

**WEACAU-III: International Workshop on
Environmental Aspects of Coal Ash Utilization**

Tel Aviv, Israel
December 11th – 12th 2012

**Israeli model for determination of coefficients of the Israeli Standard
5098**

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Abstract

All building products made of materials extracted from the Earth crust (sand, stones, cement, bricks etc.) contain natural radioactive elements that emit radiation. The main radioisotopes in the building materials are potassium-40 (⁴⁰K), radium-226 (²²⁶Ra) and its products that are part of the uranium-238 chain and therefore the effect of all of the radioisotopes in this chain must be considered, and thorium-232 (²³²Th) that also decays into a chain of radioisotopes. Typical activity concentrations of these radionuclides in building materials are within a few to hundreds of Becquerel per kilogram (Bq/kg). The radiation dose from these radionuclides consists of the external (gamma) radiation and internal (inhalation) radiation (produced by radon gas and its decay products which results from the decay of radium).

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

The program enables to calculate the annual radiation dose (based on occupancy time of 7000 hours/year inside the building), which is absorbed in a certain location in the room of given dimensions built of the materials with given density and radionuclides content. In addition, the program enables the calculations of maximum activity concentrations of the radionuclides in building products, assuming a given annual radiation dose obtained in the center of the