

Processing uranium ores of Central Jordan

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A process conceptual design is proposed based on the results of a sequential metallurgical testing campaign. During which, both random and designed samples collected from uranium ore deposits of central Jordan have been subjected to dynamic and static leaching testing. The ore amenability to leaching under alkaline and acidic conditions was studied using finely ground, P80<64µm, arbitrarily picked samples. Findings indicated obvious leaching amenabilities in both media, however acid leaching track was not pursued further due to the high consumption rates of reagent. Alkaline dynamic leaching rates were relatively slower and demonstrated a nonlinear tendency.

Deposition analysis and dynamic testing on coarsely crushed bulk samples, planned and collected by JFUMC, supported the choice for heap leach as one promising option to process the aforementioned ore. A set of six columns were used to imitate, on a semi-pilot scale, the flow behavior inside a heap pad. Steadiness of liquid flow inside the bed was observed under a testing range 1 –5 L/h/m² however slumping behavior of around 7% was detected. Uranium recoveries matched well the findings of rotating bottle investigations and were attained in less than two weeks for fluxes larger than 4.5 L/h/m².

Author: Dr ALLABOUN, Hussein (Jordan Atomic Energy Commission)

Presenter: Dr ALLABOUN, Hussein (Jordan Atomic Energy Commission)

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