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## ***ACQUIS COMMUNAUTAIRE* IN THE FIELD OF NUCLEAR AND RADIATION SAFETY AND UKRAINIAN LEGISLATION: PROSPECTS AND CHALLENGES OF HARMONIZATION**

### **1. INTRODUCTION**

Since the Chernobyl disaster, special attention is paid in Ukraine to the effects of radiation on human health and the environment. People are constantly exposed to small amounts of ionizing radiation from the environment as they carry out their normal daily activities (natural background radiation). Exposure to ionizing radiation arises from naturally occurring sources (such as radiation from outer space and radon gas emanating from rocks in the earth). Radioactive minerals are naturally found in the contents of food and drinking water. For instance, vegetables are typically cultivated in soil and ground water which contains radioactive minerals<sup>1</sup>. Exposure to ionizing radiation arises also from sources of an artificial origin (such as medical diagnostic and therapeutic procedures; radioactive material resulting from nuclear weapons testing; energy generation, including by means of nuclear power; unplanned events such as the nuclear power plant accidents at Chernobyl in 1986 and that following the great east-Japan earthquake and tsunami of March 2011; and workplaces where there may be increased exposure to radiation from artificial or naturally occurring sources)<sup>2</sup>.

The accident at the Chernobyl Nuclear Power Plant on 26 April 1986 in Ukraine, then part of the former Soviet Union, was a tragedy of social and political significance for the USSR and the whole world. Among the technical causes of the Chernobyl disaster experts name, *inter alia*, a lack of a developed system of nuclear legislation.

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<sup>1</sup> For more details, see: <http://nuclearsafety.gc.ca/eng/resources/radiation/introduction-to-radiation/types-and-sources-of-radiation.cfm> (accessed 6 May 2017).

<sup>2</sup> For more details, see: [http://www.unscear.org/docs/publications/2016/UNSCEAR\\_2016\\_GA-Report.pdf](http://www.unscear.org/docs/publications/2016/UNSCEAR_2016_GA-Report.pdf) (accessed 6 May 2017).

It is necessary to emphasize that Ukraine began to develop its own law in the field of nuclear energy only in 1995. Nowadays the main Ukrainian laws regulating nuclear and radiation safety are: the Law of 8 February 1995 on Nuclear Energy Use and Radiation Safety<sup>3</sup>; the Law of 30 June 1995 on Radioactive Waste Management<sup>4</sup>; the Law of 14 January 1998 on Human Protection Against Impact of Ionizing Radiation<sup>5</sup>; the Law of 11 January 2000 on Authorizing Activity in Nuclear Energy Use<sup>6</sup>; the Law of 8 September 2005 on the Procedure of Decision-Making on Location, Design, Construction of Nuclear Installations and Radioactive Waste Management Facilities of National Significance<sup>7</sup> etc.

A new stage of enhancing Ukrainian nuclear and radiation safety legislation begun with the signing in 2014 of the Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part (hereinafter – the Association Agreement)<sup>8</sup>.

## **2. THE ASSOCIATION AGREEMENT AS AN IMPETUS TO ENHANCE THE LAW OF UKRAINE ON NUCLEAR AND RADIATION SAFETY**

According to the Association Agreement, cooperation between Ukraine and the EU is to provide a high level of nuclear safety, clean nuclear energy use for peaceful purposes. Cooperation covers an entire range of activities in the field of civil nuclear energy and all stages of the fuel cycle, the safety aspects of nuclear energy, emergency preparedness and also health, environmental issues and non-proliferation of nuclear weapons (Article 342).

Much attention in the Association Agreement is paid to issues around the Chernobyl disaster and the consequences of recovery efforts. According to the third paragraph of Article 342 of the Association Agreement, cooperation is aimed at solving the problems caused by the Chernobyl disaster, and decommis-

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<sup>3</sup> Law of Ukraine of 8 February 1995 on Nuclear Energy Use and Radiation Safety (Official Journal of the Supreme Council of Ukraine, 1995, No. 12, P. 178).

<sup>4</sup> Law of Ukraine of 30 June 1995 on Radioactive Waste Management (Official Journal of the Supreme Council of Ukraine, 1995, No. 27, P. 198).

