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INTEGRATED REVIEW SERVICE FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT, DECOMMISSIONING AND REMEDIATION (ARTEMIS)

MISSION

TO

CYPRUS

Nicosia, Cyprus

23-27 May 2022

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY
DEPARTMENT OF NUCLEAR ENERGY

IAEA

Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation

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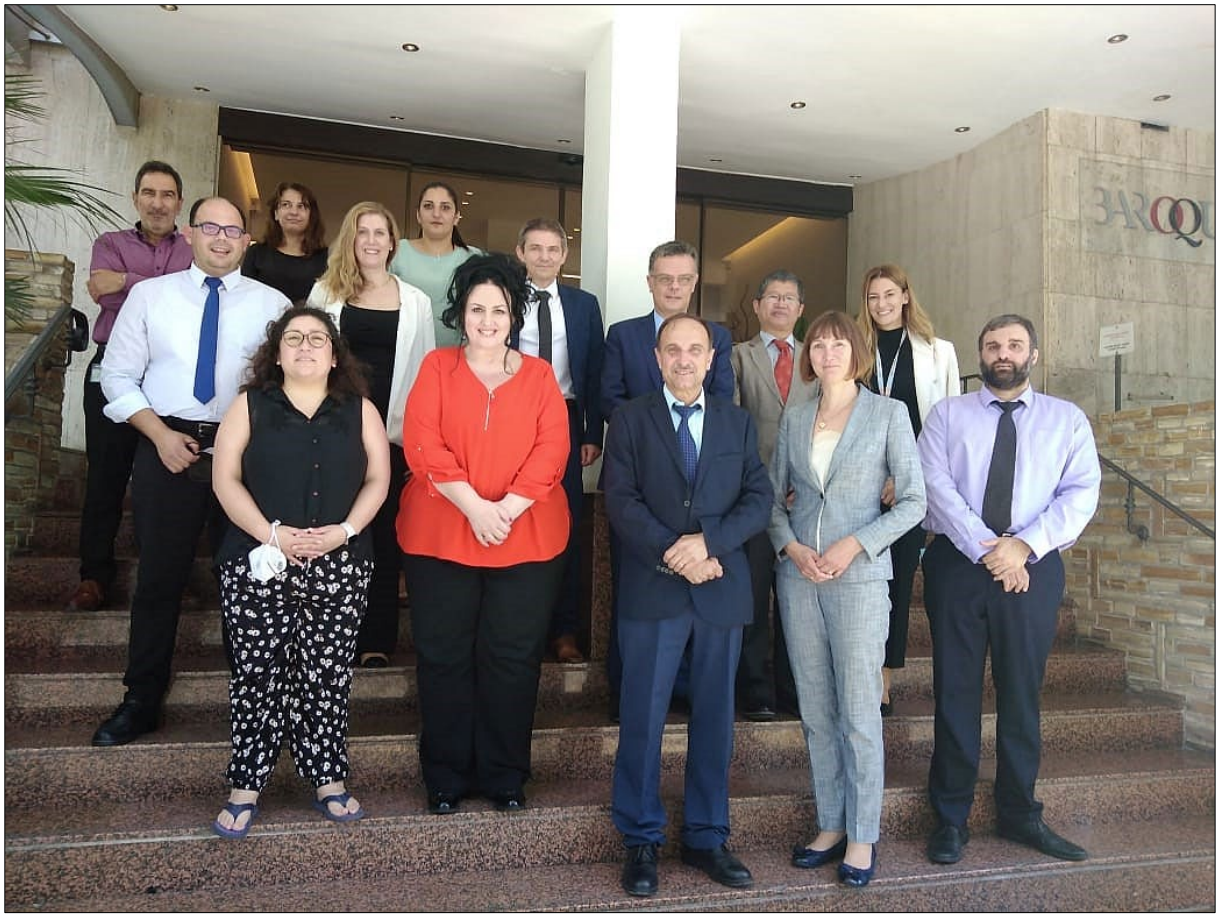

Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation

IAEA ARTEMIS

REPORT OF THE

INTEGRATED REVIEW SERVICE FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT, DECOMMISSIONING AND REMEDIATION (ARTEMIS) MISSION

TO

CYPRUS

Mission dates: *23-27 May 2022*
Location: *Nicosia, Cyprus*
Organized by: *IAEA*

ARTEMIS REVIEW TEAM	
Mr Patrice François	ARTEMIS Team Leader (France)
Ms Tamara Djurovic	Reviewer (Montenegro)
Mr Jose Marques	Reviewer (Portugal)
Mr Zhiwen Fan	IAEA Team Coordinator
Ms Vivian Pereira Campos	IAEA Deputy Team Coordinator
Ms Irena Ostrouska	IAEA Admin. Assistant

IAEA-2022

The number of recommendations, suggestions and good practices is in no way a measure of the status of the national infrastructure for nuclear and radiation safety. Comparisons of such numbers between ARTEMIS reports from different countries should not be attempted.

