

RADIOECOLOGICAL PROBLEMS IN A REGION OF NATURAL-URANIUM PROVINCE (KYRGYZSTAN)

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At present the attempts have being made in our Republic for solving problems concerning heritage of uranium ores extraction and processing in places where several thousands of tons of radioactively polluted waste is accumulated, posing potential threat for contamination of the environment and for people's health. Natural events as ground erosion in polluted sites, landslides, mudflows, and pollutants carry-over (radionuclides and chemically toxic matters) from these sites promote their spreading over significant distances from places of primary localization.

The scientists of the Kyrgyz Republic and other countries actively work over the above mentioned problems solution: several international ISTC, IAEA and other projects were fulfilled, the material and technical basis of specialized laboratories became better, the results were obtained for presentation and discussion.

Taking into account urgency of natural and technogenic (man-caused) radionuclides control in objects of the environment it becomes clear that the equipment of high effectiveness and sensitivity of measurements is needed. One of the modern radioecological laboratories was created, in Biological & Pedology Institute NAS KR (BPI NAS KR) at the assistance of IAEA. The laboratory participated in 2012 in IAEA project TC RER3/010 "Laboratory preparedness proficiency test on the determination of natural radionuclides in uranium and thorium ores and soil". As a whole, the obtained results showed a good level of the staff competence and the laboratory technical equipping.

In technogenic (man-caused) uranium province "Kajy-Sai" the uranium oxide was extracted from ashes of brown uranium-containing coal. The research of the tail deposit ground uranium composition has shown specific activity of U-238 (865.2 ± 8.5 Bq/kg), Ra-226 (3840.2 ± 8 Bq/kg), Pb-210 (3318.2 ± 18 Bq/kg).

In 2013 the bore-holes were drilled together with IAEA at the tail deposit Tuyuk-Su and the analysis was made of the tail material pollution; water samples were taken from rivers and drainages and from mine water of affected tail deposit's zone. The samples of soil and vegetation were selected and then analyzed in several laboratories of biochemistry and radioecology institute (BPI) NAS KR, IAEA and partner laboratories in Ukraine.

In all these laboratories different kinds of effective semi-conductor germanium detectors were used for analysis of radionuclides gamma-spectra in tail materials and samples of the environment. The methods of alpha-spectrometry and liquid scintillation counters were also used. The analysis of data matching in different laboratories was made in order to verify the obtained values of U²³⁸, Ra²²⁶, and Pb²¹⁰ activity. They showed a good coincidence of analytical data obtained in partner Kyrgyz and other laboratories.