

Biological removals of phenol, cyanide, thiocyanate and ammonia from cokes wastewater by anoxic-oxic activated sludge treatment

김영모, 박동희¹, 이대성², 박종문^{1,*}
포항공과대학; ¹차세대바이오환경기술연구센터;
²경북대학교 환경공학부
(jmpark@postech.ac.kr*)

A combined system consisting of sequentially arranged suspended growth reactors under anoxic and aerobic environments were used to treat cokes wastewater containing phenol, cyanide, thiocyanate and ammonia. The total hydraulic retention time (HRT) of the two-stage reactor was changed for the study as variable parameter. The concentrations of chemical oxygen demand (COD), phenol, thiocyanate (SCN⁻), total cyanide (TCN), total nitrogen (TN) and ammonia nitrogen (NH₄⁺ -N) in the wastewater ranged between 1200–2025 mg/L, 140–220 mg/L, 360–500 mg/L, 9–16 mg/L, 180–270 mg/L and 90–120 mg/L, respectively. Interestingly, 80% COD, 98% phenol, 99% SCN⁻, 80% TCN, 80% TN and 99% NH₄⁺ -N were removed at 7 d of total HRT and 5 of recycle ratio. Most of TCN and COD were removed in anoxic stage, whereas thiocyanate was completely removed in aerobic stage. Nitrification and denitrification were successfully taken place in aerobic and anoxic stages, respectively.