

Pretreatment of sewage sludge by enzymatic and ozonation degradation

김정래, 심상준*
성균관대학교

(simsj@yurim.skku.ac.kr*)

Excess sludge resulting from municipal and industrial wastewater treatment is becoming a serious issue, owing disposal lands and strict regulations on environmental protection. Pretreatment processes have been developed in order to improve sludge handling and disposal. Pretreatment will change the floc structure and enhance the solubility of sludge solids. The dissolved components can either be used to improve the efficiency of a subsequent biological degradation process or for the recycling of useful components. we introduced biological pretreatment to investigate the effect of enzyme addition such as protease, carbohydrase, and lipase on improvement of sludge treatment efficiency. Among protease, carbohydrase, and lipase, protease showed the best effect to enhance the sludge treatment efficiency. Compared to digestion of sludge without pretreatment, digestion of sludge processed by ozone and enzyme was more efficient, and sludge pretreated with both ozone and enzyme resulted in better digestion than that of sludge pretreated by ozone alone. We optimized the amount of enzyme and the amount of ozone for the successful sludge degradation. We found that as more enzyme is used, the higher hydrolysis efficiency was shown, thus the SCOD of the sludge after enzyme and ozone pretreatment was increased.