



Regulatory Cooperation Program in Ukraine

On 18 November 2014 an agreement was signed by the Norwegian Radiation Protection Authority and the State Nuclear Regulatory Inspectorate of Ukraine. This agreement set up a bilateral regulatory cooperation program under which the parties will exchange technical information and cooperate in the fields of nuclear and radiation safety and security. As part of the implementation of that agreement, in January 2015, 3 joint projects were initiated that are concerned with regulation of radiation protection in the uranium industry, radioactive waste management, and radiation safety in medicine. A fourth project was also put in place to assess the main nuclear and radiation threats to safety and security from a regulatory perspective, with the objective to identify the current main challenges, threats and gaps in the Ukrainian regulatory framework. Cooperation program in Ukraine is funded by the Norwegian Ministry of Foreign Affairs.



Left up and down: Construction of Chernobyl Nuclear Power Plant (ChNPP) Unit 4 shelter, Right up and down: Deserted Pripjat town, close to ChNPP. (Foto: M.Sneve, Siegien-Iwaniuk)

Norwegian-Ukrainian Bilateral Cooperation

The Soviet Union left in Ukraine a legacy of numerous institutions and industrial enterprises that use or handle materials and equipment that emit ionizing radiation. Major activities include

nuclear power (including the wrecked unit 4 at the ChNPP), diagnostic and therapeutic applications in medicine, and uranium mining and ore processing. All these activities give rise to radioactive waste that requires safe management. However, an up to

date and fit for purpose regulatory framework for For more than a decade Norway has supported countries of the former Soviet Union in resolving legacy problems on a bilateral basis under the umbrella of regulatory cooperation programs. On 18 November 2014, such a bilateral agreement was signed by the Norwegian Radiation Protection Authority (NRPA) and the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU). Under this agreement, the parties exchange technical information and cooperate in the fields of nuclear and radiation safety and security. The scope of the agreement includes:

- safety of nuclear installations,
- radioactive waste management including disposal,
- safety and security of radiation sources,
- emergency preparedness and response,
- remediation of legacies including uranium mining and processing sites,
- radiation protection,
- transport of radioactive material,
- management of naturally occurring radioactive material,
- medical exposure, and
- physical protection

This agreement provided the foundation to start 3 projects that support development of enhanced regulatory documents in the specific areas of the uranium industry (URAN), radioactive waste management (WASTE) and radiation protection in medicine (MEDICINE). In addition, it was recognized that there is an urgent need to have an overall picture of the Ukrainian legislative structure and assess the main nuclear and radiation threats to safety and security from a regulatory perspective. Accordingly a 4th project was set up to provide such an assessment, from which it will be possible to identify the current main challenges, threats and gaps in the Ukrainian regulatory framework.

THREAT ASSESSMENT Project

The main objective of the Project is to carry out a comprehensive analysis of the SNRIU's activities, as a central executive authority entrusted with state regulation of nuclear and radiation safety. Analysis focusses on areas covering:

- organization and general principles for activities of the regulatory authority,
- safety of nuclear installations,

supervision of their management was lacking.

- radioactive material transport,
- emergency preparedness and response,
- radioactive waste management and decommissioning, and
- radiation safety

The threat assessment does not include a full risk analysis. It is limited to an overall description of the situation in the sector and identification of areas where the support of SNRIU will be the most effective.

These efforts will thus result in the identification of the main threats which should be addressed by regulatory authorities and the development of measures to eliminate or minimize them. Such measures might include more detailed radiological and environmental impact assessments, and related risk assessments, in areas where the threats are most significant or least well understood and supervised. These measures will further be used to define a roadmap for improving and focusing SNRIU activities.

Work completed to date includes an overview of the main facilities and processes relevant to use of nuclear energy in Ukraine. This also includes the identification of the number of challenges for the industry as a whole. These include, for example, the life extension of NPP units, construction of new units, and construction of storage facilities for high level and long-lived radioactive waste, and supervision of legacy sites.

The threat assessment report is scheduled to be completed in October 2015.

URAN Project

The main areas of the uranium mining and processing industry in Ukraine involving the regulatory framework are:

- mining technologies,
- mine the residual reserves, open and mine new deposits,
- remediation of Zhovti Vody Hydrometallurgical Plant, increase the capacity of tailing pits, and
- closure and decommissioning of worked out mines and waste storage areas

Initial work has included a short analysis of the current situation in the regulatory framework of uranium industry area. Results show:

- discrepancies in terminology and definitions applicable in international recommendations and Ukrainian practice, e.g. definitions of protective zones,
- differences between Ukrainian and international recommendations to uranium mining and processing waste management,
- Ukrainian legislation does not consider regulatory control on such activities as exploration and mining of uranium deposits or construction of radioactive ore mines, and
- operation, liquidation, conservation and re-profiling of facilities are not taking into account principles of optimization, graded approach and safety culture.

