



Foundations and guiding principles for the preservation of records, knowledge and memory across generations: A focus on the post-closure phase of geological repositories

A Collective Statement of the NEA Radioactive Waste Management Committee

Research and development underway on the disposal of long-lived radioactive waste in engineered facilities or repositories located in deep geological formations has confirmed this form of disposal as the ultimate solution for the long-term protection of human beings and the environment, eliminating the need for human intervention and maintenance. While the intention is not to abandon repositories for geological disposal of radioactive waste, either before or after closure, as with many long-term projects, it is a question of minimising the risks of losing records, knowledge and memory (RK&M). The international community of radioactive waste professionals is leading advanced work in this important area, dedicating efforts towards the preservation of RK&M across generations. At the end of its first phase of RK&M work, the OECD/NEA Radioactive Waste Management Committee (RWMC) observed that the context has changed considerably since the 1980s, when RK&M preservation was thought to serve the sole function of deterring intrusion into a repository. The goal today is to preserve information for future generations while maintaining technical and societal oversight of the repository for as long as practicable. The foundations and guiding principles that serve this goal are presented in this Collective Statement of the NEA Radioactive Waste Management Committee.

Foundations for RK&M preservation

It is commonly understood today that:

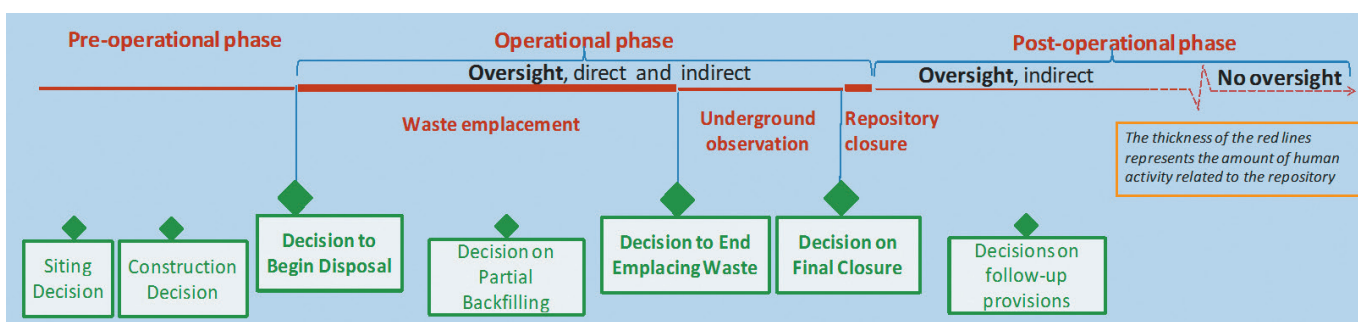
- There is no intention to abandon repositories for geological disposal of radioactive waste, either before or after closure. The RWMC accepts and adopts the ICRP-122 position on the relevance of maintaining oversight over the geological disposal of radioactive waste for as long as practicable.
 - Oversight is a general term for “watchful care” and refers to society “keeping an eye” on the entire technical disposal system and the actual implementation of plans and decisions.
 - Oversight includes regulatory supervision, institutional control, preservation of records and societal memory maintaining in relation to the existence of the facility.

- Once the closure of the repository has been authorised, the latter should be considered safe in and of itself. Safety – meaning the absence of significant threats to human health or the environment – should be independent from any form of oversight.
- Once current institutions – implementers, regulators and others – have fulfilled their legal mandates, repository oversight will continue through other means (e.g. other institutions and stakeholders).
- Any strategy for the preservation of RK&M should take into account the possibility of major discontinuities in the future.

Based on the points above, the following guiding principles are offered to inform and shape long-term strategies for RK&M preservation across generations.

Guiding principles for RK&M preservation

- Maintaining RK&M for a radioactive waste repository after its closure will allow future members of society to take informed decisions regarding the repository and its contents and to prevent inadvertent human intrusion.
- Enabling future members of society to make informed decisions is part of responsible, ethically sound, sustainable radioactive waste management, and is in line with a prudent approach regarding safety.
- Preparing for future RK&M preservation is best addressed while waste management plans are being designed and implemented, and funding is available for this important component of long-term planning.
 - The long operational phase of the repository creates an opportunity for reflection and for the development of workable RK&M strategies.
- During the operational phase, institutional stakeholders must prepare for the post-closure phase, when their own roles will be reduced and increasing roles will be played by other stakeholders with new responsibilities – especially in the area of RK&M preservation. During this operational phase, the institutional stakeholders can facilitate the preparation and implementation of:
 - archives;
 - administrative restrictions on land use;
 - regular reporting by governments under one or more international mechanisms or agreements.
- A systemic approach should be formulated whereby the various components of the RK&M system complement each other, provide for redundancy in the communication of messages and maximise the chances of survival of a recognisable and comprehensible message.
 - There is no single best means of preservation over all timescales. All available communication channels should be explored.
 - Records will be used more by future members of society than by the original providers, and thus attention should be given to the needs of these users in terms of facilitating readability and intelligibility, providing in particular relevant information on the context in which the records were created.
 - The various components of the RK&M system should apply robust, simple and understandable techniques and support materials, and should not rely on technological provisions alone.
 - RK&M preservation approaches should include provisions for knowledge reconstruction and for providing information to future generations with and without requiring the involvement of intermediate generations.
 - Regulatory guidance and supervision should be developed to support the systemic approach to RK&M preservation.
- Synergies should be sought with societal institutions and international bodies. Agreements should be reached that are likely to survive beyond the closure of the repository and can thus contribute to RK&M preservation.
 - Mechanisms outside radioactive waste management constitute an additional resource for waste management organisations and governments.
- A concerted approach at the international level will contribute to the further development of national strategies.



Planning for future RK&M preservation is best addressed while waste management plans are designed and implemented and funding is available. The long operational phase of the repository creates an opportunity for reflection and for the development of workable RK&M strategies. A systemic approach should be formulated whereby the various components of the RK&M system complement each other, provide for redundancy in the communication of messages and maximise the chances of survival of a recognisable and comprehensible message. Through this approach, synergies can be sought with societal institutions and international bodies, and agreements can be reached that are likely to survive beyond the closure of the repository and can thus contribute to RK&M preservation. Mechanisms outside radioactive waste management constitute an additional resource for waste management organisations and governments. A concerted approach at the international level will contribute to the further development of national strategies.