ASSESSMENT OF GROUNDWATER QUALITY USING WATER QUALITY INDEX IN WARRI METROPOLIS, DELTA STATE, NIGERIA.

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ABSTRACT

Water Quality Index was used to assess suitability of groundwater quality in Warri Metropolis. The groundwater samples, collected from sixteen selected boreholes over a period of three months, were subjected to comprehensive physico-chemical and bacteriological analysis by applying standard procedures.The study was intended to ascertain the quality of water for public consumption, recreation and other purposes. The mean values of thirteen important parameters were calculated and were computed to water quality index (WQI) using the weighted arithmetic index method. Only two of the sixteen parameters analysed; pH and dissolved oxygen were above regulatory standard limit. The calculated water quality index (WQI) showed that the index for the locations range from 24.2 (Otokutu) to 38.5 (NPA) indicating good to excellent water quality. It was observed that most of the groundwater indicating excellent water quality are from the semi-urban areas (Jeddo, Otokutu and Ugbomro) while majority of the locations indicating good water quality are from the urban and well populated areas of the metropolis. Some of these urban areas have poor sanitary and waste disposal conditions with industries and factories located within their locations. This result indicates that water from the underground are generally clean and fit-for-purpose with respect to portability, recreation and other purposes but anthropogenic factors may affect the water either by the method used for abstraction or the storage means. Overall the results indicate that the different water samples analysed from the groundwater from Warri Metropolis are safe for human consumptions and domestics purposes.

Keywords: Warri, Standard procedures, WQI, weighted arithmetic index method, standard limit