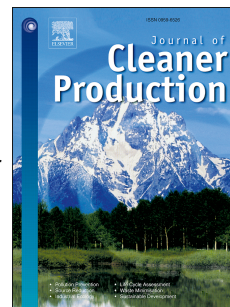


Accepted Manuscript

Effects of the presence of organic matter on the removal of arsenic from groundwater

Adriana Saldaña-Robles, Cesar E. Damian-Ascencio, Ricardo J. Guerra-Sanchez, Alberto L. Saldaña-Robles, Noe Saldaña-Robles, Armando Gallegos-Muñoz, Sergio Cano-Andrade



PII: S0959-6526(18)30474-8

DOI: [10.1016/j.jclepro.2018.02.161](https://doi.org/10.1016/j.jclepro.2018.02.161)

Reference: JCLP 12108

To appear in: *Journal of Cleaner Production*

Received Date: 12 September 2017

Revised Date: 13 February 2018

Accepted Date: 15 February 2018

Please cite this article as: Saldaña-Robles A, Damian-Ascencio CE, Guerra-Sanchez RJ, Saldaña-Robles AL, Saldaña-Robles N, Gallegos-Muñoz A, Cano-Andrade S, Effects of the presence of organic matter on the removal of arsenic from groundwater, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.02.161.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Effects of the Presence of Organic Matter on the Removal of Arsenic from Groundwater

Adriana Saldaña-Robles^a, Cesar E. Damian-Ascencio^{b,*}, Ricardo J. Guerra-Sanchez^c, Alberto L. Saldaña-Robles^a, Noe Saldaña-Robles^a, Armando Gallegos-Muñoz^b, Sergio Cano-Andrade^b

^a*Department of Agricultural Engineering, Universidad de Guanajuato, Irapuato, GTO 36500, Mexico*

^b*Department of Mechanical Engineering, Universidad de Guanajuato, Salamanca, GTO 36885, Mexico*

^c*Department of Environmental Sciences, CIATEC, Leon, GTO 37545, Mexico*

Abstract

Arsenic is a natural contaminant present in groundwater mantles which, in high concentrations, causes severe health and environmental problems such as the degradation of human health and the contamination of land used for agriculture during irrigation. Understanding the process of arsenic removal from water contributes to the sustainability of regions where this problem is present. This work presents an experimental study complemented with numerical predictions of the adsorption of arsenic (As(V)) in mini-columns using Granular Ferric Hydroxide (GFH) as adsorbent. The work focuses on the effects of the presence of organic matter, i.e., humic (HA) and fulvic (FA) acids, in a water inflow that is contaminated with As(V). The treatments contain the same concentration of organic matter, the same initial concentration of As(V) of 0.8 mg L^{-1} , and the same amount of GFH of 2 g for the filters. Results show that the samples containing organic matter (HA and FA) show a lower adsorption capacity, a lower breakthrough volume, a lower pH, and a non uniform saturation of the GFH filter. The results suggest the need to include the effects of organic matter in all subsequent analyses of arsenic removal from water because organic matter is always present in real life scenarios. Also, this work provides useful information

*Corresponding author

Email address: cesar.damian@ugto.mx (Cesar E. Damian-Ascencio)

Download English Version:

<https://daneshyari.com/en/article/8097122>

Download Persian Version:

<https://daneshyari.com/article/8097122>

[Daneshyari.com](https://daneshyari.com)