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# Panel: safeguarding nuclear waste management

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**Abstract.** When the world's first encapsulation plant and geological repository (EPGR) for spent nuclear fuel disposal will start operations in Finland in a few years, this will also be the first facility of this kind for which international safeguard measures (e.g. Niemeyer et al., 2021) will be implemented. This two-part panel takes this as an opportunity to focus on the approaches, concepts, methods and technologies for safeguarding nuclear waste management.

The first part discusses the current state and challenges in safeguarding spent fuel storage facilities, encapsulation plants and geological repositories and elaborates on the recent progress of safeguard developments and implementation, as well as existing gaps. Panellists will address the following questions. (i) Which safeguards approaches are currently developed for or implemented at spent fuel storage facilities, encapsulation plants and geological repositories? (ii) How do we make best use of safeguards concepts, such as safety–security–safeguards (3S) and safeguards by design (SBD), in nuclear waste management? (iii) Lastly, what are the most important research and development (R&D) activities regarding safeguards methods and technologies in nuclear waste management (related to the technical readiness levels (TRL) 4–8)?

The second part then looks at future challenges of safeguarding nuclear waste management in the medium and long term and develops some priorities in order to meet these challenges, based on the following questions. (i) Which challenges are on the horizon regarding safeguards implementation at spent fuel storage facilities, encapsulation plants and geological repositories in the medium and long term? (ii) What are medium- and long-term challenges of safeguards implementation from the operator's point of view? (iii) What are the most promising methods and technologies for safeguarding nuclear waste management in the medium- and long-term future (related to the technical readiness levels (TRL) 1–4)?

Both parts will include panellists from safeguards inspectorates, national safeguards authorities, the nuclear industry and research entities. The panel will be held with the Final Disposal Working Group of the European Safeguards Research and Development Association (ESARDA) (https://esarda.jrc.ec.europa.eu/working-groups/final-disposal-fd_en, last access: 24 August 2023).

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## References

Niemeyer, I., Aymanns, K., Deissmann, G., and Bosbach, D.: International safeguards for the final disposal of spent nuclear fuel – why, what and how, Saf. Nucl. Waste Disposal, 1, 241–242, https://doi.org/10.5194/sand-1-241-2021, 2021.