

**International Conference on Occupational Radiation Protection:
Strengthening Radiation Protection of Workers –Twenty Years of Progress
and the Way Forward**

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Occupational radiation protection as part of the occupational safety and health management system in the uranium mining industry

NAC Kazatomprom JSC is the national operator of the Republic of Kazakhstan for the import and export of uranium, rare metals, and nuclear fuel for nuclear power plants. Since 2009, Kazakhstan has been the world leader in natural uranium mining. Kazatomprom, together with subsidiaries, affiliates and joint organizations, is developing 26 sites on the territory of the Republic of Kazakhstan, combined into 14 mining assets.

Uranium in Kazakhstan is mined by in-situ leaching method. HSE units deal with occupational safety and health issues –appropriate structures have been created at each enterprise, and HSE Department has been established in the headquarters.

Safety issues are one of the company's values, and radiation protection issues in general cannot be separated from health, safety and environment issues.

HSE units are divided into four areas –Occupational Health and Safety, Radiation Safety, Environmental Protection, and Analytics and Methodology. The latter also deals with quality issues.

Uranium mining is primarily characterized by most production processes with various risks to the health and life of the employee: harmful chemicals, work in a confined space, work at height, electrical hazards, transport, pressure vessels, rotating equipment and others. Radiation, taking into account the naturally low activity of natural uranium, is not able to affect the life of an employee at the same time, but it can affect the health of both personnel and the population and the environment in the long term.

Kazatomprom uses a risk-oriented approach to HSE issues. Control measures, or measures that reduce the amount of risk, are selected depending on the risk itself. At the same time, radiation is one of the production risks inherent in uranium mining activities.

At Kazatomprom enterprises, the safety culture is developing at all levels of the organization: leadership programs, programs for identifying dangerous conditions, dangerous actions and near miss have been introduced, behavioral safety audits are conducted.

As for ensuring professional radiation protection, uranium belongs to substances with naturally low radioactivity, the Radiation Safety services conduct constant monitoring of workplaces, individual dosimetry control of personnel, and measures are being taken to improve the state of radiation safety. One of the measures is the development of an individual electronic dosimeter with a built-in GPS and data transmitter, which allows to practically assess the radiation situation in the workplaces of personnel online, identify abnormal places with pollution and respond to them in a timely manner. This project for the development of the dosimeter was carried out in 2020-2021 and currently the dosimeter is being tested at Kazatomprom enterprises.

It should also be noted that the development strategy of Kazatomprom includes a measure to comply with the best international practices. In this area, it should be noted that Kazatomprom, especially in the field of radiation protection, cooperates with the IAEA and uses the IAEA guidelines. Kazatomprom also participated in the development of the SR-100 safety report "Occupational radiation protection in the uranium mining and processing industry", in 2019, the first training course in this area was held at the Kazatomprom site.

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