

The OECD-NEA RK&M Initiative

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“Information and memory for future decision making – radioactive waste and beyond”
Workshop co-hosted by Kärnavfallsrådet, Linnaeus University and Riksarkivet
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Profile

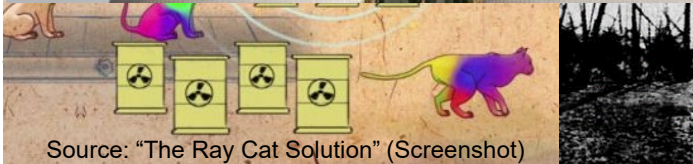
“Preservation of Records, Knowledge and Memory (RK&M) Across Generations”

- An international initiative of the OECD/NEA/RWMC. In short: “**RK&M Initiative**”
- Guiding question: “How can we continue to remember and understand across generations where, why and how radioactive waste is disposed?”
- 21 participating organisations from 14 countries
 - BE, CA, CH, CZ, DE, ES, FI, FR, HU, JP, RU, UK, US, SE (Riksarkivet, SKB, SSM, Kärnavfallsrådet)
- Phase-I: 2011–2014
Phase-II: 2014–2018
Currently: Publication of deliverables (2018/2019)

Evolution

historical review

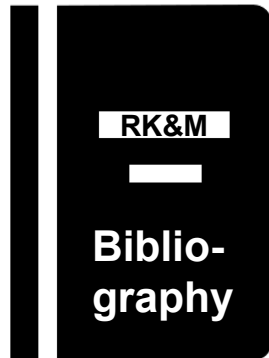
- “Compelling from the 1970s onwards”
- Popular culture:



- “Landscape of thorns” by Trauth et al. (1993, Markers Panel for WIPP)
- Overall: Rich literature — Several insights from these reports remain valid and relevant today
 - Popular media coverage often with poor reflection of these

anthropologist/linguist within Human Interference (‘s’), building on an earlier concept by exist from 1985 to 2005.

response to a poll by R. Posner)



Analysis of the RK&M Bibliography

- Many reports deal with one of the two areas:
 - Preservation of RK&M for short-term, primarily operational purposes (fairly detailed)
 - Long-term preservation of RK&M, aimed at notifying future generations about the existence/hazards of a DGR
- Few documents attempt to cover both areas of interest, or to bridge them.
- Specific topics hardly covered
 - Costs and funding for RK&M preservation
 - The role of actors other than implementers and regulators
 - Security and safeguards as motivations for preserving RK&M
- 1980's–today: Change in emphasis/rationale

From dictating the future (“stay away!”) to informing future generations (“come and be informed/get involved”)

Lessons co-shaping the RK&M Initiative

- Refrain from futurology, yet encourage long-term and creative thinking
- Focus RK&M preservation efforts on informing, not on scaring future generations
- Close the gap: Address the intermediate timescale and link **the short term** with **the long term**
- Combine thorough, theoretical reflections with a systemic identification of various actual mechanisms for practicable implementation

Annex 1:
RK&M
Glossary

Objectives and aims

1. Develop a theoretically founded, broad-based understanding of the issue at stake
2. Develop a practice-oriented “toolbox” of concrete RK&M preservation methods



RK&M preservation fundamentals

Two fundamental rationales for the preservation of RK&M:

- Protection of humans and the environment
- Preservation of conditions for informed decision making

Overlapping with these two, but rooted in radiological protection principles:

- The ICRP concept of oversight

Fundamental rationales

Protection of humans and the environment

- Objective: Preventing inadvertent intrusion by future generations
- Connected task: Preserving awareness of the repository

Preservation of conditions for informed decision making

- Objective: Enabling future generations to make informed decisions about the repository
- Connected task: Preserving detailed knowledge of the repository (or the possibility to regain it)

From challenges and fundamentals...

...to practical steps:

The toolbox of RK&M preservation

“Systemic strategy”

- There is no single approach or mechanism that, on its own, would achieve the preservation of RK&M over the necessary timescales.
- We recommend a variety of RK&M transmission approaches and mechanisms with different key characteristics, integrated with or complementing one another.
- These would provide for diversity and redundancy, with a view to maximising information accessibility, understandability and survivability.
- We recommend a participatory approach in designing, developing and implementing such a “systemic strategy”.

The toolbox of RK&M preservation

9 “approaches”

each divided into two or more mechanisms/tools of RK&M preservation

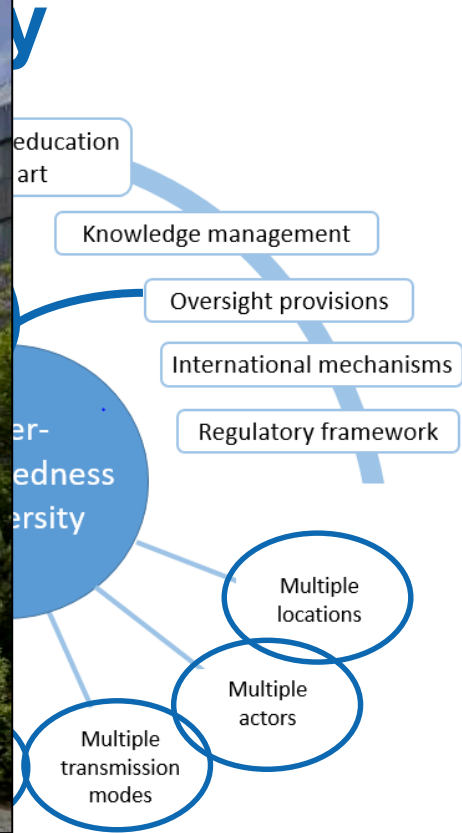
- Dedicated record sets and summary files (“Key Information File”, “Set of Essential Records”)
- Memory institutions (archives, museums, libraries)
- Markers (land surface markers, sub-surface m., deep geological m., ...)
- Time capsules (large visible time capsules, non-visible time c., small time c.)
- Culture, education and art (industrial heritage, alternative site re-use, education & research, art, ...)
- Knowledge management (knowledge retention tools, knowledge risk analysis, ...)
- Oversight provisions (monitoring, land-use control, ...)
- International mechanisms (int. agreements, int. guidelines, int. inventories/catalogues, ...)
- Regulatory framework (national regulatory framework, safeguards)

