

Are we about to upgrade wastewater treatment for removing organic micropollutants?

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Abstract Activated sludge treatment allows only for a partial removal of micropollutants, mainly via sorption and biological degradation. Ozonation and activated carbon filtration are processes bearing the potential to drastically reduce the micropollutant load discharged to the environment after (centralized) biological treatment. The estimated total costs between 0.05 and 0.20 €/m³ treated water (depending on plant size and effluent DOC content) represent only a small fraction of the total costs for urban wastewater management and are therefore considered feasible. Full scale testing are currently planned or under way with the aim to a) confirm this cost estimation and b) to better document the benefit by quantification of the effect removal and by documenting the impact on the ecology of receiving waters. Ozonation would have the additional advantage of achieving partial disinfection. Another issue currently being intensively studied are the byproducts formed during ozonation and their toxicity. Evidence is needed, that the formed ozonation byproducts are either harmless or easily degradable. Since a 5% to 20% loss of sewage is occurring due to sewer leakage and combined sewer overflow an improved reduction of micropollutant input to the aquatic environment requires that advanced centralized treatment is complemented with measures taken before discharge into the sewer. Options hereto may be waste design, labeling of compounds according to environmental friendliness or separate treatment of quantitatively significant point sources (e.g. hospital wastewater, nursery homes, industrial wastewater).

Keywords Micropollutants; xenobiotics; advanced wastewater treatment; ozonation; activated carbon.