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Feasibility Study of Thorium Effluent Treatment using the Existing Flocculation-Coagulation Effluent Treatment Plant

Built in 1984, the existing Low Level Effluent Treatment Plant (LLETP) of the Malaysian Nuclear Agency is used to treat hot sink effluents which might be contaminated by mainly beta and gamma emitters such as Strontium-90 and Iodine-131. Here, the treatment is done mainly by flocculation-coagulation process. The recent interest in Thorium energy has sparked research and development of Thorium extraction in-house. Realizing the potential of local tin-tailing as an abundant source of Thorium, Xenotime and Monazite are being re-exploited for Thorium. Various technologies are available, but for the recent extraction process upscaling work, the alkaline dissolution process has been chosen for the phosphate cracking part and the conventional solvent extraction process using a mixer settler was chosen for the separation and purification of Thorium ions. The extraction processes is still being perfected by the responsible group, therefore waste streams released from the pilot plant contains different concentrations of Thorium. The current study is looking into the suitability of the existing facility to treat the alpha emitting effluent from the Thorium pilot plant.

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