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Uranium recovery from acid mine drainage treatment residue –Caldas, Brazil case

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The generation of acid mine drainage on mining areas, an effluent generated due to the presence of a sulphide minerals (usually pyrite, FeS₂) in contact with oxygen and water, is a huge environmental problem. The Osamu Utsumi Mine, the first uranium mine in Brazil, located in Caldas, Minas Gerais, which had its operations ceased in 1995, presents this environmental issue. The acid solution is produced from the waste rock piles and leaches residual metals, including uranium. This effluent is treated continuously with lime and the residue, an alkaline mud, is deposited into the mine pit. This alkaline mud contains uranium and rare earths and several projects are being carried out in order to recover these products. This paper presents the comparison between efforts on developing acid and alkaline leaching processes to extract and to concentrate uranium liquor from this residual material. As the uranium concentration in the residue ranges from 1.800-3.000 mg/kg U₃O₈, this recovery is interesting not only from the economical point of view but also from the environmental one, as the material can be deposited in a safer way during the mine closure process.

Country or International Organization

Brazil

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