



REPUBLIC OF CYPRUS
MINISTRY OF LABOUR, WELFARE AND SOCIAL INSURANCE
DEPARTMENT OF LABOUR INSPECTION
RADIATION INSPECTION AND CONTROL SERVICE

National Report

**on the implementation of the obligations under the
Joint Convention on the Safety of Spent Fuel Management
and on the Safety of Radioactive Waste Management**

**submitted for the purposes of the
6th Review Meeting of the Convention
Vienna, Austria, 21 May - 1 June 2018**

Lefkosia (Nicosia), Cyprus

October 2017

Table of Contents

SECTION A. INTRODUCTION	4
SECTION B. POLICIES AND PRACTICES.....	5
SECTION C. SCOPE OF APPLICATION	8
SECTION D. INVENTORIES AND LISTS	8
SECTION E. LEGISLATIVE AND REGULATORY SYSTEM.....	9
SECTION F. OTHER GENERAL SAFETY PROVISIONS	15
SECTION G. SAFETY OF SPENT FUEL MANAGEMENT	19
SECTION H. SAFETY OF RADIOACTIVE WASTE MANAGEMENT.....	19
SECTION I. TRANSBOUNDARY MOVEMENT	20
SECTION J. DISUSED SEALED SOURCES	21
SECTION K. GENERAL EFFORTS TO IMPROVE SAFETY.....	23
SECTION L. ANNEX.....	30

Abbreviations

(in alphabetical order)

DLI	Department of Labour Inspection
DSRS	Disused Sealed Radioactive Source
ECURIE	European Commission Urgent Radiological Information Exchange
ENSREG	European Nuclear Safety Regulators Group
EPR	Emergency Preparedness and Response
EU	European Union
Euratom	European Atomic Energy Community
EURDEP	European Radiological Data Exchange Platform
GICNT	Global Initiative for Combating Nuclear Terrorism
GSG	General Safety Guide
HERCA	Heads of European Radiological Protection Competent Authorities
IAEA	International Atomic Energy Agency
IEC	Incidents and Emergency Centre (of IAEA)
ICAO	International Civil Aviation Organisation
IMDGC	International Maritime Dangerous Goods Code
IRRS	Integrated Regulatory Review Service (of IAEA)
ITDB	Incident and Trafficking Database (of IAEA)
MLWSI	Minister of Labour, Welfare and Social Insurance
NORM	Naturally-Occurring Radioactive Material
NSG	Nuclear Suppliers Group
P.I.	Public Instrument
RICS	Radiation Inspection and Control Service
SGL	State General Laboratory
SSDL	Secondary Standard Dosimetry Laboratory
TENORM	Technologically-Enhanced Naturally-Occurring Radioactive Material
TLC	Technical Licensing Committee
TSO	Technical Support Organisation
UNECE	United Nations Economic Commission for Europe
UPU	Universal Postal Union

Section A. Introduction

The Republic of Cyprus (“Cyprus” hereafter) is a member of the International Atomic Energy Agency (IAEA) since 1965 and a member of the European Union (EU) since 2004.

Cyprus has established a comprehensive framework for radiation and nuclear safety, including the appropriate legislative framework for the responsible and safe management of radioactive waste, which is in line with the IAEA standards and the EU Acquis.

Cyprus acceded on the Joint Convention on the Safety of Spent Fuel Management and on the Safety of the Radioactive Waste Management (the “Joint Convention” hereafter) on 21 October 2009 [Ref. 1], with the enactment of the ratification Law 13(III)/2009, published in the Official Journal of the Republic of 24 July 2009, Issue 4120 [Ref. 2] and entered into force on 19 January 2010. Since its accession to the Joint Convention, Cyprus participated in two review meetings, in 2012 and in 2015, and submitted relevant national reports.

This is the third National Report submitted for the purposes of the 6th Review Meeting of the Joint Convention.

Cyprus does not operate any nuclear installations or uranium or thorium mines. The main use of ionizing radiation in the country is in medicine, with also some applications in industry and research. All sources of ionizing radiation used in the country are imported from abroad. The use of nuclear energy for the generation of electric power is not considered by the Government of Cyprus (“the Government” hereafter) in the country’s energy mix in the foreseeable future. Radioactive waste is produced in low volumes and very low radioactivity levels, for example waste in medical laboratories for nuclear medicine applications.

Currently, no radioactive waste management facilities operate in Cyprus and the management of spent fuel in the country is prohibited by the relevant existing legislation.

A comprehensive policy and strategy on the safe and responsible radioactive waste and disused sealed radioactive sources management has been adopted in 2015 and serves as the national commitment to address the country’s waste issues in a coordinated, cooperative and sustainable manner, in line with the country’s EU and other international obligations. Further details on this policy are given in Section B of this report.

The administration of the legislation for the responsible and safe management of radioactive waste is assigned, as defined under the Protection from Ionising Radiation and Nuclear Safety Laws of 2002 to 2017 [Ref. 3], to the regulatory authority, thus the Minister of Labour, Welfare and Social Insurance (MLWSI), acting through the Radiation Inspection and Control Service (RICS) of the Department of Labour Inspection (DLI).

Summary of the Main Developments during the Reporting Period

The main developments since the last national report include:

- Entry into force of a new set of Regulations issued under the Law on the Safe and Responsible Management of Spent Fuel and Radioactive Waste in 2014;

- Adoption and implementation of a comprehensive policy and strategy on safe and responsible radioactive waste and disused sealed radioactive sources management in July 2015;
- Adoption and initiation of implementation of a national programme for the safe and responsible radioactive waste and disused sealed radioactive sources management in August 2015;
- Political commitment to the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary Guidance on the Import and Export of Radioactive Sources and thus, endeavours to follow the guidance in the Code and its accompanying Guidance on the Import and Export of Radioactive Sources;
- Conductance of an Integrated Regulatory Review Service (IRRS) peer review mission of the regulatory authority and radiation safety framework in Cyprus in February 2017;
- Revision of the existing regulatory and legislative framework in order to be in line with the provisions of Directive 2014/87/Euratom on nuclear safety of nuclear installations and the Directive 2013/59/Euratom for laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation and also, by taking into consideration the recommendations and suggestions of the IRRS mission (to be transposed by February 2018);
- Ratification of the Amendment of the Convention on Environmental Impact Assessment in a Transboundary Context and the associated Protocol on Strategic Environmental Assessment.

Section B. Policies and Practices

Article 32. Reporting - paragraph 1

(i) Spent fuel management policy

(ii) Spent fuel management practices

No nuclear applications that could lead to the generation or disposal of spent fuel (i.e. nuclear power plants, research reactors, nuclear treatment facilities, uranium or thorium mines etc.) exist in Cyprus. Also, no facilities that could treat, process, reprocess, condition etc. spent fuel exist in the country.

Furthermore, according to the Protection from Ionising Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014 [Ref. 4] the management of spent fuel in the country is prohibited. Thus, the national policy and strategy refers only to the responsible and safe management of radioactive waste.

(iii) Radioactive waste management policy

A comprehensive policy and strategy on safe and responsible radioactive waste and disused sources management has been approved and adopted by the regulatory authority in 2015 and serves as the national commitment to address the country's issues on the management of radioactive waste in a safe, secure, responsible and sustainable manner, in accordance with national objectives and recognized international principles to protect the individuals, the society and the environment from the potential harmful effects of exposure to ionising radiation or the release of radioisotopes, and to avoid imposing undue burdens on future generations.

The policy on the responsible and safe management of radioactive waste is based on the following general principles:

- (a) The Government has ultimate responsibility for the long-term management of radioactive waste.

- (b) The financial burden for the management of radioactive waste, from generation to disposal, shall be borne, in principle, by the generators of the waste (the “Polluter pays” principle).
- (c) The disposal of radioactive waste in dedicated facilities is recognised as the final end-point for sustainable management of radioactive waste, unless the waste can be released or exempted, according to national regulatory requirements.
- (d) The interdependencies among all steps in radioactive waste generation and management are taken into account.
- (e) Radioactive waste shall be safely managed, including in the long term with passive safety features.
- (f) The minimisation of generation of radioactive waste at the design (minimisation at source), operation and decommissioning stages of facilities should be taken into account.
- (g) The implementation of measures regarding the responsible and safe management of radioactive waste shall follow a graded approach.
- (h) A sound evidence-based and documented decision-making process shall be applied with regard to all stages of the management of radioactive waste, based on scientific information, risk analysis and optimisation of resources.

