

عنوان مقاله:

ThO₂ spent fuel assembly's gamma dose rate dependency to burnup and cooling time

محل انتشار:

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خلاصه مقاله:

Today thorium based fuels are being investigated as an alternative fuel technology. However, the majority of thorium fuel research studies are limited to reactor physics investigations, which leaves a gap for dose evaluation and shielding concerns of such spent fuels. The present work investigates thorium oxide fuel assemblies in Tehran research reactor. The fuel gamma dose rates are calculated at different burnups and cooling times. A comparison between the reactor routine fuel and the thorium oxide fuel is conducted to reveal the thorium-based fuel application shielding challenges. The obtained results showed that inverse to U₃O₈-Al routine fuel the spent ThO₂ gamma dose rates are completely dependent to the burnup values. In addition, for transporting the spent ThO₂ fuel with the routine transport casks there is needed to be waited for the higher cooling times than U₃O₈-Al transportation time or .construction of thicker transport casks is needed for transportation of the thorium-based spent fuels at shorter times

کلمات کلیدی:

Gamma dose rate, Thorium spent fuel, Computational calculations, MCNPX code

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