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Evaluation of Indoor and Outdoor Environmental Radiation in the Federal College of Education (Technical), Gombe, North-Eastern. Nigeria.

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Background ionizing radiation is a significant source of environmental exposure and possible health hazards for the general public, especially in cities where schools are located next to landfills. The levels and radiological effects of background ionizing radiation at Federal College of Education (Technical), Gombe, in Gombe Metropolis, Nigeria, are examined in this study. Using a portable Radiation Alert Inspector meter, radiation dose rates were measured both indoors and outdoors in a few chosen buildings. Using accepted international conversion factors, the acquired exposure rates were transformed into excess lifetime cancer risk (ELCR), absorbed dose rate (ADR), and annual effective dose equivalent (AEDE).
The findings indicated that exposure rates ranged from 0.015 to 0.0467 μSv/h (mean: 0.0293 ± 0.0098 μSv/h) indoors and from 0.015 to 0.040 μSv/h (mean: 0.0330 ± 0.0077 μSv/h) outdoors. The associated mean AEDE values were 0.049 mSv/year (outdoor) and 0.227 mSv/year (indoor), both of which are below the International Commission on Radiological Protection's (ICRP, 2007) suggested 1.0 mSv/year public exposure limit. The ELCR values, which varied from ⊠4.19×10^{-4} to 1.30×10⊠^(-3), showed negligible long-term health consequences in contrast to the UNSCEAR (2020) reported worldwide average risk factor (2.9×10^{-4}).
According to the study's findings, background ionizing radiation levels in the vicinity of FCE(T) Gombe and adjacent waste zones continue to be below reasonable safety bounds. However, to guarantee continued environmental safety and public health protection, constant monitoring is advised.

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