Safety of disposal

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Different wastes – Different solutions

Low and Intermediate Level Waste

Spent Fuel and High Level Waste
Disposal concepts
Post-closure safety must be considered in all steps
Understanding the system
Research, technology and safety

Technical Report
TR-11-01

Long-term safety for the final repository for spent nuclear fuel at Forsmark
Main report of the SR-Site project
Volume I

Svensk Kärnbränslehantering AB

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Analysis of post-closure safety

Results and conclusions
Are safety functions maintained? What is the risk? Can improvements be made?

Scenarios
Can the impact on the barriers be greater than in the reference development? What can go wrong? Human intrusion? What could the consequences be?

Analysis
How do conditions in the repository change over time? Reference development is obtained

Knowledge
The design of the repository About the site (rock) About the artificial barriers About processes that affect the repository

Safety functions
What do the barriers need to withstand?
Parallel activities during operation

- Tunnel prepared for deposition
- Deposition
- Backfilling
- Backfilled and plugged tunnels
- Drilling of deposition holes
- Excavation activities
- Main tunnel
- Partition wall
Integrating operational and post-closure safety for disposal

Preliminary Safety Report (PSAR)
- Introduction
- Relation between PSAR and license application

Requirements and premises
- The site
- Radioactive substances in the repository
- Design premises and other requirements

Design and operation
- Organisation, management and control
- Facility design
- Construction of deposition areas
- Deposition
- Closure

Analysis and conclusions
- Radiation protection
- Operational safety
- Initial state
- Post-closure safety

Supporting documents
Safe geological disposal is feasible

• Scientific understanding
  – Geosphere, biosphere, climate evolution…
  – Engineered barriers and waste characteristics

• Technologies demonstrated
  – Pilot and full scale tests
  – Production and construction

• Safety requirements are met
  – Generic and site specific assessments