MIXED RADIATION DOSE EQUIVALENT INDEX METER WITH IMPROVED RESPONSE FOR INTERMEDIATE AND THERMAL NEUTRONS

S. Pszona
Radiation Protection Department
Institute of Nuclear Research
Swierk, Poland

Two integral methods for direct determination of dose equivalent index have been so far applied i.e.

i/differential "recombination method.

ii/Twin detector system-TE ionization chamber and organic scintillation probe.

These two methods suffer for serious drawback for unappropriate response to neutrons below 100KeV due to small mass of the detectors.

In order to recognize the possible ways of correcting the response of the measuring systems, the theoretical method of analyzing of the response has been set up. The response of TE ionization chamber for neutrons, using Monte Carlo method, has been calculated.

It has been shown that by alteration of the composition of the walls of TE ionization chamber as well as the composition of gas fillied a chamber the response of the detection system may be approximated to the needed one.

Paper describes the method of calculation and the results for twin TE-organic scintillator system of dose equivalent index determination.