The toolbox of RK&M preservation

Approaches	Mechanisms
Dedicated record sets and summary files	<ul style="list-style-type: none"> • Key Information File (KIF) • Set of Essential Records (SER)
Memory institutions	<ul style="list-style-type: none"> • Archives • Libraries • Museums
Markers	<ul style="list-style-type: none"> • Surface markers • Monuments • Sub-surface markers • Deep geological markers • Surface traces
Time capsules	<ul style="list-style-type: none"> • Large visible time capsules • Large invisible time capsules • Small time capsules
Culture, education and art	<ul style="list-style-type: none"> • Industrial heritage • Alternative reuse of the disposal site/infrastructure • Heritage inventories and catalogues • Public information dissemination activities • Local history societies • Intangible cultural heritage • Education, research and training • Art
Knowledge management	<ul style="list-style-type: none"> • Knowledge retention tools • Knowledge risk analysis • Knowledge sharing philosophy
Oversight provisions	<ul style="list-style-type: none"> • Monitoring • Land use control • Clear and planned responsibilities
International mechanisms	<ul style="list-style-type: none"> • International regulations and agreements • International standards and guidelines • International inventories and catalogues • International education and training programmes • International cooperation • International archiving initiatives
Regulatory framework	<ul style="list-style-type: none"> • National regulatory framework • Safeguards



- – mediated
- – non-mediated



The toolbox: Diversity of characteristics (schematic diagram, section)

Approaches	Mechanisms	Scope						Characteristics				Timescales								
		RK&M Type					Level of Detail		Tangi- bility		Trans- mission Modes		Target Timescale				Implementation Timescale			
		Information	Records	Knowledge	Memory	Awareness	Low Level of Detail	High Level of Detail	Tangible	Intangible	Mediated	Non-Mediated	Very Short Term	Short Term	Medium Term	Long Term	Pre-Operational	Operational	Pre-Closure	Post-Closure
Dedicated Record Sets and Summary Files	Key Information File (KIF)	x	x		x		x		x		x	x		x	x		x	x	x	
	Set of Essential Records (SER)	x	x					x		x		x	x			x	x	x	x	
Memory Institutions	Archives	x	x				x		x		x	x				x	x			
	Libraries	x		x	x		x	x	x		x		x							
	Museums	x			x	x	x		x		x			x	x					
Markers	Surface Markers	x				x	x		x			x			x	x			x	x
	Monuments	x			x	x	x		x			x			x	x			x	x
	Sub-Surface Markers					x	x		x			x			x				x	x
	Deep Geological Markers					x	x		x			x			x				x	x
	Surface Traces					x	x		x			x			x				x	x
Time Capsules	Large Visible Time Caspules	x	x			x		x	x			x			x	x			x	x
	Large Invisible Time Capsules	x	x					x	x			x			x	x			x	x
	Small Time Capsules	x	x					x	x			x			x	x			x	x

Deliverables

The toolbox is to be found in:

- The “Final report of the RK&M Initiative”

Other deliverables:

- The KIF concept report: “Developing a Key Information File for a Radioactive Waste Repository”
- The SER concept report: “Compiling a Set of Essential Records for a Radioactive Waste Repository”
- The RK&M “Reference Bibliography”
- The RK&M “Regulatory Catalogue”



To be found soon on
www.oecd-nea.org/rwm/rkm/

Summary and Outlook

- RK&M Initiative (2011–2018):
 - Developed a broad-based understanding of the issue
 - Developed a “toolbox” of concrete RK&M preservation mechanisms
 - Recommends a participatory approach in developing/implementing a “systemic strategy”

**Thank you
for your
attention**

Annex Slides

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Outlook: In practice

“In practice” refers to several aspects:

- Address the “multiple actors” issue: Get actors involved in practice
- — Develop tools concretely; e.g. the KIF
- — Develop how to use them!
- — Use them!
- This also relates to “closing the gap” (linking the short term with the medium/long term), since medium term usefulness is best anchored in short term usefulness:
 - What is not useful for anybody now, is unlikely to become useful in the future.
- Challenge: To make tools useful “in practice”.

RK&M preservation does not jeopardise ...

... Safety

- The “concentrate & contain” strategy makes it possible, in principle, for the waste to be re-accessed. — It is not RK&M preservation that makes it possible.
- “Remember to forget” is impossible.

... the sustainability principle “No undue burden on future generations”

- RK&M preservation is in support of passively safe disposal
- “No undue burden!” may indeed be feasible with geological disposal in combination with RK&M preservation.
- “Zero burden!” would be an impossible demand. Future generations will live with the radioactive waste we produce. — Again, this is not due to RK&M preservation.