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ANALYSIS OF THE OPERATING CONDITIONS IN THE TREATMENT OF COSMETIC WASTEWATER BY SEQUENCING BATCH REACTORS

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Abstract

The biological removal of organic matter from a cosmetic wastewater by sequencing batch reactors has been optimized by analyzing the influence of the hydraulic retention time as well as the inclusion of anoxic and/or aerobic stages in the process sequence. Hydraulic retention time of 5 d led to the highest total organic carbon and chemical oxygen demand removal regardless the sequence used. Although a completely aerobic sequence can be used for cosmetic wastewaters treatment, the alternation of anoxic and aerobic stages significantly improved the organic matter and nutrients removal. Total organic carbon and chemical oxygen demand removal efficiencies around 67 and 74 %, respectively, were achieved with a sequence which includes two anoxic stages of one hour at the beginning and the end of the cycle. Additionally, nutrients were satisfactorily removed when anoxic stages were included along the cycle, reaching nitrogen and phosphorous removals higher than 97 and 70 %, respectively. Under these conditions the flocs showed a moderate density, good mechanical stability and settleability.

Key words: Biological treatment, cosmetic wastewater, hydraulic retention time, reactor sequence, sequencing batch reactor

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