

Groundwater quality and identification of hydrogeochemical processes within university of Lagos, Nigeria

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Water samples from twenty one boreholes were collected within University of Lagos and analyzed for physical properties, trace elements and cations using inductively coupled plasma optical emission spectrometry (ICP-OES). Physical analysis of the samples shows slight acidity and alkalinity with 78% of the samples exceeded recommended standards. They can be classified as fresh water based on TDS and EC. Chloride concentrations fall within water standards in most samples while Al, Na, Pb and Br exceeded recommended standards in most samples. Gibbs plot, relationship between total cations, Na+K, Ca+Mg and Cl showed that all the groundwater samples fall in the water-rock interaction field which suggests that the weathering of rocks and influence of sea water primarily controls the major chemistry of groundwater in the area. Sodium Absorption Ratio (SAR) for all the water samples was less than 10 and excellent for irrigation purpose. Only 33% of water samples were suitable for irrigation based on Soluble Sodium Percentage (SSP) and Magnesium Adsorption Ratio (MAR), whereas based on Kellys Ratios (KR) all the water samples were not good for irrigation purpose having KR greater than 1. Fifty percent of the water samples showed pollution index (PI) above 1 with highest contribution (37.8%) from lead (Pb). Mn, Al, Ni, Fe and As contributed 29.3%, 19.13%, 8.66%, 4.25% and 0.82% respectively.