Waste Acceptance Criteria and Documentation system - Experiencies from the Swedish Repository for LILW

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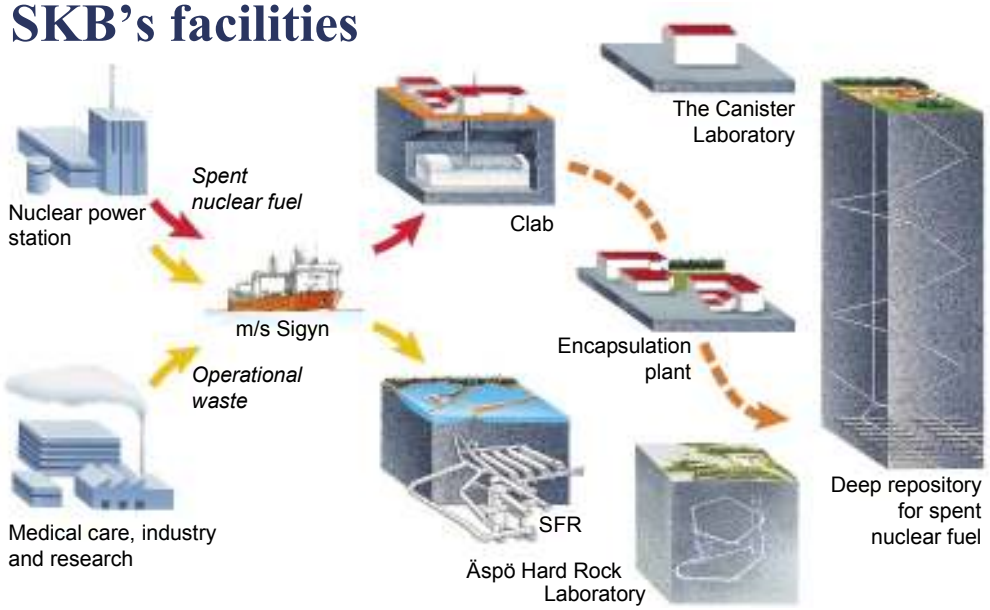
- The Swedish radwaste management system-Overview
- The Swedish LILW repository - SFR
- Waste Acceptance Criteria and Waste Type Descriptions
- Computerized documentation system
- Conclusions

SKB's facilities



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Transports with m/s Sigyn

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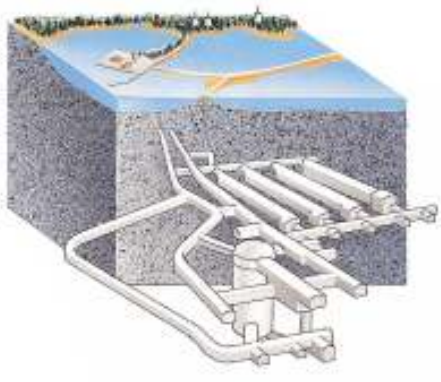
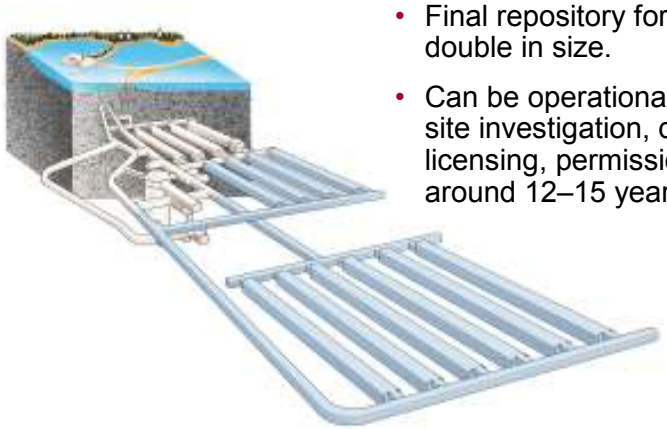
SFR – Final Repository for LILW

(at Forsmark NPP, commissioned in 1988)

