

Occurrence of Micropollutants in Wastewater and Evaluation of their Removal Efficiency in Treatment Trains: The Influence of the Adopted Sampling Mode

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Table S1. Concentrations of the three representative compounds and values of flow rates used for defining the corresponding profile of concentrations and flow rate over the day (Figures 1, 2 and 5 in the manuscript).

Time	HV_Sub	LV_Sub	RV_Sub, influent	RV_Sub, effluent	Flow rate
(h)	(ng/L)	(ng/L)	(ng/L)	(ng/L)	(m ³ /h)
12:00 AM	1000	1500	14,000	4700	16
1:00 AM	1000	1100	13,500	6000	18
2:00 AM	1000	850	15,500	7500	20
3:00 AM	1000	550	19,000	8500	21
4:00 AM	1000	280	22,500	9000	19
5:00 AM	1000	100	26,000	9100	18
6:00 AM	1000	100	29,000	9500	19
7:00 AM	1000	100	31,000	9500	24
8:00 AM	1000	100	32,000	10,000	30
9:00 AM	5500	300	32,000	10,500	36
10:00 AM	17,000	550	31,500	11,500	39
11:00 AM	30,000	750	31,000	12,000	39
12:00 PM	40,000	850	30,000	12,500	37
1:00 PM	46,000	900	29,000	12,500	35
2:00 PM	48,000	900	29,000	12,000	34
3:00 PM	46,000	800	29,500	11,500	33
4:00 PM	40,000	650	30,500	10,500	31
5:00 PM	37,000	450	32,000	9800	28
6:00 PM	34,500	300	34,000	9000	24
7:00 PM	35,000	200	36,500	9000	21
8:00 PM	37,000	250	38,000	9500	22
9:00 PM	38,500	450	38,000	10,000	27
10:00 PM	35,000	850	35,500	11,000	28
11:00 PM	22,000	1300	29,000	10,000	17
12:00 AM	1000	1500	14,000	4500	16

Table S2. Evaluation of the average concentrations of RV_Sub in case of 24-h time proportional composite sampling mode.

time (h)	c_i (every hour) (ng/L)	c_i (every 2 h) (ng/L)	c_i (every 4 h) (ng/L)	c_i (every 8 h) (ng/L)
12:00 AM	14,009	14,009	14,009	14,009
1:00 AM	13,559			
2:00 AM	15,584	15,584		
3:00 AM	18,894			
4:00 AM	22,594	22,594	22,594	
5:00 AM	26,050			
6:00 AM	28,857	28,857		
7:00 AM	30,806			
8:00 AM	31,852	31,852	31,852	31,852
9:00 AM	32,081			
10:00 AM	31,677	31,677		
11:00 AM	30,888			
12:00 PM	29,996	29,996	29,996	
1:00 PM	29,285			
2:00 PM	29,002	29,002		
3:00 PM	29,334			
4:00 PM	30,367	30,367	30,367	30,367
5:00 PM	32,056			
6:00 PM	34,194	34,194		
7:00 PM	36,379			
8:00 PM	37,978	37,978	37,978	
9:00 PM	38,100			
10:00 PM	35,557	35,557		
11:00 PM	28,836			
$\bar{c}_{time\ prop}$	28,664	28,472	27,799	25,409

Table S3. Evaluation of the average concentrations of RV_Sub in case of 24-h flow proportional composite sampling mode.

