

Assessment of Radiological hazards for Latrite Mining Field in Ilorin South LGA, North-central Nigeria

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Assessment of activity concentrations of ^{40}K , ^{238}U , ^{232}Th and gamma dose rate (DR) was carried out over a latrite mining field using a well calibrated Super-Spec (RS-125) gamma spectrometer, along Ajese-Ipko road, Ilorin-south, Kwara state, Nigeria. The results of the radioactivity measurements were used to assess the radiological hazards associated with the latrite mining field and its suitability as building material. Fifty (50) measurements of the activity concentration of the radionuclides were obtained at about 1 meter above the topsoil to cover a large area. For each of these 50 sample points, measurements were taken four (4) times for better accuracy. The mean activity concentrations of ^{238}U and ^{232}Th are higher than their corresponding global average of 32.00 Bqkg⁻¹ and 30.00 Bqkg⁻¹ respectively provided by UNSCEAR. This is a cause for worry as significant enhancement in the concentration of ^{238}U and ^{232}Th will increase the level of the background radiation and possibly render the soil unfit for use in building and construction purposes. The results of the radiological impact parameters (RIP) such as the mean values of the indoor radiation dose rate (Din), indoor Annual Effective Dose (EADindoor) and Annual Gonadal Equivalent Dose (AGED) are above the recommended limits provided by UNSCEAR. Since other hazard parameters are close or could possibly be approximated to the permissible limit, this implies that the lateritic soil from this mine field may not be too suitable for building and construction purposes (either as raw material or finished product).

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