

ASSESSMENT OF THE LEVEL OF CONFORMITY OF WUPA SEWAGE TREATMENT PLANT TO ENVIRONMENTAL STANDARDS

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Abstract

Over the last twenty years, Abuja, especially the Federal Capital City (FCC) and its neighbouring satellite towns have witnessed dramatic increase in human population which has exerted so much pressure on waste generation (liquid and solid waste) and surface and ground sources of portable water. It has become unbearable for the Federal Capital Territory Water Board to meet up with the ever increasing demand for portable water. Wupa treatment plant is the only plant that treats wastewater for the entire Federal Capital Territory. Abuja municipal area is designed such that all sewers from households, businesses, companies and government agencies collect together at the sewage treatment plant in Idu industrial Area, this wastewater is eventually released into the Idu River which is the only source of water for Idu community, an outbreak of epidemic from such plant can lead to serious loss to the country. Therefore, this research work focused on the assessment of the level of conformity of Wupa sewage treatment plant, Abuja Municipal Area Council, FCT, having the following objectives; assessing physiochemical analysis of the wastewater influent and effluent, assessing the bacteriological analysis of the wastewater influent and effluent, comparing the physiochemical and bacteriological properties of the water with Federal Ministry of Environment (FMEnv) standard for quality water and determine if the water of the sewage treatment plant conform with environmental standards. It made use of both primary and secondary data. Primary data were through water samples from the treatment plant, total of five (5) samples were collected randomly in selected point from Influent and Effluent of sewage treatment plant and information regarding physiochemical and bacteriological properties of water from the treatment plant was obtained from the laboratory, Microsoft Excel software, Clerk's (1984) Compliance Equation and one-way Analysis of Variance was used to analyzed data. Result obtained showed that value of turbidity (250), total suspended solids (218.7), Biochemical oxygen demand (122.5) and chemical oxygen demand (250) of influent water was higher than value obtained from effluent waste of 3.34, 19.4, 6.5 and 26 for turbidity, total suspended solids, BOD, and COD respectively. Also the value of Total plate count of the influent of 6000 was higher than value of effluent of 2000. The value of turbidity, TSS, COD of influent is higher than the FMEnv standard for quality water, the value of BOD, total plate count on both influent and effluent is higher than the FMEnv standard for quality water. The of values Physico-Chemical parameters of effluent water show 100% compliance with FMEnv standard and 50% for Microbial Bacterial of effluent water except for B.O. D5 which was at 0%. Assessing the level of compliance for sample water before treatment at the influent, value for turbidity, Total suspended solid, Biochemical oxygen demand and Chemical oxygen demand, total coliform and total plate count was at 0% compliance with the standard. Therefore, the following recommendation were made that a thorough and formal environmental audit of the facility be done as non has been done since the facility was setup in 2006, that more should be done with regards to the UV-radiation tank to ensure 100% conformity with FEPA standard of 0 CFU/100ml, effort should be made at improving the solid waste management of the plant, sorting of waste at source should be made mandatory and a recycling policy be put in place.

Keywords: physiochemical, heavy metal properties, Sewage treatment plant and Environmental Standards