

Development of a National System to Regulate Safe Transport of Radioactive Materials in Ukraine

M. Gashev, T.Kutuzova, V.Sakalo

State Nuclear Regulatory Inspectorate of Ukraine

Abstract. The paper provides brief information on development of the legislative framework and regulatory requirements in transport of radioactive materials in Ukraine. The application of IAEA documents is demonstrated and their contribution to the improvement of the national regulatory control system and processes of its harmonization with international safety requirements is underlined. Proposals for coordination and interaction enhancement in order to improve safety in safe transport of radioactive materials are defined in the conclusion.

1. Introduction

Ukraine implements the nuclear power program, has significant reserves of uranium, widely uses nuclear and radiation technology in medicine, science and industry. Due to geographical location and the existing practice, the country actively participates in international transport of radioactive materials (hereinafter - RM), transit of fresh and spent nuclear fuel. Annually from 120 to 150 permits for international transport by road, rail and, in some cases, water and air transport are issued. Ukrainian legislation provides for licensing of radioactive material transport. As of early 2011, 40 companies (consignors and carriers) dealing with transport of nuclear fuel, radioactive waste sources obtained SNRCU licensees. Transport safety is ensured by a set of administrative and technical measures, among which the main factors are design of transport packaging, compliance with regulations and adherence to safety culture principles by all stakeholders [1].

2. Development of the Legislative and Regulatory Framework for Transport Safety

The establishment in 1991 of an independent state - Ukraine required developing its own regulatory and independent safety assessment system in transport of dangerous goods. The legislative framework for state safety regulation of nuclear energy use, including transport of radioactive materials is established in the Law of Ukraine 'On Nuclear Energy Use and Radiation Safety' adopted in 1995. In succeeding years, other legislative acts have been consecutively adopted that determine the state policy and allocate responsibilities in the transport of dangerous goods [2].

Moreover, Ukraine became a party to several international conventions, in particular:

- International Civil Aviation Organization (ICAO) – 1992;
- International Maritime Organization (IMO) – 1994;
- European Agreement concerning the International Carriage of Dangerous Goods by Road, ADR – 2000;
- Convention concerning the International Carriage by Rail (COTIF) – 2003;
- Universal Postal Union (UPU) – 2006.
- European Provision concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) – 2009.

After the collapse of the Soviet Union, to regulate the safety of radioactive material transport, Ukraine used the 'Safety Rules in Transport of Radioactive Materials (PBTRB-73)' developed with taking into account the IAEA recommendations set forth in the 'Rules for Safe Transport of Radioactive Materials' issued in 1973. 'Basic Safety and Physical Protection Rules for Nuclear Material Shipment OPBZ-83' were used for transport of nuclear materials. These documents did not fully comply with the dynamic development of the national legislation. Therefore, in 1998 the regulatory body decided to use the latest edition of the Rules of International Atomic Energy

Agency (1996) to regulate the domestic transport of RM. Since August 2001, 'Regulation for Nuclear and Radiation Safety in Transport of Nuclear Materials' were put into force in Ukraine which corresponded to the 'Regulations for the Safe Transport of Radioactive Material', 1996 Edition. N ST-1.

Further development of the national regulatory framework for transport of radioactive materials was aimed at developing documents that supplement the rules, establish procedures and specify requirements in accordance with IAEA recommendations and practical needs. Thus, the regulatory document 'Provision on Planning of Measures and Actions for Emergency Response to Transport Accidents Involving Radioactive Material' was put into force in June 2005. This document has been developed with taking into account the IAEA document 'Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material No. TS-G-1.2 (ST-3)'. Since 25 July 2006, the regulatory document 'Requirements for Quality Assurance Programs in Transport of Radioactive Materials' is in force. This document was developed with taking into account IAEA documents 'Quality Assurance for the Safe Transport of Radioactive Material, Safety Series No. 113, 1994', 'Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material. Safety Guide No. TS-G-1.1 (ST-2). Appendix IV: Quality Assurance in Safe Transport of Radioactive Material' and national quality standards DSTU ISO 9001-2001, DSTU 3815-98.

In so doing, new 'Regulation of Nuclear and Radiation Safety in Transport of Radioactive Material (PBPRM-2006)' were developed with taking into account 'Regulations for the Safe Transport of Radioactive Material. 2005 Edition. No. TS-R-1' put into force on 18 September 2006 [3]. In addition, on 20 November 2009 the Advisory Material to PBPRM-2006 was developed with taking into account the IAEA document 'Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material', Safety Guide, No. TS-G-1.1 (Rev. 1), 2008; 'Methodological Recommendations for Developing Radiation Protection Programs for the Transport of Radioactive Material (2 August 2010) which took into account the document 'Radiation Protection Programmes for the Transport of Radioactive Material. Safety Guide, No. TS-G-1.3, 2007', and the regulatory document 'Procedure for Issuing Certificates for Safe Transport of Radioactive Materials' (20 September 2007).

According to the recommendations of the IRRS Mission – 2008, appropriate regulations are under development now with taking into account 'The Management System for the Safe Transport of Radioactive Material. Safety Guide. No. TS-G-1.4', 2008 and 'Compliance Assurance for the Safe Transport of Radioactive Material. Safety Guide. No. TS-G-1.5', 2009.

General Conclusions IRRS Mission to Ukraine

- Comprehensive legal infrastructure that addresses international requirements and includes all the relevant international conventions is in force.
- The legislation clearly specifies that regulatory requirements shall be developed with strict consideration of the recommendations of competent international organizations. [4].

