Modeling of thorium transport by the water flow in the river Kechi-Kemin

Valentina ALEKHINA [1], Ilya STARODUMOV [2], Oleg STARODUMOV [2]

[1] *Institute of Physical-Technological Problems and Materials Science,*
Bishkek, Kyrgyz Republic
E-mail: alekhina@jet.kg
[2] *Laboratory of Multi-Scale Mathematical Modeling, Ural Federal University,*
Ekaterinburg, Russia
E-mail: ilya.starodumov@urfu.ru

Abstract: Radioactivity of the Kechi-Kemin river is mainly due to transported thorium. The problem of the spread of radioactive pollution of the river Kechi-Kemin and their impact on the life is an important task that requires permanent monitoring and research. An important part of such work is mathematical modeling.

The current talk presents the modeling of thorium transfer in the section of the river Kechi-Kemin. To solve this problem, we used the numerical method [1] for the Saint-Venant equation to describe behaviour of water flow. This method has used together with thorium advection-diffusion transfer model along the river watercourse. By the use of river regime information and thorium source data we have simulated the possible behavior of thorium propagation in water flow. This report contains a description of the methods and the main results of the calculations.

Keywords: Kechi-Kemin, radioactive, river modeling

2010 Mathematics Subject Classification: 35Q35 , 35Q86

References

[1] Starodumov I., "Numerical Scheme for Solution of an Approximation of Saint-Venant Equation , *Contemporary Engineering Sciences*, Vol. 7, No. 35, 1861 - 1866, 2014.