

Batch tests for sulfuric acid recovery from U re-extraction in Caetité

I. C. T. S. Oliveira¹
e-mail: taam@ien.gov.br

¹ Division of Nuclear Engineering - IEN

Keywords: uranium; sulfuric acid; potentiometry

The process of uranium ore beneficiation in Caetité - BA uses sulfuric acid to leach and for make a U liquor. In this process, we stress the possibility of recycling the liquid effluents generated, preventing their liberation to the environment. The effluents are processed and can be used many times, thus lowering costs and reducing any environmental impact [1].

Several experiments were performed in order to extract the sulfuric acid present in the liquor prior to the uranium re-extraction and precipitation. In all the samples collected from these tests, we analyzed free and total acidity rates in sulfuric acid by potentiometry, and also the U concentration by EDXRF and potentiometry [2].

38 experiments were performed to recover the sulfuric acid used in the process of Caetité. These experiments generated 157 samples for analysis of free and total acidity by potentiometry and 128 samples for determination of U by potentiometric methods and EDXRF in 2012

References

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Analytical control of chemical process for U purifying in Caetité

I. C. T. S. Oliveira¹
e-mail: taam@ien.gov.br

¹ Division of Nuclear Engineering - IEN

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The benefiting process of uranium ore is the leaching of piles (static). Once crushed, the ore is arranged in stacks and irrigated with sulfuric acid to remove the uranium therein contained.

This process requires monitoring of free acidity and total acidity of the extracted liquor at every stage, performance control of the extraction solvents used in each step and final wastes, thereby preventing environmental risks and contamination in case of leaking.

Free acidity and total acidity potentiometry analysis have been used in this work to evaluate quickly and securely acidic concentrations at each stage of the process under study and evaluate which are the best conditions for the extraction of U ore [1].

Quantitative analysis of U by potentiometry and EDXRF were used to evaluate the performance of extractions and the final concentration of U in the wastes generated by the process.

336 samples were analyzed for determination of free and total acidity by potentiometric method and also 458 samples for U determination by potentiometric methods and EDXRF in 2011.

References

- [1] RIBEIRO V. A. L.; AFONSO J. C.; WILDHAGEN G. R. da S.; CUNHA J. W. S. D. da. Extração líquido-líquido de urânio(VI) do colofanito de Itataia (Santa Quitéria, Ceará) por extratantes orgânicos em presença de ácido fosfórico. *Química Nova*, 31(8): 2159-2164, 2008