

Technical Concept for a Hazardous Waste Cavern in Salt in Accordance with German Regulations of Hazardous Waste

by

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1 SUMMARY

The new Technical Regulations on Hazardous Waste (TA Sonderabfall) in Germany demand that all waste which cannot be stored for long periods above ground without prejudicing the biosphere, even after undergoing treatment, shall be stored below ground in suitable geological formations. This article describes the salt cavern waste disposal concept and, in particular, the cavern technology sector as opposed to the other sectors of conditioning and injection technology.

The paper starts with a basic discussion of the method of injecting into a brine filled cavern and includes filling operations with cavern back pressure.

Reports follow on the initial results of the joint R&D project "Experimental studies into the disposal of wastes in salt caverns", which is aimed at the adaption of known technologies to the specific requirements of a salt cavern waste repository taking the TA Sonderabfall into account. This project, sponsored by the German government, is commissioned by the NGS².

Two main areas of this work are described in detail:

In the field of rock mechanics, the stability of a disposal cavern operated at atmospheric pressure and the long-term behaviour of the waste body / salt rock system are studied. Various important requirements on conditioning and injection techniques are derived.

As far as long-term safety is concerned, the construction of a maintenance-free seal for the cavern after completion of filling operations is critical. Relevant results regarding material selection and plugging concepts are discussed.