

عنوان مقاله:

Toxicological Assessment of Borehole Water in Oshodi/Isolo, Lagos, Nigeria: Heavy Metals and Microorganism Contamination Perspectives

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خلاصه مقاله:

Background: This study focused on the evaluation of the quality of borehole water in Oshodi, Lagos, Nigeria, considering that groundwater serves as the primary source of potable water in the country. However, the vulnerability of groundwater to contamination raises concerns regarding its suitability for consumption. **Methods:** Water samples were obtained from Okota, Ayo, Osi, Oke-Afa, Ajao, Oshi, and Iso-Aye Streets in Oshodi and assayed for the presence of heavy metals and microorganisms. The heavy metals analyzed in the samples included zinc (Zn), lead (Pb), chromium (Cr), manganese (Mn), copper (Cu), iron (Fe), and cadmium (Cd). Additionally, the water samples were examined for the presence of bacteria, coliforms, and fungi as representative microorganisms. To evaluate the potential health risks associated with the heavy metals detected, non-carcinogenic risks were assessed. This involved determining parameters such as average daily dermal exposure (ADDE), average daily ingestion (ADI), and hazard quotient (HQ). Further, the carcinogenic risks (CR) of the heavy metals were determined. **Results:** The analysis of the water samples revealed that the levels of Pb and Mn, exceeded the recommended limits. However, ADI values for these heavy metals were found to be within permissible limits. The HQ of dermal exposure to Zn, Mn, and Pb during the dry season, as well as for Cr, Mn, Zn, and Pb during the wet season, were higher than recommended limits. The CR (dermal) of Pb and Cr during the wet season and Pb during the dry season were also above recommended limits. In terms of microorganisms, the presence of bacteria, coliforms, and fungi in the water samples was found to be within permissible limits. **Conclusion:** Given the identified presence of heavy metals exceeding recommended limits and the potential health risks associated with dermal exposure and ingestion, it is evident that the water from the assessed boreholes in Oshodi poses health hazards to consumers. Therefore, it is imperative to implement decontamination measures to mitigate these risks and ensure the provision of safe and potable water to the community.

کلمات کلیدی:

Carcinogenic risk, Groundwater, Hazard quotient, Heavy metal, Lead

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