

Measurement of ^{238}U , ^{232}Th and ^{40}K in Soil Samples Collected from Coal City Dhanbad, India

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Abstract : Specific activities of the natural radionuclides ^{238}U , ^{232}Th and ^{40}K were measured by using γ - ray spectrometric technique in soil samples collected from the city of Dhanbad, which is located near coal mines. Mean activity values for ^{238}U , ^{232}Th and ^{40}K were found to be 60.29 Bq/kg, 64.50 Bq/kg and 481.0 Bq/kg, respectively. Mean radium equivalent activity, absorbed dose rate, outdoor dose, external hazard index, internal hazard index, for the area under study were determined as 189.53 Bq/kg, 87.21 nGy/h, 0.37 mSv/y, 0.52 and 0.64, respectively. The annual effective dose to the general public was found 0.44 mSv/y. This value lies well below the limit of 1 mSv/y as recommended by International Commission on Radiological Protection. Measured values were found safe for environment and public health.

Keywords : coal city Dhanbad, gamma-ray spectroscopy, natural radioactivity, soil samples

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020