time	1 sample every hour			1 sample every 2 h			1 sample every 4 h			1 sample every 8 h		
(h)	c_i	flow rate	sample volume	c_i	flow rate	sample volume	c_i	flow rate	sample volume	c_i	flow rate	sample volume
	(ng/L)	(m ³ /h)	(mL)	(ng/L)	(m ³ /h)	(mL)	(ng/L)	(m ³ /h)	(mL)	(ng/L)	(m ³ /h)	(mL)
12:00 AM	14,009	16.2	32.4	14,009	16.2	32.4	14,009	16.2	32.4	14,009	16.2	32.4
1:00 AM	13,559	18.1	36.2									
2:00 AM	15,584	19.9	39.8	15,584	19.9	39.8						
3:00 AM	18,894	20.6	41.3									
4:00 AM	22,594	19.2	38.4	22,594	19.2	38.4	22,594	19.2	38.4			
5:00 AM	26,050	17.8	35.5									
6:00 AM	28,857	19.0	38.0	28,857	19.0	38.0						
7:00 AM	30,806	23.7	47.3									
8:00 AM	31,852	30.2	60.5	31,852	30.2	60.5	31,852	30.2	60.5	31,852	30.2	60.5
9:00 AM	32,081	36.1	72.2									
10:00 AM	31,677	39.2	78.4	31,677	39.2	78.4						
11:00 AM	30,888	39.2	78.5									
12:00 PM	29,996	37.3	74.5	29,996	37.3	74.5	29,996	37.3	74.5			
1:00 PM	29,285	35.1	70.1									
2:00 PM	29,002	33.7	67.4	29,002	33.7	67.4						
3:00 PM	29,334	32.9	65.8									
4:00 PM	30,367	31.5	62.9	30,367	31.5	62.9	30,367	31.5	62.9	30,367	31.5	62.9
5:00 PM	32,056	28.3	56.5									
6:00 PM	34,194	23.9	47.8	34,194	23.9	47.8						
7:00 PM	36,379	20.9	41.8									
8:00 PM	37,978	22.2	44.4	37,978	22.2	44.4	37,978	22.2	44.4			
9:00 PM	38,100	27.0	54.1									
10:00 PM	35,557	27.9	55.7	35,557	27.9	55.7						
11:00 PM	28,836	16.6	33.2									
$\bar{c}_{flow\ prop}$		29,525			29,443			29,000			27,543	

Table S4. Evaluation of the average concentrations of RV_Sub in case of 24-h volume proportional composite sampling mode.

	24 samples a day	12 samples a day	6 samples a day	3 samples a day
	$V_{vp} = 26.4 \text{ m}^3$	$V_{vp} = 52.9 \text{ m}^3$	$V_{vp} = 105.8 \text{ m}^3$	$V_{vp} = 211.5 \text{ m}^3$
time	C_i	C_i	C_i	C_i
(h)	(ng/L)	(ng/L)	(ng/L)	(ng/L)
1:29 AM	14,310			
2:48 AM	18,176	18,176		
4:07 AM	23,020			
5:35 AM	27,784	27,784	27,784	
6:54 AM	30,652			
7:54 AM	31,787	31,787		
8:44 AM	32,091			
9:27 AM	31,964	31,964	31,964	31,964
10:08 AM	31,588			
10:48 AM	31,063	31,063		
11:29 AM	30,452			
12:11 PM	29,844	29,844	29,844	
12:55 PM	29,331			
1:41 PM	29,032	29,032		
2:28 PM	29,073			
3:16 PM	29,540	29,540	29,540	29,540
4:06 PM	30,508			
4:59 PM	32,023	32,023		
5:59 PM	34,157			
7:11 PM	36,739	36,739	36,739	
8:24 PM	38,264			
9:24 PM	37,480	37,480		
10:21 PM	33,768			
11:59 PM	16,339	16,339	16,339	16,339
$\bar{C}_{volume \text{ prop}}$	29,541	29,314	28,702	25,948