The above mentioned principles are strictly correlated with the objective of sustainable development, which meets the needs of today without compromising the ability of future generations to meet their own needs. In addition to the internationally accepted principles, radioactive waste management is implemented in accordance with the following principles:

- (a) Transparency regarding all aspects of radioactive waste management: All radioactive waste management activities shall be conducted in an open and transparent manner and the public shall have access to information regarding waste management where this does not infringe on the security of radioactive material.
- (b) The precautionary principle applies: Where there is uncertainty about the safety of an activity a conservative approach shall be adopted.
- (c) Co-operative governance and efficient national co-ordination: waste management shall be managed in a manner that prevents duplication of effort and maximises coordination.
- (d) International cooperation: The Government recognises that it shares a responsibility with other countries for global and regional radioactive waste management issues. Its actions shall follow the principles in the national Policy and in relevant regional and international agreements.
- (e) Public Participation: Radioactive waste management shall take into account the interests and concerns of all interested and affected, when decisions are being made.
- (f) Capacity building and education: The Government shall create opportunities to develop people’s understanding, skills and general capacity concerning radioactive waste management.
- (g) The Government shall use these principles to develop, test and apply its Policy. The Government shall also use the principles for decision-making, transparency, and, where necessary, amend laws and regulations.

(iv) Radioactive waste management practices

The main origins of radioactive waste in Cyprus are from activities in the field of medicine and research, mainly by laboratories applying nuclear medicine techniques, in small quantities in liquid or solid form. Radioisotopes in this waste stream have short half-lives and are kept in suitable licensed facilities within the premises of licensees until their radioactivity levels decrease below the levels of release from regulatory control and then are disposed as usual (non-radioactive) waste. Very small

quantities of radioactive waste from research applications (universities, laboratories, etc.) are properly kept by the licensees.

All practices where radioactive materials are used, including practices with radioactive waste, have to be licensed. For sealed sources, a condition imposed to the license holders is to return back to the supplier/manufacturer any disused source.

In addition, scrap metals exported/shipped to various countries for processing/recycling need to be monitored for radioactivity prior to shipment.

A number of disused sources, such as from cobalt-60 teletherapy units and other small sources from medical applications, lightning rods, smoke detectors, small sources for education purposes used in the past in secondary education schools etc. have been collected in a licensed temporary storage facility within the Lefkosia General Hospital, Ministry of Health, until a final solution is decided according to the national programme.

(v) Criteria Used to Define and Categorize Radioactive Waste

A national radioactive waste classification scheme has been adopted and supports the arrangements on the management of radioactive waste, taking fully into account the specific types and properties of radioactive waste.

“Radioactive waste” for legal and regulatory purposes is defined as a material that contains or is contaminated with radionuclides at concentrations or activities greater than clearance levels as established by the existing legislation or as defined by the regulatory authority, and for which no use is foreseen. It should be recognised that this definition is purely for regulatory purposes, and that material with activity concentrations equal to or less than clearance levels is radioactive from a physical viewpoint, although the associated radiological hazards are negligible.

Radioactive material which could meet the requirements for clearance, reuse, reprocessing or recycling is considered as potential radioactive waste, for example contaminated metal. Ownerless radioactive waste is radioactive waste where the generator no longer exists or cannot be identified through reasonable means or does not have the resources to manage such waste.

Cyprus follows the guidelines of IAEA regarding the definition and classification of radioactive waste, as described in the General Safety Guide No. GSG-1 “Classification of radioactive waste”, IAEA, Vienna, 2009 [Ref. 5].

Exemption

Exemption from the requirements of the Laws is translated to exemption with respect to the specific and total activity of materials that are being handled, used or disposed of as radioactive waste and also exemptions with respect to practices. These are currently based on the EU Council Directive 96/29/Euratom of laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation [Ref. 6].

Clearance levels

Radioactive waste in Cyprus comes from activities in the fields of medicine and research, mainly by laboratories applying nuclear medicine techniques, in small quantities in solid or liquid form. Radioisotopes in this waste have short half-lives and are kept in suitable licensed facilities within the premises of licensees until their radioactivity levels decrease below the levels for release from regulatory control (clearance levels) and then are disposed as usual (non-radioactive) waste.

Section C. Scope of Application

Article 3(1). Reprocessing

Cyprus has not declared any spent fuel for the purposes of the Convention, pursuant to Article 3(1).

Article 3(2). Naturally Occurring Radioactive Materials (NORM)

Naturally-Occurring Radioactive Materials (NORM) have not been declared as radioactive waste for the purposes of the Convention, pursuant to Article 3(2). An old fertilizer plant at Vasilikos area in the southern coast of Cyprus was decommissioned in 2005-2006. NORM from decommissioning and phosphogypsum are kept at the site of the plant, properly stabilised and covered with plastic liner and soil, under the supervision and monitoring of RICS/DLI. Future governmental plans to construct a natural gas liquidification terminal and the energy center of the country in the area, and also any future plans to conduct activities that could lead to the NORM production or treatment, such as NORM originating from the newly-developed hydrocarbons exploration and exploitation industry, are closely monitored by the regulatory authority.

Article 3(3). Spent Fuel or Radioactive Waste (Within Military or Defence Programmes)

Cyprus has not declared any spent fuel or radioactive waste within military or defence programmes for the purposes of the Convention, pursuant to Article 3(3).

Section D. Inventories and Lists

Article 32. Reporting - Paragraph 2

The regulatory authority manages the national inventory of the existing radioactive waste and disused sealed radioactive sources in the country. The inventory is documented in a systematic manner, taking into account the characteristics and the location of the waste. The national inventory is structured based on the particular needs of the country, and is transformed into different waste streams, where radioactive waste, to the extent it exists, is brought under different management routes. The management routes cover the steps from generation of the waste, via different treatments, if applicable, towards their respective endpoints.

The national inventory of radioactive waste and DSRS, as well as estimates for future quantities of radioactive quantities are provided in the national programme.

The national inventory provides a sufficiently broad set of information for radioactive waste

The national inventory provides a sufficiently broad set of information for radioactive waste and DSRS, such as the radionuclide content; the amount, composition, chemical and physical form, as well as possible chemical, physical, and other risks; and the location:

- (a) Small volumes of short-lived radioactive waste from medical or research applications is stored for decay until its activity is low enough to be disposed as normal waste. Medical centers in Cyprus use about 6 TBq of Tc-99m and 3 TBq of I-131 per year. Other isotopes such as In-111, I-125, Ga-67, and Th-201 are also used in medical centres and specialised laboratories but both their volumes and activity concentrations are very small (a few GBq per year in total). Nearly all of this waste enters the sewage system as liquid waste. Due to the nature of these radioisotopes (short half-life), and/or the very small quantities used, there is no need to segregate them from regular waste. The import, usage and discharge of these isotopes are licensed and the regulatory authority is informed at each step.
- (b) DSRS for which further use cannot be excluded are not considered as radioactive waste. The regulatory authority requires prior to authorisation that licensees shall have in place repatriation agreements for DSRS with manufacturers/suppliers in other countries and the endpoint is the responsible organisation/company in the receiving country. Moreover, the possibility of contracting the re-use of these DSRS to suppliers/manufacturers abroad that manufacture small sources for educational or research purposes shall be explored. Finally, the possibility of discovering orphan sources or other contaminated materials in metal scrap yards, due to the isolation of the country by land from other countries, is not considered as high. It is however possible that the number of lightning rods and smoke detectors disposed of could increase in future due to renovation works taking place in buildings and replacement with other similar equipment of modern technology which does not utilise ionising radiation.

It is estimated that current quantities/volumes of radioactive waste will not change significantly in the medium and long-term future.

Section E. Legislative and Regulatory System

Article 18. Implementing measures

The responsibility for the radiation and nuclear safety policy is vested to the MLWSI. MLWSI acts through RICS/DLI, whose responsibilities, among others, include:

- Policy development/implementation monitoring and advice to the Government in relation to nuclear and radiation matters;
- Drafting legislation, including transposition into national legislation of relevant EU and other international instruments;
- Regulatory control, e.g. licensing, inspection, review and assessment and enforcement, over practices within the scope of the existing legislation;
- Representation at meetings of the EU, IAEA and other international organisations.

Cyprus's policy on nuclear weapons non-proliferation and disarmament is the responsibility of the Ministry of Foreign Affairs.