Further development of the regulatory framework for the safe transport of radioactive materials will consist of timely review of regulatory documents to incorporate changes made to IAEA documents, to meet the best international practices, and to implement EU directives concerning the transport of radioactive materials [5].

Nuclear materials are transported on the basis of multi-lateral international agreements on cooperation in the field of transport of nuclear materials, in particular:

Russia-Ukraine-Hungary (1992)

Russia-Ukraine-Slovakia (1993; 2009)

Russia-Ukraine (1996)

Russia-Ukraine-Moldova-Bulgaria (1997)
Russia-Ukraine-Slovakia-Czech Republic (1998)
Russia-Ukraine-Bulgaria (2006).

3. Certain Challenges and Needs of Radioactive Material Transport Market

The Cabinet of Ministers of Ukraine approved the Provision on the Procedure for Transport of Radioactive Materials through the territory of Ukraine. Despite the fact that no accidents occurred involving radiological consequences for people or the environment over the whole history of radioactive material transport in Ukraine, the potential risk of damage to people, environment and property during transportation, handling and temporary storage requires continuous improvement of safety and control measures, and provokes increased attention from citizens, public organizations and Green Movement activists. As a result, changes to the current Procedure for Radioactive Material Transport through the territory of Ukraine were made by Government Resolution No.1196 dated 3 October 2007. According to these changes, it is forbidden to carry out transit transport of nuclear materials during events of national importance, major international sports and cultural events. Moreover, transit of nuclear materials and radioactive waste through the territory of Ukraine can not be performed if there are potential hazards related to military operations, armed conflicts, civil wars, rebellions, political or civil unrest, strikes, acts of terrorism, force majeure, including natural phenomena which are of the exceptional, inevitable, unpredictable nature (floods, flash floods). International transport of radioactive materials through the territory of Ukraine are carried out in accordance with national laws, rules for safe transport of radioactive materials of the International Atomic Energy Agency (IAEA) and international agreements of Ukraine whose obligation is approved by the Verkhovna Rada of Ukraine.

Existence of threats to use transport equipment or infrastructure elements as a tool or object of terrorist attacks generates a need for additional safety requirements of the totality of dangerous goods. In so doing, transport of nuclear materials requires additional measures to ensure their physical protection.

Needs for efficient information exchange on transport of radioactive materials with customs, border, and export supervision bodies are rather constrained today by the need for technical measures to protect information and compatibility of databases and information systems available at public authorities.

Issues on liability insurance and determination of the amount of possible damage to certain transportation of radioactive materials require individual analysis. In Ukraine, the duties to implement international agreements ICAO, IMO, COTIF, UPU, AND are assigned to the Ministry of Transport and Communications (from 2011 – the Ministry of Infrastructure of Ukraine) and the implementation of ADR rests with the Ministry of Internal Affairs of Ukraine. Moreover, a set of other agencies are competent in individual safety and control issues, in particular the State Ecological Inspectorate carries out radiation monitoring of all cargo at the border, the Ministry of Health establishes the rules and regulations regarding radiation protection and dose limits, the Ministry of Emergencies is assigned to be at the head in the event of emergencies.

The Provision on the State Nuclear Regulatory Inspectorate of Ukraine (SNRIU) was approved by Presidential Decree No. 403 dated 06 April 2011. According to this Provision, the SNRIU, besides its main tasks, is assigned to be a competent authority in the field of safe transport of radioactive materials. Strengthening of institutional and human capabilities of the regulatory authority will also contribute to the safety and security of radioactive materials at all stages of their transport.

4. Conclusion and Proposals

Safe transport of radioactive materials is part of the larger system for international regulation of transport of dangerous goods.

- The interaction of IAEA with the Committee of Experts on the Transport of Dangerous Goods of the Economic and Social Council of the United Nations, other international organizations and associations that form a hierarchy of safety rules and requirements for different types of transport can be strengthened to unify and harmonize safety requirements, procedures for their implementation and control.

An important factor in transport safety is the overall economic conditions of country's transportation infrastructure, information and communicative interaction of the involved services and agencies, adherence to safety culture principles of a wide range of people who are not directly related to the transport but affect its speed and success through their actions or inaction.

- IAEA should summarize examples of establishing effective control and interaction systems, along with statistics and analysis of reasons of accidents occurred in transport of radioactive materials, as well as should make them available to all stakeholders, including civil society institutions and educational programs at various levels.

As a party to international legal regimes for nuclear safety and an active part in ensuring transport links between member states of the European Union and the Russian Federation, Ukraine has consistently lead its national regulations in compliance with IAEA safety standards, demonstrating an openness to collaboration and cooperation for safety purposes.

REFERENCES

- [1] INTERNATIONAL ATOMIC ENERGY AGENCY, Fundamental Safety Principles, IAEA Safety Standards Series No. SF, IAEA, Vienna (2006).
- [2] INTERNATIONAL ATOMIC ENERGY AGENCY, Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety, IAEA Safety Standards Series No. GS-R-1, IAEA, Vienna (2000).
- [3] IAEA SAFETY STANDARDS SERIES TS-R-1, 2005 Edition.
- [4] IAEA, INTEGRATED REGULATORY REVIEW SERVICE (IRRS) to UKRAINE, Kiev, Ukraine, 9-20 June 2008.
- [5] Nuclear and Radiation Safety in Ukraine. Annual Report 2009. www.snrc.gov.ua