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Utilisation of the IAEA BDC Scoping Tool and AMBER Modelling for Post Closure Safety Assessment for a Proposed Borehole Repository of Disused Sealed Radioactive Sources in Ghana

The IAEA BDC Scoping Tool and AMBER Modelling were employed in the post-closure safety assessment of a proposed borehole disposal facility in Ghana. The borehole disposal facility is to be constructed to dispose of disused sealed radioactive sources in storage. Based on the hydrogeology and geochemical characteristics of the proposed site, results obtained from the IAEA BDC Scoping Tool revealed that the borehole and its components were efficient in offering acceptable safety to the disposal system and the environment. Considering the evolution of the borehole and the reference site, further assessment using AMBER Modelling was carried out to assess the safety that would be provided by the borehole and its components. Farmers were assumed as the receptors of the exposed dose in the AMBER Modelling. Results from the AMBER calculations revealed that, the borehole and its components were able to provide satisfactory safety for the disposal system if the borehole design functioned as envisaged. Also, in an unlikely event that there are defects in the borehole components, viz, the source capsule and disposal container, satisfactory safety was achieved.

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