

Application research of Eluex process in acid in-situ leaching

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ABSTRACT

Over the past two decades, ISL mining, which uses either acid or alkaline solutions to extract the uranium directly from the deposit, has become the dominant method of uranium production, and producing about 48% of world output. Because of its potential for both low cost recovery and having environmental advantages, the use of the technology will very probably increase.

ISL technology recovers uranium using two alternative chemical leaching systems —acid and alkaline. Acid leach is the more widely employed and has historically produced a majority of the world's ISL production. This technology, with its origins in the 1960s, was developed and employed in the former Soviet Union and the successor states, as well as in central and east Europe.

Because of a relatively low uranium concentration and a more complicated chemical composition of the production solutions recovered from acid ISL, the current practice of recovering uranium from low-grade ISL solutions is adsorption on strong base anionic resins. But the processing of ISL solutions is still need to improve in economy and environment.

Eluex process that extract uranium from the production solutions recovered from acid ISL in China was investigated, hydrometallurgical extraction process and process parameters were determined, the key technology problems in hydrometallurgy processing process have been solved. All the results had provided a design basis and technical support for industrial development of the deposits.

The process has been successful used in one ISL deposit in China now. Stably operation and excellent quality of yellow cake have proved it's profitable. With this report, other deposits will have more information to design new operations and safely regulate current and future ones with a view to maximizing economic performance and minimizing negative environmental impact.