

Different Formula of Mixed Bacteria as a Bio-Treatment for Sewage Wastewater

Authors : E. Marei, A. Hammad, S. Ismail, A. El-Gindy

Abstract : This study aims to investigate the ability of different formula of mixed bacteria as a biological treatments of wastewater after primary treatment as a bio-treatment and bio-removal and bio-adsorbent of different heavy metals in natural circumstances. The wastewater was collected from Sarpium forest site-Ismailia Governorate, Egypt. These treatments were mixture of free cells and mixture of immobilized cells of different bacteria. These different formulas of mixed bacteria were prepared under Lab. condition. The obtained data indicated that, as a result of wastewater bio-treatment, the removal rate was found to be 76.92 and 76.70% for biological oxygen demand, 79.78 and 71.07% for chemical oxygen demand, 32.45 and 36.84 % for ammonia nitrogen as well as 91.67 and 50.0% for phosphate after 24 and 28 hrs with mixed free cells and mixed immobilized cells, respectively. Moreover, the bio-removals of different heavy metals were found to reach 90.0 and 50.0% for Cu ion, 98.0 and 98.5% for Fe ion, 97.0 and 99.3% for Mn ion, 90.0 and 90.0% Pb, 80.0% and 75.0% for Zn ion after 24 and 28 hrs with mixed free cells and mixed immobilized cells, respectively. The results indicated that 13.86 and 17.43% of removal efficiency and reduction of total dissolved solids were achieved after 24 and 28 hrs with mixed free cells and mixed immobilized cells, respectively.

Keywords : wastewater bio-treatment , bio-sorption heavy metals, biological desalination, immobilized bacteria, free cell bacteria

Conference Title : ICW 2018 : International Conference on Wastewater

Conference Location : Paris, France

Conference Dates : June 25-26, 2018