

Evaluation of Fluidized Bed Bioreactor Process for Mmabatho Waste Water Treatment Plant

Authors : Shohreh Azizi, Wag Nel

Abstract : The rapid population growth in South Africa has increased the requirement of waste water treatment facilities. The aim of this study is to assess the potential use of Fluidized bed Bio Reactor for Mmabatho sewage treatment plant. The samples were collected from the Inlet and Outlet of reactor daily to analysis the pH, Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), Total Suspended Solid (TSS) as per standard method APHA 2005. The studies were undertaken on a continue laboratory scale, and analytical data was collected before and after treatment. The reduction of 87.22 % COD, 89.80 BOD % was achieved. Fluidized Bed Bio Reactor remove Bod/COD removal as well as nutrient removal. The efforts also made to study the impact of the biological system if the domestic wastewater gets contaminated with any industrial contamination and the result shows that the biological system can tolerate high Total dissolved solids up to 6000 mg/L as well as high heavy metal concentration up to 4 mg/L. The data obtained through the experimental research are demonstrated that the FBBR may be used (<3 h total Hydraulic Retention Time) for secondary treatment in Mmabatho wastewater treatment plant.

Keywords : fluidized bed bioreactor, wastewater treatment plant, biological system, high TDS, heavy metal

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