Article 19. Legislative and regulatory framework

The legislative basis for radiation and nuclear safety in Cyprus consists of the Protection from Ionizing Radiation and Nuclear Safety Laws of 2002 to 2017 (“the Laws”), which were enacted on 12 July 2002, and amended in 2009, 2011 and in 2017 [Ref. 3], and various sets of Regulations [Ref. 7, 8, 9, 10,11 and 12], issued under the Laws. This legislative framework is in line with the IAEA standards and the EURATOM Acquis. In addition, the EURATOM Treaty and all relevant European regulations and decisions, Conventions or other instruments ratified or signed by the EU apply.

The Council Directive 2011/70/Euratom for establishing a community framework for the responsible and safe management of spent fuel and radioactive waste [Ref. 13] was transposed in the national legislative framework through the Protection from Ionizing Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014 (P.I. 178/2014) [Ref. 4]. The Regulations apply, inter alia, to the radioactive waste management, from generation to disposal, when radioactive waste results from civilian activities. The Regulations provide for the establishment of national policies and national programmes on radioactive waste management and set out certain criteria that should be used in developing such policies and procedures. They also set out the requirements for a national waste management framework, including the competent regulatory authority, as well as the responsibilities of licensees. They finally include provisions on transparency and reporting and specifically provides for a peer review of national arrangements every ten years.

The national legislative framework on radiation and nuclear safety applies both for natural and artificial sources of ionising radiation and covers all aspects of ionising radiation risk management and control and radiation protection and nuclear safety, such as:

- occupational exposure (including outside workers);
- public exposure;
- medical exposure;
- shipments of radioactive material;
- radioactive waste management;
- illicit trafficking;
- nuclear safety and security; and
- emergency preparedness and response.

The above framework provides, inter alia, for:

- the establishment of the regulatory authority;
- the establishment of a Technical Licensing Committee (TCL) (advisory to the MLWSI on authorisation matters);
- the establishment of a Council of Radiation Protection and Nuclear Safety (advisory to the MLWSI);
- the authorisation in relation to the possession, use, manufacture, supply, handling, distribution, storage, import, export, disposal, recycling, commissioning, decommissioning etc. of practices and sources of ionising radiation;
- the justification, optimisation of protection and dose limitation of all practices;
- appeals;
- obligations of employers and licensees;
- appointment and powers of a chief inspector and inspectors;
- enforcement actions;
- offences and penalties;

- the design, erection, commissioning and decommissioning of nuclear installations;
- the storage, shipment and disposal of radioactive waste, radioactive discharges and spent or disused sources;
- the categorisation of workplaces and workers;
- individual and area monitoring;
- health surveillance of the workers;
- environmental radioactivity monitoring;
- radiological/nuclear emergency preparedness and response;
- transport or shipment of radioactive materials; and
- the power of the Council of Ministers to issue Regulations.

The above legislative framework is to be revised by February 2018, in order to be in line with the provisions of Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom [Ref. 14].

Furthermore, Cyprus has ratified, signed or accessed to in a number of International Conventions, Protocols, Agreements and other Instruments in the area of nuclear energy and ionizing radiation, namely (the references in brackets refer to the national ratification laws):

- The Conventions on Early Notification (NOT) and Assistance in the case of Nuclear Accident (ASSIST) [Ref. 15];
- The Convention on Nuclear Safety (CNS) [Ref. 16];
- The Convention on Physical Protection of Nuclear Material (CPPNM), and its 2005 amendment [Ref. 17];
- The Comprehensive Nuclear Test Ban Treaty (CTBT) [Ref. 18];
- The Joint Convention (JC) on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management [Ref. 2];
- The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) [Ref. 19];
- The Safeguards Agreement between Cyprus and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons [Ref. 20];
- The Protocol Additional to the Safeguards Agreement [Ref. 21];
- The Agreement between the European Atomic Energy Community, and the Member States without nuclear weapons and the International Atomic Energy Agency, in application of Annexes 1 and 4 of Article III of the Treaty on the Non-Proliferation of Nuclear Weapons and its Additional Protocol [Ref. 22];
- The Convention for the Suppression of Acts of Nuclear Terrorism [Ref. 23];
- The Statute of the International Atomic Energy Agency and its amendments [Ref. 24]; and applies the UNSC Resolution 1540 [Ref. 25].

The Government has made a political commitment to the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary Guidance on the Import and Export of Radioactive Sources and thus, endeavours to follow the guidance in the Code and its accompanying Guidance on the Import and Export of Radioactive Sources. As Cyprus does not have nuclear reactors, the guidance of the Code of Conduct on Reactors does not apply.

Cyprus is also member of the Nuclear Suppliers Group (NSG) and the Global Initiative to Combat Nuclear Terrorism (GICNT).

It also applies the relevant international standards for transport of radioactive materials, by road, sea or air, namely:

- The IAEA Safety Regulations for the Transport of Radioactive Materials [Ref. 26];
- The United Nations Recommendations on the Transport of Dangerous Goods [Ref. 27];
- The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) [Ref. 28];
- The International Maritime Dangerous Goods (IMDG) Code [Ref. 29];
- The International Civil Aviation Organization (ICAO) Technical Instructions on the Safe Transport of Dangerous Goods [Ref. 30], and
- The Universal Postal Union (UPU) Convention [Ref. 31].

No railways or rivers exist in Cyprus.

Other relevant Conventions/Protocols ratified by Cyprus on environmental impact assessment and on public participation issues are the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention and its amendment), its associated Protocol (UNECE Kiev Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context), and the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) and its Protocol on Pollutant Release and Transfer Registers (PRTRs). The MLWSI has competence for all installations referred to in the above Conventions where ionizing radiation is used.

Moreover, Cyprus has established and implements the following agreements:

- Agreement with the European Commission for the participation in the Joint Undertaking for ITER and the Development of Fusion Energy (F4E);
- Memorandum of Understanding between the Joint Research Center of the European Commission and the DLI of the Republic of Cyprus on the participation at the EURDEP Platform (European Radiological Data Exchange Platform);
- Agreement between the Greek Atomic Energy Commission (EEAE), Hellenic Republic, and the DLI of the Ministry of Labour, Welfare and Social Insurance, Republic of Cyprus, for cooperation on radiation protection and nuclear safety issues and for exchange of information on relevant issues. As a result, frequent education and training events are organised and knowledge, experiences and expertise is shared between the two authorities.

Article 20. Regulatory body

MLWSI, acting through RICS/DLI, is the sole regulatory body in Cyprus on radiation and nuclear safety (and security) and has the responsibility for the administration of relevant legislation and authorisation of all sources and practices involving exposure or potential exposure to ionising radiation.

RICS was established in 2002 within DLI, in the framework of the implementation of the Radiation Protection and Nuclear Safety Laws of 2002 to 2017 [Ref. 3], aiming at the protection of individuals, property and the environment against risks due to exposure to ionising radiation or dispersion of radioactive substances or radioactive contamination. The regulatory authority is functionally separate from any other body or organisation concerned with the promotion or utilisation of ionising radiation in general, and effectively independent from undue influence in its regulatory decision making. The regulatory authority has been given the necessary legal power to discharge its responsibilities under the national legislative framework.

DLI is one of the Departments of MLWSI, with competence in Occupational Health and Safety, Industrial Air Emissions Control, Air Quality Control, Control of Chemical Substances, Protection against Ionizing Radiation and Nuclear Safety, and the Control of Machinery, pressure equipment, equipment in explosive atmospheres and Personal Protective Equipment (in the market and at work).

There is a clear allocation of decision-making and other responsibilities between the regulatory authority (the Minister) and the governing body (RICS/DLI) i.e. executing the powers of the Chief Inspector (the Director the DLI) and the Inspectors, who are in charge of the regulatory authority's performance and implementation of policies and decisions. Thus, a clear reference to hierarchy and relevant political or technical decisions is made through the organizational scheme of the regulatory authority, preventing the probability of occurrence of direct or indirect interest in facilities or activities under regulatory control or other authorised parties and that staff remains focused on safety irrespective of their personal views.

All administrative decisions within the regulatory authority in implementation of the existing legislation are taken by the Chief Inspector (the Director of DLI). However, for any high-level policy matters e.g. for the adoption of the government's policy for radioactive waste management, decisions are taken on MLWSI level. For simplicity purposes, for reducing the burden to the Minister and any bureaucratic procedures between the government and the licensees, in line with existing legislation, some of the powers of the Minister e.g. authorisation of practices, have been delegated to the Chief Inspector by a notification published in the Official Gazette.

