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RADIOECOLOGICAL IMPACT ASSESSMENT OF TE-NORM WASTE FROM KADUNA REFINERY AND PETROCHEMICAL COMPANY USING GAMMA RAY SPECTROMETRY TECHNIQUE

ABSTRACT:
Nigeria is a member of the Organization of Petroleum Exportin Countries (OPEC) and also performs refinery and petrochemical processes to meet local consumption of petroleum products. The Kaduna Refinery and Petrochemical Company (KRPC) is located in the Kaduna and it is only Company in the northern part of Nigeria. it is one of the subsidiaries of the Nigerian National Petroleum Cooperation (NNPC) where crude oil is processed into products such as gasoline, diesel, liquefied petroleum gas, heating oil and asphalt base among others. In order to assess the impact of activities associated with refinery and petrochemical processes of the Company, the concentrations of Technologically Enhanced Naturally Occurring Radionuclide Materials (TENORM) in soil, scale and sludge collected from the production sites were determined by gamma ray spectrometry technique. The gamma ray spectrometry setup located at the Centre for Energy Research and Training, Ahmadu Bello University, Zaria, Nigeria consists of a 3"x 3"NaI (Tl) detector connected to a Computer-based Multi-Channel Analyzer software via Pre-Amplifier and Amplifier Modules. The activity concentrations of 226Ra, 232Th and 40K were determined via their respective gamma ray lines, 1764.0 keV, 2614.5 keV and 1460.0 keV. Results obtained were used to assess the absorbed dose rate and annual effective dose as well as to determine the radiation hazard indices due to the activities of KRPC

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