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Radiological Risk Assessment in Industrial Bricks used for Construction in Malaysia

Primordial radionuclides in building materials are considered one of the major sources of radiation hazard. It has been acknowledged that clay and cement bricks are mainly used for the constructions and their presence of natural radioactivity in these materials are inevitable. Therefore, in this study, we want to evaluate the radiological hazards associated with industrial bricks that use for constructions. 20 cement bricks and clay bricks samples were collected to measure specific activities of 226Ra, 232Th and 40K in brick samples using high purity germanium (HPGe) detector. The mean activity concentration of 226Ra, 232Th, 40K in cement brick were 8.646±3.109 Bq/kg, 176.336±15.929 Bq/kg and 2277.891±191.457 Bq/kg, respectively; while in clay bricks were 10.464±2.950 Bq/kg, 156.494±12.212 Bq/kg and 1183.389±95.152 Bq/kg, respectively. External, internal and other representative hazard indices measured for most samples were found to be exceeding than the internationally accepted upper limit for building materials except for clay bricks. With the exception of cement bricks, clay bricks provide lower background radiation levels and typically pose no significant radiological risk to the population.

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