Abstract

Radon is a naturally occurring radioactive gas and a major contributor to natural radiation exposure, with prolonged inhalation associated with an increased risk of lung cancer. This study evaluated indoor radon concentrations and associated radiological risks in selected buildings at South-Eastern Kenya University (SEKU), Kenya. Indoor radon concentrations were measured in six selected multi-storey buildings using a calibrated RAD7 electronic radon detector under standardized operating conditions. Measurements were conducted on the lowest floor of each building over 24 hours at each sampling location. Radiological risk parameters, including equilibrium equivalent concentration (EEC), annual effective dose (AED), excess lifetime cancer risk (ELCR), and lung cancer cases per million persons per year (LCC), were estimated using internationally established models and conversion factors. Indoor radon concentrations ranged from 8.18 ± 0.26 to 17.21 ± 0.77 Bq m^{-3}, with a mean of 12.84 ± 0.55 Bq m^{-3}, well below the reference levels recommended by the World Health Organization and the International Commission on Radiological Protection. The corresponding mean EEC, AED, ELCR, and LCC were 5.14 ± 0.22 Bq m^{-3}, 0.3239 ± 0.0140 mSv y^{-1}, (1.25 ± 0.05) × 10^{-3}, and 5.83 ± 0.25 cases per million persons per year, respectively. These values indicate a low estimated radiological risk for the monitored buildings. Because the measurements were limited to 24-hour active monitoring at six buildings, the findings are interpreted as a short-term baseline assessment rather than an estimate of annual average indoor radon exposure. Periodic and seasonal monitoring is recommended to better characterize long-term exposure variability.