

## **ESTUDOS PRELIMINARES DA IMOBILIZAÇÃO DE REJEITOS RADIOATIVOS, COM MICROONDAS, EM MATRIZES ASFÁLTICAS E RESÍDUOS ELASTOMÉRICOS**

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### **ABSTRACT**

The present work consists of preliminary studies for immobilization of radioactive waste by using monolithic solid matrices compounded by bitumen (asphalt) and production leftovers of EVA shoe soles (polymeric residues). Those matrices were obtained through high microwave energy heating aiming to reduce possible dispersion of radioactive material in the environment during the stages of intermediate storage, transportation and final disposal. The radioactive waste that was used results from the purification of thorium long made at Instituto de Pesquisas Energéticas e Nucleares (IPEN-CNEN/SP). The obtained precipitate is named Retoter (thorium residue and rare earth elements). The compounded samples of bitumen and rubber were heated by electromagnetic radiation (high microwave energy); the time was varied and the temperature was controlled. Variables such as mass percent of bitumen/rubber, dosage, microwave power, heating period and temperature were analyzed in order to get the most homogeneous formulations that might be most resistant to environmental agents. The geometry of samples is still being studied to obtain the best distribution of radioactive waste on the polymeric compound (bitumen/rubber). To prove the efficiency of the method, physics and chemistry characterizations have been initially made through assays in order to evidence properties like: porosity, density, leaching rate, resistance to radiation, resistance to aging, thermal, mechanical and structural properties.