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Advancing membrane technologies for wastewater treatment and reclamation in selected Arab MENA countries

Rashed Al-Sa'ed[a]*, Sami Sayadi[b], Adnan Ghata[c], Hussein Abdel-Shafy[d], Gerhard Schories[e], Marisol Oropeza[e], Antonia Lorenzo[f], Enrico Drioli[g]

[a]*Institute of Environmental and Water Studies, Birzeit University, PO Box 14, Birzeit, Palestine*
Tel. +972 2 298 2070; Fax +972 2 298 2120; email: rsaed@birzeit.edu
[b]*Laboratory of Bio-processes, Centre of Biotechnology of Sfax, BP "K", 3038 Sfax, Tunisia*
[c]*Faculty of Chemical and Petroleum Engineering, Al-Baath University, PO Box 884, Homs, Syria*
[d]*Water Research and Pollution Control Department, NRC, El-Behous Street, Dokki, Cairo, Egypt*
[e]*TTZ Bremerhaven, Environmental Institute, An der Karlstadt 6, 27568 Bremerhaven, Germany*
[f]*Bioazul S.L., Avenida Juan López Peñalver 21, 29590 Campanillas, Málaga, Spain*
[g]*ITM-NRC, Institute on Membrane Technology, University of Calabria, Via P. Bucci 17/C, 87030 Rende, Italy*

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ABSTRACT

Membrane technology (MT) is advancing rapidly as a powerful tool to abate the looming water crisis and reduce quality degradation of water resources in the Mediterranean zone. Despite several national membrane research activities, the general trend in promotion of MT is not satisfying and requires further analysis. This article compiles and critically analyzes the current research efforts in the field of membrane technology in selected Mediterranean and North African countries (MENA). A total of 114 research papers published in peer-reviewed literature from 1980 to 2007 and 22 laboratory- and full-scale membrane-based treatment plants in the MENA countries were used as the database for the analysis introduced in this paper. Results revealed few published scientific works (20% of total articles compiled) and pilot-scale studies on membrane bioreactors where further research and development pertinent to MT cost effectiveness and sustainability are needed. Advancing MT research has particular relevance to the decision makers in facilitating investment allocations and choosing sustainable treatment processes and demonstration projects for both effluent reclamation and reuse.

Keywords: Membrane processes; Wastewater treatment; Membrane bioreactor; MENA countries; Reclamation

* Corresponding author.