



# International Atomic Energy Agency (IAEA) support for the management of site investigations for radioactive waste disposal facilities

Vaclava Havlova<sup>1</sup>, Stefan Mayer<sup>1</sup>, and Paul Degnan<sup>2</sup>

<sup>1</sup>International Atomic Energy Agency (IAEA), Vienna, Austria

<sup>2</sup>Catalystra, Brisbane, Australia

**Correspondence:** Vaclava Havlova (va.havlova@iaea.org)

Received: 6 April 2023 – Accepted: 24 May 2023 – Published: 6 September 2023

**Abstract.** Providing safe, secure and environmentally acceptable radioactive waste disposal is a national responsibility that requires a long-term commitment, adequate resources and the involvement of multiple stakeholders. The choice of a particular disposal concept and its detailed design will depend on several factors, such as the properties of the waste inventory to be disposed of, national circumstances and strategic preferences. A concept is likely to evolve iteratively as one or more sites are investigated and the repository design is refined to reflect local conditions. In this context, the International Atomic Energy Agency (IAEA) recently published technical guidance on the management of site investigations for radioactive waste repositories. A key objective of the publication *Management of Site Investigations for Radioactive Waste Disposal Facilities* (IAEA, 2023) is to ensure that site investigation efforts in Member states have firm foundations based on a clear understanding of data and information requirements. The publication was developed to reflect the experiences and knowledge from a range of disposal programmes, and it is intended to support initiation of well-planned and focused site investigations in Member states with a need to develop and site radioactive waste disposal facilities.

A siting process is intended to result in the identification of a suitable location for any nuclear installation, including a deep geological repository, and ultimately to receive authorisation to construct and operate the facility. To achieve this objective, it will be necessary to ensure that the combination of site properties and engineered barrier properties provides requisite levels of safety for the inventory under consideration (IAEA, 2015).

The siting process and associated site investigations for a radioactive waste disposal facility follow a stepwise process, irrespective of whether the early stages of siting start with investigating and screening the national territory or whether the iterative investigation process starts with a more focused approach, e.g. volunteer sites, sites with already well-known characteristics, sites with existing nuclear facilities or similar ones (IAEA, 2023).

Site investigations should follow a graded approach in an iterative manner, reflecting a phased approach to decision-making and the development of disposal facilities (IAEA, 2011). At each stage in the siting process the disposal system is to be evaluated based on the data and information available at that time. Following an assessment, a gap analysis comparing requirements to knowledge about the site would identify process model and data uncertainties affecting confidence in the implementation of the disposal concept at the site.

Furthermore, the IAEA also recently launched a project to develop guidance reflecting good practices in Member states' programmes for establishing site selection criteria and applying a decision-making framework as part of a siting process.

**References**

- IAEA: Disposal of Radioactive Waste, Specific Safety Requirements, IAEA Safety Standards Series No. SSR-5, IAEA, Vienna, ISBN 978-92-0-103010-8, 2011.
- IAEA: Site Survey and site selection for nuclear installations, Specific Safety Guide, IAEA Safety Standards Series No. SSG-35, IAEA, Vienna, ISBN 978-92-0-102415-2, 2015.
- IAEA: The Management of Site Investigations for Radioactive Waste Disposal Facilities [preprint], IAEA Nuclear Energy Series No. NW-T-1.40, IAEA, Vienna, 2023.