



**REPUBLIC OF CYPRUS**

**Ministry of Labour, Welfare and Social Insurance**

**Department of Labour Inspection**

**Radiation Inspection and Control Service**

# **CYPRUS 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  
7<sup>th</sup> Review Meeting of the Convention**

**Vienna, Austria, May/June 2021**

**Nicosia, Cyprus**

**October 2020**

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## Abbreviations

(in alphabetical order)

DLI	Department of Labour Inspection
DSRS	Disused Sealed Radioactive Source
EC	European Commission
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
GSG	General Safety Guide
GSR	Generic Safety Requirements
HERCA	Heads of European Radiological Protection Competent Authorities
IAEA	International Atomic Energy Agency
ICAO	International Civil Aviation Organisation
IMDG	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
R.A.A.	Regulatory Administrative Act
RICS	Radiation Inspection and Control Service (of DLI)
TENORM	Technologically-Enhanced Naturally-Occurring Radioactive Material
TLC	Technical Licensing Committee
UNECE	United Nations Economic Commission for Europe
UPU	Universal Postal Union
USIE	The IAEA Unified System for Information Exchange in Incidents and Emergencies

## Section A. Introduction

### *General*

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 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. The relevant Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Ratification) Law of 2009 (L.13(III)/2009) was published in the Official Journal of the Republic of 24 July 2009, and entered into force on 19 January 2010. Since its accession to the Joint Convention, Cyprus participated in three review meetings, in 2012, 2015 and in 2018, and submitted relevant national reports.

Cyprus has no nuclear power reactor units and 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. Also, Cyprus has no research reactors, nor does it operate any other nuclear installations or uranium or thorium mines. Currently, no radioactive waste management facilities operate in Cyprus and the management of spent fuel is prohibited by law. The main use of ionising radiation in the country is in medicine, industry and education/research. All radioactive sources and radiation generators used in the country are imported from abroad. Radioactive waste is produced in low volumes and very low radioactivity levels, for example waste in medical laboratories for nuclear medicine applications. There are also some legacy disused sealed radioactive sources (DSRS) used for cancer therapy in the past, smoke detectors and lightning rods.

Cyprus has established a comprehensive legal, regulatory and administrative framework for radiation protection and nuclear and radiological safety, which is in line with the IAEA standards and the EU Acquis. This framework has been significantly revised during the past years, in the time period since the last Joint Convention Review Meeting, in harmonisation with the relevant Euratom legislative instruments on nuclear and radiological safety and radiation protection.

A comprehensive policy and strategy on the safe and responsible radioactive waste and DSRS management has been adopted in 2015, in accordance with the national legislation and the IAEA standards and European and other international commitments, and serves as the national commitment to address the country’s waste management issues, in a coordinated, cooperative and sustainable manner. Further details on this policy are given in Section B of this report. Cyprus has also strengthened its efforts for national coordination and international participation and cooperation, as well as in getting benefit from independent peer review assessments of the national framework.

The administration of the legislation for the responsible and safe management of radioactive waste is assigned to the regulatory body, i.e. the Minister of Labour, Welfare and Social Insurance (MLWSI), as defined under the Protection against Ionising Radiation and Nuclear and Radiological Safety and Security Law of 2018 (L.164(I)/2018) (“the Law” hereafter), acting through the Radiation Inspection and Control Service (RICS) of the Department of Labour Inspection (DLI) of this Ministry.

The current report is the 4<sup>th</sup> National Report under the Joint Convention, and is submitted for the purposes of the 7<sup>th</sup> Review Meeting of the Convention, to be held in Vienna, from 24 May to 4 June 2021.

### ***Main developments since the 6<sup>th</sup> Joint Convention Review Meeting***

The main developments since the last national report include the following:

1. Cyprus has further strengthened the legislative and regulatory framework in order to maintain and promote the continuous improvement of nuclear/radiological safety and protection and its regulation

and maintain appropriate national arrangements for a high level of nuclear/radiological safety and to protect workers and the general public against the dangers arising from ionising radiation from the various application of ionising radiation.

The improvements in the legislative and regulatory framework are consistent and aligned with:

- (a) the European Directive 2009/71/Euratom, as amended by Directive 2014/87/Euratom, on the nuclear safety of nuclear installations, which aims at maintaining and promoting the continuous improvement of nuclear safety and its regulation and providing for the national arrangements for a high level of nuclear/radiological safety.
- (b) the European Directive 2013/59/Euratom on the establishment and implementation of basic safety standards for protection against the dangers arising from exposure to ionising radiation, which covers all relevant radiation sources, including the control of high-activity sealed sources and natural radiation sources, integrate protection of workers, members of the public, patients and the environment, covers all exposure situations (planned, existing, emergency), sets the regulatory control standards of practices and harmonises numerical values (dose limits; dose constraints; and reference levels) with the international standards. It also includes emergency preparedness and response provisions that were strengthened in the aftermath of the Fukushima Daiichi nuclear accident.

The new legislative and regulatory framework revises and/or completes, as appropriate, the pre-existing framework on: (a) the 1996's basic safety standards (radiation protection) (2002); (b) the health protection of individuals against the dangers of ionising radiation in relation to medical exposure (2002); (c) the information provided to the general public about health protection measures to be applied and steps to be taken in the event of a radiological emergency (2002); (d) the operational protection of outside workers exposed to the risk of ionising radiation during their activities in controlled areas (2002); (e) the control of high-activity sealed radioactive sources and orphan sources (2006); (f) the supervision and control of transboundary shipments of radioactive waste and spent nuclear fuel (2009); (g) the nuclear safety of nuclear installations (2011, 2017); (h) the safe and responsible management of radioactive waste (2014); (i) the protection of the health of the general public with regard to radioactive substances in water (2016); and (j) the provisions of the relevant Euratom "food and feed" Regulations, i.e. the Euratom Regulation 2016/52 on the maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other radiological emergency and the Regulation 733/2008 of 15 July 2008 on the conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power station, replaced by the Commission Implementing Regulation (EU) 2020/1158 of 5 August 2020.

Efforts have been made through the recent revision of the national nuclear/radiological safety and radiation protection legislation to incorporate provisions in the text that further align with the IAEA safety standards, in particular GSR Part 1 (rev. 1), GSR Part 3, and GSR Part 7, as well as the Code of Conduct on the Safety and Security of Radioactive Sources, making their provisions binding through the national framework.

With respect to the safe and responsible management of radioactive waste, Cyprus has developed since 2014 a dedicated national legislative, regulatory and organisational framework for radioactive waste management, and implements a national policy and strategy on radioactive waste and DSRS management, as well as a national programme that covers all types of radioactive waste or DSRS under its jurisdiction and all stages of radioactive waste management, from generation to disposal. New elements relevant to the management of DSRS are:

- (a) the establishment of a system to enable the regulatory body to be adequately informed of any transfer of high activity sealed sources and where necessary individual transfers of sealed sources;

- (b) the requirement that each license holder possessing a sealed source to notify the regulatory body promptly of any loss, significant leakage, theft or unauthorised use of a sealed source;
- (c) arrangements providing for the transfer of DSRS to the supplier or their placement in a disposal or storage facility or an obligation for the manufacturer or the supplier to receive them;
- (d) a financial security or any other equivalent means appropriate for the source in question for the safe management of sources when they become disused, including the case where the license holder becomes insolvent or ceases its activities.

2. The new legislation introduced in Cyprus further strengthens the legal status, capacity and powers of the regulatory body:

- (a) It strengthens its effective independence from undue influence on its decision making and functional separation of the regulatory body from any other body or organisation concerned with the promotion or utilisation of nuclear energy or of ionising radiation;
- (b) It provides the legal powers to the regulatory body necessary to fulfil its obligations in connection with the national framework i.e. (i) define the national nuclear/radiological safety requirements; (ii) require the license holder to comply and demonstrate compliance with national nuclear safety requirements and the terms of the relevant license; (iii) verify such compliance through regulatory assessments and inspections; and (iv) propose or carry out effective and proportionate enforcement actions;
- (c) It provides for the human and financial resources necessary for the functioning of the regulatory body i.e. dedicated and appropriate budget allocations to allow for the delivery of its regulatory tasks; appropriate number of qualified staff with experience and expertise necessary to fulfil its obligations;
- (d) It provides for the integrity and stability in the processes, procedures and decision-making of the regulatory body, and the prevention and resolution of any conflicts of interest;
- (e) It further promotes openness and transparency in the regulatory procedures and decisions;
- (f) It clearly defines requirements for the license holders, including: (i) maintaining adequate financial and human resources to fulfil their obligations under the law; (ii) defining the prime responsibility for safety; (iii) regularly assessing, verifying, and continuously improving the safety of their facilities in a systematic and verifiable manner; (iv) establishing and implementing management systems which give due priority to safety; and (v) establishing and updating appropriate on-site emergency procedures and arrangements, including arrangements for responding effectively to accidents in order to prevent or mitigate their consequences;
- (g) It provides for arrangements for education and training to be in place by all parties having responsibilities related to the safety of facilities, so as to obtain, maintain and to further develop expertise and skills in nuclear safety and on-site emergency preparedness;
- (h) It defines the information (to be) made available to the workers and the general public in relation to safety in the event of nuclear or radiological emergency.

3. Adoption of a graded approach in the regulatory process and control through:

- (a) the concepts of exclusion, exemption and clearance;
- (b) notification and authorisation (registration or licensing);
- (c) notification and application forms for registration and licensing and the required documentation in support of the application;
- (d) authorisation (registration) under general conditions for common practices with radiological equipment, e.g. dental or veterinary radiological practices;
- (e) review and assessment;
- (f) inspection, e.g. inspection programme and frequency; and
- (g) enforcement, e.g. serving of verbal notices, improvement notices, prohibition notices, fixed penalty notices and prosecution.

