



Treatment of lixivate from Jebel Chakir-Tunis by electrocoagulation

E.S. Bel Hadj Hmida^{a*}, D. Mansour^a, N. Bellakhal^{a,b}

^aLaboratoire de Chimie Analytique et d'Électrochimie, Département de chimie, Faculté des Sciences de Tunis, Campus Universitaire, 2092 Tunis El Manar, Tunisie

Tel. +21698471276; fax +21670852817; emna.selmane-belhadj@laposte.net

^bDépartement de Chimie et de Biologie Appliquées, Institut National des Sciences Appliquées et de Technologie (INSAT), B.P. No. 676, 1080 Tunis Cedex, Tunisie

Tel. +2169855049; email: nizar_bellakhal@yahoo.fr. Tel. +21622495021; email: dorssafi@yahoo.fr

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ABSTRACT

The removal of organic pollutants from lixivate was experimentally studied using direct current electrocoagulation (EC) with aluminum electrodes. The effects of operating parameters such as current density, initial pH and electrolysis time were further studied in order to optimize conditions for the treatment of lixivate. Two different electrode connections (monopolar and bipolar) were examined for choosing the best alternative in order to intensify the performance of the process. It was observed that high removal capacity was better for monopolar connection than for bipolar connection. The subsequence of EC tests performed with Al electrodes showed that optimal operating conditions are an initial pH of 6; a current density 15 A cm^{-2} and EC time of 90 min. Treatment reduces chemical oxygen demand (COD) to 94%. The color removal efficiency reached 96%. Cost estimation was adopted and presented as well. Total operating costs for monopolar connection was evaluated at about $43.315 \text{ US\$ m}^{-3}$ for the optimal operating conditions. These findings might be useful in order to treat lixivate contaminated groundwater, rivers and grounds.

Keywords: Lixivate; Electrocoagulation; Electrode of aluminum; Chemical oxygen demand; Decolorization

*Corresponding author