VIRTUAL EVENT
International Conference on
Management of Naturally Occurring Radioactive Material (NORM) in Industry
19–30 October 2020 #NORM2020

Contribution ID: **263** Type: **Oral**

The new conception of waste rock piles disposal after uranium mining in Příbram

DIAMO, the State Enterprise, carries out the elimination of the consequences of the mining and remediation of uranium ores, polymetallic ores and hard coal in the Czech Republic through its four branches. An important part of the decontamination is the remediation and reclamation of the mines after mining. The final stage of remediation of underground mining is the reclamation of the land with the waste rock piles. At the Příbram site there are 10 waste rock piles with a total volume of 40 Mt of waste rock. These waste rock piles present environmental and territorial development issues and have to be remediated due to the presence of toxicological contaminants in higher concentrations (As, Pb, Cd, U, Ra). Therefore, it is not possible to leave those piles open to the public or include these areas for territorial development. The average residual U mineralization is 0,005 % (it represent approx. 400 000 t of uranium ore) with a high gamma dose. The conception of waste rock piles disposal which was planned in technical plans for disposal assumed that rock from waste rock piles will be used as aggregates. The new conception of waste rock piles disposal is based on these principles: (1) Reduce the noise from transport and production as much as reasonably possible, (2) Reduce the dust from transport and production as much as reasonably possible, (3) Do not make local traffic situation worse, (4) Propose and define final remediation, and (5) Try to use all of the remained polymetallic ores (zinc, lead, silver ⋯). The main idea of the new conception of waste rock piles disposal is to transfer the piles to another site for future reprocessing for aggregates. All of the major 10 waste rock piles will be transferred to the new central pile over 25 years at maximum. Aerial conveyors will be used as the main transport system between the remote piles and central disposal site with a capacity of 1 200 tonnes/hour. Uranium and polymetallic ores will be sorted out before waste rocks will be stored in the central pile. Sorted ores will be processed in DIAMO's chemical plant in Dolní Rožínka. The central pile will be constructed with a maximum slope of 18°. Brownfield areas will be preferred as a location of the central pile. Aggregates will be still produced from the clean waste rock from the central pile. Areas beneath the remote waste rock piles will be cleaned up, remediated and transferred to the public for new utilization.

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Session Classification: Session III - Experiences Related to Decommissioning of Facilities and Remediation of Contaminated Sites

Track Classification: NORM Decommissioning and Environmental Remediation