<sup>5</sup> Law of Ukraine of 14 January 1998 on Human Protection Against the Impact of Ionizing Radiation (Official Journal of the Supreme Council of Ukraine, 1998, No. 22, P. 115).

<sup>6</sup> Law of Ukraine of 11 January 2000 on Authorizing Activity in Nuclear Energy Use (Official Journal of the Supreme Council of Ukraine, 2000, No. 9, P. 68).

<sup>7</sup> Law of Ukraine of 8 September 2005 on the Procedure of Decision-Making on Location, Design, Construction of Nuclear Installations and Radioactive Waste Management Facilities of National Significance (Official Journal of the Supreme Council of Ukraine, 2005, No. 51, P. 555).

<sup>8</sup> Association Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other part (Official Journal of the European Union, L 161, 29.05.2014, pp. 3–2137).

sioning of the Chernobyl nuclear power plant, including: a) the Implementation Plan for the site “Shelter” to convert an existing blasted 4- unit (Object “Shelter”) into an ecologically safe system; b) management of spent nuclear fuel activities; c) decontamination areas; d) radioactive waste; e) environmental monitoring; e) other issues that can be jointly agreed upon, such as medical, scientific, economic, social and administrative aspects of activities aimed at minimizing the consequences of the disaster.

Today, 30 years later, the Ukrainian government tries to turn around the Exclusion Zone Chernobyl Nuclear Power Plant into a scientific and ecological park and location of renewable energy sources. Thus, the main directions of work on decommissioning the Chernobyl Nuclear Power Plant and transforming the “Shelter” into an ecologically safe system by the Law of Ukraine of 15 January 2009 on the National Program Decommissioning of the Chernobyl Nuclear Power Plant and Transforming the “Shelter” into an Ecologically Safe System<sup>9</sup>. A Chernobyl radiation-ecological biosphere reserve was created to preserve the natural state of the most typical natural systems<sup>10</sup>. The Ukrainian government has been turning Chernobyl Exclusion Zone into a global Chernobyl Solar Farm. Thus, the State Agency of Ukraine in the Exclusion Zone Management, Chernobyl Research and Development Institute and Easy Business in 2016 developed the investment project Chernobyl Solar, concerning the generation in the Zone Park of solar electricity<sup>11</sup>. The Minister of Ecology and Natural Resources of Ukraine said that Ukraine as a whole received 52 applications from different companies to install solar power facilities in the zone. Applications were received from companies from Denmark, the USA, China, Germany, France, Ukraine and Belarus<sup>12</sup>. Today, the Government of Ukraine is continuing to develop transparent procedures of renting land for renewable energy facilities.

In addition to this, the Ordinance of the Cabinet of Ministers of Ukraine of 17 September 2014 on the Implementation of the Association Agreement on Atomic Energy between Ukraine from One Side and the European Union, the European Community and its Member-Countries from Another Side<sup>13</sup> provided for the development and adoption of regulations in the energy sector (including

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<sup>9</sup> Law of Ukraine of 15 January 2009 on the National Decommissioning of the Chernobyl Nuclear Power Plant and Transforming the “Shelter” into an Ecologically Safe System (Official Journal of the Supreme Council of Ukraine of 2009, No 24, P. 300).

<sup>10</sup> Decree of the President of Ukraine of 26 April 2016 on the Creation of a Chernobyl Radiation-Ecological Biosphere Reserve (Official Journal of Ukraine of 2016, No. 35, P. 1355).

<sup>11</sup> For more details, see: <http://dazv.gov.ua/?start=140> (accessed 6 May 2017).

<sup>12</sup> For more details, see: [http://www.kmu.gov.ua/control/publish/article?art\\_id=249830254](http://www.kmu.gov.ua/control/publish/article?art_id=249830254) (accessed 6 May 2017).

<sup>13</sup> Ordinance of the Cabinet of Ministers of Ukraine of 17 September 2014 on the Implementation of the Association Agreement on Atomic Energy between Ukraine from One Side and the European Union, European Community and its Member-Countries from Another Side (Official Journal of Ukraine of 2014, No. 77, P. 2197).

nuclear) in order to implement Directives: 1) Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations<sup>14</sup>, 2) Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel<sup>15</sup>, 3) Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionizing radiation<sup>16</sup>. Implementation of these guidelines is provided for in Annex 27 to the Association Agreement (a division of “Nuclear Energy” Section 5 of Chapter 1).