4. Establishment of a national policy and strategy for nuclear/radiological safety and protection, approved by the MLWSI in 2019, which is implemented following a graded approach, in accordance with national circumstances and with the radiation risks associated with facilities and activities. Although the national waste management policy (2015) was approved and put into force quite earlier than the national radiation safety policy (2019), the former consists part of the latter policy, as the radiation safety policy reflects in a more general way the commitment of the Government to radiation safety, including the safety for the radioactive waste management (further discussed in Section B of the report).
5. Establishment, implementation, assessment and improvement of an Integrated Management System in the regulatory body that is aligned with its safety goals and contributes to their achievement, in order to ensure that the responsibilities assigned to the regulatory body are properly discharged, so as to maintain and improve the performance of the regulatory body by means of planning, control and supervision of its safety related activities, and to foster and support a safety culture in the regulatory body.
6. Establishment of provisions for building and maintaining the competence of all parties having responsibilities in relation to the safety of facilities and activities, including the regulatory body.
7. Continuation of implementation of the action plan established in 2017, fulfilling the requirements of the IAEA standards as pointed out by the recommendations and suggestions of the IRRS peer review held in February 2017. A number of these recommendations concern issues related to the radioactive waste management (review and assessment, authorisation, inspection, regulations and guides).
8. Cyprus has invited an IAEA Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) peer review, in accordance with the provisions of the Protection against Ionising Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014 (Regulatory Administrative Act (R.A.A.) 178/2014) (“the Waste Regulations”). The review mission was initially scheduled to take place in October 2020, however, due to the pandemic situation, has now been rescheduled to take place in Q2 of 2021.
9. Establishment of a national strategy to ensure the appropriate management of existing exposure situations commensurate with the risks and with the effectiveness of protective measures. The strategy contains provisions on the safe radioactive waste management related to existing exposure situations.
10. Establishment of a strategy on the recovery, management, control and disposal of orphan sources, including assignment of responsibilities, and for dealing with emergencies due to orphan sources, drawing up appropriate response plans and measures.
11. International participation and cooperation: Cyprus has strengthened its efforts for international participation, representation and involvement through various nuclear/radiological safety and protection channels, such as participation to Europe region and IAEA’s bodies or organisations.
12. The national radiation emergency action plan ELECTRA has been revised to align with the requirements in GSR Part 7 concerning radioactive waste management originating from a nuclear or radiological emergency. The plan in its final form is expected to be approved by the end of 2020.
13. Advancements in the implementation of the roadmap concerning the management of DSRS: as further explained in Sections J and K of the report, four Category II Co-60 sources have been contracted to be removed from the country, while efforts are made to appropriately manage a number of sources of lower categories (lightning rods, smoke detectors and educational sources). The regulatory body has asked for the upgrade of the physical protection and security measures of the storage facility of the DSRS.



14. The human resources of the regulatory body have been further strengthened. Although not yet achieved the numbers of staff provided in the staffing plan for RICS/DLI, one permanent post has been filled in 2020 and two additional posts are expected to be filled in 2021. This will result in the increase of the number of staff of RICS/DLI to six Labour Inspection Officers.

## 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 Waste Regulations, 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 and DSRS.

### *(iii) Radioactive waste management policy*

A comprehensive policy and strategy on safe and responsible radioactive waste and DSRS management has been approved and adopted by the regulatory body 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 recognised 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.

The policy statement included in the national waste management policy declares that the Government implements, in order to develop, test and apply its policy, as regards the responsible and safe management of radioactive waste, the following:

- (a) Legislative and regulatory framework;
- (b) Allocation of responsibilities;
- (c) Availability of resources;
- (d) Compliance with requirements / obligations / principles;
- (e) Export / Import / Shipment / Disposal of radioactive waste;
- (f) Import of sealed radioactive sources;
- (g) Expertise and skills development;
- (h) Transparency and information to the public;
- (i) Decision-making and public participation;
- (j) Capacity building and education;
- (k) Definition and classification scheme of radioactive waste.

The regulatory body has established in 2019, pursuant to the Requirement 1 of GSR Part 1 (rev. 1) and the Law, the national "Policy and Strategy on Nuclear Safety and Radiation Protection", the implementation of which is subject to a graded approach in accordance with national circumstances and with the radiation risks associated with facilities and activities in Cyprus. The national radiation safety policy expresses the Government's long-term commitment to safety and include provisions that set out the mechanisms for implementing the national policy (strategy), taking into account the country's international obligations and arrangements for international cooperation and assistance. The policy reflects the fundamental safety objective, thus to protect people, individually and collectively, and the environment from harmful effects of ionising radiation, without unduly limiting the operation of facilities or the conduct of activities that give rise to radiation risks, for all facilities and activities, and for all stages over the lifetime of a facility or a radiation source. As the radiation safety policy reflects the long-term commitment of the Government to safety, it has been approved at the Council of Ministers level. This is the highest level in which a regulatory document could be approved and put into force upon its publication to the Official Gazette of the Republic.

Although the national waste management policy (2015) was approved and put into force quite earlier than the national radiation safety policy (2019), the former consists part of the latter policy, as the radiation safety policy reflects in a more general way the commitment of the Government to radiation safety, including the safety for the radioactive waste management. Other dedicated parts of the national radiation safety policy are, for instance, the national standards on education and training of regulatory personnel and the personnel of all parties which have been allocated responsibilities in the national framework concerning nuclear and radiological safety, nuclear security and radiation protection and the national system for the management of emergency exposure situations (radiation emergency preparedness and response).

#### ***(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 license holders 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 license holders.

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 DSRS.

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

A number of DSRS, 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 storage facility at the Nicosia General Hospital, State Health Services Organisation, until a final solution is decided according to the national programme. For advancements in the implementation of the roadmap concerning the management of DSRS, please refer to Section J.

The Matrix Overview is presented in Section N.

#### ***(v) Criteria Used to Define and Categorise 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 body, 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.

### ***Exemption***

Within the national framework, an «exemption level» means a value defined in the Law or established by RICS/DLI and expressed in terms of activity concentration or total activity at or below which a radiation source is not subject to notification or authorisation based on the provisions adopted pursuant to this Law. Exemption from the requirements of the Law 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.

### ***Clearance levels***

«Clearance levels» means, in the national framework, values defined in the Law or established by RICS/DLI, and expressed in terms of activity concentrations, at or below of which materials arising from any practice subject to notification or authorisation may be released from the requirements pursuant to the Law. 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 the license holders until their radioactivity levels decrease below the levels for release from regulatory control (clearance levels) and then are discharged 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 fertiliser 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 liquefaction 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 hydrocarbons exploration and exploitation industry, are closely monitored by the regulatory body.

### ***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 body manages the national inventory of the existing radioactive waste and DSRS 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.

Furthermore, 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 body is informed at each step.
- (b) DSRS for which further use cannot be excluded are not considered as radioactive waste. The regulatory body requires prior to authorisation that license holders must 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 has also to be explored. Finally, the probability 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 MLWSI, acting through RICS/DLI, is the sole regulatory body in Cyprus on radiological and nuclear safety and has the responsibility for the administration of relevant legislation and authorisation of all facilities, sources, activities and practices involving exposure to ionising radiation, including radioactive waste management (please refer to the description under Article 20, Part “Status of the regulatory body”, of the report).

## ***Article 19. Legislative and regulatory framework***

The legislative basis for radiation protection and nuclear and radiological safety in Cyprus consists of the Law, which was enacted on 21 December 2018. The Law has repealed and replaced the Protection against Ionising Radiation and Nuclear Safety Law of 2002, as amended in 2009, 2011 and 2017, harmonising the national legal framework with the provisions of the European Directives on the nuclear safety of nuclear installations (Directive 2009/71/Euratom, as amended by Directive 2014/87/Euratom) and on the basic safety standards for protection against the dangers arising from exposure to ionising radiation (Directive 2013/59/Euratom). Moreover, the Law harmonises the national legal framework with the IAEA safety standards, mainly GSR Part 1 (rev. 1), GSR Part 3, GSR Part 7 and the Code of Conduct on the Safety and Security of Radioactive Sources.

Based on Article 62 of the Law, the Council of Ministers is empowered to issue Regulations for various issues arising from the Law. The main sets of Regulations issued so far under the Law are as following:

- (a) The Protection against Ionising Radiation and Nuclear and Radiological Safety and Security (Basic Safety Standards for the Protection against the Dangers Arising from Exposure to Ionising Radiation) Regulations of 2018 (R.A.A. 374/2018);
- (b) The Protection against Ionising Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014 (R.A.A. 178/2014);
- (c) The Protection against Ionising Radiation (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) Regulations of 2009 (R.A.A. 86/2009); and
- (d) The Protection against 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 (R.A.A. 54/2016).

Other R.A.A.'s or Individual Administrative Acts issued under the Law, in the form of Orders or Notifications of the MLWSI or Notifications (Standards, Specifications or Codes of Practice) of the Chief Inspector concern the following issues:

- (a) the prescribed fees for the services offered by the regulatory body;
- (b) the appointment of the members of the Council of Nuclear Safety and Radiation Protection, as described under section 61 of the Law;
- (c) general authorisation (registration) conditions for common practices with radiological equipment (dental and veterinary practices);
- (d) practices, procedures and requirements of regulatory control relating to the notification or the granting of authorisation through registration or licensing;
- (e) recognition of services and experts in the field of radiation protection and nuclear/radiological safety and security;
- (f) education and training in radiation protection and nuclear/radiological safety and security;
- (g) the control and recovery of orphan radioactive sources and for responding to emergencies due to orphan sources;
- (h) a monitoring programme of the quality from radiological point of view of the water intended for human consumption;
- (i) control of building materials and classes or types of practice involving naturally-occurring radioactive material that lead to exposure which cannot be disregarded from a radiation protection point of view;
- (j) radiation protection of members of the public;
- (k) designation of controlled and supervised areas;
- (l) role, responsibilities and practices which require the appointment of a radiation protection officer is required;
- (m) diagnostic reference levels for radiodiagnostic examinations;
- (n) individual radiological monitoring;
- (o) local rules and monitoring of controlled or supervised areas;

- (p) safety risk assessment; and
- (q) management system in workplaces.

In addition, the EURATOM Treaty and relevant European Regulations, Decisions, Conventions or other legal instruments ratified or signed by the EU apply in Cyprus as a member of the EU. The European Acquis prevails the national legislative framework.

Furthermore, Cyprus has ratified through relevant ratification Laws all the five safety international Conventions under the auspices of IAEA:

- (a) the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (JC);
- (b) the Convention on Nuclear Safety (CNS);
- (c) the Conventions on Early Notification and Assistance in the case of a Nuclear Accident; and
- (d) the Convention on Physical Protection of Nuclear Material (CPPNM) and its 2005 Amendment,

has ratified, signed or accessed to in other Conventions, Protocols, Agreements and other Instruments in the area of nuclear energy and ionising radiation, such as:

- (a) The Comprehensive Nuclear Test Ban Treaty (CTBT)
- (b) The Treaty on the Non-Proliferation of Nuclear Weapons (NPT);
- (c) The Safeguards Agreement between Cyprus and the IAEA for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons;
- (d) The Protocol Additional to the Safeguards Agreement;
- (e) The Agreement between the European Atomic Energy Community, and the Member States without nuclear weapons and the IAEA, in application of Annexes 1 and 4 of Article III of the Treaty on the Non-Proliferation of Nuclear Weapons and its Additional Protocol; and
- (f) The Convention for the Suppression of Acts of Nuclear Terrorism.

and applies the United Nations Security Council Resolution 1540.

The Government has made in 2015 a political commitment to the IAEA 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.

