

DETERMINATION OF WATER QUALITY INDEX AND IRRIGATION SUITABILITY OF GROUNDWATER SOURCES IN PARTS OF COASTAL AQUIFERS OF EASTERN NIGER DELTA, NIGERIA

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ABSTRACT

Determination of water quality index and suitability of groundwater sources in parts of Coastal Aquifers of Eastern Niger Delta Nigeria has been done to ascertain the suitability of the groundwater sources for domestic and agricultural (irrigation) purposes. Forty five (45) water samples were collected within the study area and were subjected to chemical analyses. The results of the investigation revealed that Calcium concentration (mg/l) ranged between 0-0.22, Magnesium concentration (mg/l) ranged between 0.2-4.6, Sodium concentration (mg/l) ranged between 1.2-7.3, Chlorine concentration (mg/l) ranged between 6.0-17.0, Bicarbonate concentration (mg/l) ranged between 17.9-56.3, Arsenic concentration (mg/l) ranged between 0-1.35, Copper concentration (mg/l) ranged between 0 - 0.95, Iron concentration (mg/l) ranged between 0-0.09, Mercury concentration (mg/l) ranged between 0-0.014, while Lead concentration (mg/l) ranged between 0-0.4. The Water Quality Index (WQI) in the study area was calculated using eight (8) parameters, and it gave an overall WQI value of 509.9, implying that the samples in this study were grossly unsuitable for drinking purposes, based on the WQI standard. From the result of the Sodium Absorption Ratio (SAR), the values of the entire water samples were below 3.5meq/l, indicating predominance of excellent water for irrigation purposes. This study therefore, recommends that the groundwater sources in the study area require treatment before use for domestic purposes, but is suitable for irrigation purposes.

KEYWORDS: *Water Quality Index, Suitability, Sodium Absorption Ratio, Groundwater, Irrigation*

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