



safeND2025-128, updated on 24 Oct 2025

<https://doi.org/10.5194/safend2025-128>

Third interdisciplinary research symposium on the safety of nuclear disposal practices

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40 plus X years interim storage of high active waste

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The duration of interim storage for high active waste depends directly on the progress made in the site selection process up to the commissioning of a deep geological repository. This has various implications for interim storage, e.g. with regard to the evolution of the ageing casks, their inventories, buildings and the public participation at interim storage sites. In addition to the time dimension, other aspects of the link between interim and final storage become apparent. The results have been summarised in a publication of the TRANSENS project.

Under constant environmental conditions the transport and storage casks used in Germany are subject to practically no detrimental changes even in the long term. The functionality of the cask components e.g. the double lid sealing system has to be demonstrated in the licensing procedure. Their long-term behaviour is still the subject of research. For the inventories, in particular the fuel rod cladding tubes, a reduction in integrity is to be expected over storage periods of more than 40 years. It is important to note that this may affect later manageability in the context of conditioning as an interface to final disposal.

The storage buildings were designed for a service life of 50 years in accordance with the accepted state of the art at the time. As part of the structural protection measures of a storage facility, the buildings must not only be examined for ageing processes within the framework of a new license, but it should also be possible to predict their condition development as accurately as possible. A suitable instrument for this is the adaptive lifetime prognosis based on continuous measurement technology.

As part of the licensing procedure, public participation is formally provided for in the environmental impact assessment. If the storage license is extended once, no further participation may take place. As this is in contrast to the extensive participation in the siting of repositories, it leads to unequal treatment, which should also be addressed. In addition to the establishment of independent opportunities for dialogue, it is also proposed that municipal representatives be included in the site selection process. Participation formats should be regularly evaluated and adapted.

The authors assume that public participation and studies on the further development of the state of the art in science and technology with regard to the stability and integrity of the storage buildings, casks and cask inventories will make a decisive contribution to maintaining safety. It can also be assumed that relevant research issues will probably not be fully resolved by the time new licenses are applied for. For this reason, in addition to recurring inspections and periodic safety reviews of

storage facilities every 10 years, accompanying research should also be included in the licenses applied for. The exchange of experience on the respective results will also be important in order to achieve the best possible results and to be able to organise the storage period safely.