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Retrieving legacy waste from the Swedish geological repository for short-lived waste

At the geological repository for short-lived waste (SFR) at the Forsmarks NPP, radioactive operational waste from NPP:s and similar waste from other nuclear facilities in Sweden is disposed. This includes short-lived waste from e.g. research and industry treated at the facilities in Studsvik. SFR, operated by Swedish Nucelar Fuel and Waste Management Co, is located at a depth of about 50 meters below the seabed.
This location reduces the risk of inadvertent human intrusion. Due to land uplift, the risk of intrusion (drinking water well) increases approximately 1000 years post closure.
In 2012, SKB reported that some of the disposed waste had been insufficiently characterized. Further studies reviled that the waste unexpectedly contained a significant number of Ra-226-sources.
The Swedish Radiation Safety Authority (SSM) requested an analysis of the long-term safety due to these sources. Furthermore, SSM requested a cost-benefit analysis between the long-term safety with the costs and risks that a retrieval of the waste can entail.
The presence of Ra-226 and other long-lived alfa emitters increases the estimated total risk to the critical group due to releases from the SFR by some factor of 5. This risk increment might not necessarily have justified the retrieval of the waste. The report also showed that the doses from a drinking water well into the rock vault where the waste is placed would be significant, in the order of 0.1 –1 Sv per year. This is partly due to the lack of credible technical barriers surrounding the waste packages in this rock vault in SFR.
With regards to inadvertent human intrusion, SSM's regulations primarily addresses measures taken to limit the probability of inadvertent intrusion rather than the level of exposure. However, the probability of inadvertent intrusion in a repository at such shallow depth as 50 m cannot be judged to be negligible. Given this, together with the risk for deterministic effects from ionizing radiation from intrusion, SSM supported SKB's intention for retrieval. SKB plans for a retrieval in the coming years.

Do you wish to participate as a Young Professional?

Speaker's title

Mr

Affiliation

Swedish Radiation Safety Authority

Do you wish to be considered for a Young Professional grant?

Primary author: Dr WIEBERT, Anders (Swedish Radiation Safety Authority)

Co-author: Ms ELISABET, Höge (Swedish Radiation Safety Authority)

Presenter: Dr WIEBERT, Anders (Swedish Radiation Safety Authority)

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