

Micropollutants in the urban water cycle: Oxidative water treatment as a solution?

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The problem of micropollutants in the aquatic environment is one of the big challenges of the 21st century. With about 100'000 chemicals registered in the European Union, with 5000 of them produced in high quantities of > 100t/a, it may not be astonishing that many of them are found in water resources, wastewaters and drinking waters with modern analytical techniques. In the urban water cycle, there are several strategies, such as (i) source control, (ii) enhanced wastewater treatment and (iii) polishing drinking water treatment to minimize the impact of chemicals in the aquatic environment and for human health. One of the mitigation strategies for micropollutants in water treatment consists of the application of oxidants. However, with typical oxidant doses applied in water treatment, complete mineralization of micropollutants cannot be achieved and therefore knowledge on kinetics and mechanisms of the corresponding reactions is necessary. These studies can be combined with the measurement of toxicological endpoints to assess the overall gain of oxidation processes.

The lecture will provide an overview over the micropollutant problem in the urban water cycle and then focus on oxidative transformation processes of micropollutants including reaction kinetics, mechanisms and possibilities for toxicological assessments.