Site selection procedure for high-level radioactive waste: Considerations for optimization in accordance with the principles of the German Site Selection Act

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In Germany the site for a geological disposal for high-level radioactive waste will be identified through a site selection process. The goal is to find the site with the best possible safety considering salt, clay or crystalline as possible host rocks. The process is laid down in the German Site Selection Act which defines a complex procedure including investigations above and underground, multiple safety-related reviews and decisions by parliament as well as intensive public participation. Originally, the German Site Selection Act aims for a decision in 2031, but this is not achievable following current analyses. The current estimations for determining the site in an ideal scenario range between 2068 and 2074. The authorisation and construction of the underground disposal facility, the conditioning and emplacement of the waste packages, and the closure of the repository will follow. Therefore, the high-level radioactive waste will remain for a long time in above-ground storage facilities, which will not provide the safety of a deep geological repository and could be influenced in the future by many kinds of social changes and risks. Short, medium and long-term safety has priority over all other aspects and is the basis for the Site Selection Act. Alternative disposal routes for high-level radioactive waste such as long-term storage, partitioning, transmutation and/or other emplacement techniques (borehole disposal) were assessed in an earlier study and are not considered favourable to accelerate the site selection process. Currently a discussion has been held on ways to optimise the site selection process with a view to speeding it up. Ideas on optimization potential including possible advantages and disadvantages will be presented, and it will be discussed how these comply with the principles of the Site Selection Act, defining a participatory, science-based, transparent, self-questioning and learning process.

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