**Integration Group for the Safety Case (IGSC) Symposium 2024***MOVING TOWARDS THE CONSTRUCTION OF A SAFE DGR – GETTING REAL*

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| **Abstract: 87** | **Poster P.5.3** |
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| **Abstract Title:**  The management of risks and uncertainties in the post-closure safety assessment and the use of FEP's in a top-down approach. | |
| **Abstract (300-500 words):**  The paper and the poster presentation aim to provide an overall description of the qualitative analysis of risks and residual uncertainties (ARI) considered as a key part of the post-closure safety assessment. It completes the paper on lessons learnt from the Young generation perspective and the oral presentation.  Strong of over 30 years of experience and site knowledge, residual risks and uncertainties are put by Andra at the core of the definition of post-closure safety scenario quantified in the safety assessment so as to not lower the robustness of the safety case.  Identification and classification of scenarios in the post-closure safety is the fundamental basis for the PA assessment and for checking the robustness of the disposal system as well as the impact on human. Since the 2000s, Andra has used a “Top down” approach, meaning that identification of scenario lays on an identification of safety functions, description of the disposal system of the DGR and its post-closure evolution.  The goal of the qualitative analysis of risks and residual uncertainties (ARI) developed by Andra in accordance with national and international guides, is to check if the events, processes, and the uncertainties can affect, or not, a safety function of a component of the disposal system or affect significatively the migration of radionuclides in a component and the pathway to an outlet.  The ARI is a tool to manage risks and the residual uncertainties based on the scientific, design state of knowledge and so identifies the measures to mitigate them:   * by design: for example, the thermic dimensioning of the DGR quarters (extension, spacing…) covers risks and uncertainties associated to the thermic influence of HLW wastes on the clay layer, pillar component of the safety of the DGR. * in the “normal evolution scenario”: for example, considering the plausible spatial variability of chemical composition of water, a unique conservative value of the solubility of a radionuclide for the whole clay layer has been defined. * in specific scenarios that cover potential causes of malfunction of components contributing to the realization of a post-closure safety function (low to very low plausibility of occurrence). A plausible uncertainty that could lead to the loss of a safety function would lead to a new “safety/design/knowledge” iteration.   The ARI implemented by Andra was well received by the safety authority (as well as the international peer reviews) that considered that (i) it is indeed advisable to integrate them into the project definition process to achieve a robust solution, (ii) that the principles and the methodology are consistent with national and international guides and that scenarios resulting from the ARI match with the set of plausible scenarios corresponding to various possible long-term situations, including possible subsoil mining. | |