FACTORIAL DESIGN AND OPTIMIZATION OF LEACHATE TREATMENT USING PERSULFATE OXIDATION

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Abstract

The current study aimed to evaluate the performance of sodium persulfate to treat stabilized landfill leachate. Factorial design with response surface methodology (RSM) was used to evaluate the interaction between operational conditions, such as persulfate dosage, pH, and reaction time, to obtain the optimum conditions. The two quadratic models obtained by RSM for COD and NH_3-N removal proved to be significant models ($P<0.0001$). The optimum conditions obtained included a reaction time of 60 min, 4.97g $S_2O_8^{2-}$, dosage and pH 7. The experimental results were corresponding well with predicted models (COD and NH_3-N removal rates of 45%, and 47%, respectively. The results revealed that persulfate oxidation is an efficient for pretreatment of stabilized landfill leachate.

Author keywords

Activation; Landfill leachate; Oxidation; Persulfate