Program for determination of coefficients of the Standard 5098

2009

Assoc. Professor Konstantin Kovler(1), Vitaliy Priven(1) and Dr. Yair Shamai(2)

1. National Building Reserach Institute- Technion
2. Radiation Safety Section, Soreq Nuclear Research Center

Abstract

All building products made of materials extracted from the Earth crust (sand, stones, cement, bricks etc.) contain natural radioactive elements, the main of which are potassium K^{40} and those belonging to the radioactive chains of radium Ra^{226} and thorium Th^{232}. Typical activity concentrations of these radionuclides in building materials are within a few Bq/kg to hundreds Bq/kg. The annual dose from these radionuclides consists of the two parts: external (gamma) radiation and internal (inhalation) radiation produced by radon and its decay products.

The program described in the current work is a development of the Block program published by the Nuclear Research Center 5 years ago.

The program helps to calculate the annual radiation dose on the basis on occupancy time of 7,000 hours/year inside the buildings, which is absorbed in the certain location in the room of the given dimensions built of the materials with known density and radionuclide content. In addition, the program makes possible calculations of maximum activity concentrations of the natural radionuclides in building products assuming a certain annual radiation dose obtained in the center of the room.