

Influencing parameters for the operation of an MBR with respect to the removal of persistent organic pollutants

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ABSTRACT

Membrane bioreactors (MBR) are increasingly considered for decentralized waste water treatment. In this study, the operation parameters on a pilot MBR were optimized, and the removal of organic pollutants such as pharmaceutical residues was studied. During the first phase of the research project, two membrane materials (polyethersulfone, polysulfonamide) were chosen for the manufacturing of plate modules and operation in a pilot plant, which was installed in a municipal wastewater treatment plant (20.000 p.e.). Operation conditions were optimized with regard to flux, filtration time, aeration rate, sludge age, total suspended solids, etc. Both membranes were ultrafiltration membranes and therefore achieved a very good retention with regard to particles (microorganisms and turbidity). In comparison to the conventional wastewater treatment process the system performance with regard to COD removal was higher in the MBR. Analysis of samples taken from the MBR process tank and the filtrate of both membrane types showed an improved elimination of some specific organic pollutants. Due to the promising results, more process based MBR studies are encouraged.

Keywords: Membrane bioreactor; Persistent organic pollutants; Operation parameters

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