Methodologies and tools for the estimation of mass fluxes of xenobiotics at different scales in urban areas

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Abstract In the context of sustainable urban water management, the estimation of mass fluxes plays a fundamental role in the assessment of the anthropogenic impacts of xenobiotics in urban water systems. Numerous well-known methods exist for parameter estimation and process identification in aquifers and surface waters. Thus, the need has evolved for appropriate applicable methods especially for urban areas. This article provides an overview of new and known methods that are applied in our investigations for estimating fluxes within and between different compartments which are influenced by urban sewer systems. Multiple-scale approaches combining measuring and modelling methods to estimate the mass fluxes on a large (>100 km²) and medium (<10 km²) scale are discussed. Additionally, methods are considered that allow the quantification of interaction processes between the compartments on a small (<1000 m²) scale.

Key words urban areas; xenobiotics; modelling; integral pumping test; passive sampler