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

- (a) The revised IAEA Safety Regulations for the Transport of Radioactive Materials (SSR-6 rev. 1);
- (b) The United Nations Recommendations on the Transport of Dangerous Goods;
- (c) The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR);
- (d) The International Maritime Dangerous Goods (IMDG) Code;
- (e) The International Civil Aviation Organisation (ICAO) Technical Instructions on the Safe Transport of Dangerous Goods; and
- (f) The Universal Postal Union (UPU) Convention.

No railway or river transport exist in Cyprus.

Other associated Conventions/Protocols ratified by Cyprus on environmental impact assessment and public participation to decision-making issues are the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention and its amendment), its associated Protocol (United Nations Economic Commission for Europe (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 on environmental impact assessment in a transboundary context for nuclear installations / ionising radiation.

The national legislative framework on radiation protection and nuclear and radiological safety applies both for natural and artificial sources of ionising radiation, defines national roles and responsibilities in order to protect individuals, society and the environment, and covers aspects such as:

- (a) nuclear/radiological safety;
- (b) occupational exposure (including outside workers);
- (c) public exposure;
- (d) medical exposure;
- (e) transport/shipments of radioactive material;
- (f) radioactive waste management;
- (g) illicit trafficking and regaining control over orphan sources;
- (h) education, training and provision of information to all persons/parties with allocated responsibilities with regard to radiation safety;
- (i) environmental radioactivity monitoring; and
- (j) radiation emergency preparedness and response.

The Law applies specifically to: (a) the manufacture, production, processing, handling, disposal, use, storage, holding, transport, import and export of radioactive material; (b) the manufacture and the operation of electrical equipment emitting ionising radiation and containing components operating at a potential difference of more than 5 kilovolt; (c) human activities which involve the presence of natural radiation sources that lead to a significant increase in the exposure of workers or members of the public, in particular: (i) the operation of aircraft and spacecraft, in relation to the exposure of crews; (ii) the processing of materials with naturally-occurring radionuclides; (d) the exposure of workers or members of the public to indoor radon, the external exposure from building materials and cases of lasting exposure resulting from the after-effects of an emergency or a past human activity; and (e) the preparedness for, the planning of response to and the management of emergency exposure situations that are deemed to warrant measures to protect the health of members of the public or workers.

The national legislative, regulatory and organisational framework for the nuclear and radiological safety provides, inter alia, for:

- (a) the establishment of the regulatory body and the definition of its powers, role and responsibilities;
- (b) the establishment of a system on nuclear/radiological safety and radiation protection and a system of regulatory control of nuclear/radiological safety performed by the regulatory body;
- (c) the justification and regulatory control over practices;
- (d) the definition of responsibilities and requirements in regulatory control;
- (e) the allocation of responsibilities and coordination between relevant state bodies e.g. in emergencies;
- (f) national nuclear/radiological safety requirements, covering all stages of the lifecycle of facilities;
- (g) the placement of the prime responsibility for safety and security to the license holders or the employers;
- (h) a system of notification and authorisation (registration or licensing) and prohibition of operation of facilities without a license;
- (i) a system for inspection and the appointment and the powers of the Chief Inspector and Inspectors;
- (j) effective and proportionate enforcement actions, including, where appropriate, corrective action or suspension of operation and modification or revocation of a license,
- (k) appeals against regulatory decisions;
- (l) offences and penalties;
- (m) the establishment of a Technical Licensing Committee (TLC) (advisory to RICS/DLI on authorisation issues);



- (n) the establishment of the Council of Radiation Protection and Nuclear Safety (advisory to the MLWSI on nuclear safety and radiation protection policy and strategy issues);
- (o) international cooperation; and
- (p) the power of the Council of Ministers to issue Regulations under the Law.

commensurate with the magnitude and likelihood of exposures resulting from the practice, and commensurate with the impact that regulatory control may have in reducing such exposures or improving nuclear or radiological safety.

Moreover, the Law strengthens the independence of the regulatory body, by requiring that the regulatory body is provided with the appropriate means and competences to properly carry out the responsibilities assigned to it. In particular, the regulatory body must have sufficient legal powers, sufficient staffing and sufficient financial resources for the proper discharge of its assigned responsibilities. The Law also provides for periodic self-assessments and reporting of the national framework and regulatory body through inviting, at last every ten years, international peer reviews. The Law, finally, includes provisions on transparency on nuclear and radiological safety issues, by making provision on the information to be provided to the general public and the workers. It also includes requirements on public participation in the decision-making process related to the licensing of nuclear installations and other facilities.

The legislative framework ensures that the prime responsibility for safety is placed on the license holders conducting practices with ionising radiation and being granted the relevant authorisations, and that the likelihood of a loss of control of radioactive material is minimised, through various provisions on the regulatory control and the responsibilities of registrants and license holders. The legislation also defines that any measures taken has to be transparent as concerns the rationale behind their implementation and take into consideration public consultation and the concerns of the interested parties, where applicable, and it is consistent with the national law on the protection of the confidentiality of any information received in confidence.

The national framework is maintained and improved accordingly, where necessary, taking into account operating experience, insights gained from safety analyses of operating facilities involving the use of ionising radiation, any developments of technology and results of safety research and international experience and good practice.

### ***The Waste Regulations of 2014***

The Waste Regulations apply to all stages of radioactive waste management, from generation to disposal, when the radioactive waste results from peaceful activities. These Regulations do not apply to waste from extractive industries (NORM/TENORM) and to authorised releases and to the repatriation of DSRS to a supplier or manufacturer. However, the Waste Regulations do not affect the right of the RICS/DLI or a license holder in the country to return radioactive waste, after processing, to its country of origin, where: (a) the radioactive waste is to be shipped for processing; or (b) other material is to be shipped with the purpose of recovering the radioactive waste.

Furthermore, according to the Waste Regulations, the management of spent fuel in the country is prohibited. Thus, the national waste management policy and the national programme (strategy) refers only to the responsible and safe management of radioactive waste.

The scope of these Regulations is to:

- (a) ensure a responsible and safe management of radioactive waste to avoid imposing undue burdens on future generations;
- (b) achieve a high level of safety in radioactive waste management to protect workers and the general public against the dangers arising from the use of ionising radiation; and
- (c) ensure the provision of necessary public information and participation in relation to radioactive waste management while having due regard to security and proprietary information issues.

Regulation 6 provides for the ultimate responsibility of the regulatory body for the management of radioactive waste generated within the territory of Cyprus and its responsibility to establish a national policy on radioactive waste management. The Regulation also covers the principles in which the national policy should be based on.

Regulation 7 provides that the regulatory body establishes and maintains a national framework for radioactive waste management that allocates responsibility and provides for coordination between relevant competent bodies and provides for the following:

- (a) a national programme for the implementation of radioactive waste management policy;
- (b) arrangements for the safety of radioactive waste management, including the determination of how those arrangements are to be adopted and through which instrument they are to be applied;
- (c) special arrangements for the implementation of the provisions of the Law related to the authorisation and responsibilities of the license holders for the radioactive waste management, including the prohibition of spent fuel or radioactive waste management activities, of the operation of a radioactive waste management facility without a license or both and, if appropriate, prescribing conditions for further management of the activity, the facility or both;
- (d) special arrangements for the implementation of the provisions of the Law related to the regulatory framework for the radioactive waste management, including the reporting and appropriate measures for the post-closure periods of disposal facilities;
- (e) special arrangements for the implementation of the provisions of the Law related to revocation, withdraw, cancellation or surrender of a license for radioactive waste management, including requirements, if appropriate, for alternative solutions that lead to improved safety;
- (f) the allocation of responsibility to the bodies involved in the different steps of radioactive waste management; the primary responsibility for the radioactive waste is to their generators or, under specific circumstances, to a license holder to whom this responsibility has been entrusted by the
- (g) regulatory body;
- (h) special arrangements for the implementation of the provisions of the Law related to information to the public, openness and transparency for the radioactive waste management and arrangements for the implementation of the Regulation 13;
- (i) the financing scheme or schemes for radioactive waste management.

The regulatory body is responsible to ensure that the national framework is improved, taking into account operating experience, insights gained from the decision-making process referred to in Regulation 6(4)(f), and the development of relevant technology and research.

Other important provisions of these Regulations include the effective independence of the regulatory body from undue influence on its regulatory functions, the prime responsibility for the safety of radioactive waste management facilities and/or activities that is allocated to the license holders, and provisions on expertise and skills, financial resources, transparency, the contents of the national programme on radioactive waste management and the periodic self-assessments and the peer review assessments of the national framework, the regulatory body, and the national programme and its implementation.

Although these are specialised Regulations under the Law, they do not define explicitly specific types of waste or steps in the management of the radioactive waste, but they cover in general all types of radioactive waste originating from all producers in the country and all steps in the management of radioactive waste, from generation to disposal. For example, Regulation 4 provides that “the Regulations apply to all stages of radioactive waste management, from generation to disposal, when the radioactive waste results only from civilian activities”. Specific references to the types of radioactive waste in the country and their management steps are made in the national programme (strategy) of 2015.

## ***The Shipments Regulations of 2009***

The issue of shipments of sealed radioactive sources or radioactive waste between the EU member states or to and from third countries is covered by the Law.

The Euratom Regulation no. 1493/93 of 8 June 1993 for intra-European Union shipments of sealed radioactive sources also applies directly in the EU member states. Prior to any shipment of sealed radioactive sources or radioactive waste, a written application is required to be submitted to the regulatory body, by completing the relevant documents, to ensure granting the required license in advance. These documents are attached as Annexes to the aforementioned Euratom Regulation no. 1493/93.

Additionally, as regards shipments of radioactive waste or nuclear spent fuel, the Protection against Ionising Radiation and Nuclear Safety (Supervision and Control of Shipments of Radioactive Waste and Spent Nuclear Fuel) Regulations of 2009 (R.A.A. 86/2009), which harmonise the 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, 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 DSRS to a supplier or manufacturer of radioactive sources or to a recognised installation or to transboundary shipments of waste that contains only naturally occurring radioactive material which does not arise from practices.

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 EC 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) must 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. The EC 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.

### ***National framework for radioactive waste management***

The national framework for radioactive waste management provides for the following components, which are discussed elsewhere in the report:

- (a) a national policy on radioactive waste management;
- (b) a national programme for the implementation of the policy;
- (c) national arrangements for the safety of radioactive waste management;
- (d) a system of licensing of radioactive waste management activities, facilities or both, including the prohibition of radioactive waste management activities or the operation of radioactive waste management facility without a license or both and, if appropriate, prescribing conditions for further management of the activity, facility or both;
- (e) a system of appropriate control, a management system, regulatory inspections, documentation and reporting obligations for radioactive waste management activities, facilities or both, including appropriate measures for the post closure periods of disposal facilities;
- (f) enforcement actions, including the suspension of activities and the modification, expiration or revocation of a license together with requirements, if appropriate, for alternative solutions that lead to improved safety;
- (g) allocation of responsibilities to the bodies involved in the different steps of radioactive waste management; in particular, the national framework allocates the primary responsibility for the radioactive waste to their generators or, under specific circumstances, to a license holder to whom this responsibility has been entrusted by the regulatory body;
- (h) requirements for public information and participation; and

- (i) financing arrangements in place for radioactive waste management.

