

## **ENGINEERING GEOLOGICAL FACTORS FOR EVALUATION EXISTENT URANIUM MILL WASTE DISPOSAL SITES**

1BEGUŠ, T., 2BRENCIC, M. and 1KOCEVAR, M. 1Geoinženiring d.o.o., Ljubljana, Slovenia; 2 Geological Survey of Slovenia, Ljubljana, Slovenia.

In 1990, at the only uranium mine in Slovenia, a landslide of 2,9 million cubic meters of uranium mill tailings and underlying rock occurred. In the same year, the mine was closed due to economic reasons, and de-comissioning works began. One of the major tasks was to find out the best way to treat such mill waste. Because of locality restrictions we could choose between three possibilities: to keep the waste in the same location, to relocate the waste to a new disposal site, or to relocate it into the abandoned mine openings. We examined the geological factors of these three locations. The main disadvantage of the first choice was the possibility of another landslide. The original movements, which were stopped via the addition of an underground dewatering tunnel, could reactivate. One alternative disposal site where waste could be relocated has large recharge area, and great water inflows could occur. In the underground mine openings material could be leached away and there are possibilities that cave-in occure. In the process of our evaluation for proper site selection we chose an UMTRA matrix (U.S.-DOE) as the framework for analysis. During our examination of the possible sites we used three main types of analytical approach: 1) hydrologic analysis, 2) probabilistic approach in stability analysis, and 3) evaluation of seismic activity. We incorporated the matrix results in our evaluation process. Relocation of mill waste in the mine openings seemed to be most suitable disposal solution, however our studies indicate that there are large differences between sites. Therefore, we must make comparisons between sites based upon the most important common factors before deciding upon the final disposal site.