

EURAD-2 WP SAREC: Release of safety relevant radionuclides from spent nuclear fuel under deep disposal conditions

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As a part of the EURAD-2 programme, the study of spent nuclear fuel (SNF) is central since it concerns the source term for post closure safety assessments of many of the planned geological disposal facilities in Europe. The studies described here constitute a work package (WP) within EURAD-2 called "SAREC" and the WP is built on the experience gained in many previous EU-projects, but mainly in the projects FIRST Nuclides and DisCo. This contribution focuses on the plans, initial status of experimental preparations, and expected outcomes. The aim of this WP is to provide data that will allow a re-evaluation of current approaches to the release of safety relevant radionuclides from SNF in post closure safety assessments. This will clarify which approaches are overly pessimistic and which approaches need to be adjusted to better represent the radionuclide release from SNF in a deep geological repository environment. In order to do this an improved mechanistic understanding is required, as well as a quantification of the radionuclide source term for different types of LW and HW SNF in environments typical of granite- and clay-hosted repositories. Carefully designed experiments with advanced experimental set-ups and improved analytical methods for activation and fission products will increase the system understanding and give confidence in the proposed release values and models. An important aspect of this WP is also to provide a firm ground for capture and transfer of knowledge via dedicated work on a database for spent nuclear fuel dissolution data, as well as documenting the State-of-the-Art before and after this research endeavor.

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