The regulatory body is able to make independent regulatory judgments and decisions, free from any undue influences that might compromise safety, such as pressures associated with changing political circumstances or economic conditions, or pressures from government departments or from other organizations.

Inspectors are independent in exercising their inspection powers and are supervised by the Head of RICS/DLI and the Chief Inspector. The number of qualified staff and the sufficiency of financial resources for the proper discharge of the assigned responsibilities is an on-going challenge, and there is always space for enhancing the capabilities of the regulatory body with additional qualified and trained staff and the allocation of additional budgetary funds.

Furthermore, the staff of the regulatory body does have no direct or indirect interest in facilities and activities or license holders beyond the interest for regulatory purposes. RICS/DLI is currently staffed with four labour inspection officers, with qualifications in science and engineering and trained in radiation and nuclear safety.

All RICS activities are financed through the annual budget of DLI.

Status of the regulatory authority

RICS/DLI is responsible, among others, for the following functions:

- (a) recommends safety and health standards for practices which may cause health detriment arising from exposure to ionising radiation or may cause harm to the environment or may give rise to loss of use of property due to dispersion of radioactive substances, or due to radioactive contamination;

- (b) inspects, for the purposes of compliance with the legislation in force, any practices or installations in which activities are carried out that may cause a health detriment arising from exposure to ionising radiation or may cause harm to the environment or may give rise to loss of use of property due to dispersion of radioactive substances, or due to radioactive contamination;
- (c) coordinates or ensures the presence of educational, scientific or other type of organisations for the purpose of providing of instructions for, or the education or training of apprenticeship or of other relevant services in respect of protection against risks from ionising radiation;
- (d) coordinates or ensures, in collaboration with other Services when necessary, that a national system and plans for the prevention of or response to radiological accidents and radiological emergencies are established;
- (e) keeps appropriate registers, including inventories of sources of ionising radiation, of premises, of practices and of the exposed workers and the doses received;
- (f) recommends the establishment of a national framework for nuclear safety and its improvement when appropriate, taking into account operating experience, insights gained from safety analyses of operating nuclear installations, development of technology and results of safety research, when available and relevant; and
- (g) monitors the levels of radioactivity in the air, soil, water, sea, foodstuff, feedings stuff, building materials and other products and goods, and ensures the application of appropriate measures, where appropriate.

Moreover, the regulatory authority ensures the implementation of the national programme for the management of radioactive waste, covering all types of radioactive waste under the jurisdiction of the Republic and all stages of the radioactive waste management, from generation to disposal. The regulatory authority has the responsibility to review and update the national programme, taking into account technical and scientific progress, as appropriate, as well as recommendations, lessons learned and good practices from peer reviews.

The regulatory authority is cooperating with and is supported in its duties by other institutions and laboratories, with capabilities in radioactivity analysis, measurement and dosimetry, namely:

- (a) the Environmental and Food Radioactivity Laboratory of the State General Laboratory (SGL), established under the Ministry of Health, for laboratory environmental analysis and measurements;
- (b) the Secondary Standard Dosimetry Laboratory of the Nicosia (Lefcosia) General Hospital, Ministry of Health; and
- (c) other laboratories for analytical spectroscopic measurements.

If necessary, the regulatory authority may request assistance from technical support organisations/institutions within Cyprus or from other countries, the EU, the IAEA and other international organisations. A bilateral agreement with the Greek Atomic Energy Commission is in place, which covers all issues concerning the applications of ionising radiation and nuclear safety.

Appropriate arrangements have also been made for combating illicit trafficking and terrorism. In this context, customs and police officers involved have been trained in these matters and appropriate detection equipment has been installed/procured and is in use in the major commercial ports and airports of Cyprus. In addition, Cyprus participates in all initiatives of the United Nations, the IAEA, the EU and the Global Initiative for Combating Nuclear Terrorism (GICNT).

Moreover, a comprehensive environmental radioactivity monitoring network is operated by the regulatory authority and is connected to the EURDEP platform. The automated ambient gamma dose rate monitoring network also acts as the early warning system in the country.

A fully operational emergency preparedness and response system in case of radiological or nuclear emergencies is in place. The national emergency preparedness and response action plan has been recently reviewed and updated.

The regulatory authority acts as the national contact point for IAEA, including the Incident and Trafficking Databank (ITDB), Euratom, and other relevant organisations and is the competent authority for various international conventions. It participates in various EU or international initiatives, including European Nuclear Safety Regulators Group (ENSREG) and the Heads of European Radiological Protection Competent Authorities (HERCA).

The national framework is maintained and improved, when necessary, taking into account operating experience, insights gained from safety analyses of operating installations involving the use of ionising radiation, any developments of technology and results of safety research.

Section F. Other General Safety Provisions

Article 21. Responsibility of the license holder

The prime responsibility for radiation and nuclear safety within premises or installations, including the safety of radioactive waste management facilities and/or activities, rests with the license holder, and this responsibility cannot be delegated.

A license holder is responsible for carrying out his activities ensuring primarily the safety and security of the sources or irradiators under his control, according to the conditions of the license, applying the basic principles of radiation protection, and taking all appropriate measures to protect workers, members of the public, property and the environment from risks arising from the use of ionising radiation.

As part of the licensing process of a facility or activity, the safety demonstration shall cover the development and operation of an activity and the development, operation and decommissioning of a facility or closure of a disposal facility as well as the post-closure phase of a disposal facility, as applicable. The extent of the safety demonstration shall be commensurate with the complexity of the operation and the magnitude of the hazards associated with the radioactive waste, and the facility or activity. The licensing process contributes to safety in the facility or activity during normal operating conditions, anticipated operational occurrences and design basis accidents. Measures need to be in place to prevent accidents and mitigate the consequences of accidents, including verification of physical barriers and the license holder's administrative protection procedures that would have to fail before workers and the general public would be significantly affected by ionising radiation. That approach includes identifying and reducing uncertainties.

The existing legislation on radiation and nuclear safety also provides that a license holder shall take all necessary technical and administrative measures, in relation to the license granted to him, for securing safety and health of any individual and for protecting the use or property of any person and the environment and shall establish and implement integrated management systems, including

quality assurance, which give due priority for overall management of radioactive waste to safety and are regularly verified by the competent regulatory authority. The licensee may appoint other persons to carry out actions or to carry out tasks related to his obligations as a licensee, but the licensee shall retain the responsibility for such actions, tasks or omissions himself and has the overall responsibility for the radiation protection and nuclear safety. A licensee shall notify in writing RICS/DLI of his/her intention to introduce modifications to any practice or source for which he/she is licensed, and whenever the modifications will have significant implications on safety and health matters, on the protection of use of property of any person and on the protection of the environment, he/she shall not carry out any modification unless he/she has a new license for this purpose.

Complementary to the above, the national strategy provides for the compliance of licensees with requirements/obligations/principles:

- (a) The licensees shall adopt measures for preventing or, where this is not achievable, minimising as reasonably achievable the quantity of radioactive waste generated by their activities, both in terms of activity and volume, by means of appropriate design measures and of operating and decommissioning practices. The licensees shall explore the possibility of reusing or recycling the whole or part of the radioactive waste they produce. The minimisation of the effects of disposals on environment and members of the public shall be one of the main priorities of licensees;
- (b) The licensees shall apply the principles of justification, optimisation, and dose limitation, and take all appropriate measures, as necessary, to protect workers, patients, the public, property and the environment from risks arising from the use of ionising radiation, including activities leading to the generation and management of radioactive waste;
- (c) The licensees shall regularly assess, verify and continuously improve to the reasonably achievable extent the safety of the radioactive waste management facility in a systematic and verifiable manner;
- (d) The licensees shall establish and implement integrated management systems, including quality assurance, in order to give due priority to the safety of the overall radioactive waste management scheme; and
- (e) The licensees shall have measures in place to prevent accidents and mitigate the consequences of accidents, including verification of physical barriers and the license holder's administrative protection procedures that would have to fail before workers and the general public would be significantly affected by ionising radiation.

Article 22. Human and financial resources

License holders are required to provide for and maintain adequate financial and human resources to fulfil their obligations with respect to the safety of radioactive waste management.

