

## Abstract

The assessment of the radiation levels of the natural radionuclides  $^{232}\text{Th}$ ,  $^{238}\text{U}$  and  $^{40}\text{K}$  in ceramic tiles used in Kenya has been studied. The radiometric analysis was done using a high-efficiency gamma-ray spectrometer. A total of thirty-seven (37) samples of ceramic tiles were pulverized, weighed accurately, and packaged in 250ml standard plastic containers, well labelled and stored for 28 days to attain secular equilibrium. Analysis of specific gamma energies from activities of  $^{232}\text{Th}$ ,  $^{238}\text{U}$  and  $^{40}\text{K}$  reported activity of  $53.73\pm 2.34 \text{ Bqkg}^{-1}$ ,  $43.17\pm 3.40 \text{ Bqkg}^{-1}$ , and  $525.99\pm 36.10 \text{ Bqkg}^{-1}$  respectively. The variations in the radiation activity concentration is attributed to the composition of geological raw material used for tiles manufacturing. The average radium equivalent, absorbed dose, indoor and outdoor annual effective dose, and hazard indices (internal and external) obtained were  $159.59 \text{ BqKg}^{-1}$ ,  $75.55 \text{ nGyh}^{-1}$ , 0.28, 0.19, 0.54 and 0.43 respectively. The results obtained from the study showed that the use of ceramic tiles in Kenya does not pose any significant harmful radiation effects to users.