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EVALUATION OF NORM CONTENT FROM COLTANT MINING IN NIGERIA PRIOR TO EXPORT

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Godwin Ekong, Yau Idris, Isa Sambo
Emails: gobass04@yahoo.com; yau.idris@nnra.gov.ng; isasambo@yahoo.com
Phones: +234 36097137 and +234 31924525
Nigerian Nuclear Regulatory Authority, Plot 564/565 Airport Road, Central Business District, Garki, Abuja, FCT.

ABSTRACT:
Coltant has global demand for variety of application due to its qualities of being good heat conductor, corrosion resistant, but usually associated with NORM during mining process prior to export. The aim of this study was to assess NORM level emanating from coltant shipments from Nigeria, using RDS-31S/R Multi-purpose survey meter, Radionuclides Identifinder and Sodium Iodide detector. The dose rate measurement from the coltant samples ranges from (0.23±04 and 8.44±03) μSv/hr which was above maximum dose rate of 1 μSv/hr at 1m from the package surfaces. The analyzed specific activity concentration of NORM from coltant product were 226Ra, 232Th and 40K found to be (335±195 - 15,786±9,164) Bqkg-1, (152±18 - 15,201±1,738) Bqkg-1and (16±10 - 142±21) Bqkg-1, respectively. The evaluated GDR was with a mean value of 7959 nGy/hr higher than world mean of 59 nGy/hr. The outdoor and indoor AEDR estimated were 9.76 mSv/yr and 39.05 mSv/yr respectively higher than world mean of 0.420 mSv/yr; the estimated ELCR was 3333 higher than world mean value of 0.29 × 10-3 as reported in UNSCEAR 2000. The radiological risk assessment from this investigation reveals workers and public in such mining areas and other biota will definitely be overexposed leading to radiation health effects over long term. It is recommended that there should be effective regulatory control of mines and mining Coltant products to determine NORM content prior to export to avoid regulatory infractions between exporting countries.

Keywords: Coltant, NORM, Activity Concentration, Export and Radiological risk

Primary authors: EKONG, Godwin (Nigerian Nuclear Regulatory Authority); Dr IDRIS, Yau; Dr SAMBO, Isa

Presenter: EKONG, Godwin (Nigerian Nuclear Regulatory Authority)

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