

Design Criteria for Achieving Acceptable Indoor Radon Concentration

Authors : T. Valdbjørn Rasmussen

Abstract : Design criteria for achieving an acceptable indoor radon concentration are presented in this paper. The paper suggests three design criteria. These criteria have to be considered at the early stage of the building design phase to meet the latest recommendations from the World Health Organization in most countries. The three design criteria are; first, establishing a radon barrier facing the ground; second, lowering the air pressure in the lower zone of the slab on ground facing downwards; third, diluting the indoor air with outdoor air. The first two criteria can prevent radon from infiltrating from the ground, and the third criteria can dilute the indoor air. By combining these three criteria, the indoor radon concentration can be lowered achieving an acceptable level. In addition, a cheap and reliable method for measuring the radon concentration in the indoor air is described. The provision on radon in the Danish Building Regulations complies with the latest recommendations from the World Health Organization. Radon can cause lung cancer and it is not known whether there is a lower limit for when it is not harmful to human beings. Therefore, it is important to reduce the radon concentration as much as possible in buildings. Airtightness is an important factor when dealing with buildings. It is important to avoid air leakages in the building envelope both facing the atmosphere, e.g. in compliance with energy requirements, but also facing the ground, to meet the requirements to ensure and control the indoor environment. Infiltration of air from the ground underneath a building is the main providing source of radon to the indoor air.

Keywords : radon, natural radiation, barrier, pressure lowering, ventilation

Conference Title : ICBMCE 2016 : International Conference on Building Materials and Civil Engineering

Conference Location : Singapore, Singapore

Conference Dates : March 03-04, 2016