UNCERTATINTY IN SCENARIOS AND ITS IMPACT ON POST CLOSURE LONG TERM SAFETY ASSESSMENT IN A POTENTIAL HLW REPOSITORY

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Abstract

In assessing the long term post closure radiological safety assessment of a potential HLW repository in Korea, three categories of uncertainties exist. The first one is the scenario uncertainty where series of different scenarios are developed by stakeholders. The second one is the modeling uncertatinty where different mathematical models are applied for an identical scenario. The last one is the data uncertainty which can be expressed in terms of probabilistic density functions. In this analysis, three different scenarios are seleceted; a small well scenario, a radiolysis scenario, and a naturally discharged scenario. The AMBER code, a probabilistic safety asssessment code based on the compartment theory is applied to asssess the annual individual doses at the generic biosphere. Results illustrate that the discrepanies among doses for the different scanrios are significant. However, total doses are still well below the guidelines of 2 mRem/yr. Detailed analyses with model and data uncertainties are underway to further assure the safety of a Korean reference dispsoal concept.

EFFECT OF METALLIZATION ON PERMANENT DISPOSAL OF HLW

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Abstract

To solve the burden of disposal of spent nuclear fuel, many alternatives are studied. One of the prominent option is the metallization. Throughout the metallization, major nuclides producing decay heat are separately and solidified. All TRU's remain in the Li reduction facilities and form a metal ingot. The solidified wastes are to be stored above ground until decay heat becomes significantly reduces. Metal ingots are disposed into an underground repository. Results show that the metallization can save the area of a potential repository by 60%. Also, removal of a gap in a spent nuclear fuel through the metallization process can decrease the doses significantly.