



Tracing of micropollutants sources in urban receiving waters based on sediment fingerprinting

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ABSTRACT

Micropollutants in urban receiving waters typically origin from many sources, such as wastewater effluents, combined sewer overflows, stormwater discharges and diffuse inputs from arable land. To design effective pollution management strategies in watersheds with mixed land use, we suggest a screening method that pinpoints the origin of pollutants and identifies relevant flow paths. This takes advantage of the fact, that medium polar micropollutants sorb to sediments. The core of the approach is an expert system based on Bayesian probabilities that updates the experts' knowledge on potential micropollutant sources in a catchment using monitoring data from a single sediment sample. We are able to demonstrate the feasibility of the approach on a real-world case study in the Mönchaltorfer Aa catchment, where micropollutants most probably origin from wastewater and stormwater influents and not from agriculture. Limitations arise from the analytical cost and labour-intensive analysis, which limits the number of samples and, in-screening mode, only provides qualitative information on the observed compounds.

KEYWORDS

Bayesian inference, Expert system, Polar organic micropollutants, Sediment fingerprinting, Receiving water quality