

Treatment Performance of Waste Stabilization Ponds: A Look at Physico-Chemical Parameters in Ghana

Authors : Emmanuel Adu-Ofori, Richard Amfo-Otu, Isaac O. A. Hodgson

Abstract : The study was conducted to determine the treatment performance of waste stabilization ponds in Akosombo. A total of 15 samples were taken for four consecutive months from the inlet, facultative pond and outlet of maturation pond. The samples were preserved and transported to Water Research Institute for laboratory analysis. The wastewater quality parameters analysed to assess the treatment performance were total suspended solids (TSS), biochemical oxygen demand (BOD), chemical oxygen demand (COD), ammonia and phosphate. The results of the laboratory analysis showed that the ponds achieved TSS, BOD and COD removals of about 30, 82 and 75 per cent respectively. Statistically, the BOD ($t = 10.27$, $p = 6.68 \times 10^{-6}$) and COD ($t = 4.23$, $p = 0.0029$) of the raw sewage were significantly different from the total effluent at 95% confidence interval. The ammonia and phosphate removal was as high as 92% and 84% respectively. The quality parameters analysed for the final effluent from the Waste Stabilisation Pond was within the EPA guideline values. The general treatment performances were very good with respect to the parameters studied and does not pose threat to the receiving water body. A further study to examine the bacteriological treatment performance was recommended.

Keywords : waste stabilization pond, waste water, treatment performance, nutrient, Ghana

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020