The existing legislation on radiation and nuclear safety provides also that, a licensee shall ensure that all personnel who has responsibility for protection from ionising radiation is appropriately trained and qualified, so that they understand their responsibilities and perform their duties with judgement and according to the specified procedures.

For the regulatory authority, relevant information is provided in Section K. The new legislation transposing the EU BSS Directive includes provisions for strengthening the capacity and competence of the regulatory authority.

Article 23. Quality assurance

The existing legislation on radiation and nuclear safety provides that, a licensee shall establish an appropriate management and administrative system, commensurate with the size of the undertaking or practice licensed, and a quality assurance programme, as appropriate. Risk assessment and an assessment of the effectiveness of protective measures applied by the licensees, in relation to sources of ionising radiation, shall be made at different stages, including the decision for locating, design, manufacture, construction assembly, commissioning, operation, maintenance, decommissioning or demolition, as appropriate.

Also, the legislative framework provides for the obligations of the license holders to take all necessary technical and administrative measures, in relation to the license granted to them, for securing safety and health of any individual and for protecting the use or property of any person and the environment, including the measures taken from their side to build, develop and maintain the necessary competences. The license holder compliance with the provisions of existing legislation is verified by the regulatory body through the licensing process, inspections and evaluation of risk assessment and emergency procedures reports.

Article 24. Operational radiation protection

No nuclear applications that could lead to the generation or disposal of spent fuel (i.e. nuclear power plants, research reactors, nuclear treatment facilities, uranium or thorium mines etc.) exist in Cyprus. Also, no facilities that could treat, process, reprocess, condition etc. either spent fuel or radioactive waste exist in the country.

Article 25. Emergency preparedness

National Radiation Emergency Preparedness and Response System and Action Plan

RICS/DLI, in collaboration with other governmental services, has established a comprehensive system for radiation emergency preparedness and response and a national action plan in case of a nuclear or radiological accident/incident titled ELECTRA, to identify, assess, prepare and respond to nuclear or radiological events. This document stipulates threat categorization according to IAEA standards and covers potential scenarios with ionizing radiation, either from abroad or within the country, including incidences with spent fuel and/or radioactive waste.

The regulatory body is also responsible with respect to radiation emergency preparedness and response to propose regulations, conduct licensing, review and assessment, inspections, enforcement, exercises etc.

RICS/DLI, in cooperation with other authorities/stakeholders, takes all necessary measures to ensure that:

- the probability of a radiological emergency to occur is considered and the relevant potential exposures are estimated;
- intervention plans exist as well as a system for the prevention or response to such radiological emergencies and that periodical drills are carried out according to such intervention plans;
- appropriate measurements are carried out in order to give information in time and to respond to such radiological emergencies;

- the public and the workers obtain information in time about the risks and the protective measures in case a radiological emergency occurs;
- special teams for technical, medical and health intervention, in case of radiological emergency exist;
- interventions, in response to radiological emergencies, are organized, in relation to a source, the environment and the individuals, taking account of the real characteristics, the assessment and recording of the consequences of the radiological emergency and of the effectiveness of the intervention;
- specific dose limits are prescribed, as guidance levels in case of intervention in response to radiological emergencies, and exposure above these levels may be exceeded exceptionally to save human lives and only for volunteers who are informed about the risks involved in their intervention.

Furthermore, Cyprus has appointed a competent authority and a single national 24/7 warning point under the IAEA Convention on Early Warning in Case of a Nuclear Accident and participates in the IAEA USIE platform.

Moreover, a modern early warning system of ambient gamma dose rate in air and a monitoring network for sampling and analysis of aerosol, rain, sea water, surface water, drinking water, soil, foodstuff and other environmental variables is in place. Cyprus participates in the ECURIE and EURDEP platforms of the European Union, and RICS/DLI is the focal point for these platforms, as well as for IAEA IEC, USIE and ITDB.

On-Site Emergency Plans

The legislative framework provides that the licensees shall have in place and update regularly a threat (risk) assessment as the basis of their EPR plans. This is also a condition of the license granted to the licensees by the regulatory authority. The five threat categories determined in the relevant IAEA standards establish the basis for developing generically optimized arrangements for preparedness and response.

The existing legislation clearly states the role of the licensees in EPR. The Government has allocated responsibilities for the management of interventions in emergency exposure situations between the regulatory body, national and local response organizations and the operators/licensees.

The role of the licensees in EPR as stated in the legislation is consistent with the assignment of roles and responsibilities in the national EPR framework established by the regulatory body, including the national EPR plan in case of nuclear or radiological event ELECTRA. Arrangements and obligations with regard to emergency preparedness and response are covered by the existing legislation, the conditions of the license granted to them by the Minister and the national emergency plan.

Article 26. Decommissioning

No nuclear applications that could lead to the generation or disposal of spent fuel (i.e. nuclear power plants, research reactors, nuclear treatment facilities, uranium or thorium mines etc.) exist in Cyprus. Also, no facilities that could treat, process, reprocess, condition etc. either spent fuel or radioactive waste exist in the country and currently, there is no centralised waste storage facility. Therefore, the issue of decommissioning of such facilities does not exist in Cyprus.

An old fertilizer plant at Vasilikos area in the southern coast of Cyprus was decommissioned in 2005-2006. NORM from decommissioning and phosphogypsum are kept at the site of the plant, properly stabilised and covered with plastic liner and soil, under the supervision and monitoring of RICS/DLI.

Section G. Safety of Spent Fuel Management

Article 4. General Safety Requirements

Article 5. Existing Facilities

Article 6. Siting of proposed facilities

Article 7. Design and construction of facilities

Article 8. Assessment of safety of facilities

Article 9. Operation of facilities

Article 10. Disposal of spent fuel

No nuclear applications that could lead to the generation or disposal of spent fuel (i.e. nuclear power plants, research reactors, nuclear treatment facilities, uranium or thorium mines etc.) exist in Cyprus. Also, no facilities that could treat, process, reprocess, condition etc. spent fuel exist in the country.

Furthermore, according to the Protection from Ionising Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014 [Ref. 4] the management of spent fuel in the country is prohibited. Thus, the national policy and strategy refers only to the responsible and safe management of radioactive waste.

Section H. Safety of Radioactive Waste Management

Article 11. General safety requirements

The general safety requirements for radioactive waste management in Cyprus are laid down in the relevant legislation for the Protection from Ionizing Radiation and Nuclear Safety Laws of 2002 to 2017 [Ref. 3] and the various sets of Regulations issued under the Laws [Ref. 7, 8, 9, 10, 11 and 12]. Furthermore, a national policy and strategy and a national programme on the responsible and safe management of radioactive waste has been approved in 2015 and is implemented, in accordance with the overall principles and policies that have been laid down in Section B of this report.

Article 12. Existing facilities and past practices

There are no radioactive waste management facilities in the country.

The main origins of radioactive waste in the Cyprus are from activities in the field of medicine, industry, and research. All sources or other radioisotopes used in Cyprus are produced abroad. Radioactive waste is produced in low volumes in liquid or solid form, in facilities such as medical laboratories for nuclear medicine applications.

NORM was produced in the past due to the activities of a now decommissioned fertiliser plant at Vasilikos area in the southern coast of Cyprus. NORM from decommissioning and phosphogypsum

are kept at the site of the plant, properly stabilised and covered with plastic liner and soil, under the supervision and monitoring of RICS/DLI.

For disused sealed sources, please refer to the respective section of this report.

Article 13. Siting of proposed facilities

Article 14. Design and construction of facilities

Article 15. Assessment of safety of facilities

Article 16. Operation of facilities

Article 17. Institutional measures after closure

All stages of life of a facility, including siting, design, construction, commissioning, operation, decommissioning or closure, falls within the scope of the existing legislation.

The design and the construction of a centralised radioactive waste storage or management facility as for the practices currently conducted in the country, mainly in medicine and research, is not considered by the Government as an option in the foreseeable future.

Section I. Transboundary Movement

The legislative framework in Cyprus requires that no person can perform any practice/activity involving radioactive substances or radioactive waste including the possession, production, handling, use, storage, manufacture, import or export, supply, distribution, transfer, transport, disposal, recycling, re-use of radioactive substances or radioactive waste unless this person has a license granted by the Minister of MLWSI, after application in writing. For intra-European Union shipments of sealed radioactive sources, the form of Annex I of the EU Regulation No. 1493/93 [Ref. 32] must be completed and submitted, as well as.

