

Assessment Gamma Dose Rate for Hypothetical Radwaste Container

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Metallic solid radioactive waste is the main type of radioactive waste generated from decommissioning operations. Transport, storage and disposal regulations require for gamma emitting radioactive waste (mainly by Cs-137 isotope), that the dose rate in the proximity of the container should stand below a certain threshold. Also, the conditioning technique (using cementation technique) based on certain matrix with specific ratios should be able to alternate the gamma radiation activity to the minimum level or to acceptable dosage rate on the contact or meter distance from the container. In this paper; to assess dose rate in safe way, assumption based on metallic pieces waste were polluted with (Cs-137) were conditioned with cement matrix contained in carbon steel drum volume 220 liter, 60cm diameter and dose rate measurement applied in vicinity of the container. Instead of real polluted metal waste, (Cs-137, $D_0=20\text{mR/hr}$) gamma radioactive point source was positioned in different places in front of cross section of the cemented metallic pieces and gamma dose rates were measured on the outer side of the drum as in fig.(1). Readings showed good efficiency of the cement matrix to decrease the dose rate of (Cs-137) gamma radiation lower to acceptable values and with waste acceptance criteria and regulations. Fig (2) and table below show the dose rate measurement system and the variation of dose rate and attenuation coefficient in terms of dose rate with cement matrix thickness along cemented waste cross section or hypothetically along the Radwaste container diameter.

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Primary author: Ms AL-TIMMIMI, Sabeeha (Arabic-IRAQI)

Presenter: Ms AL-TIMMIMI, Sabeeha (Arabic-IRAQI)

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