

Assessment of Dissolved Silica Content of Groundwater from Southwestern Nigeria

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ABSTRACT The groundwater resources from open dug wells in Abeokuta municipality are mostly abstracted from shallow depth of < 10.0 m with a static water level in the range of 0.2 to 5.0 m. Study was carried out to assess dissolved silica (DSi, SiO₂) in these groundwater resources to establish their baseline concentrations. 200 shallow wells were sampled from 47 communities in Abeokuta and parameters namely: Static Water Level (SWL), total depth (TD), pH, total dissolved solids (TDS), electrical conductivity (EC) and DSi were determined. The water pH varied between 6.2 and 8.1 (slightly acidic and slightly alkaline) with appreciable amount of TDS (37.0 - 601.0 mg/l). The groundwater also contains abundant dissolved silica (0.5 - 19.3 mg/l) and EC in the range of 57-1002 µS/cm. Since major source of potable water in the city is groundwater from the open dug wells, it then implies that majority of the residents are exposed to water borne silica on a daily basis. Unlike in the airborne crystalline silica, which has been established to be the cause of silicosis, the health impact of the water borne silica in the municipality is unknown.