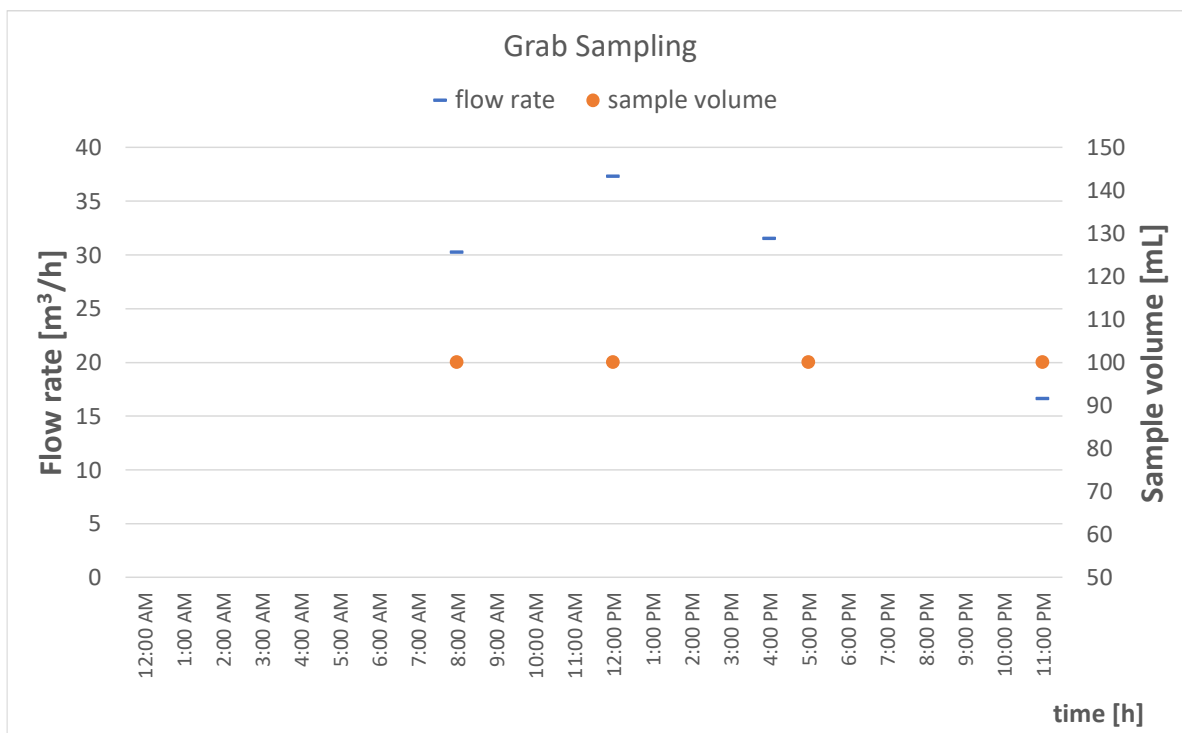


Figure S1. Flow rate profile (dashes) and withdrawn volume (full circles) for each grab sample. Note the volume is always the same at the defined instants of time in case of four grab samples (i.e. 8:00 am; 12:00 pm; 5:00 pm and 11:00 pm).

