Laboratory operation of MBR and SBR models with selected inhibitors of nitrification

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ABSTRACT

Presented contribution is focused on long-term laboratory operation (11 mon) of membrane bio-reactor (MBR) and sequencing batch reactor (SBR) operated with selected organic compounds that were supposed to be strong inhibitors of nitrification process. The first term of operation with selected inhibitor diphenylamine (DPA), the second term of operation with 4-amino-diphenylamine (ADPA) and the third term of operation with benzothiazole (BT) were tested. The effect of two different sludge ages and the different kinds of treatment models was examined. In SBR model, the nitrification process occurred only to the first step (high NO₂–N concentrations) with tested inhibitors DPA and ADPA. At BT concentrations in substrate in the range of 2–6 mg/l, slender nitrification was observed and high NH₄–N effluent concentrations were measured. On the other hand, in the MBR model the nitrification was completed to the second step (high NO₃–N concentration) almost during the whole period of operation.

Keywords: Benzothiazole; Nitrification; MBR; Inhibitors of nitrification; Industrial wastewater; Diphenylamine

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