

International Conference on the Management of Naturally Occurring Radioactive Materials (NORM) in Industry

VIRTUAL EVENT

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Measurements of Mali natural radioactivity levels and management of associated wastes

Abstract

In Mali, natural radioactivity levels are significantly influenced by the increased growth of the mining industries, which constitutes the greatest radiological threat on public and environment. Because of an ecosystem strongly shaken by natural aridity, the management of radioactive wastes from these industries and the assessment of their associated dose become difficult. At the national level, there are no radiological reference levels on which the radiation exposure limit values will be based. In this work we propose to assess the radiological impact of NORM industries. Levels of natural radioactivity around mining areas were measured using gamma-ray spectrometry with an HPGe detector and alpha spectrometry. Results of the analyzed collecting samples (soil and water) showed that the radioactive emission is due to the presence of two main radioactive families of U-238 and Th-232, as well as K-40. The influence of ecosystem in the self-absorption phenomenon is observed and then corrected. The associated annual dose rates varie from 1.32 to 2.628 mSv per year. Values are comparable to the global average dose due to natural radioactivity and will serve as a database for the partial achievement of the reference radiological state.

Keywords : Radioactivity, annual dose, gamma spectrometry, alpha spectrometry, NORM industries, mining industry, radioactive waste.

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