

International Conference on the Safety of Radioactive Waste Management, Decommissioning, Environmental Protection and Remediation: Ensuring Safety and Enabling Sustainability



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Decades of personnel and environmental safety in the management of radioactive waste facility in Ghana for a sustainable socio-economic development

Nuclear science and technology have contributed immensely to the socio-economic development of Ghana, especially in medicine, industry, agriculture, and research. The provision of effective protection to occupationally exposed persons, the public, and the environment underpins the successful management of radwaste, thus the need for this study. Twelve years (2011–2022) of personnel and environmental radiological data from the centralized radwaste facility shows that the mean annual average radiological data ranged from 0.07–1.06 $\mu\text{Sv/h}$. The decay store of the facility which contains scrap metals from dismantled disused sealed radioactive sources (DSRS), and low-level wastes from Ghana's Research Reactor exhibited the highest mean annual average dose rate of $1.06 \pm 0.92 \mu\text{Sv/h}$. The range of the mean annual average personnel dose equivalent is 0.41–2.07 mSv which is below the ICRP limit of 20 mSv. Principal component analysis indicates that the dose equivalent is primarily influenced by the radiation associated with the outer wall surface of OFF-3, LAB, and washroom where no DSRS are stored. This implies that the dose equivalents are not essentially attributable to the radiation exposures of personnel during operations at the facility where DSRS are stored. Therefore, the existing radiation protection measures at the facility are effective.

Primary author: GBEDDY, Gustav (Ghana Atomic Energy Commission)

Co-authors: Mr ABERIKAE, Emmanuel (Ghana Atomic Energy Commission); Dr AKORTIA, Eric (Ghana Atomic Energy Commission); GLOVER, Eric (Ghana Atomic Energy Commission); Mr AMEHO, Evans (Ghana Atomic Energy Commission); Mr ESSEL, Paul (Ghana Atomic Energy Commission); ADJEI-KYEREME, Yaw (Ghana Atomic Energy Commission)

Presenter: GBEDDY, Gustav (Ghana Atomic Energy Commission)

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