

# **Contributions of INE to the safety case of nuclear repositories: geochemical behavior of actinides**

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The Institute for Nuclear Waste Disposal of the Karlsruhe Institute of Technology (KIT-INE) is mainly concerned with safety research on the final disposal of radioactive waste beside work on the safe decommissioning of nuclear facilities and on geo-energy issues.

The seminar focuses on topics related to the final disposal of radioactive waste. Applied and fundamental studies are performed on subsystems (waste matrices, container materials, geotechnical and geological barriers) of different repository concepts in clay, crystalline and rock salt host rocks. The work covers a wide range of experimental and theoretical studies on the behavior of low- to high-level radioactive waste products under repository conditions. The radionuclide release from such waste products, evolution of the geochemical environment in the near-field of a repository, alteration of container materials and geotechnical barriers, radionuclide retention by components in the near-field of a repository and the adjacent host rock as well as the far-field will be also in the focus. From the results of the research work concerning the behavior of radionuclides, detailed scientific models and data are generated to answer diverse questions on radionuclide solubility phenomena, complexation reactions, redox chemistry, interaction with mineral surfaces, colloid and coordination/extraction chemistry.

In the seminar, I will give an overview of the Institute's work contributing to safety research on the disposal of radioactive waste with a focus on the geochemical behavior of relevant actinides.