### ***National strategy (programme) for radioactive waste management***

The national strategy for radioactive waste management scope, and the associated milestones, timeframes and progress indicators are expressed in a document titled the “National Programme on the responsible and safe management of radioactive waste in Cyprus” (hereafter the “national programme”) (2015).

The national programme has been established in 2015 and maintained as a key obligation under the Waste Directive and the Joint Convention, covering all aspects of radioactive waste management and for all stages of radioactive waste management, from generation to disposal.

The national programme serves as the key tool and basic reference for the respective national actors dealing with the practical implementation of the national radioactive waste management policy, as well as sets out how the national policy is transposed into practical solutions.

The present national programme includes an extensive part on the applicable legislative, regulatory and organisational framework and provides information on the following items:

- (a) the overall objectives of the national policy in respect of radioactive waste management;
- (b) the significant milestones and timeframes for the achievement of those milestones in light of the over-arching objectives of the national programme;
- (c) an inventory of DSRS and radioactive waste;
- (d) the concepts or plans and technical solutions for radioactive waste and DSRS management, from generation to disposal;
- (e) reference to the research and development activities to support the country’s programme for management of radioactive waste and DSRS;
- (f) the responsibility for the implementation of the national programme and the key performance indicators to monitor progress towards implementation;
- (g) an assessment of the national programme costs and the underlying basis and hypotheses for that assessment, which must include a profile over time;
- (h) the financing arrangements to be in place for the implementation of the programme; and
- (i) the openness and transparency policy.

### ***Article 20. Regulatory body***

The MLWSI, acting through RICS/DLI, is the sole regulatory body in Cyprus on radiation and nuclear safety and has the responsibility for the administration of relevant legislation and authorisation of all facilities, sources, activities and practices involving exposure to ionising radiation, including radioactive waste management.

RICS was established in 2002 within DLI, in the framework of the implementation of the Law, 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 body 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 body has been given sufficient authority, legal power and competent staff to discharge its responsibilities under the national legislative framework.

DLI is one of the Departments of MLWSI (see Figure 1), with competence in Occupational Health and Safety, Industrial Emissions Control, Air Quality Control, Control of Chemical Substances, Protection against Ionising Radiation and Nuclear Safety, and the Control of Machinery, Pressure Equipment, Equipment in Explosive Atmospheres and Personal Protective Equipment. DLI comprises two Sectors:

- (a) the Safety and Health at Work Sector, which consists of three Sections:
- Awareness Raising and Horizontal Issues;
  - Chemical Protection and Safety of Services;
  - Manufacturing and Construction; and
- (b) the Radiation Safety, Environmental Issues and Machinery Sector, which consists of four Sections:
- Machinery and Equipment;
  - Control of Industrial Emissions;
  - Air Quality Control and Strategic Planning;
  - Nuclear Safety and Radiation Protection, established as RICS under the Law.



**Figure 1.** Organisational chart of the Ministry of Labour, Welfare and Social Insurance.

There is a clear allocation of decision-making and other responsibilities between the regulatory body (the MLWSI) 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 body’s performance and implementation of policies and decisions. Thus, a clear reference to hierarchy and relevant political or technical decisions is made through the organisational scheme of the regulatory body, preventing the probability of occurrence of direct or indirect interest/involvement in facilities or activities under regulatory control or other license holders and that staff remains focused on safety irrespective of their personal views.

All administrative decisions within the regulatory body in implementing the existing legislation are taken by the Chief Inspector (the Director of DLI). However, for any high-level policy issues e.g. for the adoption of the Government’s policy for safety, radioactive waste management or capacity building through education and training, decisions are taken on MLWSI level.

The regulatory body is able to make independent regulatory judgments and regulatory decisions, at all stages in the lifetime of facilities and the duration of activities until release from regulatory control, under operational states and in accidents, free from any undue influences that might compromise safety, such as pressures associated with changing political circumstances or economic conditions, or pressures from

governmental departments or from other organisations. Inspectors are independent in exercising their inspection powers and are supervised by the Director of DLI (Chief Inspector). Furthermore, the staff of the regulatory body does have no direct or indirect interest/involvement in facilities and activities or license holders beyond the interest for regulatory purposes. Sufficient financial resources are allocated through the annual budget of DLI to the regulatory body for the proper and timely discharge of its assigned responsibilities. The regulatory body is able to give independent advice and provide reports to governmental departments and other bodies on issues relating to the safety of facilities and activities, including access to the highest levels of the Government. It is also capable of liaising directly with regulatory bodies of other States and with international organisations to promote cooperation and the exchange of regulatory related information and experience.

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. RICS/DLI is currently staffed with four Labour Inspection Officers, qualified in radiation protection and nuclear / radiological safety and security. Three new posts have been approved by the Government which are expected to be filled in the next years.

### ***Status of the regulatory body***

The regulatory body ensures the establishment and maintenance of a national legal, regulatory and organisational framework for all aspects of the application of the Law, including the safety of facilities and sources of radiation and the protection against ionising radiation, including in particular:

- (a) the safety principles for protecting people – individually and collectively – society and the environment from radiation risks, both at present and in the future;
- (b) the types of facilities and activities that are included within the scope of the framework for safety;
- (c) the type of authorisation that is required for the operation of facilities and for the conduct of activities, in accordance with a graded approach;
- (d) the rationale for the authorisation of new facilities and activities, as well as the applicable decision making process;
- (e) provision for the involvement of interested parties and for their input to decision making;
- (f) provision for assigning legal responsibility for safety to the persons or organisations responsible for the facilities and activities, and for ensuring the continuity of responsibility where activities are carried out by several persons or organisations successively;
- (g) the establishment of a regulatory body;
- (h) provision for the review and assessment of facilities and activities, in accordance with a graded approach;
- (i) the authority and responsibility of the regulatory body for promulgating (or preparing for the enactment of) laws and regulations and preparing guidance for their implementation;
- (j) provision for the inspection of facilities and activities, and for the enforcement of regulations, in accordance with a graded approach;
- (k) provision for appeals against decisions of the regulatory body;
- (l) provision for preparedness and response to a nuclear or radiological emergency;
- (m) provision for an interface with nuclear security;
- (n) provision for an interface with the system of accounting for, and control of, nuclear material;
- (o) provision for acquiring and maintaining the necessary competence nationally for ensuring safety;
- (p) responsibilities and obligations in respect of financial provision for the management of radioactive waste and of spent fuel, and for decommissioning of facilities and termination of activities;
- (q) the criteria for release from regulatory control;
- (r) the specification of offences and the corresponding penalties; and
- (s) provision for controls on the import and export of nuclear material and radioactive material, as well as for their tracking within, and to the extent possible outside, national boundaries, such as tracking of the authorised export of radioactive sources.

RICS/DLI performs, inter alia, 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) reviews and assesses information related to the safety and protection of facilities and sources of radiation and related practices and activities, and the protection of individuals, property and the environment against ionising radiation, to check compliance with regulatory requirements or conditions set out in the authorisation;
- (c) receives notifications and grants authorisations;
- (d) inspects, for the purposes of compliance with the legislation in force, any practices or facilities 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;
- (e) carries out substantive and proportionate enforcement actions, including, where appropriate, corrective actions or the cessation of operation of a facility or the cessation of a practice and the amendment or revocation of an authorisation;
- (f) coordinates or ensures the existence 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;
- (g) ensures the coordination of educational, scientific or other bodies responsible for providing education and training relevant to nuclear safety and radiation protection;
- (h) recognises the ability of experts and services provided for in the Law to act in accordance with the areas of their competence, as well as the qualifications and training of workers and other persons in safety and radiation protection issues;
- (i) keeps appropriate registers, including inventories of sources of ionising radiation, of premises, of practices and of the exposed workers and the doses received;
- (j) 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
- (k) monitors the levels of radioactivity in the air, soil, water, sea, foodstuff, feed, building materials and other products and goods, and ensures the application of appropriate measures, where appropriate.

The regulatory body has established in 2019 a national policy and strategy for safety, the implementation of which is subject to a graded approach in accordance with national circumstances and with the radiation risks associated with facilities and activities. More relevant information on this policy can be found in Section B. Article 32, (iii) Radioactive waste management policy, of this report.

The Government has ensured through the regulatory body that, where necessary, there is appropriate national coordination of and liaison between the various authorities concerned in areas, such as:

- (a) safety of workers and the public;
- (b) protection of the environment;
- (c) applications of radiation in medicine, industry and research;
- (d) emergency preparedness and response;
- (e) management of radioactive waste
- (f) nuclear security;
- (g) accounting for, and control of, nuclear material;
- (h) safety in relation to water use and the consumption of food;
- (i) land use, planning and construction;
- (j) safety in the transport of dangerous goods, including nuclear and radioactive material; and
- (k) controls on the import and export of nuclear and radioactive material.

The regulatory body, without compromising its effective independence, has made provision for technical services in relation to safety, such as personal dosimetry services, environmental monitoring and the calibration of equipment. These services include:

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

The regulatory body is responsible to ensure that adequate infrastructural arrangements are established for the interface of safety with arrangements for nuclear security and with the country's system of accounting for, and control of, nuclear material. Specific responsibilities within the governmental and legal framework include:

- (a) an assessment of the configuration of facilities and activities for the optimisation of safety, with factors relating to nuclear security and to the system of accounting for, and control of, nuclear material being taken into account;
- (b) an oversight and enforcement to maintain arrangements for safety, nuclear security and the system of accounting for, and control of, nuclear material;
- (c) liaison with law enforcement agencies, as appropriate; and
- (d) integration of emergency arrangements for safety related and nuclear security related incidents.

The regulatory body has established an emergency preparedness and response system, including emergency arrangements and a national emergency preparedness and response action plan, to enable a timely and effective response in a nuclear or radiological emergency and to protect the public in a nuclear or radiological emergency declared as a consequence of an incident within or outside the territory and jurisdiction of the country. The Government has designated, through the national radiation emergency plan ELECTRA, response organisations that will have responsibilities and resources necessary to make preparations and arrangements for dealing with the consequences of incidents in facilities and activities that affect, or that might affect, the public and the environment. In the event of an emergency, the regulatory body is tasked to act as coordinator of the national radiation emergency plan, advise the Government and response organisations, and provide expert services.

A comprehensive environmental radioactivity monitoring network acts as both the early warning system in the country and for routine environmental monitoring. The network has been enhanced through the last years with the addition of an online aerosol spectroscopic monitoring station, located at Nicosia, and a portable surface contamination monitoring station with interconnection to the network capability. The monitoring network has been further upgraded by means of power autonomy by establishing solar panels in all fixed ambient gamma dose rate monitoring stations and back-up communication/transmission of data channels.

