

The Effectiveness of Pretreatment Methods on COD and Ammonia Removal from Landfill Leachate

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Abstract : The goal of this experiment is to evaluate the effectiveness of different leachate pre-treatment options in terms of COD and ammonia removal. This research focused on the evaluation of physical-chemical methods for pre-treatment of leachate that would be effective and rapid in order to satisfy the requirements of the sewer discharge by-laws. The four pre-treatment options evaluated were: air stripping, chemical coagulation, electro-coagulation and advanced oxidation with sodium ferrate. Chemical coagulation reported the best COD removal rate at 43%, compared to 18 % for both air stripping and electro-coagulation, and 20 % for oxidation with sodium ferrate. On the other hand, air stripping was far superior to the other treatment options in terms of ammonia removal with 86 %. Oxidation with sodium ferrate reached only 16 %, while chemical coagulation and electro-coagulation removed less than 10 %. When combined, air stripping and chemical coagulation removed up to 50 % COD and 85 % ammonia.

Keywords : leachate pretreatment, air stripping, chemical coagulation, electro-coagulation, oxidation

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