

RADON EXHALATION AND EMANATION INFORMATION IN THE UPDATED DATABASE ON NATURAL RADIOACTIVITY IN EU BUILDING MATERIALS

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Abstract

Building materials are within the scope of the new EU BSS, where they are considered as gamma radiation source of potential radiological concern and treated in the article 75 and relevant annexes VIII and XIII. Their role as radon source is not addressed with the same detail, since this aspect is mentioned just in the Annex XVIII, in the list of items to be considered in preparing the national action plan to address long-term risks from radon exposures. This approach allows Member States to choose how this aspect shall be managed, however knowledge of the mean exhalation/emanation characteristics of building material categories looks to be a basic requirement to proceed in the elaboration and implementation of the radon national action plans. This is particularly interesting for NORM containing building materials where the Ra-226 activity concentration can be of radiological concern not only for the gamma radiation but also for Rn exhalation. Based on these considerations, the authors decided to collect also radon emanation/exhalation information during the work to update the database, published in 2012, on natural radioactivity in EU building materials. In this presentation the emanation/exhalation data and the relevant experimental and radiation protection remarks are discussed. Data about 1850 samples were found, of which about 430 relevant to NORM residues or NORM containing building materials. Some difficulties were met. Apart from a general scarcity of data, another problem was due to the use of different units to report experimental results of Rn exhalation measurements ($\text{mBq kg}^{-1} \text{h}^{-1}$, $\text{mBq m}^{-2} \text{h}^{-1}$ or $\text{Bq m}^{-2} \text{h}^{-1}/\text{Bq Kg}^{-1}$). This of course makes difficult data comparison and indicates the need for a shared choice of units for the future measurements.