Modelling as a tool when interpreting biodegradation of micro pollutants in activated sludge systems - DTU Orbit (14/12/2018)

Modelling as a tool when interpreting biodegradation of micro pollutants in activated sludge systems

The aims of the present work were to improve the biodegradation of the endocrine disrupting micro pollutant, bisphenol A (BPA), used as model compound in an activated sludge system and to underline the importance of modelling the system. Previous results have shown that BPA mainly is degraded under aerobic conditions. Therefore the aerobic phase time in the BioDenitro process of the activated sludge system was increased from 50% to 70%. The hypothesis was that this would improve the biodegradation of BPA. Both the influent and the effluent concentrations of BPA in the experiment dropped significantly after increasing the aerobic time. From simulations with a growth-based biological/physical/chemical process model it was concluded that although the simulated effluent concentration of BPA was independent of the influent concentration at steady-state, the observed drop in effluent concentrations probably was caused by either a larger specific biomass to influent BPA ratio, improved biodegradation related to the increased aerobic phase time, or a combination of the two. Thereby it was not possibly to determine if the increase in aerobic phase time improved the biodegradation of BPA. The work underlines the importance of combining experimental results with modelling when interpreting results from biodegradation experiments with fluctuating influent concentrations of micro pollutants.

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