

# Performance of integrated anaerobic/aerobic sequencing batch reactor treating poultry slaughterhouse wastewater

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## Abstract

The present study investigates the performance of a new configuration laboratory-scale bioreactor comprising of two regimes (anaerobic & aerobic) in one reactor with physical separation and it is known as integrated anaerobic/aerobic sequencing batch reactor (IAASBR). The IAASBR is designed for treating high-strength wastewater such as poultry slaughterhouse wastewater (PSW) along with the simultaneous removal of organic carbon and ammoniacal nitrogen (NH<sub>3</sub>-N). The IAASBR exhibits that the average removal efficiency of total COD (TCOD), soluble COD (SCOD), NH<sub>3</sub>-N, fat, oil & grease (FOG), and total suspended solids (TSS) were (97% ± 2%), (95% ± 3%), (98% ± 1.3%), (90% ± 11%), and (96% ± 3%) respectively. The laboratory comparison test revealed that IAASBR configuration has enhanced the sludge settleability for aerobic SBR more than the conventional SBR or settling tank. Furthermore, IAASBR could tolerate the shock loading occurrence, handle organic loading rate (OLR) up to 4.5 kg (TCOD) m<sup>-3</sup> d<sup>-1</sup> and produce a high-quality effluent complying with Malaysian standards of industrial's effluents.