Along with this, outside of the Association Agreement remain issues of nuclear security guarantees implementation provided by the guarantors of Ukraine in exchange for giving up nuclear weapons. They are becoming particularly important in the current conditions of limiting the Ukrainian sovereignty, which created a threat to European and international security, and now it is necessary to take urgent steps to resolve it.

### **3. IMPLEMENTATION OF EU DIRECTIVES IN THE FIELD OF NUCLEAR SAFETY IN UKRAINE**

#### **3.1. BRINGING THE LEGAL NATIONAL FRAMEWORK OF UKRAINE INTO COMPLIANCE WITH THE EUROPEAN UNION APPROACHES: SAFETY REGULATION OF NUCLEAR INSTALLATIONS**

Ukraine operates 15 power units, 13 of which are WWER-1000 and 2 are WWER-440. Ukraine ranks tenth in the world in this area and takes seventh place in terms of installed capacity that is 13.835 MW<sup>17</sup>. Most existing nuclear power plants in Ukraine were commissioned in the 1980s and therefore in recent years have undertaken measures of nuclear safety reevaluation.

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<sup>14</sup> Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations (Official Journal of the European Union, L 219, 25.07.2014, pp. 42–52).

<sup>15</sup> Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel (Official Journal of the European Union, L 337, 5.12.2006, pp. 21–32).

<sup>16</sup> Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionizing radiation (Official Journal of the European Union, L 013, 17.01.2014, pp. 42–52).

<sup>17</sup> See more about the Ukraine nuclear power plants: <http://www.snrc.gov.ua/nuclear/doccatalog/document?id=327019> (accessed 6 May 2017).

The Fukushima nuclear accident in Japan in 2011 renewed attention worldwide regarding the measures needed to minimize risk and ensure the most robust levels of nuclear safety. Measures to improve safety of national nuclear power plants have been implemented in Ukraine according to the Comprehensive (Integrated) Safety Improvement Program for Operating Nuclear Power Units, approved by the Cabinet of Ministers of Ukraine on 7 December 2011<sup>18</sup>. The Cabinet of Ministers of Ukraine adopted on 30 September 2015 the Ordinance on Amending the Comprehensive (Integrated) Safety Improvement Program for Nuclear Power Units<sup>19</sup>, which envisages extension of the C(I)SIP to 2020. The C(I)SIP's objectives are to: 1) further improve operational safety of nuclear power plants units; 2) decrease risks of nuclear power plants accidents during natural disasters or other hazards; 3) improve the effectiveness in management of design-basis and beyond design-basis accidents at nuclear power plants, minimize their consequences.

To increase the level of nuclear safety, protection of workers, population and environment from radiation exposure using nuclear facilities, the EU produced the Council Directive 2014/87/Euratom, amending Council Directive 2009/71/Euratom establishing the Community basics of nuclear safety of nuclear units (hereinafter – Council Directive 2014/87/Euratom). Council Directive 2014/87/Euratom is intended to: 1) maintain a national legislative, regulatory and organizational framework (“national framework”) for the nuclear safety of nuclear installations; 2) strengthen the role and effective independence of the national regulatory authorities; 3) enhance transparency in nuclear safety and emergency preparedness and response; 4) establish general nuclear safety objectives for nuclear installations and requirements; 5) further improve monitoring and exchange of experiences by establishing an EU-wide system of topical peer reviews and reporting, nuclear safety guidelines and a strong nuclear safety culture; 6) enhance accident management and on-site emergency response, and ensure continuous review and adoption of lessons learned.

A plan for the implementation of Council Directive 2014/87/Euratom in Ukraine was approved by the Ordinance of the Cabinet of Ministers of Ukraine of 18 February 2015<sup>20</sup>. It should be emphasized that the legislation of Ukraine providing for nuclear safety regulation conforms to the Council Directive 2014/87/Euratom. The main program document in the field of nuclear safety is the *Energy*

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<sup>18</sup> Ordinance of the Cabinet of Ministers of Ukraine of 7 December 2011 on the Comprehensive (Integrated) Safety Improvement Program for Operating Nuclear Power Units (Official Journal of Ukraine of 2011, No. 96, P. 3504).

