

Workshop on the Management of Spent fuel, Radioactive Waste, and Decommissioning in SMR/Advanced Reactor Technologies

7 – 10 November 2022

The NEA and NRCAN (Canada) are organizing an international workshop on the implementation of radioactive waste management strategies in small modular reactors (SMRs)/Advanced Reactor technologies. The topic has been surfacing in conversation for many months during various events within the CDLM, RWMC and RF communities. The workshop will welcome participants from various fields of expertise in the areas of Radioactive Waste Management, Decommissioning, Nuclear Science and Development, young professionals, and researchers. The objective of the workshop is to devise a guideline document that will serve implementers in understanding key issues in decommissioning and waste management of new reactors from the design perspective, aiding in the licensing process and in future decommissioning and waste management activities.

Objectives:

1. To better understand how radioactive waste management and decommissioning should be considered as part of a more comprehensive preparation for these reactors' deployment from the design stage.
2. To understand unique features of SMR waste and the key questions that need to be answered to ensure a path to final disposal.
3. To review current challenges in decommissioning and provide lessons learned to avoid similar challenges in the future.
4. To better integrate educational institutions and engage with interested communities early in the processes.
5. To better understand how the current regulatory framework should be considered in the early development of SMR/advanced reactor technologies.

Workshop Format:

A three-day workshop consisting of five sessions, with a fourth day dedicated to a site visit. The workshop will have presentations from relevant experts in the fields of SMRs technologies, Decommissioning and waste management activities, and a dedicated panel session where all the participants will work on understanding, brainstorming, and providing solutions for key issues.

Topics to be addressed by the Workshop Programme:

- Topic 1: Understanding of the functioning of major SMR technologies and Fuel Cycles
- Topic 2: Storage and Transportation of spent fuel and Radwaste in SMR/Adv Rx design
- Topic 3: Radioactive Waste and Decommissioning consideration in SMR and Advanced Reactor
- Topic 4: Key Consideration for Communities, Indigenous peoples and Stakeholder involvement
- Last session: Closing remarks

Timeline (Preliminary):

- Welcome session:
 - Welcome remarks by NEA and NRCAN
 - Introduction of participants
- Session 1: Understanding of the functioning of major SMR technologies and Fuel Cycles

- Understanding of SMR technologies such as main differences expected in function of technologies and mode of operation (e.g. fuel type).
 - What are the key questions designers need to consider now when developing a new fuel that has not been evaluated by waste acceptance criteria (e.g. is DGR capable of taking this kind of waste? Should that be considered now?).
- Session 2: Storage and Transportation of spent fuel and Radwaste in SMR/Adv Rx design
 - Current work by RWMC AdHoc Group on storage and Transportation
 - What are the current challenges associated with current fuel storage and transportation that should be evaluated to determine its applicability to new fuel type? (e.g. dual cask, criticality issues, environmental concerns, etc.).
 - What characteristic phenomena during transportation may arise from the use of advanced fuel that will need to be assessed (fresh and used fuel?)
 - Technical and economic feasibility of storage and transport of reprocessed fuel based on reactor type.
- Session 3: Radioactive Waste and Decommissioning consideration in SMR/Advanced Reactor
 - Spent Fuel from advanced reactors regulatory requirements
 - Fuel damage and fuel changes during operation and potential impacts on decommissioning and waste management
 - Regulatory perspective on Decommissioning and Radwaste management for small modular reactors and licensing
 - Best practices on managing and disposal of existing waste streams and how can some of these concepts be applied in future endeavours, such as Advanced reactors
 - How to design SMRs and Scalable New NPPs to optimize decommissioning activities without losing on efficiency
- Session 4: Key Considerations for Communities, Indigenous peoples and Stakeholder involvement
 - Best practices on stakeholder engagement and dialogue.
 - Discussion on intergenerational aspect of the SMR (i.e. waste management and decommissioning management).
 - Communication of societal benefit of SMR deployment (i.e. desalinization, hydrogen production, connection to renewable energy production systems, etc...).

Workshop Language:

Working language is English.

Registration

Expected 60-100 Participants

- IAEA, NEA, EPRI, WNA, high-level invited guests (e.g. President of CNSC, AECL, CEO)

For participation in the workshop, the online registration has been created. Please use this link to access the registration [Conference DB \(oecd-nea.org\)](https://www.oecd-nea.org/conference-db)

Proposed Key Dates

- Refer to the SMR workshop website for more specific dates [here](#)

Expected outcome

As a result of the workshop, organizers expect to obtain a short paper that will list key issues in decommissioning and waste management for SMRs, an understanding of lessons learned and how issues of the past could be prevented and guidelines on key aspects for consideration when designing, deploying and implementing new nuclear technologies.