



“Gheorghe Asachi” Technical University of Iasi, Romania



MONITORING OF RADIOACTIVITY LEVEL IN AUTOCLAVED AERATED CONCRETE PRODUCED IN ROMANIA AND RISK ASSESSMENT

**Dorina Nicolina Isopescu¹, Brindusa Mihaela Sluser (Robu)^{2*},
Fotini Noli³, Raimondas Buckus⁴, Igor Cretescu^{2*}**

¹ „Gheorghe Asachi” Tehnical University of Iasi, Faculty of Civil Engineering and Building Services,
58 Prof.dr.docent Dimitrie Mangeron Street, 700050 Iasi, Romania

² „Gheorghe Asachi” Tehnical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,
Department of Environmental Engineering and Management, 73 Prof.dr.docent Dimitrie Mangeron Street, 700050 Iasi, Romania

³Aristotle University, Department of Chemistry, Radioactivity Laboratory, Thessaloniki, Greece

⁴Faculty of Medicine, Vilnius University, M. K. Čiurlionio str. 21, LT-03101, Vilnius, Lithuania

Abstract

This paper presents the results of measurements related to the activity concentrations of ²²⁶Ra, ²³²Th and ⁴⁰K in autoclaved aerated concrete (AAC) used as building materials for various constructions in Romania. Radiation index (*I*) and the hazard index (HI) were estimated to assess the risk arising from the usage of AAC materials. Our study considered various AAC samples produced by different companies, in 2015. The activity concentrations of ²²⁶Ra, ²³²Th and ⁴⁰K were measured using by a gamma-ray spectrometer with HPGe detector. The average activity concentrations of ²²⁶Ra, ²³²Th and ⁴⁰K were found to be 24.6, 15.7 and respectively, 221.3 Bq/kg. The findings were compiled in accordance with the normative of national and international reference, and showed a very good environmental behavior regarding the emission of radionuclides from the analyzed AAC samples. There is no risk for human beings and the radiation index is under the regulations, even if the worst scenario is considered as reference (<0.5), the hazard index (HI) being in all situations under the acceptable level.

Key words: autoclaved aerated concrete (AAC), natural radioactivity, radionuclides, risks

Received: February, 2016; Revised final: April, 2016; Accepted: April, 2016

* Author to whom all correspondence should be addressed: e-mail: bmrobu@gmail.com; icre@tuiasi.ro