<sup>19</sup> Ordinance of the Cabinet of Ministers of Ukraine of 30 September 2015 on Amending the Comprehensive (Integrated) Safety Improvement Program for Nuclear Power Units (Official Journal of Ukraine of 2015, No. 80, P. 2776).

<sup>20</sup> Order of the Cabinet of Ministers of Ukraine of 18 February 2015 on the Plan for the Implementation of Council Directive 2004/87/Euratom in Ukraine (Official Journal of Ukraine of 2015, No. 16, P. 419).

*Strategy of Ukraine till 2030*, approved by the Cabinet of Ministers of Ukraine on 24 July 2013<sup>21</sup>. The main legislative acts regulating legal relations similar to those regulated in the Directive are: the Law on Nuclear Energy Use and Radiation Safety; the Law on the Arrangement of Issues on Nuclear Safety Assurance of 24 June 2004<sup>22</sup>; the Law on Human Protection Against the Impact of Ionizing Radiation; the Law on Authorizing Activity in Nuclear Energy Use; the Law on Decision-Making about Site Selection, Design, Construction of Nuclear Installations and Radioactive Waste Storage Facility of National Importance etc.

The main step in the transition of Ukraine to EU standards in the regulation of nuclear and radiation safety was the acquisition on 26 March 2015 by the State Nuclear Regulatory Inspectorate of full membership in the Western European Nuclear Regulators Association (Western European Nuclear Regulatory Association – WENRA). Participation in WENRA allows Ukraine to improve national legislation on nuclear safety in accordance to EU standards (reference levels of WENRA), and participate in their development.

However, shortcomings of the Ukrainian legislation impede the implementation of Council Directive 2014/87/Euratom. According to Article 5, paragraphs 2 and 3, the Member States shall ensure that the national framework requires that the competent regulatory authority is functionally separate from any other body or organization concerned with the promotion or utilization of nuclear energy, and does not seek or take instructions from any such body or organization when carrying out its regulatory tasks. The above gives an opportunity to talk about the need for a single state authority in the field of nuclear safety in Ukraine.

Today, in Ukraine there are two public authorities which are empowered in the area of nuclear safety – the Ministry of Energy and Coal Industry and the State Nuclear Regulatory Inspectorate. Mainly, the State Nuclear Regulatory Inspectorate of Ukraine shall: draft regulatory requirements, rules and standards on nuclear safety; carry out expert reviews of the safety of nuclear installations or ionizing radiation sources and issue appropriate permits; carry out state supervision of compliance with regulatory requirements, rules and standards on nuclear safety, and also of observance of the conditions of issued permissions; organize and carry out research work aimed at enhancing the safety of nuclear installations and ionizing radiation sources and at solving problems of radiation protection of personnel, the public and the environment; have the rights to send to licensees,

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<sup>21</sup> Ordinance of the Cabinet of Ministers of Ukraine – Energy Strategy of Ukraine till 2030 (Governmental Courier, 29.01.2014, No. 17). See also: T. Daintith, S. F. Williams, *The Legal Integration of Energy Markets*, Berlin–New York 1987; R. Petrov, *Association Agreements between the UE and Ukraine, Moldova and Georgia: legal and constitutional challenges of implementation*, (in:) T. Kerikmäe, A. Chochia (eds.), *Political and Legal Perspectives of the EU Eastern Partnership Policy*, Heidelberg–New York–London, pp. 153–165; G. Van der Loo, *The EU–Ukraine Association Agreement and Deep and Comprehensive Free Trade Area*, Leiden–Boston 2016.

<sup>22</sup> Law of Ukraine of 24 June 2004 on the Arrangement of Issues on Nuclear Safety Assurance (Official Journal of the Supreme Council of Ukraine of 2004, No. 46, P. 511).



owners or managers of enterprises a written statement concerning non-fitness of specific persons for their positions (article 24 the Law of Ukraine on Nuclear Energy Use and Radiation Safety). The only operator of all nuclear power plants in Ukraine that performs activity related with site selection, designing, constructing, commissioning, operating, decommissioning of a nuclear installation is the National Nuclear Energy Generating Company Energoatom (article 33 the Law of Ukraine on Nuclear Energy Use and Radiation Safety), operating under the supervision of the Ministry of Energy and Coal Industry.

