

ENVIRONMENTAL EFFECTS OF LANDUSE ON GROUNDWATER QUALITY IN IKEPODUN LOCAL GOVERNMENT AREA, KWARA STATE.

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Abstract

*The paper examines the impact of land use types on groundwater quality in Irepodun Local Government Area, Kwara State. Twelve groundwater samples were collected from hand-dug wells and boreholes from various land uses in four wards of the study area. These samples were analysed for fifteen physicochemical and microbial parameters using standard laboratory analytical techniques and compared with the World Health Organisation recommended standards for drinking water. Tables were used in presenting the data and principal component analysis were carried out on the data generated. The result showed that groundwater quality varies in the sampled locations, and the physicochemical parameters analysed were within the WHO-recommended standards except for BOD, TDS, Mg, and Ca. The microbial analysis showed that THC ranges between $35-102 \times 10^{-2}$ and $24-64 \times 10^{-3}$ CFU/ml, while the TFC ranged from $1-5 \times 10^{-1}$ and $3-8 \times 10^{-2}$ CFU/ml. The study revealed that *Proteus mirabilis*, *Shigella sp*, *Pseudomonas aeruginosa*, and *Bacillus sp*. were the most prominent organisms observed in the water samples. The result of the PCA revealed that 17 variables were reduced to 5 orthogonal components which cumulatively explain 89% of the variance. The contributions of the components varied from 7.67% to 41.20%, each capturing the influence of various land uses on groundwater quality. The study recommends the integration of land use and water quality for effective decision-making and sustainable land-water management, thereby informing land use optimization and water pollution control policies to manage water resources for the current and future generations.*

Keywords: Landuse; Groundwater; Water Quality; Environmental; PCA