Also, for shipments of radioactive sources, radioactive substances or radioactive waste from Cyprus to other EU Member States the consent of the regulatory body of the destination Member State is required prior to the shipment.

Additionally, as regards shipments of radioactive waste or nuclear spent fuel, the Protection from Ionising Radiation and Nuclear Safety (Supervision and Control of Shipments of Radioactive Waste and Spent Nuclear Fuel) Regulations of 2009 (P.I. 86/2009) [Ref. 12], which harmonise national legislation with the Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent nuclear fuel [Ref. 33], apply. These Regulations apply to transboundary shipments of radioactive waste or spent fuel whenever

- (a) the country of origin or the country of destination or any country of transit is a Member State of the Community; and
- (b) the quantities and concentration of the consignment exceed the levels defined in the legislation. Also, these Regulations do not apply to shipments of disused sources to a supplier or manufacturer of radioactive sources or to a recognized installation or to transboundary shipments of waste that contains only naturally occurring radioactive material which does not arise from practices. The management of spent fuel in Cyprus is prohibited by law, while there is not significant production of radioactive waste that may result in the need to export/ship such waste abroad; therefore, in practice there is not much applicability of these Regulations in the national context.

This set of Regulations is consistent with the existing legislation for the safety and protection of health of workers and the population against the dangers arising from ionising radiation. It also ensures consistency with international Conventions, in particular with the Joint Convention.

For the shipment of radioactive waste or spent fuel, the standard document (standard document for the supervision and control of shipments of radioactive waste and spent nuclear fuel attached as an annex to the Commission Decision 2008/312/Euratom of 5 March 2008 establishing the standard document for the supervision and control of shipments of radioactive waste and spent fuel referred to in Council Directive 2006/117/Euratom) shall be used. This standard document has also been published as a Notification of the MLWSI in the Official Gazette of the Republic dated 30.4.2009 [Ref. 34].

The Commission Recommendation 2008/956/Euratom of 4 December 2008 on the criteria for the export of radioactive waste and spent fuel to third countries is also relevant [Ref. 35].

The Protection from Ionising Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014 [Ref. 4], which transpose to national legislation the Council Directive 2011/70/Euratom [Ref. 13] require that radioactive waste shall be disposed of in the Member State in which it was generated, unless at the time of shipment an agreement has entered into force between the Member State concerned and another Member State or a third country to use a disposal facility in one of them.

Moreover, Cyprus applies the relevant international standards for transport of radioactive materials, by road, sea or air, namely:

- The IAEA Safety Regulations for the Transport of Radioactive Materials [Ref. 26];
- The United Nations Recommendations on the Transport of Dangerous Goods [Ref. 27];
- The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) [Ref. 28];
- The International Maritime Dangerous Goods (IMDG) Code [Ref. 29];
- The International Civil Aviation Organization (ICAO) Technical Instructions on the Safe Transport of Dangerous Goods [Ref. 30], and
- The Universal Postal Union (UPU) Convention [Ref. 31].

No railways or rivers exist in Cyprus.

The various IAEA Safety Guides which provide recommendations and guidance on how to comply with international safety requirements and best practice are followed.

RICS/DLI has competence for the transport by road, sea and air of dangerous goods/materials that are nuclear or radioactive (UN Class 7) and licenses/approvals issued by the regulatory authority do not replace or substitute any other licenses required with other relevant national legislation or European or international standards on the transport of dangerous goods/materials.

Section J. Disused Sealed Sources

Disused sealed radioactive sources (DSRS) for which no further use is foreseen are not considered as radioactive waste and the regulatory authority requires that licensees shall have in place repatriation agreements for DSRS with manufacturers/suppliers in other countries and the endpoint is the responsible organisation/company in the receiving country.

The regulatory authority authorises the import of sealed radioactive sources only on the condition that the sources are accepted back by the supplier/manufacturer at the end of their useful life (repatriation of DSRS), and the endpoint is the return to the receiving country and responsible organisation/company in that country. In such cases, there are in place arrangements/ agreements between the licensee in Cyprus and the manufacturer or the supplier abroad, whatever applicable, for accepting back such sources, which are assessed during the authorisation procedure.

Moreover, the possibility of contracting the re-use of these DSRS to suppliers/manufacturers abroad that manufacture small sources for educational or research purposes shall be explored. Finally, the possibility of discovering orphan sources or other contaminated materials in metal scrap yards, due to the isolation of the country by land from other countries, is not considered as high. It is however possible that the number of lightning rods and smoke detectors disposed of to increase in future due to renovation works taking place in buildings and replacement with other similar equipment of modern technology.

Currently, a number of legacy DSRS used in the past in oncology departments, for research or other purposes (radioactive elements from lightning rods, smoke detectors, educational resources etc.) are kept at a centralized temporary storage facility in Nicosia (Lefkosia) General Hospital. The licensee for this temporary storage is the Ministry of Health and special conditions are attached to the license granted by the regulatory authority.

The DSRS storage facility is inspected by RICS/DLI and has been also inspected in the past by Euratom and IAEA inspectors, in implementation of international agreements which Cyprus has signed.

DSRS for repatriation

DSRS under repatriation or to be repatriated are under regulatory control from their arrival in the country till shipment to the manufacturer/supplier. Take-back agreements are in place between licensees in the Cyprus and manufacturers/suppliers in other EU member states or third countries, the endpoint is the return to the receiving country and responsible organisation/company in that country.

DSRS for disposal

Because the shipment/repatriation of all DSRS abroad is not always possible for all DSRS, especially in the case of legacy DSRS kept stored since there was not regulatory and legislative infrastructure in the country, the Government shall consider, according to the national programme, taking a final decision on:

- (a) the establishment of a centralised management/disposal facility for DSRS;
- (b) licensing a Waste Management Organisation;
- (c) exploration of shipment options for proper management and disposal of DSRS abroad;
- (d) assessment on the application of the BOSS (Borehole Disposal of Sealed Radioactive Sources) method.

Orphan sources/contaminated material

A system exists for the control of orphan sources and other radioactively-contaminated material. These sources or materials will be managed and disposed of, accordingly. Currently, as explained

above, all DSRS, lightning rods, smoke detectors, education sources etc. are stored in a licensed temporary storage until a final solution is decided by the Government.

Inventory of Sealed Sources

The National Inventory of Sealed Radioactive Sources is kept and updated by RICS/DLI, according to the provisions of the existing legislation, in both hard copy and electronic form.

New elements introduced with new legislation

The new legislation transposing to the national legislative framework the EU BSS Directive includes provisions on:

- the establishment of a system to enable the regulatory authority to be adequately informed of any transfer of high activity sealed sources and where necessary individual transfers of sealed sources;
- the requirement that each undertaking holding a sealed source to notify the competent authority promptly of any loss, significant leakage, theft or unauthorised use of a sealed source;
- arrangements providing for the transfer of disused sources to the supplier or their placement in a disposal or storage facility or an obligation for the manufacturer or the supplier to receive them;
- a financial security or any other equivalent means appropriate for the source in question for the safe management of sources when they become disused sources, including the case where the undertaking becomes insolvent or ceases its activities.

Section K. General Efforts to Improve Safety

Suggestions and Challenges identified at the previous Review Meeting

Human and financial resources

Challenge 1: “Further strengthening of the Radiation Authority, the cooperating Government departments, and other supporting institutions (Staffing, training and resources)”

RICS is currently (2017) staffed with the Director of DLI (Chief Inspector under the Law, as Head), and four Labour Inspection Officers (Radiation Safety and Protection), qualified in engineering or science and with experience and training in radiation protection and nuclear safety. Although several assessments of human resource needs have been conducted in the past (both by independent bodies and the Department of Public Administration and Personnel of the Ministry of Finance) and subsequent proposals have been submitted to the government, appropriate staffing of RICS continues to be an ongoing challenge. The retirement of experienced staff is also a challenge to deal with, as well as the common recruitment of DLI Officers and the centralized recruitment procedure followed by the government (appointments of new staff through the procedures of the Civil Service Committee).

RICS is cooperating with other governmental departments and institutions in performing its duties, e.g. the Customs Department, the Police, the Fire Brigade, the State General Laboratory, the Civil Defense, academic institutions etc.

The staff of RICS is trained on a continuous basis both in Cyprus and abroad. Training programmes for regulatory staff are available. The training scheme applied by the regulatory authority for its staff covers the principles, concepts and technological aspects, as well as the procedures followed by the regulatory authority for reviewing and assessing applications for authorization, for inspecting facilities and activities, and for enforcing regulatory requirements.