It is recognized that actions of public authorities in the field of nuclear safety are not always consistent, and often even contradictory. This situation requires major changes by transferring all powers in the field of nuclear safety to a single body – the State Nuclear Regulatory Inspectorate of Ukraine, the legal authority and technical competence of which will allow for providing reliable and safe use of nuclear technology. In connection with the above it is necessary to prepare a draft bill on amendments to the regulations on the State Nuclear Regulatory Inspectorate of Ukraine”.

### **3.2. BRINGING THE LEGAL NATIONAL FRAMEWORK OF UKRAINE INTO COMPLIANCE TO EUROPEAN UNION APPROACHES: REGULATION OF INTERNATIONAL TRANSPORT OF RADIOACTIVE MATERIAL**

An important sphere of nuclear energy use is transport of radioactive materials to be used in nuclear energy, industry, medicine during waste management. Transportation of radioactive materials is carried out through public roads, so it is necessary to ensure such conditions while transporting which would reduce or eliminate impact hazards inherent in radioactive materials, personnel, population and environment. In order to achieve this objective, administrative and technical measures should be taken such as licensing of radioactive material transport, issuing permits for international transport of radioactive materials, inspections, approval of package design and special conditions for radioactive material transport. An important segment in the structure of radioactive materials transporting is transportation of fresh and spent nuclear fuel Ukraine and transit of fuel between Russia and Eastern European countries – Slovakia, Hungary and Bulgaria, implemented in accordance with intergovernmental agreements on cooperation in the transportation of nuclear materials<sup>23</sup>.

Operations involved in shipments of radioactive waste or spent fuel are subject to a number of international legal instruments regarding, in particular, safe transport of radioactive material. To protect human health and the environment

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<sup>23</sup> For more details, see: <http://www.snrc.gov.ua/nuclear/doccatalog/document?id=327019> (accessed 10 May 2017).

against the dangers arising from radioactive waste is the main issues governed by Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of radioactive waste and spent fuel shipments.

Council Directive 2006/117/Euratom lays down a Community system of supervision and control of transboundary shipments of radioactive waste and spent fuel, so as to guarantee adequate protection of the population. Mainly, this Directive specifies an approval procedure for the transportation of radioactive waste and spent nuclear fuel from competent authorities internationally.

A plan for the implementation of Council Directive 2006/117/Euratom by the State Nuclear Regulatory Inspectorate was approved by the Order of the Cabinet of Ministers of Ukraine of 18 February 2015<sup>24</sup>. The main objective was the implementation of the legislation of Ukraine in compliance with the provisions of Directive 2006/117/Euratom on procedures of coordination with the competent authorities of the Member States as regards cross-border shipments of radioactive waste and spent nuclear fuel.

At present, according to Article 59 of the Law of Ukraine on Nuclear Energy Use and Radiation Safety, prior to international and transit transporting of radioactive materials through the territory of Ukraine the state regulatory body for nuclear and radiation safety coordinates such transporting with the competent authorities of all countries, through the territory of which the materials will be transported. The procedure of issuing permits for transporting of radioactive materials, including approval of relevant documents, issuing permits, and confirmation of the issuance of a permit, is established by the Ordinance of the Cabinet of Ministers of Ukraine of 15 October 2004 on the Approval of the Procedure for Radioactive Materials Transportation Through Ukraine<sup>25</sup> and the Ordinance of the Cabinet of Ministers of Ukraine of 3 October 2007 on Some Issues Concerning Radioactive Materials Transportation<sup>26</sup>. However, the legislation of Ukraine does not provide for a procedure applicable to radioactive waste and spent fuel shipments reconcilments with the competent authorities of the countries involved in transportation, as is stated in Directive 2006/117/Euratom. Furthermore, radioactive material transfer is licensed according to the Law of Ukraine on Authorizing Activity in Nuclear Energy Use.

