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Hydrogeological evaluation of future radioactive waste repository design using finite element numerical modeling

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An extensive hydrogeological evaluation of future radioactive waste repository performance was done using Hydrus-1D and Hydrus-2D finite element numerical modelling. Although the study was oriented towards assessing impacts from repository on environment, a clear picture of its hydraulic behaviour also gave better understanding of the roles of particular engineering barriers. Some issues regarding repository design were pointed out indicating that different combinations of saturated and unsaturated hydraulic conditions occurring in a system as complex as repository must be taken into account in designing stage. Thick clay liner was of special concern, since it showed to be ineffective with respect to its hydraulic barrier role. Also, sand filling between the waste crates is subject to analysis, while its dubious hydraulic role.