The funding for RICS is provided by the Government through the annual budget of DLI.

Under the Protection from Ionizing Radiation and Nuclear Safety Laws of 2002 to 2017, fees for licensing expenses as well as for other services offered by RICS apply and are paid by applicants in the case of licensing or interested bodies in all other cases. The fees are paid into the consolidated funds of the Cyprus Government and not to the RICS/DLI budget.

RICS has sufficient facilities, office equipment, accounting, secretarial and IT support, instruments and other resources to perform its regulatory activities.

Radiation Emergency Preparedness and Response

Challenge 2: “Continuous improvement and implementation of the radiological Emergency Preparedness and Response (EPR) plan (Training and exercising of personnel involved; Resources)”

Information concerning the implementation of a comprehensive system for safety on radiation emergency preparedness and response situations is provided under Section F of this report.

RICS/DLI, in collaboration with other governmental services, has established a comprehensive system for radiation emergency preparedness and response and a national action plan in case of a nuclear or radiological accident/incident titled ELECTRA, to identify, assess, prepare and respond to nuclear or radiological events. The EPR plan ELECTRA was drafted according to the national legislation and relevant IAEA and EU standards, approved by the MLWSI in 2015 and distributed to all participating organisations/stakeholders in the country. This document stipulates threat categorization according to IAEA standards and covers potential scenarios with ionizing radiation, either from abroad or within the country, including incidences with spent fuel and/or radioactive waste.

A large number of services are involved and have been allocated responsibilities through the EPR plan ELECTRA, such as:

- First responders (Police; Fire Service; Civil Defense).
- Sampling teams (RICS, Department of Agriculture; Department of Fisheries and Marine Research; Department of Water Development; and Veterinary Services of the Ministry of Agriculture, Rural Development and the Environment; Public Health Services of the Ministry of Health; District Administrations; etc);
- Medical teams (Department of Medical and Public Health Services of the Ministry of Health; local district and other large hospitals);
- Meteorological information, weather prognosis and atmospheric dispersion modeling (Department of Meteorology);
- International relations and for issues related to citizens of foreign countries (Ministry of Foreign Affairs).

Cyprus has also appointed relevant competent authorities and the national warning point under the IAEA Convention on Early Warning in case of a Nuclear Accident and the ECURIE platform and participates in the IAEA Emergency Preparedness and Response Network. An emergency operations centre, has been established within the Civil Defense which is the 24h Warning Point of the country in case of a nuclear or radiological emergency.

In the national emergency plan ELECTRA, responsibilities have been assigned - who is responsible for doing what - within each operating and response organization for the performance of the response functions (managing the response, first responders, initial assessment, notification, mitigation, etc.). Each stakeholder involved in the EPR plan ELECTRA, including the regulatory authority, is responsible to assign in its emergency plans and procedures (internal action plans, concept of procedures) the personnel responsible for performance of the response functions specified in the plan. The personnel responsible must be assigned as part of the routine organizational structures. All personnel who are assigned to positions in all operating organizations and response organizations to perform the functions necessary to meet the requirements must be qualified and shall be assessed for their initial fitness and continuing fitness for their intended duties. On-going training requirements for each position and team within the response organizations have been established and documented to ensure that response personnel have the required knowledge, skills and abilities to perform their assigned response functions and the appropriate personnel have been selected. Training requirements are referred to in the national emergency preparedness and response action plan for nuclear or radiological events ELECTRA and the internal plans of each response organisation involved in an emergency response situation. The EPR plan ELECTRA provides that full scale drills for the entire response mechanism is conducted once every two years. Various education and training activities have been conducted in the past and more such activities are planned to be conducted in future, with the support of IAEA.

Revision of the legislative framework

Challenge 3: “Preparation/Implementation of new legislation (New EURATOM directives: Radioisotopes in Drinking Water; Amendment of Nuclear Safety Directive; BSS)”

The European “Drinking Water” Directive has been transposed to the national legislative framework through the Protection from Ionising Radiation and Nuclear Safety (Protection of the Health of the General Public from Radioactive Substances in Water Intended for Human Consumption) Regulations of 2016 (P.I. 54/2016).

In July 2017, the basic law on nuclear safety and radiation protection was amended to transpose the provisions of the amended European Nuclear Safety Directive [Ref. 36], through the Protection from Ionising Radiation and Nuclear Safety (Amendment) Law of 2017 [Ref. 3]. The new Law includes among others provisions which strengthen the powers of the regulatory authority by ensuring its independence and for providing the regulatory authority sufficient legal powers, staff, and financial resources. The new Law also provides for transparency, a system of peer reviews and reporting obligations to the European Commission.

A new Law and a new set of Regulations transposing to the national framework the European Directive 2013/59/Euratom (“BSS Directive”) for laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation [Ref. 14] have undergone public consultation and currently are under legal vetting. The new legislation, which repeals a significant part of existing legislation (i.e. basic principles, medical exposures, information to the public in case of a radiation emergency etc.) shall be put into force by February 2018. The new legislation provides

for the protection of workers exposed to ionising radiation, such as workers in the nuclear industry and other industrial applications, medical staff and those working in places with indoor radon or in activities involving naturally occurring radioactive material (NORM); protection of members of the public, for example from radon in buildings; protection of medical patients; and strengthened requirements on emergency preparedness and response incorporating lessons learnt from the Fukushima accident.

Final disposal of historical DSRS

Challenge 4: “Options for final disposal of historical DSRS in temporary storage (Repatriation of 4 Category-II Co-60 DSRS; Sent abroad or condition and final disposal in Cyprus of other DSRS (Cat. 3, 4 & 5; Borehole disposal Concept)”

The regulatory authority authorises the import of sealed radioactive sources only on the condition that the sources are accepted back by the supplier/manufacturer at the end of their useful life (repatriation of DSRS), and the endpoint is the return to the receiving country and responsible organisation/company in that country. In such cases, there are in place arrangements/ agreements between the licensee in Cyprus and the manufacturer or the supplier abroad, whatever applicable, for accepting back such sources, which are assessed during the authorisation procedure.

Information on the options under consideration for final disposal of the legacy disused sealed radioactive sources kept in a licensed temporary storage in the Nicosia (Lefkosia) General Hospital are discussed in Section J. The final disposal of the above mentioned legacy disused sealed radioactive sources continues to be an ongoing challenge, for which however appropriate actions have been initiated. In exercising its regulatory powers, the regulatory authority has asked the licensee for upgrading the security levels of the storage facility in 2016. As a consequence, the four Category II Co-60 sources and a number of smaller sources of lower categories (lightning rods, smoke detectors and educational sources) have been moved to new storage place with upgraded security measures, within the licensee premises, to accommodate temporarily the above mentioned sources. The regulatory authority is in close contact with the licensee, other stakeholders in the country and the IAEA to further assess potential disposal options and explore the possibility of repatriating these DSRS to appropriate treatment facilities abroad. The regulatory authority has invited an IAEA mission in Cyprus to support this effort which is planned to be held in late autumn 2017. The DSRS storage facility is inspected by RICS/DLI and has been also inspected in the past by Euratom and IAEA inspectors, in implementation of international agreements which Cyprus has signed.

Peer reviews

Challenge 5: “Peer Review in 2016 (Obligation under the NS and SF&RW EURATOM Directives; in cooperation with IAEA (IRRS and Artemis Missions))”

An IAEA Integrated Regulatory Review Service (IRRS) peer review mission of the Competent Authority and of the Radiation Protection and Nuclear Safety system in Cyprus has been conducted in Cyprus in the period 13-22 February 2017 (originally planned to be conducted in 2016, but postponed for logistics purposes). The peer review was carried out in accordance with the provisions of Article 18C(2) of the Protection from Ionizing Radiation and Nuclear Safety Laws 2002 to 2017 [Ref. 3] and of the European Directive 2009/71/Euratom establishing a Community framework on the nuclear safety of nuclear installations [Ref. 37].

RICS/DLI has prepared an action plan for the full implementation of the peer review recommendations and suggestions, with a view to invite a follow-up peer review mission in near future.

Part of peer review recommendations or suggestions will be implemented by amending the existing legislation for the transposition of the Directives 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation [Ref. 14] and 2014/87/Euratom amending Directive 2009/71/Euratom establishing a Community framework on the nuclear safety of nuclear installations [Ref. 36].

