State of the scientific and technical knowledge about limiting temperatures in the Repository Site Selection process of Germany with simultaneous consideration to Europe and other European repository concepts

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The Federal Republic of Germany has decided to dispose its high-level radioactive waste in deep geological formations. Three types of host rock are considered: rock salt, clay rock and crystalline rock. The Site Selection Act (StandAG\(^1\)), which came into effect on the 16\(^{th}\) of May 2017, defines the successive steps of the repository siting process, which has to ensure the best possible safety conditions for a period of one million years. Based on precaution considerations, the StandAG (§27 (4) StandAG) sets a preliminary temperature limit of 100°C at the outer surface of a repository container for the preliminary safety assessment.

This contribution provides an overview about the state of the scientific and technical knowledge on the limiting temperatures in the repository site selection process of Germany. It also illustrates the different treatments of the definition of temperature limits within other European siting processes. The findings highlight that, in Europe, the proposed criteria which consider temperature at the outer surface of a repository container get more and more into focus of research and discussion especially for the three different types of host rocks.

After presenting the national regulatory frameworks, this contribution summarizes how the European countries address the different temperature related issues for their site selection, their repository concepts and how in turn these all can influence the German safety case strategy for the German site selection. Not at least, links to site selection criteria in other countries (e.g. USA, Japan, Russia) are provided.

Reference