Krajowa Konferencja Zastosowań Matematyki w Biologii i Medycynie

Sandomierz, 5th–9th September 2016

A TOOL FOR RADIATION EXPOSURE ESTIMATION IN CASE OF A RADIOLOGICAL EMERGENCY

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ABSTRACT

The presented tool was designed to be used for emergency management in case of a major radiological event. It was created for the RENEB accident exercise [1] which was organised to train the RENEB participants [2] in managing potentially large data sets. The data set consisted of the dose values assessed with the five following assays: dicentrics (DIC), chromosome painting (FISH), micronuclei (MN), γH2AX, premature chromosome condensation (PCC), electron paramagnetic resonance (EPR) on mineral glass from smartphone touch screen and optically stimulated luminescence (OSL) on resistors from electronic board of mobile phone. Based on the distribution of doses reported by each assay the Excel VBAProject helps with the patient classification into three triage categories: green — if a patient was exposed to doses less than 1 Gy; orange — for doses between 1 and 2 Gy; and red — if the exposure exceeded 2 Gy. It could be also used to estimate the exposure patient scenario (whole or partial body exposure).

The program averages the dose values in different groups of assays and uses simply VBA functions (such as standard deviation or comparison operator) to count the estimated dose value and identify the scenario. When more than one scenario is possible, the program returns two answers, and, in some cases, when the algorithm is unable to identify the scenario, it returns information about its failure.

The tool is saved in a macro-enabled workbook format (.xlsm) and all calculated results are presented there in a clearly way in printable Excel sheet.

REFERENCES

[1] B. Brzozowska and et al: *RENEB accident simulation exercise*, International Journal of Radiation Biology (accepted).

[2] U. Kulka and et al: *Realising the European network of biodosimetry: RENEB — status quo*, Radiat. Prot. Dosim. **164(1-2)** (2015), 42–45.