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Uranium mining – challenges and lessons to learn for nuclear disposal in view of participation and safety

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Abstract. Uranium mining and milling is where the nuclear fuel chain starts. Nevertheless, it is the most disregarded part of this chain when thinking about resilience and safety, both in academic debates and in the process of resource extraction. This workshop aims at addressing this gap in addition to improving our understanding of the lessons we can learn for nuclear waste disposal.

Uranium mining and milling is challenging when considering safety, from the first day a mine is in operation to the final day of land rehabilitation. During the operation of the mine and mill, the health of the miners is at risk and so is the well-being of the population living in the surrounding area of the mine and the ore-processing plant. Moreover, environmental issues such as pollution pose a risk during the entire lifetime of a mine. The remnants of mining activities can be regarded as long-term liabilities, since they must be monitored for many generations.

Uranium mining and milling facilities are often situated on the land of indigenous people. Their rights to information and their participation in the decision-making processes regarding the mining operations, in addition to being informed about basic health outcomes, were and frequently continue to not be given, leading to injustices by mining companies and governmental authorities. Participation, however, is crucial for positive societal outcomes, such as avoiding the deepening of structural inequalities and the development of violent conflict, and for building trust – and thus also for security. This is not only true for operations at the beginning of the nuclear fuel chain but also for actions taken at the end (i.e., during the quest for the safest possible disposal site for nuclear waste).

Based on insights from the processes of uranium extraction, we can draw conclusions about the site selection process of a final repository, specifically regarding licensing, operation and land rehabilitation processes. Bearing this in mind, it is worth having a detailed look at the beginning of the nuclear fuel chain as we move forward to resolve the issues we will face during the final stage of nuclear waste disposal. Learning in this context means looking closely at the processes during the licensing, operation, closure and rehabilitation of uranium mines and mills and drawing conclusions about the site selection process, in particular with respect to inclusion of the individual stakeholders and safety concepts. As a result, we can develop recommendations for the ongoing revision of the search process for a final repository for radioactive waste.

Therefore, safety and participation issues are the focus of the uranium mining and milling workshop. The workshop will gather academics and practitioners from different fields in a transdisciplinary setting. We plan about five short inputs (up to 10 min each) based on some visualizations (slides, posters or similar), followed by a World Café related to the input talks and a concluding plenary discussion. The entire workshop will last about 2.5 h. The workshop is topped off by an excursion to the Wismut facilities in Ronneburg (Thüringen/Thuringia, Germany) on the Saturday after the conference. The field trip will be guided by Wismut GmbH, the Church Environmental Group Ronneburg and the local Miners' Association.

This workshop will enhance the transdisciplinary capabilities of the participants with respect to the logic and externalities of uranium extraction, in addition to providing opportunities for exchange and networking. We aim to compose a publication format for the *Safety of Nuclear Waste Disposal* platform, based on the contributions of all workshop participants.

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