Study on pretreatment of landfill leachate by potassium ferrate

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Received 12 July 2012; Accepted 22 April 2013

ABSTRACT

Landfill leachate is nonbiodegradable because it contains many kinds of pernicious and toxic components. Potassium ferrate is used as a pretreatment agent in the experiments for it is a kind of oxidant that can be used to oxidize and disintegrate lots of organics. However, with respect to the treatment effect of landfill leachate, several important parameters should be studied. Such parameters included (a) the dosage of potassium ferrate, (b) the pH value, (c) the reaction time, (d) the concentration of landfill leachate, and (e) the dosage of stabilizing agent. Finally, the optimum conditions for the treatment of landfill leachate were confirmed. The conditions included (a) the dosage of potassium ferrate was 6 g/L, (b) pH value was 10, (c) the reaction time was 30 min, and (d) the dosage of stabilizing agent—sodium silicate was 4 g/L. After treated under those conditions, the COD\textsubscript{Cr} removal efficiency was 36% and UV-254 value decreased from 10 to 6.64 cm\textsuperscript{-1}.

Keywords: Landfill leachate; Potassium ferrate; Oxidizing treatment; COD\textsubscript{Cr} removal efficiency; UV-254

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