Pursuant to the Action Plan on implementing Council Directive 2006/117/Euratom, a draft Ordinance of the Cabinet of Ministers of Ukraine on amending

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<sup>24</sup> Order of the Cabinet of Ministers of Ukraine “The plan for the implementation of Council Directive 2006/117/Euratom in Ukraine” of February 18, 2015 (Official Journal of Ukraine of 2015, No. 16, P. 419).

<sup>25</sup> Ordinance of the Cabinet of Ministers of Ukraine of 15 October 2004 on the Approval of the Procedure for Radioactive Materials Transportation Through Ukraine (Official Journal of Ukraine of 2004, No. 68, P. 2771).

<sup>26</sup> Ordinance of the Cabinet of Ministers of Ukraine of 3 October 2007 on Some Issues Concerning Radioactive Materials Transportation (Official Journal of Ukraine of 2007, No. 76, P. 2820).



the procedure to issue permits for international transport of radioactive materials was developed by the State Nuclear Regulatory Inspectorate in Ukraine<sup>27</sup>. This document establishes procedures governing the authorization of transport of radioactive waste and spent nuclear fuel by Ukraine and EU Member States with competent bodies in the countries of origin, destination and transit that will contribute to oversight and control of such transport to ensure appropriate protection of the public and the environment. It should be emphasized that the State Nuclear Regulatory Inspectorate in Ukraine, in pursuit of implementing Council Directive 2006/117/Euratom, developed a draft law on amendments to some laws of Ukraine in nuclear energy use of 16 December 2016<sup>28</sup>, which suggests amending the Law on Nuclear Energy Use and Radiation Safety and the Law on Authorizing Activity in Nuclear Energy Use. In particular, the draft law provides that an application for a permit to transport internationally must be accompanied by a statement of reconciliation with such transportation issued by the countries through which traffic will run. Issuance of such an agreement must occur within the competence of bodies performing state regulation of safety in the transport of radioactive materials, including permits. Unfortunately, the draft laws are still being considered either in Parliament or in the Cabinet of the Ministers of Ukraine.

#### **4. IMPLEMENTATION OF THE EU DIRECTIVES IN THE FIELD OF RADIATION SAFETY IN UKRAINE**

Ionizing radiation is a natural and permanent part of the environment. Its properties are widely used in the process of human activity: science, technology, medicine, industry, agriculture etc.

It is important that production and use of ionizing radiation as well as the operation of nuclear facilities meets the standards of radiation safety. After all, a failure to comply with radiation safety properties of ionizing radiation can cause irreparable damage to life, health and the environment. It is a question of very great importance for the proper regulation of radiation safety (safety from harmful effects of ionizing radiation) in Ukraine.

The basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation in EU are prescribed by Council Directive 2013/59/Euratom (hereinafter – Council Directive 2013/59/Euratom).

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<sup>27</sup> For more details see: <http://www.snrc.gov.ua/nuclear/uk/publish/article/296434;jsessionid=219BDB8B94D5B6B317011EE1E441184F.app1> (accessed 10 May 2017).

<sup>28</sup> For more details, see: [http://w1.c1.rada.gov.ua/pls/zweb2/webproc4\\_1?pf3511=60744](http://w1.c1.rada.gov.ua/pls/zweb2/webproc4_1?pf3511=60744) (accessed 10 May 2017).

This Directive aims to establish uniform basic safety standards to protect health and those who are exposed in a professional or medical capacity, the efficiency of radiation safety and radiation protection in the application of ionizing in various sectors of the economy. In particular, Chapter VII of Council Directive 2013/59/Euratom is devoted to radiation safety regulation in medicine using radiation sources, particularly the requirements for licensing of medical institutions, justification of medical exposure, monitoring of radiation parameters of equipment with radioactive sources, establishment and application of reference diagnostic levels for diagnostic procedures, and other safety requirements.

Implementation of the Council Directive 2013/59/Euratom is being carried out according to the Plan for the Implementation of Council Directive 2013/59/Euratom establishing basic safety standards for protection against the dangers arising from ionizing radiation and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom, approved by the Cabinet of Ministers of Ukraine” on February 18, 2015<sup>29</sup>.