The regulatory body makes continuous efforts to strengthen its capacity by means of procurement and appropriate maintenance of radiation detection and measurement equipment, relevant to its broad functions and responsibilities.

### ***National and international coordination, participation and cooperation***

The regulatory body is the sole authority in Cyprus for nuclear safety and radiation protection. Transport of radiation sources is also conducted according to the regulations on the transport of dangerous goods (by road, sea or air) and the international radiation safety regulations, in cooperation with the relevant Departments of the Ministry of Transport, Communications and Works and the Shipping Deputy Ministry.



As regards security of radioactive sources, other stakeholders in the country have competence as well, such as the Ministry of Justice and Public Order (Police, Fire Brigade, National CBRN-E Coordination Body); the Ministry of Foreign Affairs; the Ministry of Finance (Department of Customs); the Ministry of Energy, Commerce and Industry (exports control and licensing); the Ministry of Transport, Communications and Works (Department of Road Transport, Department of Civil Aviation, Department of Postal Services); the Shipping Deputy Ministry; the Cyprus Ports Authority; and the Cyprus Intelligence Service.

As discussed earlier, the regulatory body is supported by technical services for personal dosimetry, environmental monitoring and measurement and the calibration of equipment.

Cyprus has ratified, is signatory to or participates in a number of International Conventions, Protocols, Agreements and other Instruments in the area of safety and security and applies the relevant international standards for transport of radioactive materials, as reported under Article 19.

In order to ensure that information concerning any loss of control over radioactive sources, or any incidents, with potential transboundary effects involving radioactive sources, is provided promptly to potentially affected States, Cyprus participates via its regulatory body in the IAEA's Incident and Trafficking Database (ITDB) and the Unified System for Information Exchange in Incidents and Emergencies (USIE) platforms.

Cyprus has signed a Memorandum of Understanding with the Joint Research Center of the European Commission on the participation of Cyprus at the European Radiological Data Exchange Platform (EURDEP). Via its participation to EURDEP, Cyprus provides radiological data to the International Radiation Monitoring Information System (IRMIS) database, as well. Cyprus participates in the relevant European Community Urgent Radiological Information Exchange (ECURIE) platform of the European Commission and to the relevant ECURIE and a number of IAEA's ConvEx exercises. It's worth noting that Cyprus took part for the first time in 2017 in a large-scale ConvEx-3 exercise held by IAEA. Cyprus has updated the complete version of its national profile and the emergency preparedness and response arrangements under the IAEA's Emergency Preparedness and Response Information Management System (EPRIMS) in June 2019 and completed a relevant Heads of European Radiological Protection Competent Authorities (HERCA) country fact sheet. Moreover, Cyprus has sent contribution to the European Atlas of Natural Radiation, which displays the levels of natural radioactivity originating from various sources of radiation.

Cyprus participates in the meetings and other activities of various expert groups under the auspices of the European Commission, such as the High-level Group on Nuclear Safety and Waste Management (ENSREG) and the Euratom Treaty Articles 31 and 37 Groups of Experts. In the Europe region, Cyprus participates since its establishment in HERCA, and in the Western European Nuclear Regulators Association (WENRA) (as observer).

Despite of its small size, Cyprus makes efforts to involve relevant staff from the regulatory body and other institutions in international arrangements promoting safety and international cooperation and assistance, as well as providing feedback on lessons learned from operating and regulatory experience in other States, such as international peer reviews.

Cyprus signed a bilateral agreement with the Greek Atomic Energy Commission, for cooperation on radiation protection and nuclear/radiological safety and security 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.

The regulatory body has the responsibility to ensure that information in relation to safety, security or radiation protection is made available to license holders, workers, and members of the public. This obligation includes ensuring that the regulatory body provides information within its fields of competence. Information is made available 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. Subsequently, the regulatory body is responsible to protect the confidentiality of any information that it receives in confidence from another State or through participation in an activity carried out in accordance with an international instrument. Information is promptly shared and cooperation established with other States and relevant international organisations regarding safety, security or radiation protection, without prejudice to relevant confidentiality requirements and relevant national legislation.

The regulatory body has established procedures to identify lessons learned from operating experience and regulatory experience, and disseminates information on the practical implementation of measures derived from this experience by the license holders, the regulatory body itself and, where relevant, by other relevant authorities. Relevant information is reported to international knowledge and reporting networks, as well.

### ***Openness, transparency and public consultation and communication***

The regulatory body is required by law to ensure that information in relation to the justification of classes or types of practices, the regulation of radiation sources and of safety and radiation protection is made available to license holders, workers, and members of the public, as appropriate. This obligation includes ensuring that the regulatory body provides information within its fields of competence. Information is made available in accordance with national legislation and international obligations, provided that this does not jeopardise other interests such as, inter alia, security, as recognised in the national legislation or international obligations.

Originating from the Directive 2014/87/Euratom, the national legislation provides that all necessary information in relation to the nuclear safety of nuclear installations and its regulation is made available to workers and the general public, with specific consideration to local authorities, population and stakeholders in the vicinity of a nuclear installation. That obligation includes ensuring that the regulatory body and the license holders, within their fields of responsibility, provide in the framework of their communication policy: (a) information on normal operating conditions of nuclear installations to workers and the general public; and (b) prompt information in case of incidents and accidents to workers and the general public and to the regulatory authorities of other States in the vicinity of a nuclear installation. The regulatory body is required to engage, as appropriate, in cooperation activities on the nuclear safety of nuclear installations with regulatory authorities of other States in the vicinity of a nuclear installation, inter alia, via the exchange and/or sharing of information. The regulatory body ensures that the general public is given the appropriate opportunities to participate effectively in the decision-making process relating to the licensing of nuclear installations, and regarding radioactive waste management in accordance with relevant legislation and international instruments. In practice, the regulatory body implements this obligation applying a graded approach in accordance with national conditions and the radiation risks associated with facilities and activities in the country.

The regulatory body consults, in assessing the conditions of licenses to be granted, by the TLC. The TLC comprises representatives and/or technical advisors from five Ministries (with competence in environmental issues, transport, public health, medical equipment, commerce, energy, industry etc.), while representatives of district administrations, municipalities or other local authorities are invited to participate as observers and may provide their opinion. The public is represented indirectly through the participation of the municipalities or other local authorities.

The Law requires that any license granted by the regulatory body, as well as the conditions accompanying the license, be displayed in the premises of the license holder in a prominent position. The public has in that way direct access to the safety conditions placed on the license holder.

All new pieces of legislation are accompanied by an impact assessment, which identifies any social, environmental or economic impact to Small and Medium-size Enterprises and the society in general, as well as to any special groups of the population and the general public. The impact assessment is part of the accompanying documents of draft pieces of legislation that undergo public consultation. In order to inform the public and provide information quickly and effectively, and depending on the nature of the document

put under consultation, public consultation is conducted, mainly by means of publications or announcements and citations to where the draft documents are available, in the official website and the social media accounts maintained by the regulatory body, the official gazette of the Republic, in the official website of the Press and Information Office (the Republic's official information gateway), in daily press, television and radio spots in channels of national and/or local coverage, electronic mailing lists, and providing copies at the offices of the interested local authorities. Special attention is given to informing the relevant interested parties in the country, such as the associations of the employers, the employees, the industry, technical and scientific organisations, academic institutions, other governmental agencies etc.

The above information may concern a forthcoming decision, the nature of possible decisions or, where such decision has already been made, the 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 regulatory body views or raise an issue within 35 days from the date of publication of the notice. In addition, the regulatory body, informs the public of the views received or issues raised by any person. Before taking a decision, the regulatory body takes in due account the views received or issues raised. The way in which the regulatory body takes into account the received views or raised issues has to be included in a summary statement, which is maintained in an appropriate record, as provided for in the legislation.

A special Council, called the Council of Nuclear Safety and Radiation Protection, is appointed by and advises the MLWSI in the formulation of the national policy on ionising radiation issues, including the applications of nuclear techniques, nuclear or radiological safety and health and safety issues against the dangers of ionising radiation, and, as applicable, for all issues relating to nuclear energy, including issues of potential exposure to radiation from hazards from sources outside Cyprus. The Council comprises representatives of Ministries, professional associations, the associations of employers and the employees, technical and scientific organisations and academia.

An evidence-based and documented decision-making process is required by law to be applied with regard to all stages of the lifetime of a facility, including the management of radioactive waste. 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 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.

Decision-making is based on proven scientific information and recommendations of the national regulatory body (i.e. the MLWSI). Safety issues have to take into account the interests and concerns of all interested and affected parties, when decisions are being made. The regulatory body is responsible to ensure that the public is given the necessary opportunities to participate effectively in the decision-making process regarding waste management. Where there is uncertainty about the safety of an activity, a conservative approach is adopted.

Moreover, Cyprus is a party to the 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 also 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 ionising radiation is used.

Being an integral part of the MLWSI, the regulatory body has traditionally good relations with the employee associations, the employer associations etc.

### ***Knowledge management***

The regulatory body has established a system to determine the competence of its employees. The regulatory body has established a training committee, consisting of representatives from all sections of the organisation that assess the competences and training needs of employees, independently of the management of the organisation, and recommends to the senior management the training and resources required to improve performance. All employees are required to annually complete a competence assessment questionnaire that is submitted to the training committee, which conducts interviews of employees indicating deficiencies in specified areas, as well as their supervisors/managers, assesses the training needs, compiles a report of and a budget to be approved by the director. An annual budget is allocated for training and the regulatory body's management ensures the provision of training through local institutions (e.g. the Cyprus Public Administration Academy or universities), consultants, other internal knowledge management initiatives (e.g. train-the-trainers workshops), the IAEA, the EU, other European or international organisations (e.g. HERCA) etc. As such, the regulatory body has been able to ensure that its employees continuously improve their competence in line with the changing standards, and technology.

## **Section F. Other General Safety Provisions**

### ***Article 21. Responsibility of the license holder***

The new Law introduces the definition of “undertaking”, in alignment with the definition used in the European Directive 2013/59/Euratom, meaning a natural or legal person who has legal responsibility under national law for carrying out a practice, or for a radiation source (including cases where the owner or holder of a radiation source does not conduct related human activities). In this respect, not having an authorisation would not exonerate the person or organisation responsible for the facility or activity from the responsibility for safety, in accordance with IAEA standards. Although not exactly corresponding, the term “license holder” is used throughout this report instead of “undertaking” for compliance with the terminology of the Joint Convention.