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EXECUTIVE SUMMARY

At the request of Department of Labour Inspection, on behalf of the Government of the Republic of Cyprus (hereinafter Cyprus), the International Atomic Energy Agency organized an Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) peer review mission. The objective of the ARTEMIS Peer Review Service was to provide independent expert opinion and advice on radioactive waste and spent nuclear fuel management, decommissioning and remediation, based upon the IAEA safety standards and technical guidance, as well as international good practices. Cyprus requested this IAEA review to fulfil its obligations under Article 14.3 of the Council Directive 2011/70/Euratom of 19 July 2011 *establishing a Community Framework for the Responsible and Safe Management of Spent Fuel and Radioactive Waste* ("*Waste Directive*").

The review was performed by a team of three senior international experts in the field of management of radioactive waste and disused sealed radioactive sources, from IAEA Member States, with IAEA staff providing coordination and administrative support. A preparatory meeting was convened in January 2020 and the receipt and review of Advanced Reference Material was carried out in August 2020. Subsequent to this, update and further review of Advanced Reference Material was conducted. In May 2022, the ARTEMIS Review Team evaluated the overall Cyprus framework for the management of all types of radioactive waste including disused sealed radioactive sources.

Considering the very small inventory of radioactive waste and disused sealed radioactive sources to manage in the country, Cyprus is revising its national policy and strategy for radioactive waste management including disused sealed radioactive source. Cyprus has established a specific national programme as follows:

- storage for decay of short-lived radioactive materials and subsequent clearance;
- removal abroad the legacy Category 1 to 3 disused sealed radioactive sources;
- the storage of legacy DSRS at a licensed storage facility until a further option is established to manage the DSRS;
- explore options of disposal of DSRS and radioactive waste taking account of Cyprus's circumstance.

The ARTEMIS Review Team was impressed by the insurance system for the takeback of disused sealed radioactive sources. 'The authorization for the import of new sealed radioactive sources into Cyprus is granted on condition that the sources are accepted back at the end of their useful life, with financial provisions provided through an insurance' is considered a good performance.

However, the ARTEMIS Review Team made the following eight recommendations with the view to improve the safe management of DSRS and radioactive waste in Cyprus.

- The Government should ensure that provisions, particularly, human and financial resources, are in place to update and implement the national strategy for the management of radioactive waste and DSRS.
- The regulatory body should ensure that responsibility is allocated when the National Centralized Storage Facility takes the ownership of DSRS.
- The Government should update the national strategy for radioactive waste and DSRS management to address the long-term safety, including aspects such as:
    - consolidating the national inventory of DSRS and radioactive waste;

    - identifying DSRS which cannot be shipped abroad;
    - investigating possible management options for these DSRS;
    - identifying a disposal solution;
    - establishing a roadmap for implementing the disposal solution;
    - assigning adequate financial and human resources for the implementation of the disposal solution.
- The regulatory body should ensure that all radioactive waste and DSRS are stored in a licensed storage facility.
- The regulatory body should review and modify the license of the operator of the National Centralized Storage Facility as necessary according to the safety assessment to ensure all activities are addressed, all risks are mitigated and responsibilities are clear.
- The operator of the National Centralized Storage Facility should develop a comprehensive safety assessment and submit it to the regulatory body for reviewing.
- The Government should establish a dedicated fund for the management of radioactive waste, covering existing and future needs.
- The Government and all bodies responsible for management of radioactive waste and DSRS should ensure that programmes for capacity building take full advantage of support provided by external entities such that reliance on those entities reduces over time.

In addition, the ARTEMIS Review Team provided the Cyprus authorities with the following four suggestions:

- The regulatory body should consider establishing a time limit for the license holder to transfer DSRS to the National Centralized Storage Facility.
- The regulatory body should consider establishing a timeframe in the regulatory provisions to ensure that a DSRS shall be returned to the supplier after the end of its service lifetime.
- The regulatory body should consider including into the existing Inspection Manual a specific programme and procedure for the inspections of the National Centralized Storage Facility.
- The Government should consider assessing research and development needs for the implementation of the National Programme on DSRS and Radioactive Waste Management and making provisions of human and financial resources for research and development.

In summary, the ARTEMIS Review Team considers that Cyprus has made good progress in safe and responsible management of radioactive waste and disused sealed radioactive sources.

The ARTEMIS Review Team is of the collective opinion that Cyprus is in a good position to continue improvement to meet high standards of safety for radioactive waste and disused sealed radioactive sources management in the country.

I. INTRODUCTION

At the request of the Cyprus Government, specifically of the Department of Labour Inspection, the International Atomic Energy Agency organized an ARTEMIS mission to review the Cyprus Programme on Spent Fuel and Radioactive Waste Management. The objective of the ARTEMIS Peer Review Service is to provide independent expert opinion and advice on radioactive waste and spent nuclear fuel management, decommissioning and remediation, based upon the IAEA safety standards and technical guidance, as well as international good practices. Cyprus requested this review to fulfil its obligations under Article 14.3 of the Council Directive 2011/70/Euratom of 19 July 2011 establishing a *Community Framework for the Responsible and Safe Management of Spent Fuel and Radioactive Waste* ("*Waste Directive*").

