

A COMPARATIVE ASSESSMENT OF THE PHYSICOCHEMICAL, MICROBIAL PROPERTY AND THE LEVELS OF SOME HEAVY METALS IN EKEREKANA CREEK IN RIVERS STATE

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ABSTRACT

The comparative assessment of the physicochemical and biological analysis of Ekerekana creek was investigated between the months of July to September. Samples were collected monthly, from three different points. Temperature readings were 27-32°C, turbidity values were 0.55-3.52 NTU. PH values obtained were 6.5-9.4. Results obtained for conductivity was 130-970 µS/cm. Total suspended solids (TSS), Total dissolved solids (TDS) and Total solids (TS) were determined by the gravimetric method. The values were zero. The following values were obtained for Chloride (31.20-93.6 mg/L), Nitrate (13.10-33.3 mg/L), PO₄³⁻ (0.33-0.47 mg/L), Magnesium (20.85-26.06 mg/L), Calcium (30.19.13-33.89 mg/L) and Alkalinity (0-20 mg/L). Dissolved oxygen (DO), Biological oxygen demand (BOD) and Phosphate (PO₄³⁻) were determined by standard methods (APHA, 1998). The values obtained for DO was 17.81-36.10 mg/L, BOD was 2.0-7.31mg/L and COD was 10.40-41.60 mg/L. From the results obtained, pH, Temperature, Turbidity, Electrical conductivity, BOD, COD, Alkalinity, TSS, TS, TDS, Cl⁻, NO₃⁻, PO₄³⁻, Ca²⁺, Mg²⁺ were below WHO standard for the three months, except pH in the month of September, temperature for the month of July and September and electrical conductivity for the month of August that were above WHO standards. DO mean values obtained for both August and September were above WHO standard. The bacterial colony count was determined using the standard plate count method and the mean bacteria colony count values were 11.33-159 CFU/ml. Heavy metal analysis was carried out using AAS. Cu and Cr were not detected for the three months. The relative dominance of metals in the water, followed the sequence Ni > Co > Cd > Pb > Zn > Fe > Mn. The level of Ni, Pb and Cd were above WHO standards for the three months of study while Mn, Zn and Co were below WHO standard. The results obtained showed that Ekerekana creek is polluted and the pollution may be as a result of the discharge of effluents from the refining company and other anthropogenic sources.

KEYWORDS: Physicochemical, Effluent, Ekerekana, Creek, Pollution, Heavy Metals

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