Desalination and Water Treatment
www.deswater.com
1944-3994/1944-3986 © 2012 Desalination Publications. All rights reserved
doi: 10.1080/19443994.2012.677405

46 (2012) 1–9
August

Taylor & Francis
Taylor & Francis Group

Environmental remediation of thorium(IV) from aqueous medium onto *Cellulosimicrobium cellulans* isolated from radioactive wastewater

Khalid Z. Elwakeel[a,*], Hamdy A. El-Sadik[b], A.S. Abdel-Razek[c], Mokhtar S. Beheary[a]

[a]*Environmental Science Department, Faculty of Science, Port-Said University, Port-Said, Egypt*
Tel. +20 161694332; email: Khalid_elwakeel@yahoo.com
[b]*Egyptian Water and Wastewater Regulatory Agency, Masraweya District, 5th Community, New Cairo city, Egypt*
[c]*Hot Laboratories and Waste Management Centre, Atomic Energy Authority, Cairo, Egypt*

Received 20 July 2011; Accepted 6 March 2012

ABSTRACT

Cellulosimicrobium cellulans (*C. cellulans*) was isolated from radioactive wastes and identified by Biological examination. The investigation of the removal of thorium from aqueous solutions was carried out using the isolated living and dead *C. cellulans*. The biosorption of thorium was studied using different thorium ion concentrations. Electron microscopic examinations of both living and dead *C. cellulans* before and after biosorption of thorium ions were done to locate the sites of metal ion biosorption and to find the difference between living and dead bacterial cells. The obtained results showed that living and dead *C. cellulans* could sorp 151.94 and 220.56 mg/g, respectively. The kinetic behavior and biosorption isotherm were defined. These data kinetically followed the pseudo-second-order model and indicated a good fitness with the Langmuir model.

Keywords: Biosorption; *Cellulosimicrobium cellulans*; Thorium

*Corresponding author.