The legislation of Ukraine regarding radiation safety in general conforms with Directive 2013/59/Euratom. Today, the system of legal regulation in the field of radiation safety in Ukraine consists of documents on three levels. Documents of the first level are laws and regulations. The basic laws of Ukraine, the ones that define the legal principles for radiation safety (safety from harmful effects of ionizing radiation) are Laws: on Nuclear Energy Use and Radiation Safety; on Radioactive Waste Management; on Human Protection Against Impact of Ionizing Radiation; on Authorizing Activity in Nuclear Energy Use etc. The main subordinate regulations are the Ordinances of the Cabinet of the Ministers of Ukraine on the Approval of the Procedure to Hold Public Hearings in Nuclear Power Use and Radiation Safety of 18 July 1998<sup>30</sup>, on the Approval of the Procedure for Interaction of Executive and Entities Operating in the Field of Nuclear Energy in Case of Radionuclide Radiation Sources of the Illegal Trafficking of 2 June 2003<sup>31</sup>; the Order of the State Nuclear Regulatory Inspectorate in Ukraine on the Approval of the State Nuclear and Radiation Safety Expertise Procedure of 21 February 2005<sup>32</sup> etc.

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<sup>29</sup> Order of the Cabinet of Ministers of Ukraine of 18 February 2015 on the Plan for the Implementation of Council Directive 2013/59/Euratom in Ukraine (Official Journal of Ukraine of 2015, No. 16, P. 419).

<sup>30</sup> Ordinance of the Cabinet of the Ministers of Ukraine of 18 July 1998 on the Approval of the Procedure to Hold Public Hearings in Nuclear Power Use and Radiation Safety (Official Journal of Ukraine of 1998, No. 29, P. 1096).

<sup>31</sup> Ordinance of the Cabinet of the Ministers of Ukraine of 2 June 2003 on the Approval of the Procedure for Interaction of Executive and Entities Operating in the Field of Nuclear Energy in Case of Illegal Trafficking of Radionuclide Radiation Sources (Official Journal of Ukraine of 2003, No. 23, P. 1049).

<sup>32</sup> Order of the State Nuclear Regulatory Inspectorate in Ukraine of 21 February 2005 on the Approval of the State Nuclear and Radiation Safety Expertise Procedure (Official Journal of Ukraine of 2005, No. 15, P. 794).

Second-level documents include regulations (rules, regulations, standards) on radiation security based on the principles and provisions of the laws of Ukraine, and these set the criteria, requirements, conditions of radiation safety as regards nuclear energy and other radiation sources. The second group of regulations exacts direct regulatory impact on basic industries which use nuclear energy and other sources of ionizing radiation, as well as on adjacent areas where ionizing radiation is used to address a variety of scientific research, industrial and social problems. Basic requirements for the protection of human health and the environment against likely harm, associated with exposure to ionizing radiation and safe operation of such sources are defined in the Radiation Safety Standards of Ukraine of 7 December 1997<sup>33</sup>, the Basic Health and Safety Rules of Radiation Safety of Ukraine of 2 February 2005<sup>34</sup>, and the Rules for Nuclear and Radiation Safety in Transporting of Radioactive Materials of 30 August 2006<sup>35</sup> etc.

Documents of the third level are industry standards and departmental documents, adopted with the aim of achieving compliance with the regulations of the second level and specifying measures established thereby as well as possible ways of achieving them. Documents of the third level are the following industry standards: the Hygienic Standard of Specific Activity of Radionuclides Cs<sup>137</sup> and Sr<sup>90</sup> in Wood and Products of Wood of 31 October 2005<sup>36</sup>, Permissible Levels of Radionuclides Cs<sup>137</sup> and Sr<sup>90</sup> in Food and Drinking Water of 3 May 2006<sup>37</sup>; Hygienic Requirements to Placement and Operation of X-ray Rooms and Radiology Procedures of 4 June 2007<sup>38</sup>.

It should be emphasized that for the current Ukrainian system of radiation safety regulation can be characterized by a “hard” regulatory approach. It involves the development and implementation of regulations containing detailed technical requirements, criteria and parameters. This makes it difficult to regulate. Furthermore, nowadays there are many documents of the former USSR, especially as

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<sup>33</sup> Radiation Safety Standards of Ukraine of 7 December 1997 (Public hygiene standards. Kyiv 1998, P. 4).

