

ACCEPTED ABSTRACTS

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Presentation code: P-069**Topic:****EVALUATION OF THE DEPENDENCE OF RADIATION HAZARD INDICES ON THE PHYSICAL CHARACTERISTICS OF PHOSPHOGYPSUM-BASED BUILDING MATERIALS**

M.F. Máduar, B.P. Mazzilli, M.B. Nisti

Instituto de Pesquisas Energéticas e Nucleares (IPEN-CNEN/SP)

Abstract text

Phosphogypsum, a waste by-product derived from the production of phosphoric acid, is being worldwide stockpiled, posing concerns about the environmental problems originating from this practice. Considerations about the viability of the safe reuse of this material have been raised, among them its potential use in civil construction. However, as phosphogypsum can contain natural radionuclides in significant concentrations, using it as a building material has radiological implications, which presently prevent such application. In order to evaluate the feasibility of using phosphogypsum in the manufacturing of building elements such as bricks and plates, a comprehensive research is underway at IPEN, Brazil, following a multiple approach. This research includes studies related to: a) phosphogypsum characterization; b) experimental determination of radon exhalation rates; c) application of theoretical models to forecast both radon exhalation and external doses. In this paper, a case study is performed, using the physical parameters of Brazilian phosphogypsum from different origins, already characterized in previous works, including radionuclides concentration, apparent density and radon exhalation rates. The data are applied to well established methodologies for evaluating the radiation hazard indices and the influence of each physical parameter is also studied. This work will contribute to the national regulatory authority in the definition of constraints for using phosphogypsum in civil construction.