

Accepted Manuscript

Title: Treatment of heavy metals –polluted industrial wastewater by ballasted electroflocculation the new water treatment process

Authors: Khaled Brahmi, Wided Bouguerra, Soumaya Harbi, Elimame Elaloui, Mouna Loungou, Béchir Hamrouni



PII: S0304-3894(17)30873-7
DOI: <https://doi.org/10.1016/j.jhazmat.2017.11.051>
Reference: HAZMAT 19022

To appear in: *Journal of Hazardous Materials*

Received date: 17-7-2017
Revised date: 31-10-2017
Accepted date: 26-11-2017

Please cite this article as: Khaled Brahmi, Wided Bouguerra, Soumaya Harbi, Elimame Elaloui, Mouna Loungou, Béchir Hamrouni, Treatment of heavy metals –polluted industrial wastewater by ballasted electroflocculation the new water treatment process, *Journal of Hazardous Materials* <https://doi.org/10.1016/j.jhazmat.2017.11.051>

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***Treatment of heavy metals -polluted industrial wastewater by ballasted electroflocculation
the new water treatment process***

Khaled Brahmi ^{a*}, Wided Bouguerra ^a, Soumaya Harbi ^a, Elimame Elaloui ^b, Mouna Loungou ^c, Béchir

Hamrouni ^a

^a U. R Traitement et Dessalement des Eaux, Département de Chimie, Faculté des Sciences de Tunis, 2092 Manar II, Tunisie. Université de Tunis El Manar Tel. / Fax: +21671871282.

^b U. R Matériaux, Environnement et Energie, Département de Chimie, Faculté des Sciences de Gafsa, Campus Universitaire Sidi Ahmed Zarroug -2112 Gafsa, Tunisie.

^c Groupe Chimique Tunisien, Usine de M'Dhilla Gafsa, Km. 14 Route M'Dhilla- 2100 Gafsa.

Corresponding author E-mail: khaled.brahmi@gmail.com

H I G H L I G H T S

- ❖ Investigation of BEF operating parameters was carried out.
- ❖ BEF was proved to be a highly efficient method for the treatment of MWW.
- ❖ BEF is a suitable to remove heavy metals pollution.
- ❖ Heavy metals compounds are well removed (>90%).
- ❖ BEF is sensitive for the accurate adjustments of polymer and sand doses.

A B S T R A C T

This laboratory study investigated the parameters efficiency of the new technology: ballasted electro-flocculation (BEF) using aluminum (Al) electrodes to remove cadmium and zinc from industrial mining wastewater (MWW). The principle of the BEF process is based on the use of micro-sand and polymer together to increase the weight of the flocs and the rate at which they settle is radically changing the electrocoagulation-electroflocculation settling methodology. Based on the examination of the operation parameters one by one, the best removal percentage was obtained at a current intensity of 2 A, a the flow rate of 20 L/h, a micro-sand dose of 6 g/L, a polyéthylèneimine (PEI) polymer dose of 100 mg, the contact

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