

Evidence

The early stages of implementing geological disposal: regulatory use of geoscientific information

Project summary SC100011

Overview

This study reviewed how regulatory bodies in 5 countries have used geological information to make decisions on proposals for the geological disposal of higher activity radioactive waste. The report's findings on the use of generic site safety assessments, site-specific investigations and pre-permitting discussions will inform the Environment Agency's preparations for any geological disposal facility that might be proposed or developed in England.

The review considers lessons learnt from radioactive waste disposal programmes in France, Finland, Sweden, Switzerland and the USA, all of which are at different stages of development. These countries have similar regulatory regimes to the UK and represent a range of geological environments.

The project consultants interviewed staff in the organisations involved and evaluated desk-based studies and site investigations up to 2013. Their report is structured according to the Government's Managing Radioactive Waste Safely (MRWS) siting process.¹ It covers the use of geosciences data in the early phases of developing a geological disposal facility.

The following topics are considered for each radioactive waste disposal programme:

- the framework for radioactive waste management and the roles of the government, developer, regulator and other stakeholders;
- the strategy for site selection and the geology of the areas considered;
- the criteria used to select and evaluate sites;
- the geological investigations;
- the development of the safety case;
- the basis for the regulatory and government decisions that allowed development of a geological disposal facility to proceed.

Conclusions

The review concludes that, initially, a generic safety assessment could be used to define site requirements, possibly varied according to broad differences in geology between sites. This could also inform the development of safety arrangements related to the engineered barrier system and the scenarios and issues that need to be assessed. When potential sites have been identified, site-specific safety assessments will investigate these aspects in detail using the knowledge and understanding gained from site investigation.

If suitable geoscience information and data are available, some limited site-specific features may be evaluated by desk-based safety assessments. Site investigations are needed to develop safety assessments and disposal facility design and also to inform environmental impact assessments.

Phasing site investigations into campaigns, separated by data 'freezes', is good practice to allow time to update site models, assess confidence in the results, and feedback on the data required. In most of the national programmes reviewed, the developer produces research, development and demonstration plans every 3–5 years, which enable the regulators to review progress and provide information to the public.

Interviewees highlighted the value of the regulator discussing the requirements for a permit or licence application with the developer and communicating throughout the process. This advice is consistent with the Environment Agency's current approach to engagement with Radioactive Waste Management Limited (RWM)², the prospective developer of a geological disposal facility. These discussions can also be used to ensure that the developer's advice to waste producers on packaging radioactive waste for future geological disposal meets regulatory expectations.

¹ In July 2014, the UK Government published a revised approach to selecting a site for a geological disposal facility in its White Paper, *Implementing Geological Disposal*.

² RWM is a wholly owned subsidiary of the Nuclear Decommissioning Authority, an executive non-departmental public body.

The Environment Agency's regulatory role

The Environment Agency and the Office for Nuclear Regulation will jointly regulate the development, construction, operation and closure of any future geological disposal facility in England. The regulators are working together to make sure that any such facility will meet high standards for environmental protection, safety, security and radioactive waste transport.

Geological disposal has been designated as a Nationally Significant Infrastructure Project. Therefore the Secretary of State for Business, Energy & Industrial Strategy will decide whether to grant a proposed geological disposal facility a Development Consent Order based on the Planning Inspectorate's examination of a developer's submission. The Environment Agency does not regulate or decide on the selection of sites proposed for geological disposal. Its role will start when a developer applies for an environmental permit for intrusive investigation work at a potential site, for example, drilling boreholes to assess the geology.

This summary relates to information reported in detail in the following output(s):

Report: SC100011/R

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