

Supporting Information for:

Removal of Trace Organic Micropollutants by Drinking Water Biological Filters

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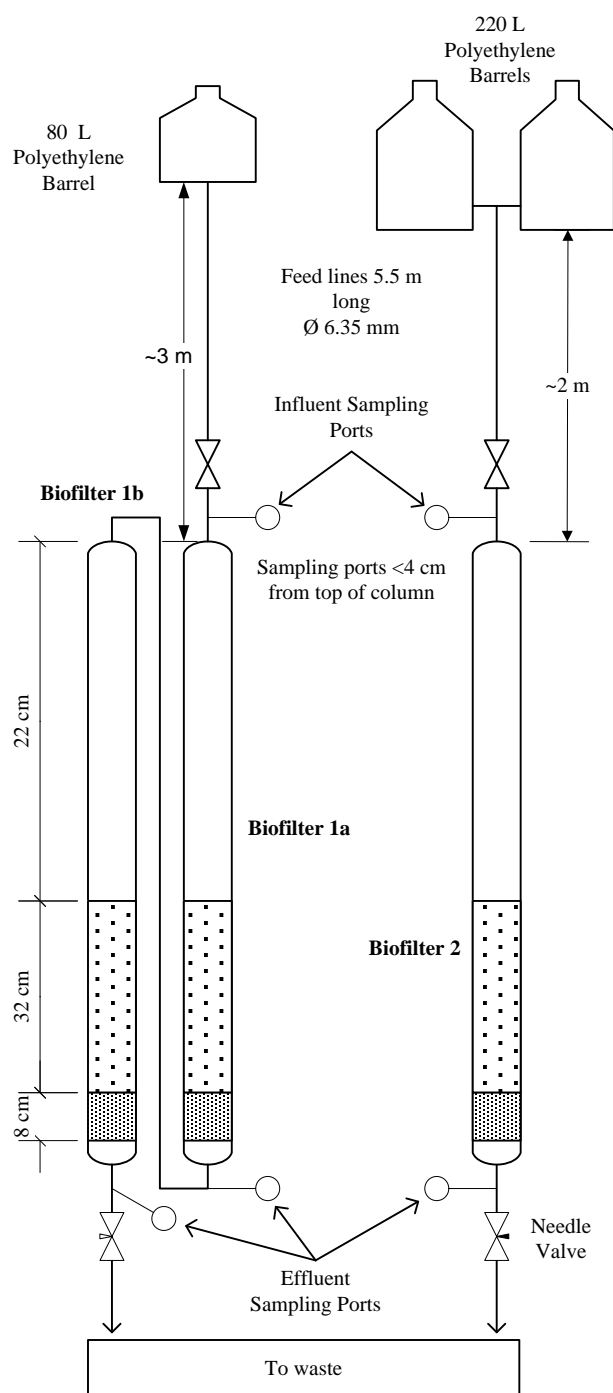
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SI Figure 1. Biofilter and feeds system setup.

SI Table 1. Analytical methods with detection limit and total exposure time.

micropollutant	CAS	MP stock group	total exposure (days)	method	method detection limit (ng L⁻¹)
2,4-D	94-75-7	1	338	LC	5
acetaminophen	103-90-2	1	338	LC	10
acetochlor	34256-82-1	2	257	LC	10
aldicarb	116-06-3	2	257	LC	10
atrazine	1912-24-9	1	338	LC	1
bisphenol A	80-05-7	3	181	GC	100
caffeine	58-08-2	1	338	LC	10
carbamazepine	298-46-4	1	338	LC	5
carbaryl	63-25-2	1	338	LC	10
chlorpyrifos	2921-88-2	1	338	LC	100
clofibric acid	882-09-7	2	257	LC	5
cotinine	486-56-6	1	338	LC	5
diazinon	333-41-5	1	338	LC	1
diclofenac	15307-86-5	4	171	LC	10
dimethoate	60-51-5	2	257	LC	5
diuron	330-54-1	1	338	LC	5
erythromycin	114-07-8	4	171	LC	10
ethinyl estradiol	57-63-6	3	181	GC	100
gemfibrozil	25812-30-0	1	338	LC	5
ibuprofen	15687-27-1	1	338	LC	25
iopromide	73334-07-3	1	338	LC	25
malaoxon	1634-78-2	2	257	LC	10
methomyl	16752-77-5	1	338	LC	5
metolachlor	51218-45-2	4	171	LC	10
MIB	2371-42-8	5	123	GC	1
molinate	2212-67-1	1	338	LC	10
naproxen	22204-53-1	2	257	LC	10
prometon	1610-18-0	4	171	LC	1
simazine	122-34-9	1	338	LC	5
sulfamethoxazole	723-46-6	1	338	LC	5
tributyl phosphate	126-73-8	2	257	LC	5
triclosan	3380-34-5	3	181	GC	100
trimethoprim	738-70-5	1	338	LC	5
warfarin	81-81-2	2	257	LC	5

SI Table 2. Micropollutant sampling schedule for all biofilters unless noted.

		Micropollutants ^a				
		Group 1	Group 2	Group 3	Group 4	Group 5
	<i>Start Date:</i>	5/9/10	7/29/10	10/13/10	10/23/10	12/10/10
Sample Date	TOC					
5/17/2010		Only Biofilter 1				
7/16/2010	All	All				
8/25/2010	All	All	All			
9/21/2010	All	All	All			
11/2/2010	All	All	All	All	All	
1/11/2011	All	All	All	All	All	All
3/9/2011	All			All		All
4/12/2011	All	All	All	All	All	All
4/20/2011 (2x MP Inf.)	Only Biofilter 1a	All	All	All	All	All

^a Defined in SI Table 1.

Feed Water Preparation

The biofilter feed water was dechlorinated overnight by allowing the supplemented DOM to react with the free chlorine in the tap water. The absence of free chlorine was confirmed after the reaction by a Hach Pocket Colorimeter in accordance with Standard Methods 4500-Cl G before the addition of micropollutants. The pH was measured with a Corning Model 430 meter and probe according to Standard Methods 4500-H⁺ and alkalinity with a Hach Digital Titrator Model 16900-01 according to Standard Methods 2320 B.¹

Sample Handling and Analysis

Samples were collected for micropollutant and TOC analysis in amber glassware which had been cleaned with distilled water and baked at 400°C for 3 hours. Micropollutant analysis for the compounds analyzed by liquid chromatography (LC) began immediately after sampling (<30 min) and the compounds analyzed by gas chromatography (GC) were shipped overnight on ice in headspace free bottles. TOC samples were preserved by adding phosphoric acid to drop the pH below 2.0 and stored at 4.0°C and were analyzed within 2 days of sampling.

References

1. APHA; AWWA; WEF. *Standard Methods for the Examination of Water and Wastewater*. 21st Edition ed.; APHA: Washington, DC, 2005.