



Launching ISL Vs Conventional Mining Suitability Study in Case of Uranium Minerals in South Asia. A Study Review

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Opinion

Deciding and conveying people and government for the initiation of mines in a rich biodiversity area is not a easy task but the real outcomes of the decision comes on the real research study of prolonged time, and gatherings data and researches were conducted by Kumar International R&D consultant private limited a startup in the decision making in India for the mineral mining project has studied the deep aspects and requirement for the initiation of the Uranium mines and had explored the different issues related to it [1]. It has been found that the yield kg per annum and expected infrastructure investment and the requirement of water and transportation could be immensely sought issues in the proposed mining area in Meghalaya.

Pre mining condition of the Uranium mines U308 percent in the Mahadek type rock formation strata bound in origin in the Domiasiat area Meghalaya India; during studies it shows the Gamma activity variation along the gradient is 199 Bq/kg in the soil in radius of 30 km while the doses variation is 0.0199 micro grey per hour in biota as USEPA international standard for fish is 2 micro grey hour and esitamated ; the wash off rate of the uranium mineralized soil is estimated by gross beta activity methods is 9×10^6 tons per year in the nearby river and the natural water losses is on an average 800 to 900 liter per day from the 2 km river length along the river including vegetation by evaporation & transpiration measured using oxygen isotopes methods and nuclear hydrological modelling methods [2]. Kumar Niranjana 2022.

These research data shows that the ISL is a water and acid based uranium extraction process in which the bore well size (50x20x30 m)of the mineralised ores is injected by huge amount of aquatic sulphuric and Nitric acid 1.5 % mixture as lixivient and resin requirement for separation of uranites ions [3] is around 4 tons per recovery well after making pregnant for a prolonged time mostly a day and the reduced slurry is than filtered out mechanically a d pumped back into the well and the uranium metal

is collected from dried resin at the processing plant where yellow cake is In this process billions of gallons of water is required for recovering a kilogram of yellow metal. It could be opined that for the survivability of the vegetation [4] and functioning of forest required enough water to loose as transpiration while for mining water demand for yellow metal can be supplied by the nearby river system and the natural precipitation of the area is quite high 1000 cm annual and ISL mechanical and hybrid technological implementation as in other part of Russia and Australia and other commonwealth countries could be the more practical ; as the world production rate through ISL is (4750 tons of uranium); with lesser environmental damages in comparison with open cast mining in which the ores needed to carried to the milling and extraction plant and causes more environmental damages. Commonwealth countries like Mongolia; Uzbekistan and Kazakhstan where Cameco corporation and COGEMA are actively producing the producible uranium 2200 tU in total of 8300tU at the cost of 40 USD per Kg. While in china produces 6830 tU through ISL.

Deciding not to start mining for several years or decades by government is also not a wise descion as the 30 km of the studied area having the gradient variation 400 to 700 Amsl causing the loss of mineralized soil 9×10^6 tons a year which is moving out to the nearby nation Bangladesh as the river kynshi the depth variation from(few 3 feet to 40 meter) flow through the Bangladesh and meet in ocean which became a transboundry international diplomatic and political issues [5]. Kumar Niranjana 2011.

So the study conducted by Kumar International R&D consultant private limited is that the geographical availability suggest that the ISL extraction and leaching plant should be launched as commercial level of production by UCIL and AMDER of India to recover the metal as soon as possible to protect it from getting waste rather than the open caste mining as in Jaduguda Singhbhum district Jharkhand India and procurring indgineously the need of Uranium as a Nuclear Fuel [6]. The accessibility and

the site suitability for mining is more appropriate for ISL rather than open cast and the company Kumar International R&D consultant private limited is trying to convince UCIL and AMDER for communicate tender and providing research support in near future [7]. The processing Unit at the moment is in Hyderabad BNFL but an additional central processing unit could be established near the mines once the ores yield concentration is found satisfactorily high else for a time being BNFL could be used as an separating and processing unit for the same. Biodiversity and environmental aspects favoured the ISL not open cast mining methods in the area .Biota radiation safety issue is more sought in every nations and governing bodies and the development of RADIANT11 software by Kumar International R&D consultant private limited is more effective and guaranteed an automation in any safety related issues before the environmentalist and miners at global level the same as the PHREEQC and SERMINE software uses in effective yeild generation and exploration task in most of the country ISL operation [8].

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