

REMEDICATION OF MINING DUMPS AND OF ASH FIELDS FROM OIL SHALE COMBUSTION

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Ash fields are the unavoidable result of oil shale combustion processes for power generation while dumps are principally connected to all almost all mining activities including those for oil shale extraction. Since both have serious negative impacts to the environment, remediation activities are a crucial contribution to the environmental policy of the concerned countries.

The general remediation procedures are rather similar for all dumps and residual deposits and they contain in principle three basic activities, namely a) reshaping of the deposit bodies for ensuring the geotechnical stability and safe surface water runoff, b) capping of the deposits for avoidance of direct exposure and for ceasing the infiltration of contaminants into ground and surface water bodies, c) landscaping measures for erosion control and dust protection. Since the aforementioned three activities for dump closure – especially the landscaping measures – are rather time consuming and expensive, alternative and advanced technologies such as renunciation of top soil layers with hydro-seeding of grass and installation of alternative cover systems by using evapotranspiration layers are an important contribution for time and cost efficient remediation of dumps and deposits.

Furthermore require the existing ash fields in North-East Estonia, which are results of the oil shale combustion for energy generation, additional measures for the treatment of alkaline water as stored at the ash field surfaces. And they provide soft carbonate layers, which have almost no load bearing capacity and make the access to the ash fields by heavy construction vehicles impossible. In this additional regard the article presents experiences made with the closure and remediation of Ash Field No. 2 of Balti Power Plant in Narva. Especially the handling of soft carbonate layers by excavation of those wet materials with minimum load bearing capability and by burying them in specific trenches is shown and explained.

For dealing with more than 6 million cubic metres of highly alkaline excess and precipitation water located at the ash field surface before start of the remediation activities a neutralisation plant was installed for treatment of the alkaline water by hydrochloric acid. In this way it was possible to reach the Estonian standards for water quality and the treated alkaline water could be discharged into the Narva reservoir and Narva river.