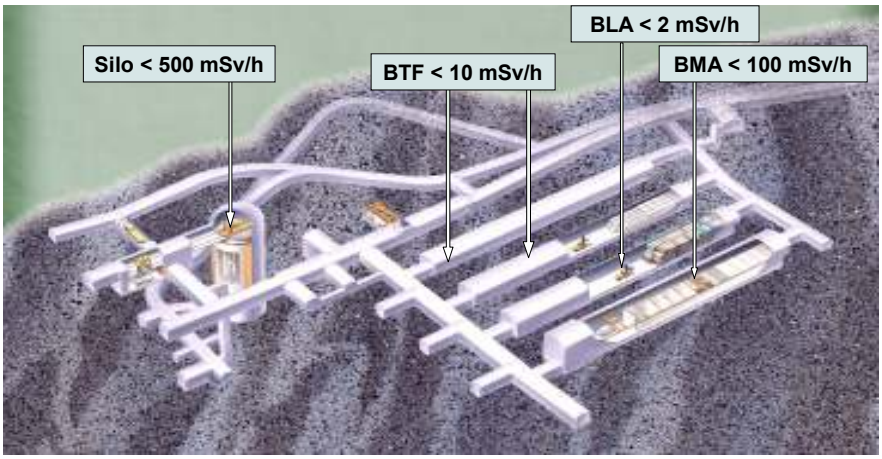


Decommissioning waste

- Final disposal of decommissioning waste at final repository for operational waste.
- Final repository for operational waste will double in size.
- Can be operational in 2020, at the earliest: site investigation, design, application, licensing, permission and building will take around 12–15 years.



SFR – max permissible dose rates

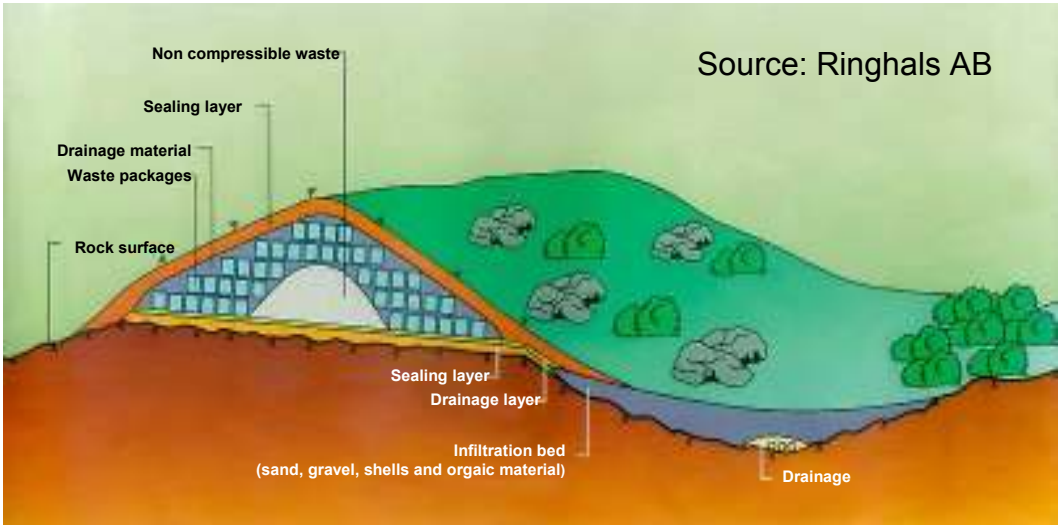


SFR Key data

Text

- Disposal capacity phase I: 63 000 m^3
- Start construction: 1983
- Commissioned: 1988
- Annual amount received: ca 1000 m^3
- Disposed volume: ca 35 000m^3
- Staff: 12 persons
- Operator: SKB

VLLW - Landfill repository



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Waste Categorization System - Example

Radioactivity			Content of longlived radionuclides	
High activity	**Intermediate activity**	**Low activity**	**Shortlived**	**Longlived**
Needs cooling and shielding Heat effect approximately 2 kW/m^3	Needs shielding but no cooling Surface doserate > 2 mSv/h	Needs no cooling or shielding Surface doserate < 2 mSv/h	Dominating content of radionuclides with a halftime T1/2 < 30 year	Significant content of radionuclides with a halftime T1/2 >30 year α > 400 Bq/g

