IDENTIFICATION OF SUITABLE ARGILLACEOUS FORMATIONS FOR LILW DISPOSAL IN SLOVENIA

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Due to the growing need for a final disposal of LILW, the final solution for the short-lived LILW is the key issue of radioactive waste management in Slovenia at the moment. ARAO – the Slovenian Agency for Radwaste Management – and Geological Survey of Slovenia are intensely involved in the re-initiated site selection process for a LILW repository. By a combination of technical and volunteer approach to the site selection we wish to guarantee high public involvement and sufficient flexibility of the process. In the technical phase, our tendency is to retain a larger number of potential areas/sites. As an outcome of the area survey stage, a number of potentially suitable areas were identified in 2001.

The final confirmation of site suitability will be gained by detailed field investigations during site characterisation and site confirmation stages. The progress of this phase of the site selection process will strongly depend on the response of local communities where potentially suitable areas are identified.

With regard to the geological setting of Slovenia, argillaceous rocks are mainly considered for LILW disposal. In the geological suitability assessment the required natural predisposition of Slovene territory was assessed in order to locate geologically suitable formations. It was performed by the multi-criteria decision-making evaluation with ARC/INFO technology. The results are compiled in a map, showing potential areas for underground and surface disposal of LILW in Slovenia. The main natural predisposition for LILW disposal was identified for surface type of LILW disposal and for the underground type of disposal.

The argillaceous formations identified as potentially suitable for LILW disposal can be classified as :

a) Oligocene, Miocene and Pliocene mainly unconsolidated sediments
These sediments were deposited in different parts of the Pannonian basin and their lithological composition can vary. Clays, marls and clayey schists alternating with sand and gravel can be found. They are extended in the NE and E parts of Slovenia and to a minor extent also in the central part. Special emphasis has to be given to the oligocene clay called "sivica", which builds thick low permeable strata.

b) Palaeocene flysch rocks
Flysch rocks are built of marls and sandstones, which alternate in layers of different thickness. Main flysch areas are in the SW part of Slovenia.

c) Carboniferous/permian claystones and shales
These rocks are most common in the central part of Slovenia. Their thicknes can be very great - over 1000 m in some parts.

For the further assessment of the suitability of these formations for LILW disposal some limited filed investigations have also been performed. These were mainly focused on their hydrogeological properties.

The lowest permeabilities were found in oligocene clays (about $4 \cdot 10^{-10}$ m/s), while in palaeocene flysch and carboniferous/permian rocks permeabilities are normally higher mostly due to their heterogeneus lithological composition.