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Express determination of the transuranic elements in fallout resulting from NPP accidents from gamma activity of fission products. — •Andrei Burak[1], Helmut Fischer[1], and Eduard Rudak[2] — [1]Institute of Environmental Physics, University of Bremen, Germany — [2]Institute of Physics of the National Academy of Sciences of Belarus, Minsk, Belarus

Accumulation of fission fragments and activation products of fuel nuclei in the thermal reactor core is a very complicated physical process. Accordingly, the existing methods of describing this process are also very complicated. Therefore, it is tempting to develop a simple phenomenological model, and evaluate it in terms of accuracy of calculations, compared to established numerical nuclear physics programs. Such a model was developed by the authors and presented in [1]. In the present work the grounds of express determination of environmental contamination by transuranic elements from gamma spectrometry of a number of accompanying fission fragments are given. The method uses simple analytic expressions to derive transuranic specific mass, specific activity and time in the core region of a NPP from these fission fragment data. These analytical functions are used to calculate levels of environmental alpha contamination due to the Chernobyl accident from gamma spectrometry data. The data are then validated by experimental data from alpha spectrometry. [1] A. Burak, A. Eremina, É. Rudak, Atomic Energy, v. 94/6, (2003)

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