DETERMINATION OF RADIONUCLIDE ACTIVITIES AND RADON EMANATION POWER OF SOIL FROM EX-MINING AREA IN KAMPUNG GAJAH, PERAK

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Muhammad 'Azim Bin Jamaluddin

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ABSTRACT

Naturally occurring radioisotopes such as U-238 and Th-232 are present in earth's crust producing uranium and thorium daughters such as Ra-226 and Ra-228. Radium is found at low level in soil, water, rocks, coal, plants and food. K-40 also exist in the earth crust with a concentration of higher than Ra-226 and Ra-228 since it is the most abundance naturally occurring radionuclide. In this study, the activity concentrations of Ra-226, Ra-228 and K-40 were determined in topsoil samples collected from 8 point of soil located at an ex-mining area at Kampung Gajah, Perak. 400 g of dried samples were ground and packed in a plastic container and allow to stabilize for at least three week before counting using gamma spectrometer with Germanium hyper pure detector (HPGe). The gamma spectra were analyzed for the activity concentrations of Ra-226 and Ra-228 and K-40. In conclusion, the average of Ra-226, Ra-228 and K-40 activity concentration are 145.93 Bq/kg, 150.49 Bq/kg and 565.29 Bq/kg respectively. Rn-222 concentration from soil is determined by putting a radon monitor in a fully covered aquarium and allowed to equilibriate for three days. The activity concentration of Ra-226 and concentration of Rn-222 are then used to calculate emanation power of Rn-222 from each sample, which can be concluded ranged between 0.01 to 0.08.