

Preliminary Feasibility Study of a Sand-Clay Filter for treating Surface and Industrial Wastewaters in Trinidad

E.I. Ekwue & R.J. Ramdeen

Abstract

Some physical, chemical and biological properties of raw water collected from Caroni River in Central Trinidad and raw wastewater from Angostura Distillery in North Trinidad were measured in the laboratory. In addition, the properties of the water effluent obtained by passing the raw Caroni River water through various sand-clay filter media that differed in the proportions of sand and clay by volume were tested in order to observe the efficacy of sand-clay mixtures as filter media. Hitherto, most filter media were made of sand placed in beds. In general, the pH from the effluents from the sand-clay filters increased while the turbidity and total suspended solids decreased in comparison with the raw untreated water. An optimal filter medium with a sand-clay combination of 70-30% was determined from the results. This optimal filter combination was used to treat raw industrial wastewater collected from the Angostura Distillery. Results showed that this filter medium decreased the total suspended solids, turbidity, 5-day BOD, total coliforms and phenol below the maximum permissible limits for discharge into the environment. The use of sand-clay filters for pre-treating industrial wastewater before discharge into the environment is encouraging but more testing necessary before it could be adopted as a commercial filter medium.

Keywords: Sand, Clay, Filter, Wastewater