The national legislative framework assigns the prime responsibility for safety throughout the lifetime of a facility and the duration of an activity, including the safety of radioactive waste management facilities and/or activities, to the person or organisation responsible for the facility or the activity, and confers on the regulatory body the authority to require such persons or organisations to comply with stipulated regulatory requirements, as well as to demonstrate such compliance. The regulatory body stipulates that compliance with regulations and requirements established or adopted by the regulatory body does not relieve the person or organisation responsible for a facility or an activity of its prime responsibility for safety. The responsibility for safety may be transferred to a different license holder only when there has been a declared change of general responsibility for a facility or activity that has been approved in advance by the regulatory body. In addition, responsibility for safety may extend to other groups associated with the license holder, such as designers, suppliers, manufacturers and constructors, employers, contractors, and consignors and carriers, in so far as their activities or products may be of significance for safety. Moreover, license holders may seek advice for safety, security and radiation protection issues from radiation protection experts (qualified experts) in the field of their competence, recognised by the regulatory body. In no case may this extension of responsibility or receiving advice or other services from external technical support organisations relieve the license holder of the prime responsibility for safety.

A license holder is responsible for carrying out its activities ensuring primarily the safety and security of facilities and activities, according to the national legislation and the conditions of the license, meeting the safety standards and 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 must cover the development and operation of an activity and the site evaluation, design, construction, commissioning, operation, shutdown and decommissioning, as applicable. The extent of safety demonstration has to 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.

The national legislation on radiation protection and nuclear and radiological safety also provides that a license holder is required to take all necessary technical and administrative measures, in relation to the license granted to it, for ensuring safety and health of any individual and for protecting the use of, or property of any person and the environment and to establish and implement integrated management systems, including quality assurance, which give due priority to safety and are regularly verified by the regulatory body. The license holder may appoint other persons to carry out actions or to carry out tasks related to its obligations as a license holder, but the license holder retains the responsibility for such actions, tasks or omissions itself and has the overall responsibility for the radiation protection and nuclear and radiological safety and security. A license holder is required to notify RICS/DLI in writing of its intention to introduce modifications to any practice or source for which it is licensed, and whenever the modifications have significant implications on safety and health issues, on the protection of use of property of any person and on the protection of the environment, it must not carry out any modification unless it has a new license for this purpose.

Complementary to the above, the national strategy provides, as concerns the compliance of the license holders, the following requirements, obligations and principles:

- (a) The license holders 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 license holders 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 license holders;
- (b) The license holders 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 license holders 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 license holders 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 license holders 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.

The compliance of the license holders with the national legislation, the conditions of the license and any other applicable safety standards is assessed and verified by the regulatory body through review and assessment, authorisation, and inspections, both announced and unannounced.

## ***Article 22. Human and financial resources***

License holders are required to provide for and maintain financial and human resources with appropriate qualifications and competences, necessary to fulfil their obligations with respect to the safety of a facility and/or activity, including radioactive waste management.

In particular, in order to grant an authorisation for practices involving high-activity sealed sources, the regulatory body requires the applicant to have made adequate provision, by way of a financial security or any other equivalent means appropriate for the source in question, for the safe management of radiation sources once they become disused, including the case where the license holder becomes insolvent or ceases its activities. Also, the legislation provides for the establishment of a financial security system to cover intervention costs relating to the recovery, management, control and disposal of orphan sources.

The national legislation provides that all parties should make arrangements for the education and training of their staff having responsibilities related to the safety of facilities so as to obtain, maintain and to further develop expertise and skills in safety, so that they understand their responsibilities and perform their duties with good judgement and according to the specified procedures, and on-site emergency preparedness, and on-site emergency preparedness.

License holders are also required to ensure that contractors and subcontractors under their responsibility and whose activities might affect the nuclear safety of an installation have the necessary human resources with appropriate qualifications and competences to fulfil their obligations.

## ***Article 23. Quality assurance***

The legislative framework on radiation protection and nuclear radiological safety provides that, a license holder should establish an appropriate management and administrative system, commensurate with the size of the license holder, the facility and the practice for which authorisation has been granted, and a quality assurance programme, as appropriate, ensuring that:

- (a) a policy and procedures are in place, demonstrating that safety and protection against the dangers from ionising radiation is one of the priorities of the license holder;
- (b) the risks arising from the use of ionising radiation for the health and safety of persons, for the use of property and for the protection of the environment are identified in a timely manner and corrective actions are taken in proportion to the magnitude of the risk;
- (c) the responsibilities of each individual, as well as its powers for decision-making as regards safety, security, protection, health and safety of persons or the protection of the use of property or the protection of the environment are clearly defined and such persons are suitably trained and have the necessary qualifications;
- (d) there is continuous provision of information and guidance on safety, security and protection against ionising radiation at all levels of operation of the license holder;
- (e) where practicable, radioactive sources under the responsibility of the license holder or the employer are made identifiable and traceable or, where this is impracticable, there are alternative procedures for the identification and tracking of such sources;
- (f) where DSRS are stored for an extended period of time, after authorisation by the regulatory body, the facility where they are stored is suitable for that purpose; and
- (g) appropriate and up-to-date records relating to the sources and practices the license holder carries out are maintained and are available to the regulatory body.

The license holder compliance with the provisions of national legislation is assessed and verified by the regulatory body through the authorisation 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.

The license holders are required to regularly assess, verify, and continuously improve, as far as reasonably practicable, the safety of their facilities in a systematic and verifiable manner. This includes verification that measures are in place for the prevention of accidents and mitigation of the consequences of accidents. Each license holder or employer shall establish an appropriate management system, depending on the size of the license holder or the extent of practice for which authorisation has been granted, which shall ensure, inter alia, that there is a policy and procedures demonstrating that safety and protection against the dangers due to the use of ionising radiation is one of its priorities.

In order to demonstrate compliance and that it gives due priority to safety, a license holder is required, inter alia, to submit: (a) a comprehensive risk assessment and measures to mitigate the effects of an accident; (b) an appropriate action plan in case of an emergency; (c) arrangements in place for education and training and information provided to all persons that have been allocated responsibilities associated with the safety or radiation protection; (d) an appropriate management system and quality control programmes which give due priority to safety; (e) actions to establish and further promote the safety culture; (f) the appropriate equipment, methods and measurements; and (g) adequate financial and human resources with appropriate qualifications and competences, necessary to fulfil their obligations with respect to the safety of a facility.

In particular to on-site emergency procedures and arrangements for responding effectively to accidents in order to prevent or mitigate their consequences, these are required to: (a) be consistent with other operational procedures and periodically exercised to verify their practicability; (b) be aligned with any national or local off-site arrangements in place; (c) address accidents and severe accidents that could occur in all operational modes and those that simultaneously involve or affect several units; (d) provide arrangements to receive external assistance; and (e) be periodically reviewed and regularly updated, taking account of the experience from exercises and lessons learned from accidents.

Concerning the promotion of safety culture, the license holder is required to take measures to promote and enhance an effective safety culture. Those measures include in particular: (a) management systems which give due priority to safety and promote, at all levels of staff and management, the ability to question the effective delivery of relevant safety principles and practices, and to report in a timely manner on safety issues; (b) arrangements by the license holder to document safety significant operating experience; (c) the obligation of the license holder to report events with a potential impact on safety to the regulatory body; and (d) arrangements for education and training.

The license holder or the employer shall take appropriate measures to foster, promote and maintain an effective safety and protection culture at all levels of the staff and the management itself, as a key factor in achieving a high level of safety and protection, which is constantly improving. These measures shall include in particular: (a) the commitment at all levels of personnel and the management to safety and its continuous improvement; (b) improving the ability of staff at all levels to assess whether principles and practices are provided for the continuous improvement of safety; (c) the ability of staff to report in a timely manner on safety issues to the management; (d) lessons learned from the operating experience of the facility; and (e) systematically reporting any deviation from normal operating conditions and addressing corrective actions related to the management of accidents that are likely to affect safety.

For the purposes of operational radiation protection in occupational exposures, the license holders are required to have in place special arrangements as regards all workplaces where workers are liable to receive an exposure greater than an effective dose of 1 mSv per year or an equivalent dose of 15 mSv per year for the lens of the eye or 50 mSv per year for the skin and extremities. Such arrangements shall be appropriate to the nature of the facilities and radiation sources and to the magnitude and nature of the risks.

The license holder is responsible for assessing and implementing arrangements for the radiation protection of exposed workers. In the case of outside workers, the responsibilities of the license holder and the employer of outside workers are also stipulated in the legislation.

The operational protection of exposed workers is based on: (a) prior evaluation to identify the nature and magnitude of the radiological risk to exposed workers; (b) optimisation of radiation protection in all working conditions, including occupational exposures as a consequence of practices involving medical exposures; (c) classification of exposed workers into different categories; (d) control measures and monitoring relating to the different areas and working conditions, including, where necessary, individual monitoring; (e) medical surveillance; and (f) education and training.

The license holder is required to have arrangements in workplaces that include: (a) a classification into controlled and supervised areas, where appropriate, on the basis of an assessment of the expected annual doses and the probability and magnitude of potential exposures; (b) radiological surveillance of the workplace; (c) categorisation of exposed workers; (d) individual measurements performed by a dosimetry service; and (e) when appropriate, medical surveillance of exposed workers.

As concerns the operational protection of members of the public in normal circumstances from practices subject to licensing, the license holders are required to ensure that this protection includes, for relevant facilities: (a) examination and approval of the proposed siting of the facility from a radiation protection point of view, taking into account relevant demographic, meteorological, geological, hydrological and ecological conditions; (b) acceptance into service of the facility subject to adequate protection being provided against any exposure or radioactive contamination liable to extend beyond the perimeter of the facility or radioactive contamination liable to extend to the ground beneath the facility; (c) examination and approval of plans for the discharge of radioactive effluents; (d) measures to control the access of members of the public to the facility. The regulatory body is required, where appropriate, to establish authorised limits as part of the discharge authorisation and conditions for discharging radioactive effluents which: (a) take into account the results of the optimisation of radiation protection; and (b) reflect good practice in the operation of similar facilities. In addition, these discharge authorisations shall take into account, where appropriate, the results of a generic screening assessment based on internationally recognised scientific guidance, to demonstrate that environmental criteria for long-term human health protection are met.

The license holder responsible for practices where a discharge authorisation is granted is required to monitor appropriately or where appropriate evaluate the radioactive airborne or liquid discharges into the environment in normal operation and to report the results to the regulatory body. Moreover, the license holder is required to carry out the following tasks: (a) achieve and maintain an optimal level of protection of members of the public; (b) accept into service adequate equipment and procedures for measuring and assessing exposure of members of the public and radioactive contamination of the environment; (c) check the effectiveness and maintenance of equipment as referred to in point (b) and ensure the regular calibration of measuring instruments; (d) seek advice from a radiation protection expert in the performance of the tasks referred to in points (a), (b) and (c).

