

Establishing the first Biological Dosimetry Laboratory in Lithuania

The challenge...

Over the last few years, Lithuania has seen a significant increase in the application of nuclear technologies, especially in the areas of cancer care and sustainable energy development. While the country's governmental and regulatory frameworks for safety and legal framework are in line with international standards, the possible occurrence of a radiological accident cannot be completely ruled out. A priority for Lithuania is to optimize infrastructure for emergency preparedness and response, including the use of biological dosimetry for assessing health risks of individuals exposed to radiation following nuclear or radiation accidents, or as a result of occupational exposure.

The project...

Biological dosimetry relies on the use of physiological, chemical or biological markers of exposure of human tissue to ionizing radiation (assays). These assays enable the reconstruction of doses to individuals or populations which, in turn, are used to provide an assessment of the damage from occupational or accidental exposure to ionising radiation. Biological dosimetry, which is most useful in the management of irradiated persons, can also be used to optimize cancer therapy regimes.

The IAEA has provided Lithuania with support in the establishment of a new Biological Dosimetry Laboratory within Lithuania's Radiation Protection Centre (RPC). The new, dedicated premises are equipped with state-of-the-art instrumentation to perform assays using traditional cytogenetic techniques, as well as the more advanced 'fluorescence in situ hybridization' (FISH) method. Two junior laboratory staff have received comprehensive, hands-on training in top institutions in the region, gaining knowledge and experience in operating the new equipment according to best international practices.



Staff working in the new Biological Dosimetry Laboratory.

The impact...

The project has contributed significantly to building national capabilities for cytogenetic analysis of ionizing radiation exposure and biological dose assessment. On 5 November 2013, the new Biological Dosimetry Laboratory was inaugurated in the presence of the Health Policy Advisor to the Prime Minister of Lithuania. Since then, the laboratory has become fully operational. Ongoing collaboration with national oncology centres in support of optimized cancer therapy will help to ensure its sustainability.

The results of the project mark an important step towards further enhancing Lithuania's radiation safety infrastructure in the field of emergency preparedness and response.