44 cm/h	n/a	HPLC fittings	HPLC pump	aqueous solutions from 0.01 N $CaCl_2$ & various methanol-water mixtures	30 mg/L diuron 20 mg/L atrazine	leaching retardation factors by graphical analysis of column BTCs	flow-through variable-wavelength UV detector, assaying radioactivity with liquid scintillation techniques
Oppel et al. (2004)	Leaching according to OECD (2003) guideline (unsaturated)	carbamazepine, clofibric acid, diazepam, ibuprofen, ivermectin, iopromide and its derivatives, 5-amino-2,4,6-triiodo-isophthalic acid, desmethoxyacetyl-iopromide, (N-2,3-dihydroxypropyl)-5-amino-2,4,6-triiodo-isophthalic acid amide	glass	30	n/a	natural soil	air-dry, compaction by vibration	n/a	393 mL drop wise within 48 h	n/a	n/a	n/a	artificial rain (0.01 mol/L $CaCl_2$)	as aqueous solutions or dissolved in organic solvent: 100 mg/kg soil (dry weight)	n/a	n/a
Rodriguez-Cruz et al. (2007)	leaching (saturated flow regime)	atrazine, linuron, metalaxyl	glass	20	3	natural soil, partly ex & in situ modified with cationic surfactant octadecyltrimethylammoniumbromde	dry	n/a	drainage rate of 1 mL/min	n/a	n/a	peristaltic pump	n/a	1000 µg/L in methanol (1 mL of solution applied at the top of the soil and leached by application of 500 mL of water)	n/a	fraction collector

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			tubes	pump	fluids			
Salem Attia et al. (2013)	leaching (saturated)	diclofenac, gemfibrozil, ibuprofen, naproxen	glass	25	1	artificial sediment (magnetic nanoparticle coated zeolithe)	n/a	n/a	flow rate: 25 mL/min	glass wool	n/a	suction pump	influent from drinking water treatment plants	n/a	n/a	1 L amber glass bottles.
Salvia et al. (2014)	leaching (unsaturated)	androstenedione, carbamazepine, dicyclanil, erythromycin, fluvoxamine, gestodene, levonorgestrel, norethindrone, paracetamol, penicillin G potassium salt, progesterone, roxithromycin, sulphabenzamide, sulphadiazine, sulphadimethoxine, sulphadimidine, sulphameter, sulphamethoxazole, sulphanilamide, sulphathiazole, testosterone, trimethoprim, tylosin tartrate	PVC	30	10	natural soil	dry	n/a	40 mL of artificial rain every 2 days	glass beads	n/a	n/a	artificial rain ($CaCl_2$)	1 mg of each substance	fitting of degradation curves to the exponential decay model	leachates were recovered every 2 days in amber flasks
Schaffer et al. (2015)	leaching (varying hydraulic recharge conditions)	4-acetaminoantipyrine, 1H-benzotriazole, acesulfame, atenolol, atenolol acid, bezafibrate, carbamazepine, citalopram, clarithromycin, diclofenac, diazepam, fluoxetine, gemfibrozil, haloperidol, ibuprofen, irbesartan, isoproturon, losartan, mecoprop, metoprolol, naproxen,	stainless steel	150	35	artificial sediment (mix from sieved sand and compost)	n/a	0.40 - 0.49	0.05 – 0.19 m/d	n/a	PTFE, stainless steel	peristaltic pump	treated waste water	up to 6.5 µg/L	CXTFIT, CDE (Toride et al., 1995) for tracer BTCs, PMWIN with MT3D (Chiang and Kinzelbach, 1998) for compound BTCs	glass syringe

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			tubes	pump	fluids			
		phenazone, primidone, sulfamethoxazole, tamoxifen, tolyltriazole, valsartan, valsartan acid														
Scheytt et al. (2006)	leaching (unsaturated)	carbamazepine, diclofenac, ibuprofen, propyphenazone	stainless steel	35	13.6	natural sediment	dry, compaction by plunger	n/a	0.71 – 0.88 m/d (av pore water velocities)	glass beads and teflon gauze net (personal communication)	n/a	by gravity	artificial (ground)water and simulated treated waste water	1 µg/L	CXTFIT, CDE (Toride et al., 1995)	flowthrough cells, fraction collector
Scheytt et al. (2007)	leaching (unsaturated)	clofibric acid, diclofenac, ibuprofen, propyphenazone	stainless steel	35	13.6	natural sediment	dry, compaction by plunger	n/a	0.96 m/d (av pore water velocities)	glass beads and teflon gauze net (personal communication)	n/a	by gravity	artificial (ground)water - simulated treated waste water	1 µg/L	CXTFIT, CDE (Toride et al., 1995)	flowthrough cells, fraction collector
Siemens et al. (2010)	leaching	bezafibrate, clarithromycin, clindamycin, diclofenac, erythromycin, gemfibrozil, ibuprofen, metoprolol, naproxen, trimethoprim	PVC	10	8	natural soil	n/a	n/a	0.047 cm/h - 0.136 cm/h	moist quartz silt, porous glass suction plate	n/a	suction / vacuum pump	artificial (ground)water, equilibrated with $CaCO_3$, unknown composition	20 - 2000 µg/L	CXTFIT, CDE (Toride et al., 1995), HYDRUS (Simunek et al., 1998), Gaussian 03 (Frisch et al., 2004)	aliquots of 0.07 L
Unold et al. (2009)	leaching, steady state flow, near saturation	sulfadiazin	stainless steel	10	8.5	natural soil	dry (slightly wetted before packing), compaction by pestle	n/a	0.24 - 0.26 cm/h (Darcy velocity) 0.49 - 0.64 cm/h (tracer pore velocity)	quartz filter sand / gravel, porous ceramic plate	n/a	peristaltic pump	artificial (ground)water ($CaCl_2$)	0.57 mg/L	CXTFIT, CDE (Toride et al., 1999) HYDRUS (Simunek et al., 1998), PEST (Doherty, 2002)	fraction collector

Citation	Conditions	Compounds	Column			Sediment			Velocities / flowrates	Filter layers	Infrastructure / used materials			Input concentrations	Modelling	Sampling methods
			material	length [cm]	diameter [cm]	type	installation	porosity			tubes	pump	fluids			
Wu et al. (2010)	leaching (unsaturated)	carbamazepine, carbamazepine-10,11-epoxide, clindamycin, diltiazem, diphenhydramine, fluoxetine, norfluoxetine	PVC	40	4	natural soil, biosolids added	compaction by vibration	n/a	200 mm over 48 h	glass wool, quartz filter sand and (unknown) screening material	n/a	peristaltic pump	artificial rain ($CaCl_2$)	100 ng/g (substance / soil)	n/a	by glass funnels into 250-ml Erlenmeyer flasks wrapped with aluminum foil to avoid photodegradation
Xu et al. (2010)	leaching (saturated)	ibuprofen, diclofenac-sodium, ketoprofen, naproxen,	stainless steel	12	1.5	natural soil	n/a	0.42 - 0.48 (*calculated using provided mass, bulk density and pore volume*)	n/a	aluminum plate with a stainless steel needle	acrylic	by gravity	artificial (ground)water ($CaCl_2$), deionized water, DOC and polyacrylamide amendment	about 2 mg/kg (substance / soil)	n/a	manual
Yao et al. (2012)	leaching	sulfamethoxazole	acrylic cylinder	16.5	4	natural soil, artificial sediment (biochar & sandy soil)	wet (saturated)	n/a	n/a	stainless steel mesh	n/a	n/a	artificial (ground)water, artificial reclaimed water	2 mg/L	n/a	manual

n/a = not applicable

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