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# RADIOLOGICAL RISKS ASSESSMENT OF MINING VICINITIES USING RESRAD COMPUTER CODE

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Environmental radioactivity monitoring and protection often require measurement and modelling of natural radionuclides in environmental media and exposure pathways. In this study, the activity concentration of natural radionuclides determined using Broad energy germanium detector, was used to model the radiological risks for a hypothetical resident using Residual Radioactivity (RESRAD) computer code. The activity concentration of K-40, Th-232 and U-238 of soil sampled in Rustenburg mining vicinities was found to be less than global average values of 400 Bq/kg, 35 Bq/kg and 30 Bq/kg reported by the United Nations Scientific Committee on the Effects of Atomic Radiation respectively. The maximum total effective dose and excess life cancer risk estimated using RESRAD-offsite code in investigated area are 0.5190 mSv/yr at year 16.92 and 8.58 at year 0, respectively. Total excess life cancer risk is observed to be below 2.90 × 10-4, along with the total effective dose which is also lower than 1 mSv/yr reported by UNSCEAR (2000). Thus, the study reveals insignificant radiological hazards in investigated mining vicinities. However, regular environmental measurement and monitoring is recommended to ensure resident exposure is as low as reasonably achievable.

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None

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Yes, I ACCEPT

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