Comparison of chloride effect between A²O and SBR processes treating domestic wastewater

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**ABSTRACT**

The synthetic wastewater as influent containing different chloride concentrations (150, 500, 1,000, 1,500, 2,500, and 5,000 mg/L) was fed to sequencing batch reactor (SBR) and anaerobic/anoxic/oxic (A²O) reactor to investigate the effect of influent chloride concentration on organics and nutrients removal. With the chloride concentration increasing from 150 to 5,000 mg/L, the chemical oxygen demand (COD) removal efficiency decreased linearly from 96.4 and 94.8% to 48.4 and 63.0% for SBR and A²O process, respectively. No significant effect of influent chloride concentration on nitrification process was observed in A²O reactor, while a sharp increase of effluent NH₃-N concentration to 2.4 mg/L was detected in SBR process when the influent chloride concentration increased to 5,000 mg/L. In terms of phosphorus removal, the removal efficiency for total phosphorus (TP) started to decrease when 1,500 mg/L chloride was fed into the influent for both processes. However, more severe effect was observed in A²O reactor, without any phosphorus removal at 2,500 and 5,000 mg/L chloride concentrations. When the chloride concentration increased from 1,500 to 5,000 mg/L in SBR, the TP removal efficiency gradually decreased from 86.0 to 57.5%.

**Keywords:** Anaerobic/anoxic/oxic reactor; Biological nutrients removal; Chloride effect; Organics removal; Sequencing batch reactor; Wastewater treatment

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