



Contribution ID: 46

Type: Poster

## Radioactivity and Hazard Risk Analysis of Soil Samples Taken from Former Mining Area in Klang Valley, Malaysia

Radioecology still presents a significant impact on environmental research especially in evaluating the radiation-induced risk among populations lives in the former industrial area. Therefore, in this study, we evaluated the radioactivity from the former mining soils in a residential area within Klang Valley and determined the risk associated with natural radionuclides. 20 soil samples have been collected and analyzed via High Purity Germanium (HPGe) gamma spectrometer. The activity of  $^{226}\text{Ra}$ ,  $^{232}\text{Th}$  and  $^{40}\text{K}$  for the studied soil samples were ranged from 11.91-54.09 Bq/kg, 8.95-49.50 Bq/kg and 974.64 Bq/kg, respectively. The risk of radiation hazard to a human being was observed based on studied area via radium equivalent activity, radiation hazard index, external hazard index and total air absorbed dose rate ( $305.90 \pm 111.84$  Bq/kg,  $2.25 \pm 0.85$ ,  $0.30 \pm 0.84$  and  $139.5 \pm 49.42$  nGy/h, respectively). These calculated values were comparable with the United Nations Scientific Committee on the Effect of Atomic Radiation, UNSCEAR (2000) standard safe limit. The study also shows that the location P2, P6, P16 and P17 have highest potential based on the results obtained and has a radioactive element that can endanger the health of the surrounding population on external exposure through ingestion or inhalation. The mean annual effective dose outdoors received by an individual at the location is estimated to be  $0.17 \pm 0.01$  mSv/y, which is far below than the annual dose limit of 1 mSv/y of the public.

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**Session Classification:** Session IV - Characterization in Industrial Facilities and in the Environment

**Track Classification:** NORM Characterization, Measurement, Decontamination