## ***Article 25. Emergency preparedness***

### ***Emergency management system***

The national legislative framework aims at protecting the public in a nuclear or radiological emergency and requires that account is taken of the fact that emergencies may occur in the territory of the country and that the country may be affected by emergencies occurring outside its territory. The emergency management system established requires adequate administrative provisions to be in place to maintain such a system and is commensurate with the results of the assessment of potential emergency exposure situations.

The emergency management system includes, but is not restricted to, the following elements: (a) assessment of potential emergency exposure situations and associated public and emergency occupational exposures; (b) clear allocation of the responsibilities of persons and organisations having a role in



preparedness and response arrangements, so that timely and effective decisions can be made in an emergency; (c) establishment of emergency response plans at appropriate levels and related to a specific facility or human activity; (d) provision for effective coordination of and communication between license holders and response organisations; (e) reliable communications and efficient and effective arrangements for cooperation and coordination at the facility and at appropriate national and international level; (f) health protection of emergency workers; (g) arrangements for the provision of prior information and training for emergency workers and all other persons with duties or responsibilities in emergency response, including regular exercises; (h) arrangements for individual monitoring or assessment of individual doses of emergency workers and the recording of doses; (i) public information arrangements; (j) involvement of stakeholders; and (k) transition from an emergency exposure situation to an existing exposure situation, including recovery and remediation.

### ***Off-site emergency procedures and arrangements (preparedness phase)***

The emergency management system includes, inter alia, the national off-site emergency response plan in case of a nuclear or radiological accident/incident, titled ELECTRA, with the objective of avoiding severe deterministic effects in any individual from the affected population and reducing the risk of stochastic effects, taking account of the general principles of radiation protection and appropriate reference levels (emergency exposure situation). The specific goals of the emergency plan in a nuclear or radiological emergency are to: (a) regain control of the situation and to mitigate consequences; (b) save lives; (c) avoid or to minimise severe deterministic effects; (d) render first aid, to provide critical medical treatment and to manage the treatment of radiation injuries; (e) reduce the risk of stochastic effects; (f) keep the public informed and maintain public trust; (g) mitigate, to the extent practicable, non-radiological consequences; (h) protect, to the extent practicable, property and the environment; and (i) prepare, to the extent practicable, for the resumption of normal social and economic activity.

The emergency response plan for nuclear or radiological emergencies ELECTRA is one of the 24 specific action plans under the General Crisis Management plan of the country titled ZENON, which adopts the all-hazards approach. This plan stipulates hazard categorisation according to IAEA standards and covers the various types of emergencies identified by the assessment of potential emergency exposure situations, either from abroad or within the country. The plan incorporates relevant elements of the emergency management system referred above.

The elements covered by the emergency plan ELECTRA are, for emergency preparedness: (a) reference levels for public exposure; (b) reference levels for emergency occupational exposure; (c) an optimised protection strategy for members of the public who may be exposed, for different postulated events and related scenarios; (d) predefined generic criteria for particular protective measures; (e) operational criteria, such as observables and indicators of on-scene conditions; and (f) arrangements for prompt coordination between organisations having a role in emergency preparedness and response; and for emergency response: (a) timely implementation of preparedness arrangements; (b) prompt implementation of protective measures, if possible before any exposure occurs; (c) assessment of the effectiveness of the strategy adopted and implementation of actions and adjustment of these actions, as appropriate, to the prevailing situation; and (d) comparison of the doses against the applicable reference level, focusing on those groups whose doses exceed the reference level.

Among the roles of the regulatory body in preparing the emergency plan and in the event of an emergency is to advise the Government and response organisations and provide expertise, for example, in radiation monitoring and risk assessment for actual and expected future radiation risks.

The plan ELECTRA includes clear provisions on when and how is tested, reviewed and, as appropriate, revised at regular intervals, taking into account lessons learned from past emergency exposure situations and the results of the participation in emergency exercises at national and international level.

## ***Emergency response***

The national legislative and regulatory framework requires the license holder to notify the regulatory body immediately of any emergency in relation to the practices for which it is responsible and to take all appropriate action to reduce the consequences. In the event of an emergency in the country's territory, the license holder concerned makes an initial provisional assessment of the circumstances and consequences of the emergency and assists with protective measures.

The legislative and regulatory framework require, in the event of an emergency in or outside the country's territory: (a) the implementation of appropriate protective measures, taking account of the real characteristics of the emergency and in accordance with the optimised protection strategy as part of the emergency response plan; and (b) the assessment and recording of the consequences of the emergency and of the effectiveness of the protective measures.

## ***Information to the public likely to be affected in the event of an emergency***

In the event of an emergency, the Law requires that the members of the public likely to be affected in the event of an emergency are provided with appropriate information about the health protection measures applicable to them and about the actions they should take in the event of such an emergency.

This information mainly includes: (a) basic facts about radioactivity and its effects on human beings and on the environment; (b) the various types of emergency covered and their consequences for the public and the environment; (c) emergency measures envisaged to alert, protect and assist the public in the event of an emergency; and (d) appropriate information on action to be taken by the public in the event of an emergency.

The information is updated and distributed at regular intervals and whenever significant changes take place. Provision is taken that this information is permanently available to the public.

## ***Information to the public actually affected in the event of an emergency***

When an emergency occurs, the Law required that the members of the public actually affected are informed without delay about the facts of the emergency, the steps to be taken and, as appropriate, the health protection measures applicable to these members of the public.

The information to be rapidly provided should cover: (a) the type of emergency which has occurred and, where possible, its characteristics (e.g. its origin, extent and probable development); (b) advice on protection, which, depending on the type of emergency, may: (i) cover the following: restrictions on the consumption of certain foodstuffs and water likely to be contaminated, simple rules on hygiene and decontamination, recommendations to stay indoors, distribution and use of protective substances, evacuation arrangements; (ii) be accompanied, where necessary, by special warnings for certain groups of the members of the public; (c) announcements recommending cooperation with instructions or requests by the regulatory body. Other information to be received is: (a) invitation to the members of the public concerned to tune in to relevant communication channels; (b) preparatory advice to establishments with particular collective responsibilities; and (c) recommendations to occupational groups particularly affected.

## ***On-site emergency procedures and arrangements***

The legislative and regulatory framework provides that the license holders must have in place and regularly update a threat (risk) assessment as the basis of their EPR plans, for responding effectively to accidents in order to prevent or mitigate their consequences. The role of the license holders 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. Responsibilities have been also allocated for the management of interventions in emergency

exposure situations between the regulatory body, national and local response organisations and the operators/license holders.

Whenever the risk assessment indicates that a radiological emergency might occur, the license holder or the employer must prepare in writing and implement an appropriate contingency plan designed to prevent or limit the exposure to radiation of any person and protect the environment. The contingency plans must: (a) include procedures, guidelines and arrangements to deal with accidents that may occur in all operational, termination and transition situations, ensuring consistency and continuity between all these procedures and arrangements; (b) be consistent with other operational procedures and periodically exercised to verify their practicability; (c) be based on an organisational structure with a clear division of responsibilities and coordination between the company itself and the emergency responders or bodies; (d) be periodically reviewed and regularly updated, taking account of experience from exercises and lessons learned from accidents; (e) be periodically tested at appropriate intervals, taking into account any changes in the practices carried out, the available knowledge and experience and the risk assessment; (f) include provisions on adequate and trained personnel, adequate and adequate equipment and other necessary resources; (g) assign clear responsibility for prompt notification of the emergency situation to the regulatory body and the emergency response bodies or organisations; (h) provide arrangements to receive external assistance; and (i) be submitted for review and assessment to the regulatory body as part of the application for authorisation.

### ***International cooperation***

The national legislative and regulatory framework provides for the cooperation with other States in addressing possible emergencies in the territory of the country which may affect other States, in order to facilitate the organisation of radiological protection in these States.

The regulatory body should, in the event of an emergency occurring on its territory or likely to have radiological consequences on its territory, promptly establish contact with regulatory authorities of other States which may be involved or are likely to be affected with a view to sharing the assessment of the exposure situation and coordinating protective measures and public information by using, as appropriate, bilateral or international information exchange and coordination systems. These coordination activities should not prevent or delay any necessary actions to be taken on a national level.

The regulatory body should promptly share information and cooperate with other relevant States and relevant international organisations regarding the loss, theft or discovery of high-activity sealed sources, other radioactive sources and radioactive material of concern and regarding related follow-up or investigations, without prejudice to relevant confidentiality requirements and relevant national legislation.

Apart from a regulatory body, Cyprus has appointed 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. Cyprus participates in the ECURIE and EURDEP platforms of the EU, and RICS/DLI is the focal point for these platforms, as well as for IAEA USIE and ITDB. A network of ambient gamma dose rate and aerosol monitoring stations serves as the country's early warning system.

### ***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. Therefore, there is no need for decommissioning of such facilities in Cyprus.

An old fertiliser 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***

Currently, 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 Waste Regulations, 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 principles, policies and legislation. 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 being implemented. Further description of these overall principles, policies and legislation is provided in Sections B and E of the 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.

Further description of existing facilities and practices is provided in Sections B and D of the report. Information on DSRS is given in Section J of the 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 or 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 regulatory body, 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 has to 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 (R.A.A. 86/2009), 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, 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 DSRS to a supplier or manufacturer of radioactive sources or to a recognised 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 nuclear fuel referred to in Council Directive

2006/117/Euratom) has to 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.

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.

The Waste Regulations, which transposes to national legislation the Council Directive 2011/70/Euratom, requires that radioactive waste 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:

- (a) The IAEA Safety Regulations for the Transport of Radioactive Materials;
- (b) The United Nations Recommendations on the Transport of Dangerous Goods;
- (c) The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR);
- (d) The International Maritime Dangerous Goods (IMDG) Code;
- (e) The International Civil Aviation Organisation (ICAO) Technical Instructions on the Safe Transport of Dangerous Goods, and
- (f) The Universal Postal Union (UPU) Convention.

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 body 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**

Cyprus has established since 2014 a dedicated national legislative, regulatory and organisational framework for radioactive waste management, and implements a national policy and strategy on radioactive waste and DSRS management, as well as a national programme that covers all types of radioactive waste or DSRS under its jurisdiction and all stages of radioactive waste management, from generation to disposal. Of course, general provisions on the management of DSRS were standing ahead of 2014.

DSRS for which no further use is foreseen are not considered as radioactive waste and the regulatory body requires that license holders should 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.

In order to grant an authorisation for practices involving high-activity sealed sources, the regulatory body requires the applicant to have made adequate provision, by way of a financial security or any other equivalent means appropriate for the source in question, for the safe management of radiation sources once they become disused, including the case where the license holder becomes insolvent or ceases its activities. In particular, the regulatory body 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 license holder in Cyprus and the manufacturer or the supplier abroad, whatever applicable, for accepting back such sources, which are assessed during the authorisation procedure. Also, the legislation provides for the establishment of a financial security system to cover intervention costs relating to the recovery, management, control and disposal of orphan sources.

