Contribution ID: **86** Type: **Poster**

Radiation monitoring system at the enterprises of uranium mining by ISL method

Uranium in the Republic of Kazakhstan is mined by the enterprises of NAC Kazatomprom JSC by in-situ leaching method.
The sources of radiation-hazardous factors are natural uranium, which occurs at all stages of the technological chain. External exposure occurs largely in areas where uranium is concentrated in a large volume, during the transportation of uranium. Long lived radionuclide dust can be contained in occupational dust, mainly in areas where there is a dry circulation. Sources of radon and its decay products appear together with uranium when it is extracted from the earth interior, and since the pumping of pregnant solutions goes through pipelines to technological equipment. In addition, sources of internal exposure can be radioactively contaminated materials if handled incorrectly.

Radiation monitoring
The schedule of radiation monitoring is developed taking into account the technological chain, the places of radiation-hazardous factors, as well as the degree of their impact on personnel and the environment. As a rule, radon and its decay products is monitored in the shop of processing of pregnant solutions in automatic mode displaying the information on the board, the power of gamma radiation in the workplace is determined from daily measurements at the main workplaces to quarterly measurements in the territory around production sites.

Radiation monitoring equipment
The radiation monitoring equipment used must be certified for use on the territory of the Republic of Kazakhstan, in accordance with the legislation, it passes annual verification by a certified organization, as well as calibration before starting work in accordance with the manufacturer's recommendations.

Qualification of personnel
In accordance with the legislation, mandatory training is carried out for all personnel involved in working with ionizing radiation sources. Separate requirements are imposed on employees of the units that carry out and are responsible for radiation monitoring. All employees of such units have professional training, the employees appointed responsible for radiation control are certified by the authorized state body in the field of atomic energy use. Certification is carried out once every three years.

Dosimetric control
TLDs are used to determine the dose of external exposure. They are used by all workers. For individual works, when an excess in the dose of external exposure may occur, when evaluating newly introduced production capacities, or when eliminating radiation accidents, the use of direct-indicating electronic personal dosimeters is provided. The dose of internal exposure is determined based on radiation monitoring data and the time spent by personnel at specific sites.
The uranium content in bioassays is analysed at ISL enterprises. However, legally, at the moment, the data from the analysis of bioassays are not the source of calculating the dose of internal radiation, but allow us to assess the control measures applied.

Continuous improvement
The level of radiation exposure at ISL enterprises is consistently low, the level of the average radiation dose is about 1.5 mSv/year, taking into account natural background. Measures are being taken to increase the competencies of personnel, as well as the use of scientific developments that reduce the radiation impact on personnel.

Name of Member State/Organization

Kazakhstan/NAC Kazatomprom JSC

Speakers affiliation

NAC Kazatomprom JSC

Speakers email

zkimolaev@gmail.com

Authors: Mr ISKAKOV, Manas (NAC Kazatomprom JSC); Mr KIMOLAYEV, Zhanat (NAC Kazatomprom JSC)

Co-authors: Mr ARYSTANOV, Adilbek (NAC Kazatomprom JSC); Mr TRENIN, Artyom (NAC Kazatomprom JSC)

Presenter: Mr KIMOLAYEV, Zhanat (NAC Kazatomprom JSC)

Session Classification: Session 2. Monitoring and dose assessment of occupational radiation exposures

Track Classification: 3. Monitoring and dose assessment of occupational radiation exposures