Increasing the effectivity of pulp bleching prosess effluent treatment by up-flow anaerobic sludge blanket (UASB) and mobilized activated sludge reactors

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Abstrak

Treatment of pulp bleaching effluent using Upflow Anaerobic Sludge Blanket (UASB) and Suspended Carrier Biofilm (SCB) systems have been carried out. Upflow Anaerobic Sludge Blanket (UASB) and Suspended Carrier Biofilm (SCB) reactors were run on the Hydraulic. Retention Time (HRT) of 12 hours, respectively. Micronutrient solution containing some traces elements was added into feed wastewater of UASB reactor to accelerate the growth of granular sludge. Sludge characteristics of UASB and activeted sludge reactors were observed and analyzed. Settling rate of granular reactor was also measured. Effluent of UASB reactor was treated further in Susoended Carrier Biofilm (SCB) reactor. Concentration of COD, TSS and AOX parameters both influent and effluent of UASB reactor as well as suspended carrier biofilm (SCB) reactor were analyzed. Result revealed that UASB reactor run on the Hydraulic Retention Time (HRT) of 12 hours could remove COD up to 90 % and AOX up to 84 %. Addition of micronutrient solution has accelerated the growth of granular sludge. Dark-brownesh color of granular sludge with the diameter of 1-4 mm having settling rate of 70-120 m/hr has been formed. SCB reactor as post-treatment could remover COD of 85%, TSS of 73 % and AOX of 76%. Sequential UASB and SCB reactor could increase the effectivity of pulp and paper mill wastewatertreatment with the removal of dissolved and suspended organic pollutant more than 94%.