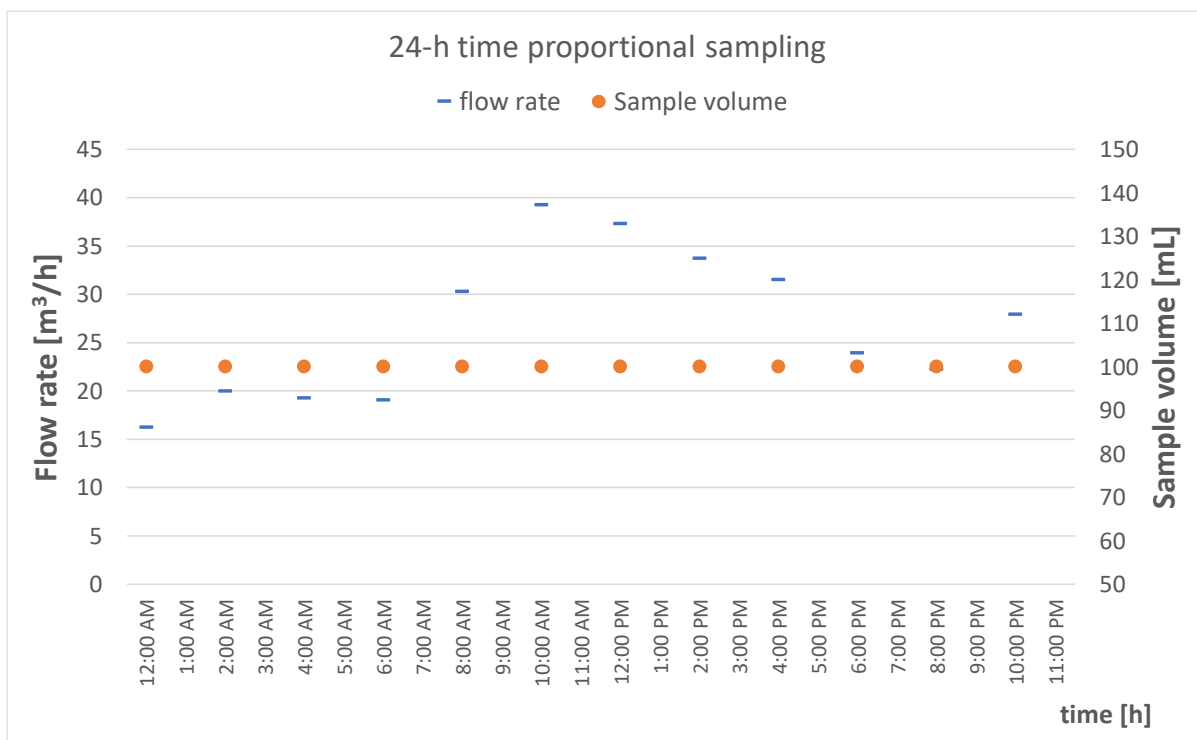


Figure S2. Flow rate profile (dashes) and volume withdrawn (full circles) for the 12 water samples. Also in this case, the sample volume is constant. Samples are taken every 2 hours.

