

# International Conference on the Management of Naturally Occurring Radioactive Materials (NORM) in Industry

VIRTUAL EVENT

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## An Assessment of the Radiological Impact of Rock Quarrying in Ogun State, South-Western Nigeria

The abundance of crystalline rocks in Ogun State has resulted in increasing activities of quarry Industries. The rocks in this area have been observed to be rich in Naturally Occurring Radionuclides (NOR) which are the primary terrestrial sources of radiation in the environment. This study determined radionuclide contents of rocks in selected twenty (20) quarry industries and also evaluated their possible impacts on the environment. Sixty (60) rock samples were collected. The rocks were pulverized, sieved to  $\leq 2$  mm and analyzed for activity concentrations of the with naturally occurring radionuclides (NOR) using NaI(Tl) gamma spectrometer. The activity concentrations of NOR were 64.72–1723.12, 16.71–94.96 and 11.20–101.85 Bq kg<sup>-1</sup> for 40K, 238U and 232Th. The calculated ranges of Absorbed Dose Rate (ADR), Annual Effective Dose (AED), Radium equivalent dose rate (Raeq) and External hazard index (Hex) were 28.73 –170.37 nGy h<sup>-1</sup>, 35.23 –208.94  $\mu$ Sv y<sup>-1</sup>, 59.94 21–350.90 Bq kg<sup>-1</sup> and 0.16 –0.95. The AED were higher than world average dose value of 70  $\mu$ Sv y<sup>-1</sup> for most of the rocks” investigated hence possess radiological and health hazard to occupancy of buildings and other constructions made from granite and other products of the quarry industries. There will be need for continuous monitoring and routine assessment of radionuclide contents of the rocks from quarry industries.

Key words: Natural radioactivity, quarry industries, granite, activity concentration, environment

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