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Preoperational and operational radiomonitoring and radiation protection program of Iran near-surface disposal facility

The main goal of this paper is to investigate the preoperational and operational radiomonitoring program for near-surface disposal in the Anarak radioactive waste near-surface trench-type repository in Iran using both experimental and simulation methods. Barrels containing solid and solidified radioactive waste and concrete overpacks are planning to dispose into the near-surface disposal trenches. In such a manner, a comprehensive radiomonitoring plan is designed for the Anarak waste repository including, main pathways, sampling methods, sampling frequency, radionuclides concentration analysis, and radiation protection design for both preoperational and operational periods. Finally, all measured values were evaluated with national and international standards to demonstrate that the radioactive release into the environment is less than the permissible limit to ensure the safety of people and the environment. Results of analysis presented that, concentrations of radionuclides in soil, water, and air particulates samples are at environmental background level which determined in preoperational period and variations in operational periods compared to pre-operational phase shows there in no meaningful changes. On the other hand, Monte Carlo modeling of radiation protection of the Anarak site have done for operational purpose and the maximum dose released from solid and solidified radioactive waste overpacks at 1 (m) distance are calculated.

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