



Regulating safety in final disposal

SKI's current position

Waste safety - basic provisions

The waste producer has the full responsibility (SKB)

- siting, construction and operation
- research and development
- financing

SKI ensures compliance with safety requirements

- regulations and licence conditions
- supervision
- review
- research

SKI's tasks in the disposal programme

- Regulations
- Review of SKB's R&D
- Consultations in the siting process
- Review of license applications
 - Licence conditions
 - Operating permits
- Supervision and periodic reviews of safety of installations

SKI's role in the siting

Balance between involvement and independence

- Consultations \Leftrightarrow review of licence application

The siting process

- Consistency with environmental protection (EIA)
- Stepwise implementation with regular review
- Request for clear regulatory requirements
 - Organisations, municipalities and the public
 - Communication necessary

The role of SA depends on the phase of the disposal programme

- Assess safety and demonstrate compliance with safety and radiation protection criteria
- Guidance and basis for
 - Performance criteria for barriers
 - Quality control
 - Site selection and characterisation
 - R&D
- *One* important basis for EIA

Regulations and competence

- Clear basic safety requirements
 - not prescriptive nor too detailed
- Demonstration of compliance is most important
 - Requirements not enough
 - Safety assessments
 - Reasonable assurance
- SKI has competence for own, independent SA
 - Own staff
 - External network
 - Research prioritised

SKI's regulations for long-term safety

Passive safety

- System of multiple barrier functions
- Biosphere not a barrier
 - Siting factor
 - Only reference biosphere possible for distant future
 - Present biosphere one possible reference

Timeframes should reflect the waste's hazard

- 10^4 years minimum

Disaggregated approach ("risk profile")

Scenarios

Systematic identification based on

- External FEPs
- Internal FEPs

Three classes of scenarios

- Main scenario
- Less likely scenarios
- Residual scenarios

The main scenario

Starting points

- Likely climate evolution
- Reasonable assumptions about the initial state
- Cover the next glacial cycle

Basis for

- Judging compliance with radiation protection and safety criteria
- Uncertainty/sensitivity analysis

Less likely scenarios

- Variations of the climate evolution
- Human activities
(impact on barrier performance)
- Consequences should be assessed and probabilities estimated
- Expert judgements are important

Residual scenarios

Aim at illustrating performance of barriers

- "What-if" scenarios
 - safety allocation
- Extreme natural events
- Consequences to intruders

Scenarios, models, uncertainties

- Focus on "completeness" and quality
- Systematic approach to identification of scenarios and uncertainties
- Probabilistic and deterministic models