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Standardized Waste Packages

Waste Acceptance Criteria (WAC) & Waste Type Descriptions (WTD)

WAC

- Defines the waste properties allowed in order to comply with safety assessment and environmental assessment of the disposal facility

WTD

- Is a standardized description of a certain waste type to check compliance with the defined WAC

Waste Package Data

- Data for each waste package is *checked for compliance* with approved WTD (and thereby WAC) *prior to permission to ship* for disposal

LILW – Swedish procedure

Waste generators

- Preparation of Waste Type Descriptions
- Conditioning
- Buffer storage

Transport

Waste package approved prior to permission to ship

Disposal

Waste Acceptance Criteria is the basis for:
- Radiological safety assessment
- Environmental assessment

Waste Acceptance Criteria (WAC)

• **General**	Design, geometry, weight, identification
• **Radiological properties**	Inventory, dose-rate, contamination
• **Chemical properties**	Composition, structure, homogeneity, liquid, corrosion resistance, gas formation, combustibility & fire resistance, chemical reactivity, leaching properties
• **Mechanical properties**	Mechanical strength, stability

Waste Type Description - Guidelines

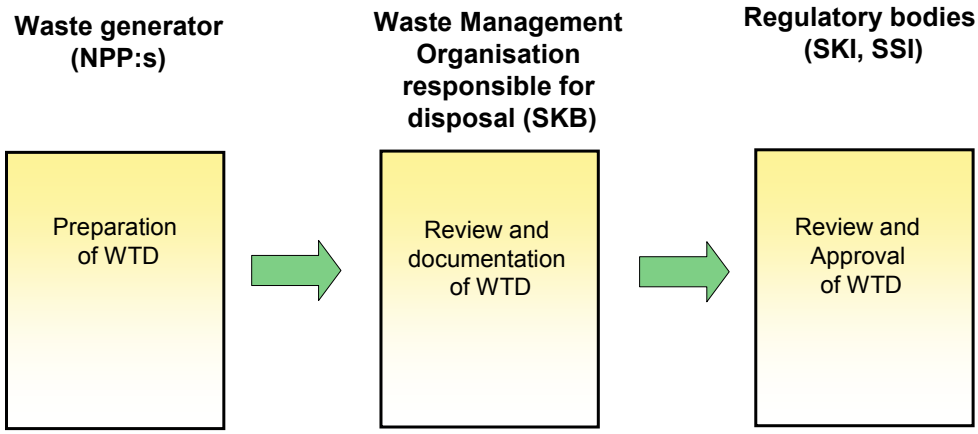
- Each waste type is described and approved in a specific waste type description (WTD)
- Five handling steps are evaluated according to WAC, the final step 5 is the most important on long term basis

1. Conditioning of the waste
2. Intermediate storage of the conditioned waste
3. Transportation to the disposal facility (SFR)
4. Handling and operation in the disposal (SFR)
5. Disposal (SFR)

Waste Type Description (WTD) - Structure

- Title page
- Introduction
  - Waste origin, treatment and handling
  - Waste data
- Handling sequence and demands
- Quality criteria
- Production data
- Results of investigations and calculations
- Quality control
- References

Review and approval of WTD (simplified)



Waste management data-base

Information stored:

- Waste package ID
- Waste Type
- Package type code
- Waste category code
- Package weight
- Date of production
- Nuclide content and total activity
- Surface dose-rate
- Dose-rate at 1 meter
- Measuring date
- Special information from the producer
- Position in SFR after disposal

Waste management data-base - Experiences

- Enables check of waste package compliance with WAC before disposal
- Facilitates search for information of waste packages
- Facilitates prognoses work
- Easy to extract reports for different purposes
- Important to have a flexible system

Conclusions

- WAC of the receiving facility is a tool in the overall waste management process
  - Sorting
  - Conditioning
  - Interim storage
  - Disposal
- Standardized system for waste categorization and WTD:s is an efficient tool to check compliance with WAC
- Computerized waste management system is an efficient tool for documentation, control and reporting
- ***Collecting and storing waste data early in the process (conditioning) when it is easily available, saves a lot of problems later in the process (disposal)***

Thank you for your attention !