Moreover, the possibility of contracting the re-use of these DSRS to suppliers/manufacturers abroad that manufacture small sources for educational or research purposes should 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 in a storage facility at Nicosia General Hospital. The license holder for this storage is the State Health Services Organisation and special conditions are attached to the license granted by the regulatory body.

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 license holders 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 has to consider, according to the national programme, the options of:

- (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 storage facility 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:

- (a) the establishment of a system to enable the regulatory body to be adequately informed of any transfer of high activity sealed sources and where necessary individual transfers of sealed sources;
- (b) the requirement that each license holder possessing a sealed source to notify the regulatory body promptly of any loss, significant leakage, theft or unauthorised use of a sealed source;
- (c) arrangements providing for the transfer of DSRS to the supplier or their placement in a disposal or storage facility or an obligation for the manufacturer or the supplier to receive them;
- (d) a financial security or any other equivalent means appropriate for the source in question for the safe management of sources when they become disused, including the case where the license holder 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 of the regulatory body***

***Challenge 1:*** “Strengthening the regulatory body, whereby the continued progress in addressing staffing challenges with the regulator. The number of qualified staff and the sufficiency of financial resources for the proper discharge of the assigned responsibilities is an on-going challenge”

***Suggestion 1:*** “Options to strengthen the radiation [safety] authority, including staffing, training and resources”

RICS was established in 2002 within DLI of the Ministry of Labour, Welfare and Social Insurance, and operates under Section 7 of the Law. The new Law (issued in December 2018) includes enhanced provisions on the human and financial resources of the regulatory body. Specifically, the new Law provides that the regulatory body, inter alia, receives exclusive and appropriate funds and be provided with the necessary facilities and equipment to enable it carry out its regulatory tasks as defined in the national framework and that the regulatory body must employ the appropriate number of staff with the necessary qualifications, experience and expertise to fulfill its obligations.

RICS is currently (2020) staffed, apart from the Director of DLI (Chief Inspector under the Law, as the Head of RICS) and the Head of the Radiation Safety, Environmental Issues and Machinery Sector (Principal Labour Inspection Officer), with four Labour Inspection Officers (in the area Radiation Safety and Protection), qualified in radiation protection and nuclear / radiological safety and security. Several assessments of human resource needs and staffing plan 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. The retirement of experienced staff remains a challenge, as well as the common recruitment of all DLI Officers and the centralised recruitment procedure followed by the Government (appointments of new staff through the procedures of the Civil Service Committee). However, two new dedicated posts intended for further staffing the regulatory body have been announced by the Civil Service Committee in 2019, and is expected that these new posts will be filled within one-year time. This increases significantly the capacity of the regulatory body, though effort is still needed to reach the staffing plan’s target of 13 persons in total.

The staff of RICS is trained on a continuous basis both in Cyprus and abroad. The training scheme applied by the regulatory body for its staff covers the principles, concepts and technological aspects, as well as the procedures followed by the regulatory body for reviewing and assessing applications for authorisation, for



inspecting facilities and activities, and for enforcing regulatory requirements. Further information is provided under Section E. Of great importance are the training and other educational activities organised under the various IAEA's Technical Cooperation Programmes, in which Cyprus participates to.

RICS/DLI is funded through the Government's annual budget and the amounts allocated are considered adequate. RICS has been provided adequate facilities, office equipment, accounting, secretarial and IT support, instruments and other resources to perform its regulatory activities.

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, and other technical support organisations, as further described under Section E of the report (ref. "Article 20. Regulatory body"). In particular, to radiation emergencies, the response organisations involved are required to: (a) harmonise the individual action plans under their supervision with the national emergency plan; and (b) take all necessary measures, including the availability, in quantity, quality and time, of the necessary human resources and technical means, with the aim of creating and maintaining the necessary infrastructure and preparedness and response procedures. These measures also include a provision for including in the annual budgets of the organisations involved the necessary funds.

### ***Disposal of legacy DSRS***

***Challenge 2: "The final disposal of legacy disused sealed radioactive sources"***

***Suggestion 2: "Establish a roadmap for the disposal of disused sealed sources, accounting for necessary competence building identification of operator, steps for implementation and public consultancy with the possible support of international instances"***

The regulatory body 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 license holder 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 DSRS kept in a licensed storage facility at the Nicosia General Hospital are discussed in Section J. A relevant roadmap has been concluded, with the assistance of IAEA, on the repatriation of 'large' legacy DSRS kept at the storage facility and appropriate actions have been initiated targeting at the final disposal of these DSRS. In exercising its regulatory powers, the regulatory body has asked the license holder for upgrading the security of the storage facility. 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 in 2017 to the new storage facility with upgraded physical and security measures, within the license holder premises, to accommodate temporarily the sources. In parallel, Cyprus has asked for the assistance of IAEA in procuring the removal of the Category II sources abroad in appropriate receptors, and it is expected that by the end of 2020 these sources will be removed out of Cyprus.

The regulatory body is in close contact with the license holder, other interested parties in the country and the IAEA to further assess potential storage and disposal options, including the possibility of further repatriating DSRS to appropriate treatment / disposal facilities abroad. In parallel, Cyprus has strengthened its efforts in building necessary competence within the license holder for the appropriate treatment of DSRS and the operation of the storage facility.

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 safeguards agreements which Cyprus has signed.

Seeking sharing lessons learned from international experience and good practice, as mentioned in Section A, the regulatory body has invited an IAEA ARTEMIS mission in Cyprus, to support this effort, which was initially planned for autumn 2020, and now has been postponed to 2021, due to the pandemic circumstances.

## **Section L. Overarching issues identified in the 6<sup>th</sup> JC RM**

- *Implementation of national strategies for spent fuel and radioactive waste management*
- *Linking long-term management and disposal of disused sealed radioactive source*

These two overarching issues which are relevant to Cyprus have already been discussed in the relevant sections of this report.

## Section M. References to national laws and regulations and other EU or international instruments made in the text

- [1] The Joint Convention on the Safety of spent Fuel Management and on the Safety of Radioactive Waste Management, INFCIRC/546, 24 December 1997.
- [2] The Joint Convention 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 Convention on Nuclear Safety (CNS) (Ratification) Law of 1998, L.20(III)/1998.
- [4] The Conventions on Early Notification (NOT) and Assistance in the case of Nuclear Accident (ASSIST) (Ratification) Law of 1988, L.164/1988.
- [5] 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.
- [6] The Protection against Ionising Radiation and Nuclear and Radiological Safety and Security Law of 2018, L.164(I)/2018.
- [7] The Protection against Ionising Radiation and Nuclear Safety (Responsible and Safe Management of Spent Fuel and Radioactive Waste) Regulations of 2014, R.A.A. 178/2014.
- [8] The Protection against Ionising Radiation (Supervision and Control of Shipments of Radioactive Waste and Spent Fuel) Regulations of 2009, R.A.A. 86/2009.
- [9] The Protection against Ionising Radiation and Nuclear and Radiological Safety and Security (Basic Safety Standards for the Protection against the Dangers Arising from Exposure to Ionising Radiation) Regulations of 2018, R.A.A. 374/2018.
- [10] The Protection against 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, R.A.A. 54/2016.
- [11] The Protection against Ionising Radiation (Supervision and Control of Shipments of Radioactive Waste and Spent Nuclear Fuel) Notification of 2009, R.A.A. 183/2009.
- [12] The Comprehensive Nuclear Test Ban Treaty (CTBT) (Ratification) Law of 2003, L.32(III)/2003.
- [13] The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) (Ratification) Law of 1970, L.8/1970.
- [14] 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.
- [15] 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.
- [16] 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.
- [17] The Convention for the Suppression of Acts of Nuclear Terrorism (Ratification) Law of 2007, L.44 (III)/2007.
- [18] Council Directive 2011/70/Euratom for establishing a community framework for the responsible and safe management of spent fuel and radioactive waste.
- [19] 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.
- [20] Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations.
- [21] 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.
- [22] 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.

- [23] Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent nuclear fuel.
- [24] 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.
- [25] Euratom Regulation 2016/52 on the maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other radiological emergency.
- [26] EU Regulation No. 1493/93 for intra-European Union shipments of sealed radioactive sources.
- [27] Regulation 733/2008 of 15 July 2008 on the conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power station, replaced by Commission Implementing Regulation (EU) 2020/1158 of 5 August 2020.
- [28] The United Nations Recommendations on the Transport of Dangerous Goods.
- [29] The European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR).
- [30] The International Maritime Dangerous Goods (IMDG) Code.
- [31] The International Civil Aviation Organisation (ICAO) Technical Instructions on the Safe Transport of Dangerous Goods.
- [32] The Universal Postal Convention, 1874.
- [33] The IAEA Safety Regulations for the Transport of Radioactive Materials, IAEA Safety Standards Series No. SSR-6 (Rev.1), IAEA, Vienna, 2018.
- [34] The UNSC Resolution 1540, S/RES/1540 (2004), 28 April 2004.
- [35] Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1 (rev. 1), IAEA, Vienna, 2016.
- [36] Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna, 2014.
- [37] Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSR Part 7, IAEA, Vienna, 2015.
- [37] General Safety Guide No. GSG-1 “Classification of radioactive waste”, IAEA, Vienna, 2009.
- [38] Code of Conduct on the Safety and Security of Radioactive Sources, IAEA, Vienna, 2004.

## Section N. Matrix Overview

Type of Liability	Long-term management policy	Funding of Liabilities	Current practices/facilities	Planned activities/facilities
<b>Spent Fuel</b>	N/A	N/A	N/A	N/A
<b>Nuclear Fuel Cycle Waste (NPPs)</b>	N/A	N/A	N/A	N/A
<b>Application Waste</b>	Decay; Disposal; Export/Shipment	License holder	Decay (Interim storage and retention of short-lived waste); Interim storage	None
<b>Decommissioning</b>	DSRS repatriated; all facilities involving ionising radiation e.g. accelerators, nuclear medicine, research laboratories will require at some stage to undergo decommissioning	License holder	Two plants and a hospital decommissioned in the past; Oncology centers, nuclear medicine centers, blood irradiators, industrial radiography, research applications.	
<b>Disused Sealed Radioactive Sources (DSRS)</b>	Return to supplier or manufacturer; Repatriation and local final disposal of legacy DSRS considered	License holder; State budget	Interim storage; Return to supplier or manufacturer; Repatriation and local final disposal of legacy DSRS considered	Category II sources to be repatriated. Other storage/disposal options for legacy DSRS and new DSRS (lightning rods, smoke detectors, etc.) are under consideration.
<b>NORM and Non-Nuclear Fuel Cycle Mining Waste</b>	N/A	N/A	N/A	N/A