<sup>34</sup> Order of the Ministry of Health of Ukraine of 2 February 2000 on the Basic Health and Safety Rules of Radiation Safety of Ukraine (Official Journal of Ukraine of 2005, No. 23, P. 1322).

<sup>35</sup> Order of the State Nuclear Regulation Committee of Ukraine of 30 August 2006 on the Rules for Nuclear and Radiation Safety in the Transport of Radioactive Materials (Official Journal of Ukraine of 2006, No. 168, P. 2606).

<sup>36</sup> Order of the Ministry of Health of Ukraine of 31 October 2005 on the Hygienic Standard of Specific Activity of Radionuclides Cs<sup>137</sup> and Sr<sup>90</sup> in Wood and Products of Wood (Official Journal of Ukraine of 2005, No. 46, P. 2927).

<sup>37</sup> Order of the Ministry of Health of Ukraine of 3 May 2006 on the Permissible Levels of Radionuclides Cs<sup>137</sup> and Sr<sup>90</sup> in Food and Drinking Water (Official Journal of Ukraine of 2006, No. 29, P. 2114).

<sup>38</sup> Order of the Ministry of Health of Ukraine of 4 June 2007 on the Hygienic Requirements for the Placement and Operation of X-ray Rooms and Radiology Procedures (Official Journal of Ukraine of 2007, No. 87, P. 3202).

regards regulation of the safety of nuclear installations and radiation sources that are continuing to operate in the territory of independent Ukraine.

Most of the provisions of the Directive are reflected in national regulations, but there are some differences (mismatches or gaps) between the domestic law and the provisions of the Directive. So, it is necessary to complement legislation with regulations concerning the requirements for radiation protection education, training and information, justification and regulatory control of practices, medical exposures and so forth. These are the provisions of the Directive which are absent in national legislation and require full implementation in national law:

- 1) Regulation of radionuclides of natural origin – an environmental monitoring programme, indoor exposure to radon, gamma radiation from building materials;
- 2) Identification, restoration and control of wasteful radioactive sources;
- 3) Monitoring of radioactive discharges;
- 4) Cosmic radiation exposure of aircraft crews.

## 5. CONCLUSION

A legal basis for the implementation of EU Directive on the protection of human safety and the environment from the negative effects of ionizing radiation in Ukraine is laid down in national law. However, Ukraine must make radical changes and additions to legislation in the field of nuclear energy and radiation safety in order to ensure effective implementation of the Association Agreement between Ukraine and the EU in its internal legal order. Implementation of EU legislation in the field of nuclear and radiation safety will reveal major shortcomings of the current state of affairs and, at the same time, mechanisms to improve Ukraine's national legislation with the aim of preventing another Chernobyl disaster in the future.

### ***ACQUIS COMMUNAUTAIRE IN THE FIELD OF NUCLEAR AND RADIATION SAFETY AND UKRAINIAN LEGISLATION: PROSPECTS AND CHALLENGES OF HARMONIZATION***

#### **Summary**

Since the Chernobyl disaster, special attention is paid in Ukraine to legislation in the field of nuclear energy and radiation safety. A new stage of enhancing Ukrainian nuclear and radiation safety legislation began with the signing in 2014 of the Association

Agreement between the European Union and its Member States, of the one part, and Ukraine, of the other. In addition, the Ordinance of the Cabinet of Ministers of Ukraine of 17 September 2014 on the implementation of the Association Agreement on atomic energy between Ukraine from one side and the European Union, the European Community and its member-countries from another side, provided for the development and adoption of new regulations in the energy sector (including nuclear) in order to implement Directives: 1) Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations, 2) Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel, 3) Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionizing radiation. Implementation of EU legislation in the field of nuclear and radiation safety will reveal major shortcomings of the current state of affairs and, at the same time, mechanisms to improve Ukraine's national legislation with the aim of preventing another Chernobyl disaster in the future.

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## KEYWORDS

european Union (EU) Directives, Ukraine national law, nuclear safety, radiation safety

## SŁOWA KLUCZOWE

dyrektywy UE, prawo krajowe Ukrainy, bezpieczeństwo jądrowe, bezpieczeństwo radiacyjne