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Supplementary Information

Tracer tests and uncertainty propagation to design monitoring setups in view of pharmaceutical mass flows analyses in sewer systems

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S1 Calibration of tracer concentration measurement by fluorescence analyses

From every sample a standard curve was produced by a series of 6 different volume ratios of sample and standard solution (0.1mg/l uranine solution). The total volume in each cavity of the 96 well plate was always the same (230µl). The proportional fluorescence of the sample and the solvent of the standard solution (Milli-Q water) was then subtracted from the standard curve (see Table S1). This method overcame background noise and quenching effects in the complex and dynamic matrix of the hospital wastewater. To each cavity of the well plate 30µl of a 0.1mol/l (ph 7.5) HEPES solution was added to harmonize the pH of each measurement.

Table S1: Composition of a standard series for measuring one sample on a 96 well plate

No. sample standard series	Volume sample	uranine standard		Volume HEPES buffer	uranine concentration[a]
		Volume	Mass		
	µl	µl	ng	µl	µg/l
1	190	10	1	30	5
2	160	40	4	30	20
3	130	70	7	30	35
4	100	100	10	30	50
5	70	130	13	30	65
6	40	160	16	30	80

[a] Concentration related to volume without HEPES buffer

S2 Results of the tracer calibration procedure

The results of the calibration procedure for the first day of the respective tracer tests are depicted in Figure S2. The latter shows that the fluorescence intensity of the 24h-composite samples gained during the tracer test is on the lower end of the calibration curve.

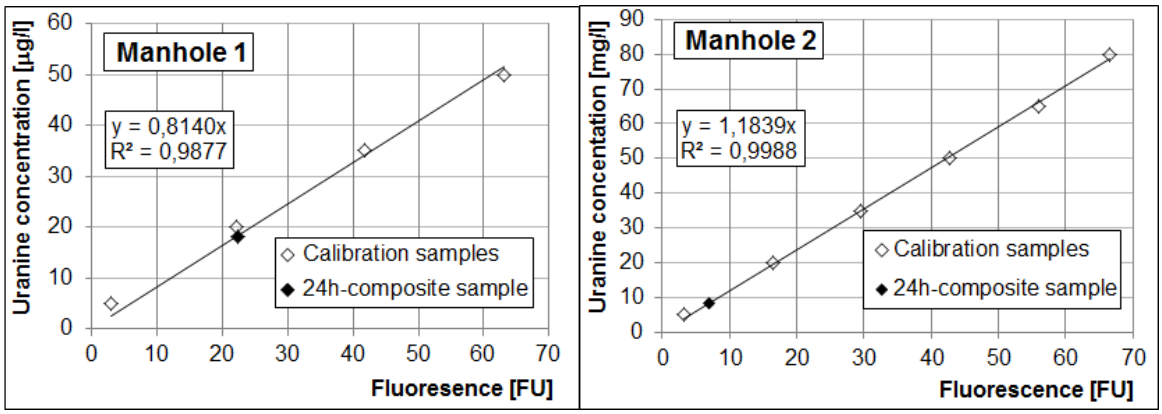

Figure S1: Fluorescence calibration line and fluorescence of 24h-composite sample from the first days of tracer test in manhole 1 and manhole 2