RICS/DLI has made public the final report of the peer review on its website, has given its consent to IAEA for uploading the review report at the relevant IAEA website and also has communicated the report to the European Commission and the EU member states through the Council of the European Union.

Moreover, Cyprus has planned to invite an IAEA Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation Programmes (ARTEMIS) peer review by 2020, according to the provisions of the Protection from Ionizing Radiation and Nuclear Safety Laws 2002 to 2017 [Ref. 3] and the Council Directive 2011/70/Euratom for establishing a community framework for the responsible and safe management of spent fuel and radioactive waste [Ref. 13].

Transparency policy and public involvement processes

The legislative framework requires that information in relation to radiation protection and nuclear safety is made available to the workers and the general public. The procedure for the adoption of new legislation involves consultation with all stakeholders and the public. Information is made available to the public in accordance with national legislation and international obligations.

The national Regulations on the Responsible and Safe Management of Spent Fuel and Radioactive Waste [Ref. 4] provide that the necessary information on the management of radioactive waste shall be made available to workers and the general public. This obligation includes ensuring that the competent regulatory authority informs the public in the fields of its competence. Information shall be made available to the public in accordance with national legislation and international obligations, provided that this does not jeopardise other interests such as, inter alia, security, recognised in national legislation or international obligations.

The above Regulations [Ref. 4] also provide that the public is given the necessary opportunities to participate effectively in the decision-making process regarding spent fuel and radioactive waste management in accordance with national legislation and international obligations. Specifically, the Regulations provide that the regulatory authority may inform the public, by a notification published in the Gazette, in two newspapers of wide circulation in the country and on the internet, about a forthcoming decision, the nature of possible decisions or, where such decision has already been made, the draft decision; the place and time in which the information associated with the impending decision are available to the public; and that any member of the public may submit to the competent authority views or raise an issue within 35 days from the date of publication of the notice. In addition, the competent authority, informs the public, by notice could be published in two newspapers of wide circulation in the country and on the internet, of the views received or issues raised by any person. Before taking a decision, the competent authority shall take in due account the views received or issues raised. The way in which the competent authority has taken into account the received views or

raised issues shall be included in a summary statement, which is maintained in an appropriate record, as provided for in the legislation.

Furthermore, the national policy and strategy on the responsible and safe management of radioactive waste provides the following:

(a) Transparency and information to the public:

- (i) All radioactive waste management activities shall be conducted in an open and transparent manner, in compliance with current legislation and international obligations, and the public will be granted access to information regarding waste management, where this does not infringe upon national laws, security and defence.
- (ii) The license holders shall ensure that necessary information on the management of radioactive waste is made available to workers and the general public.

(b) Decision-making and public participation:

- (i) An evidence-based and documented decision-making process shall be applied with regard to all stages of the management of radioactive waste.
- (ii) The documentation of the decision-making process as it relates to safety should be commensurate with the levels of risk (graded approach) and should provide a basis for decisions related to the management of spent fuel and radioactive waste. This should enable the identification of areas of uncertainty on which attention needs to be focused in an assessment of safety. Safety decisions should be based on the findings of an assessment of safety and information on the robustness and reliability of that assessment and the assumptions made therein.
- (iii) Decision-making shall be based on proven scientific information and recommendations of the national Competent Authority (i.e. the MLWSI). Radioactive waste management shall take into account the interests and concerns of all interested and affected parties, when decisions are being made. The Competent Authority shall ensure that the public is given the necessary opportunities to participate effectively in the decision-making process regarding waste management.
- (iv) Where there is uncertainty about the safety of an activity, a conservative approach shall be adopted.

Moreover, Cyprus is a party to the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, known as the "Aarhus Convention". This Convention establishes a number of rights of the public, individuals and their associations, with regard to the environment, such as the right of everyone to receive environmental information that is held by public authorities ("access to environmental information"), the right to participate in environmental decision-making ("public participation in environmental decision-making"), and the right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general ("access to justice"). Cyprus is party to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention and its amendment), its associated Protocol (UNECE Kiev Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context), as well. The

MLWSI has competence for all installations referred to in the above Conventions where ionizing radiation is used.

Section L. Annex

References to national laws and regulations and other EU or international instruments

- [1] The Joint Convention on the Safety of spent Fuel Management and on the Safety of Radioactive Waste Management.
- [2] The Joint Convention (JC) on the Safety of spent Fuel Management and on the Safety of Radioactive Waste Management (Ratification) Law of 2009, L.13(III)/2009.
- [3] The Protection from Ionising Radiation and Nuclear Safety Laws of 2002 to 2017, L.115(I)/20002, L.8(I)/2009, L.127(I)/2011 and L.122(I)/2017.
- [4] The Protection from Ionising Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014, P.I. 178/2014.
- [5] General Safety Guide No. GSG-1 “Classification of radioactive waste”, IAEA, Vienna, 2009.
- [6] Council Directive 96/29/Euratom of laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation.
- [7] The Protection from Ionising Radiation (Basic Principles) Regulations of 2002, P.I. 494/2002.
- [8] The Protection from Ionising Radiation (Medical Exposure) Regulations of 2002, P.I. 497/2002.
- [9] The Protection from Ionising Radiation (Information to the Public on Applicable Measures in case of Emergency) Regulations of 2002, P.I. 495/2002.
- [10] The Protection from Ionising Radiation (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) Regulations of 2009, P.I. 86/2009.
- [11] The Protection from Ionising Radiation (Control of High Activity Sealed Radioactive Sources and Orphan Sources) Regulations of 2006, P.I. 30/2006.
- [12] The Protection from Ionising Radiation and Nuclear Safety (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) Regulations of 2009, P.I. 86/2009.
- [13] Council Directive 2011/70/Euratom for establishing a community framework for the responsible and safe management of spent fuel and radioactive waste.
- [14] Council Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom.
- [15] The Conventions on Early Notification (NOT) and Assistance in the case of Nuclear Accident (ASSIST) (Ratification) Law of 1988, N.164/1988.
- [16] The Convention on Nuclear Safety (CNS) (Ratification) Law of 1998, L.20(III)/1998.
- [17] The Convention on Physical Protection of Nuclear Material (CPPNM) (Ratification) Law of 1998, N.3 (III)/1998 and its amendment Law of 2012, L.38(III)/2012.
- [18] The Comprehensive Nuclear Test Ban Treaty (CTBT) (Ratification) Law of 2003, N.32(III)/2003.
- [19] The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) (Ratification) Law of 1970, L.8/1970.
- [20] The Safeguards Agreement between Cyprus and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (Ratification) Law of 1973, L.3/1973.
- [21] The Protocol Additional to the Safeguards Agreement between Cyprus and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (Ratification) Law of 2002, L.27(III)/2002.
- [22] The Agreement between the European Atomic Energy Community, and the Member States without nuclear weapons and the International Atomic Energy Agency, in application of Annexes 1 and 4 of Article III of the Treaty on the Non-Proliferation of Nuclear Weapons and its Additional Protocol (Ratification) Law of 2007, L.37(III)/2007.

- [23] The Convention for the Suppression of Acts of Nuclear Terrorism (Ratification) Law of 2007, L.44 (III)/2007.
- [24] The Statute of the International Atomic Energy Agency (Ratification) Laws of 1965 to 2011, L.21/1965, L.49/1972, L.25/1998 and L.27(III)/2011.
- [25] The UNSC Resolution 1540.
- [26] The IAEA Safety Regulations for the Transport of Radioactive Materials.
- [27] The United Nations Recommendations on the Transport of Dangerous Goods.
- [28] The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR).
- [29] The International Maritime Dangerous Goods (IMDG) Code.
- [30] The International Civil Aviation Organization (ICAO) Technical Instructions on the Safe Transport of Dangerous Goods.
- [31] The Universal Postal Union (UPU) Convention.
- [32] EU Regulation No.1493/93 for intra-European Union shipments of sealed radioactive sources.
- [33] Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent nuclear fuel.
- [34] The Protection from Ionising Radiation (Supervision and Control of Shipments of Radioactive Waste and Spent Nuclear Fuel) Notification of 2009, P.I. 183/2009.
- [35] The Commission Recommendation 2008/956/Euratom of 4 December 2008 on the criteria for the export of radioactive waste and spent fuel to third countries.
- [36] 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.
- [37] Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations.