



Report on Study Tour

Remediation of Mining Sites

Czech Republic, 20 – 24 October 2008.

The last of the three study tours for 2008 developed by the Regional Programme Management Unit (RPMU) in the frame of the Western Balkans Environmental Programme was organized from 20th- 24th October in Prague area, Czech Republic. The topic of the study tour was visiting mining sites, subjects to remediation activities. The remediation activities are conducted in order to mitigate/eliminate existing negative impacts of the mining sites to the environment, and preparing the remediated sites for future public usage as recreational areas.

Participants on the study tour were representatives of relevant institutions from Albania, Macedonia FYR and UNMIK Kosovo. The purpose of the study tour was to familiarize the participants with good show cases, learn and see how heavily impacted sites due to mining can be remediated and reclaimed, and get relevant information on how similar/same activities can be organized and conducted in their respective countries. The host organization in Prague was the Environmental Damage Department, Ministry of Environment of Czech Republic, with Mr Jaromir Manhart acting as focal point from their side.

During the study tour, participants have visited a state enterprise which implements the inhibition of the uranium, ore, and partially, of the coal mining; a company which main field of activity are coal extraction and processing, conversion of substantial part of the production into refined fuels, and also trading in final products, but at the same time does remediation of their abandoned mining sites; and a company that actively remediate its abandoned coal mine in order to prepare it for future public usage. The study tour participants have explored in detail:

- Chemical mining processes and the remediation technologies/technological processes in use.
- Surface mining technologies and the appropriate remediation technologies/ technological processes in use and
- Creating of artificial lakes at the remediated sites.

Visit to Diamo, s.p. Straz pod Ralskem facility and mining site was organized on Tuesday, 21st October. **DIAMO, state enterprise, with the headquarters in Stráž pod Ralskem, implements the inhibition of the uranium ore and partially of the coal mining in the Czech Republic, as declared by the government, and ensures production of uranium concentrate for the nuclear energy sector.** Exploration for wells rich with uranium in Straz pod Ralskem area had started in 1962, and the first uranium mining

operations started in 1978, using chemical mining technology. Due to heavy impact on the environment, especially on the aquifer which provides Prague town and the surrounding area with fresh water, in **the 1990's further mining of uranium has** been stopped and liquidation of open wells were started. In 1996, first remediation activities were initiated, and are still going on today.

The inhibition and remediation programme complies with the state policy of gradual improvement of the environment and removal of old environmental damage financed by the state and it primarily comprises: Implementation of the inhibition programme and removal of the results of prospecting, mining and processing of uranium; Completion of the removal of results of ore mining and processing; Dismantling and cleanup work following coal mining in the Rosice-Oslavany coal basin and in the area of Hodonin lignite mines; Dismantling and cleanup work following black coal mining in the wound-up part of the Ostrava-Karviná coal mining district, and remediation of environmental damage caused by refining production in the former state enterprise OSTRAMO in Ostrava, taken over in 1997.

The remediation works are being conducted on a surface area of 628 ha, containing 15000 drilled wells. Due to the enormous surface area and nature of contamination, pump and treat remediation approach is used and innovative in-situ immobilization approach is planned to be used. The in-situ immobilization approach is based on injecting immobilizing media in the ground that will react with the solutions underground and turn it into immobile mixed media.

The all remediation process is expected to finish in 2035. During this period 3,7 mil. tons of contaminants (2,8 mil. tons of SO_4^{2-}) will be withdrawn from the ground. Decommissioning of chemical leaching of uranium is a long lasting and complex process that must be continuously evaluated and specified. Till the end of remediation process the extensive monitoring, verification and modelling work will be carried out. Respective Czech authorities continuously approve the process of remediation and its individual components.

More information you can be found at: <http://www.diamo.cz/en/>

Visit to Paliivovy Kombinat – mine Most Lezaki and Mariánské Radčice, Kohinoor mine was organized on Wednesday, the 22nd October. The brown coal mine Most Lezaki was opened in 1960, and was created by merging two smaller mines, with total surface area of 1.240 ha. Due to large deposit of coals located beneath the old town of Most, the town had to move to another location. First remediation activities were started in 1970s in the outer parts of the mining sites, and in 1990s the remediation in the city of Most.

The recultivation procedure follows several steps: first comes leveling of the mine slopes with soil, building necessary infrastructure for dewatering (drainage systems) and access roads, leveling the slopes with fertile soil for further revegetation and reforestation. When finished, the remediated site will be used for recreational purposes for Most town inhabitants. In the center of the remediated site an artificial lake will be established in 2011 with total surface area of 300 ha. Water for the lake will be distributed with pipe lines from a river 10 km away from the site, and from a second mining site where water has quality level equal to technical water. Recultivation and reforestation has started this year and will be finished in 2015. The remediation process is financed by the Czech Government.

More information you can be found at: <http://www.pku.cz/pku/site.php?location=1>

Visit to Sokolovská uhelna, a.s. Sokolov was organized on Thursday, 23rd October – one of the essential factors that influence the environment in the region Sokolov is intensive brown coal mining. Therefore, a long-term master plan for land reclamation after coal mining in the district of Sokolov was established, which was carried out by Hydroprojekt Praha in 1993. It is focused on water area restoration together with the conditions of water resources in the region, with a view to achieving maximum diversity and aesthetic value of the reclaimed land until mine closure. The extent and time schedule for redevelopment and reclamation are specified by a special regime for a period of 5 years,

which has been authorized by the Department of Environment, Bureau for State Administration IV in Usti nad Labem.

In the district of Sokolov, forestry, agriculture, water and other reclamations are carried out. The basis of these reclamation precedes the actual biological reclamation. Within the scope of technical reclamation, ground engineering work is performed, with areas shaped into the required slope, drainage by means of open trenches, and bottom sealing together with roads in water areas. The roads represent communications serving the purpose of equipment transport and delivery of necessary material to the required site in reclaimed locality, in the future they are designated for user access to the reclaimed sites.

More information you can be found at: <http://www.suas.cz/>