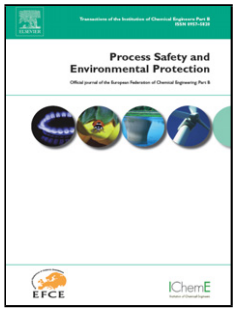

Title: Biodegradation of phenanthrene by a bacterial consortium enriched from Sercina oilfield

Authors: Sami Mnif, Alif Chebbi, Najla Mhiri, Sami Sayadi, Mohamed Chamkha

PII: S0957-5820(17)30028-9
DOI: http://dx.doi.org/doi:10.1016/j.psep.2017.01.023
Reference: PSEP 963

To appear in: *Process Safety and Environment Protection*

Received date: 20-4-2016
Revised date: 20-12-2016
Accepted date: 25-1-2017

Please cite this article as: Mnif, Sami, Chebbi, Alif, Mhiri, Najla, Sayadi, Sami, Chamkha, Mohamed, Biodegradation of phenanthrene by a bacterial consortium enriched from Sercina oilfield.Process Safety and Environment Protection http://dx.doi.org/10.1016/j.psep.2017.01.023

Biodegradation of phenanthrene by a bacterial consortium enriched from Sercina oilfield

Sami Mnif[1,2], Alif Chebbi[1] , Najla Mhiri , Sami Sayadi , Mohamed Chamkha[*]

Laboratory of Environmental Bioprocesses, LMI COSYS-Med, Centre of Biotechnology of Sfax, University of Sfax, PO Box 1177, 3018 Sfax, Tunisia

[1] These two authors contributed equally to this work.

[2] Present Address of Dr. Sami Mnif : *Laboratory of Molecular and Cellular Screening Processes, Centre of Biotechnology of Sfax, University of Sfax, PO Box 1177, 3018 Sfax, Tunisia.*

[*] Corresponding author: Tel: +216 74 871 816; Fax: +216 74 874 452.

e-mail: mohamed.chamkha@cbs.rnrt.tn (M. Chamkha)

ABSTRACT

The phenanthrene (PHE) degradation by a halotolerant bacterial consortium enriched from production water of Sercina oilfield in Tunisia was investigated. The consortium PHMM utilized PHE (200 mg/L), as a sole carbon source, in the presence of a wide range of NaCl concentrations, from 1 to 5% (w/v). The maximum growth rate was obtained at 500 mg/L of PHE. A PHE metabolism was assayed by using FTIR, UV and GC-MS analyses. Results revealed that the consortium PHMM metabolized PHE *via* protochatechuate pathway since intermediates such as naphthalenol and phthalic acid were detected. Phylogenetic analysis