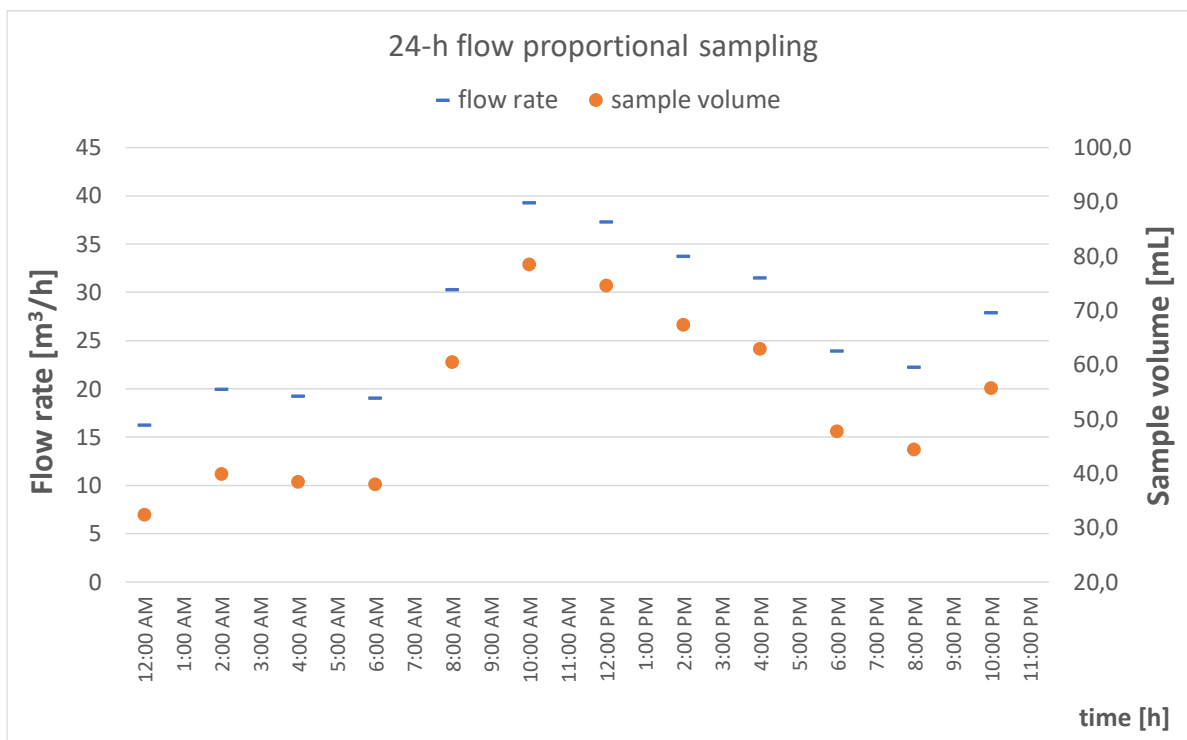


Figure S3. Flow rate profile (dashes) and volume withdrawn (full circles) for the 12 water samples. The volume taken for the different samples is proportional to the flow rate at the sampling time. Samples are taken every 2 hours.

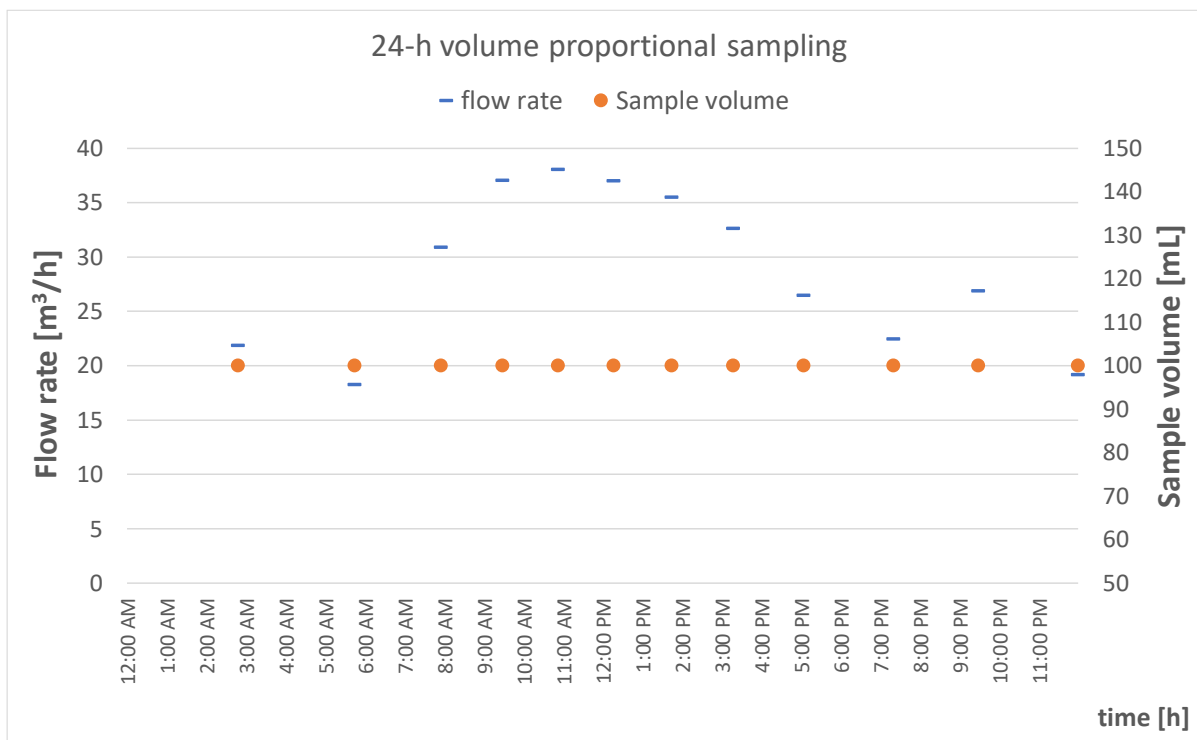


Figure S4. Flow rate (dashes) profile and volume withdrawn (full circles) for the 12 water samples. The volume taken for the different samples is constant. Samples are taken when $\frac{1}{12}Q_{\text{daily}}$ is passed at the sampling point.