The primary objective of the Project is to develop two regulatory documents: “General Provisions for Radiation Safety in the Uranium Industry” and “Institutional Control of Sites of Former Uranium Processing Facility”. The project is due for completion 2016.m³

MEDICINE Project

Initial work has focused on analysis of Ukrainian regulatory requirements on radiation safety in medicine and their correspondence with international safety standards. Preliminary results show that there is no comprehensive approach to ensuring radiation protection for medical exposure. Main revealed differences between provisions of Ukrainian and international recommendations are:

- Ukrainian legislation has no provision on “expert on radiation safety” and “medical physicist”,
- there are no reference levels for diagnostic procedures,
- there are no protocols of checking quality of physical and radiation characteristics of diagnostic and therapeutic equipment;
- international standards for medical therapeutic and diagnostic devices and equipment are not applied,
- there are no requirements on protection of children, pregnant and breastfeeding women during medical procedures with ionizing radiation sources,

- there are no defined limitations on exposure of volunteers and persons that ensure comfortable conditions for patients,
- there are no updated rules on radiation safety in nuclear medicine, dental radiology, intervention procedures, computerized tomography etc.

The main documents under development in the under project are “Radiation Safety Rules for Using Radiation Sources in Brachytherapy” and “General Safety Requirements for Medical Radiation Sources”. The project is due for completion 2016.

WASTE Project

Current approaches to radioactive waste management envisage implementation of an integral management system, which takes into account interrelations between interim stages in radioactive waste management stages and long-term risks linked to final disposal. Taking this into account, there is a clear need to establish regulatory requirements that would cover all these stages and all the different waste streams (see Fig. 1), and promote compliance with internationally recognized safety standards.

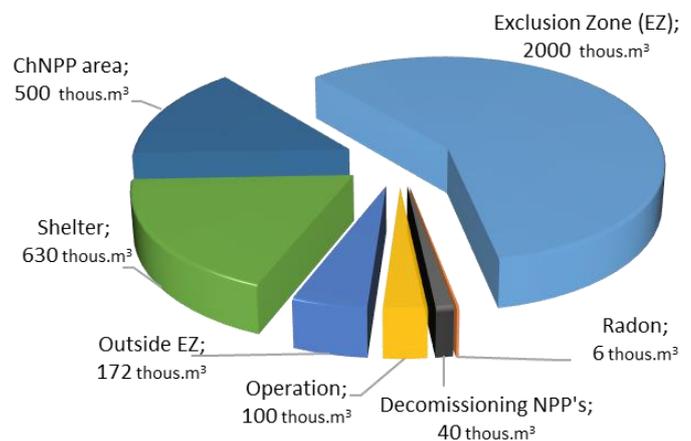


Fig. 1 Distribution of radioactive wastes Ukraine in Ukraine (NRPA elaboration based on SNRIU data)

Ukraine carries out activities for development of such an integrated radioactive waste management system, including the design, construction, and commissioning of:

- predisposal management facilities and processing facilities for all wastes at operating nuclear power plants and the Chernobyl site;
- long-term storage and disposal of radioactive waste in the Chernobyl Exclusion Zone.

It is planned to remove radioactive wastes from “legacy” storage facilities of Radon Enterprises in order to bring them into compliance with enhanced safety requirements leading to final disposal at the Vector site in the Chernobyl Exclusion Zone.

Project supports development of documents: “General Safety Provisions for Predisposal Radwaste Management”, and “General Safety Provisions for Disposal of Radioactive Waste”. The project is due for completion 2016.

Coordination and review meeting

From 22 to 25 September 2015, Norwegian experts participated in a series of meetings with Ukrainian authorities and their technical support organizations, to review activities performed under the above program.

A site visit was organized on 22 September to the Chernobyl nuclear power plant and the Exclusion Zone. Participants were familiarized with organization of the remediation works including the New Safe Confinement building, a structure intended to contain the unit 4 reactor during its dismantling.



Visit of Norwegian delegation at ChNPP (Foto: Siegien-Iwaniuk)

On 23 September 2015 a coordination workshop was held involving NRPA, SNRIU, the Ministry of Health of Ukraine, State Agency of Ukraine for the Management of the Exclusion Zone (SAUMEZ), Energoatom and representatives of EC-Ukraine Cooperation Program. The main purpose was to discuss bi-lateral support for development of a road

map for implementation of plan of action on nuclear and radiation safety and security in Ukraine. Each organizations presented an overview of its responsibilities and activities in the area of nuclear radiation safety and security. The importance of coordination between different authorities as well as engagement with operators and other stakeholders, was highlighted.



Signing the protocol on 2nd progress meeting SNRIU, SSTC NRS and NRPA 24-25 Sept. 2015 Kiev, Ukraine, from the left: O. Pecherytsia - First Deputy Director SSTC NRS, T. Kilochytska - Deputy Chair SNRIU, M. Sneve - Director Regulatory Cooperation Programme (Foto: Siegien-Iwaniuk)

On 24-25 September a review meeting was held at the headquarters of SNRIU to assess the progress in Norwegian-Ukrainian bilateral regulatory cooperation projects. NRPA representatives were happy to acknowledge the dedication and commitment shown by Ukrainian experts to the work already carried within the cooperation program.



2nd progress meeting SNRIU, SSTC NRS and NRPA 24-25 Sept. 2015 Kiev, Ukraine (Foto: M.Sneve)