

Context

Over the past 30 years, SCK•CEN has developed one of the most advanced R&D programmes on the disposal of radioactive waste in clay formations. Experience and knowledge acquired in the framework of the Belgian radioactive waste management programme is highly relevant and applicable to programmes beyond the Belgian context. Therefore, SCK•CEN is engaged in various national and international programmes with main emphasis on research related to the disposal of radioactive waste in surface facilities and in geological repositories.

Objectives

Through its involvement in projects outside the Belgian repository development programme, SCK•CEN has attained worldwide recognition as the leading research organisation in the field of investigations on the disposal of radioactive waste in a clay-based environment. Active participation in these projects has allowed to maintain, to apply and to further expand knowledge in specific areas of competence as well as to anchor research performed at SCK•CEN in a broader international context.



Field investigations to determine site parameters for a surface repository for the disposal of low-level radioactive waste in Bulgaria.

Main activities

SCK•CEN's international programme on research related to radioactive waste management covers a wide range of bi- and multilateral co-operations with national and international organisations worldwide.

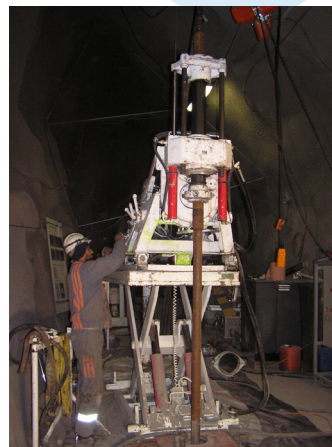
As part of the Belgian programme for the improvement of the safety of nuclear installations in countries of Central- and Eastern Europe and the Former Soviet Union, SCK•CEN is actively involved in defining programmes as well as in conducting research in support of the long-term management of radioactive waste. In particular:

- SCK•CEN has provided advice and expertise to Romania and Bulgaria relating to the investigation of potential sites for the construction of surface facilities for the disposal of low-level radioactive waste. Within this framework, SCK•CEN performed detailed studies to identify key field characteristics and parameters. In addition to site specific investigations, SCK•CEN implemented a methodology for performing safety analyses and evaluations including the training of local staff and experts.
- Experts of SCK•CEN are engaged in national R&D programmes for the development of geological repositories for radioactive waste disposal in Lithuania, Poland, Russia and the Slovak Republic. Contributions by SCK•CEN cover site investigations, laboratory testing to determine key parameters and the development of and training in methodologies in support of safety assessments.

Since the 70's, SCK•CEN has been taking part in research programmes supported by the European Commission. Through its participation in the EU Framework Programmes, SCK•CEN has played a foremost role in the establishing of the scientific basis for the geological disposal of radioactive waste in clay formations. In particular, SCK•CEN has acquired international recognition as a lead contractor and coordinator of cutting-edge research projects such as the Integrated Project NF-PRO (Sixth Framework Programme of the European Commission).

SCK•CEN is a founding member of the “IAEA Network of Centers of Excellence in Training and Demonstration in Underground Research Facilities”. The main objective of the Network is to promote international co-operation and research on the geological disposal of high-level radioactive waste and spent fuel. For this purpose, the Network brings together the world’s leading Underground Research Facilities. These Underground Research Facilities are made available to the Network for joint research and training activities. Within the Network, SCK•CEN is acknowledged as a foremost research organisation for its expertise regarding R&D on plastic clay formations.

SCK•CEN is taking part in the Mont Terri Project, which is an international research project based in Switzerland. In the Mont Terri underground rock laboratory, experiments are being carried out to investigate the geological, hydrogeological, geochemical and rock mechanical properties of the Opalinus Clay. The results of these experiments provide input for assessing the feasibility and safety of a repository for radioactive (or chemotoxic) waste in an indurated clay. The experiments are carried out in a series of boreholes up to 30 meters long which are drilled in different directions. Testing and, where necessary, adapting existing measurement techniques is also an important objective of the programme. SCK•CEN takes up an active role in the experimental programme of Mont Terri and is the lead investigator of the Bitumen-Nitrate Interaction *in situ* experiment.



The Mont Terri Underground Laboratory (Switzerland) and installation of the Bitumen-Nitrate Interaction experiment.

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