Geophysical Research Abstracts
Vol. 20, EGU2018-2102, 2018
EGU General Assembly 2018

Treatment of wastewater from moorish baths by infiltration-percolation process for agricultural reuse in arid regions

Mahmoud Bali
Higher Institute of Sciences and Techniques of Waters, University of Gabès, Tunisia (mahmoud.bali@yahoo.fr)

The scarcity of water resources is one of the major problems in arid regions of Tunisia. Wastewater reuse can contribute to meet a number of water needs for different sectors, particularly agricultural one. It allows to reduce the high pressure exerted on the conventional water resources specially groundwater one. Infiltration-percolation is an extensive treatment technique aimed at eliminating organic matter, oxidizing ammonium and removing pathogens. The main purpose of this study was to determine the depuration efficiency of the infiltration-percolation process to remove contaminants from wastewater effluents. Elimination of pathogenic bacteria and their relationship with the filter depth were investigated. Results showed that the technique of infiltration-percolation is performed as an advanced treatment system for suspended solids (SS), organic matter (expressed in terms of chemical oxygen demand (COD) and 5-day biochemical oxygen demand (BOD5)) and ammonium nitrogen (NH4-N). Experimental results demonstrated that oxidation and disinfection performances of the sand filter were highly dependent on the filter depth. Removal rates reached 93, 85, 96.2 and 94.7% respectively for SS, COD, BOD5 and NH4-N at 150cm filter depth. Average reductions of 2 log unit total coliforms, 2.2 log unit faecal coliforms and 2.01 log unit faecal streptococci were obtained. The physic-chemical and bacteriological quality of the treated water was good enough to allow unrestricted irrigation. Results showed that infiltration-percolation allows oxidizing and disinfecting wastewater. This treatment process is a low cost method which can be used to improve wastewater quality for possible reuse in arid regions.

Keywords: wastewater, treatment, reuse, infiltration-percolation, arid regions