



Use of combination of coagulation and adsorption process for the landfill leachate treatment from Casablanca city

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Received 12 January 2017; Accepted 20 March 2017

ABSTRACT

This article presents a combination of coagulation–flocculation and powder activated carbon (PAC) adsorption as a treatment process for landfill leachate. Leachates were collected from a municipal solid waste landfill in Mediouna site, Casablanca city. Ferric chloride (FeCl_3) is used here as a coagulant to study the optimum conditions for the removal of chemical oxygen demand (COD), colour, total suspended solids (TSS) and turbidity in jar tests. This coagulant showed the highest removal efficiency in terms of COD (62.5%), turbidity (92.5%), colour (80%) and least sludge volume generation (30% v/v) for an optimum coagulant dose of $12 \text{ g Fe}^{3+} \text{ L}^{-1}$. Combining coagulation with adsorption process onto PAC enhances the removal of COD, turbidity and colour reduction by a 77%, a 99% and a 99.7%, respectively. These results show that coagulation-adsorption could be used as a promising hybrid process for the treatment of landfill leachates.

Keywords: Coagulation; Flocculation; Adsorption; Jar-Test; Landfill leachate

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Presented at the First International Symposium on Materials, Electrochemistry and Environment (CIMEE 2016), 22–24 September 2016, Tripoli, Lebanon