Thesis Title Optimum Condition for Biological Removal of Nitrogen and Phosphorus in a Sequencing Batch Reactor

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Abstract

The objective of this study was to investigate the optimum condition for biological removal of Nitrogen and Phosphorus in a sequencing batch reactor (SBR). Two lab scale reactors of 10 litres in volume were used to treat synthetic wastewater. The operating cycle time were 8,12 and 24 hours. The MLSS concentration was controlled in the range of 2100-2400 mg/L. The organic loading rate in reactor No.1 and No.2 were in the range of 0.072-0.202 Kg.COD/Cubicmetre.day and 0.141-0.392 Kg.COD/Cubic metre.day and the influent SCOD were 100 and 200 mg/L , respectively. It was found that the removal efficency of SCOD and TN could be reached 87.5-97.3 % in every cycle time in both reactor. Phosphorus could be removed well only in reactor No.2 at operating time of 8 and 12 hours.

Domestic wastewater of Chiang Mai University was also applied at cycle time of 8 hours and MLSS concentration were in the range of 2200-2400 mg/L and 2900-3100 mg/L and the average organic loading were in the range of 0.093-0.260 Kg.COD/Cubic metre.day and 0.238 Kg.COD/Cubic metre.day (in reactor No.1 and reactor No.2 ,respectively).It was found that the removal efficency of SCOD and TN were 74.5-82.7 % and 86.2-86.9 % . The reduction of Phosphorus was not noticeable in this condition.