The review was performed by a team of three senior international experts in the field of management of radioactive waste and disused sealed radioactive sources, from IAEA Member States, with IAEA staff providing coordination and administrative support. A preparatory meeting was convened in January 2020 and the receipt and review of Advanced Reference Material was carried out in August 2020. Subsequent to this, update and further review of Advanced Reference Material was conducted in March 2022. In May 2022 the ARTEMIS Review Team evaluated the overall Cyprus framework for the management of all types of radioactive waste including disused sealed radioactive sources.

II. OBJECTIVE AND SCOPE

The ARTEMIS review provided an independent international evaluation of the Radioactive Waste and Spent Fuel Management Strategy of Cyprus, requested in line with the obligations of the *Waste Directive*.

The ARTEMIS review, organized by the Department of Nuclear Safety and Security and the Department of Nuclear Energy of the IAEA, performed against the relevant IAEA Safety Standards and proven international practices and experiences with the combined expertise of the international peer review team selected by the IAEA.

The ARTEMIS review assessed, as requested by the *Waste Directive*, the overall strategy for the management of all types of radioactive waste in Cyprus.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IAEA REVIEW TEAM

At the request of the Government of Cyprus, a preparatory meeting for the ARTEMIS Review mission, was conducted from 9 to 10 January 2020. The preparatory meeting was carried out by the appointed Team Leader Mr Patrice François, the IAEA coordinator and deputy coordinator Mr Zhiwen Fan and Mr Juan Carlos Benitez Navarro, and the team of National Counterparts led by Mr Michalis Tzortzis from the Department of Labour Inspection.

The ARTEMIS mission preparatory team had discussions regarding:

- the Terms of Reference for the ARTEMIS review of the Cyprus programme to fulfil obligations from article 14(3) of the Waste Directive; and
- the relevant detailed aspects for organization and conduct of the review.

IAEA staff presented the ARTEMIS principles, process and methodology. This was followed by a discussion on the work plan for the implementation of the ARTEMIS review in Cyprus in October 2020.

Mr Michalis Tzortzis was appointed as the National Counterpart for the ARTEMIS mission and designated IAEA point of contact.

Cyprus provided IAEA with the Advance Reference Material (ARM) for the review at the beginning of August 2020. Subsequent to this, update and further review of Advanced Reference Material was conducted in March 2022.

B) REFERENCES FOR THE REVIEW

The articles of the *Waste Directive*, the draft guidelines for the ARTEMIS review service and the responses to the self-assessment questionnaire were used as the basis for the review together with the ARM and materials presented during the mission and associated discussions. The complete list of IAEA publications used as the basis for this review is provided in Appendix D.

C) CONDUCT OF THE REVIEW

The initial Review Team meeting took place on Sunday, 22 May 2022 in Nicosia, directed by the ARTEMIS Team Leader Mr Patrice François, the ARTEMIS Team Coordinator Mr Zhiwen Fan and the Deputy Team Coordinator, Ms Vivian Pereira Campos. The National Counterpart Mr Michalis Tzortzis was present at the initial Review Team meeting, in accordance with the ARTEMIS guidelines, and presented logistical arrangements planned for the mission.

The ARTEMIS opening meeting was held on Monday, 23 May 2022, with the participation of the Permanent Secretary of the Ministry of Labour and Social Insurance, and representatives from the Radiation Inspection and Control Service (RICS) of Department of Labour Inspection (DLI), the Nicosia General Hospital (State Health Services Organisation), the German Oncology Center and the Bank of Cyprus Oncology Center. Opening remarks were made on behalf of the Cyprus authorities by Mr Andreas Zachariades, Permanent Secretary of the Ministry of Labour and Social Insurance, and by Mr Anastassios Yiannaki, Director of the Department of Labour Inspection (DLI) and Head of the Radiation Inspection and Control Service (RICS) of this Department. On behalf of the ARTEMIS Review Team, opening remarks were made by Mr Patrice François, ARTEMIS Team Leader and the Team experts. Mr Michalis

Tzortzis gave an overview of the Cyprus waste and DSRS management programme and framework.

During the ARTEMIS mission, a review was conducted for all review topics within the agreed scope with the objective of providing Cyprus authorities with recommendations and suggestions for improvement and, where appropriate, identifying good practice.

The ARTEMIS Review Team performed its review according to the mission programme given in Annex 2 of Appendix A.

The ARTEMIS Exit Meeting was held on Friday, 27 May 2022. Remarks were made by Mr Anastassios Yiannaki on behalf of the Cyprus authorities. A presentation of the results of the Review Mission was given by the ARTEMIS Team Leader, Mr Patrice François. Closing remarks were made on behalf of the IAEA by Ms Anna Clark, Section Head, Waste and Environmental Safety, Division of Radiation, Transport and Waste Safety, Department of Nuclear Safety and Security.

An IAEA press release was issued.

1. NATIONAL POLICY AND FRAMEWORK FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT

Cyprus position

Cyprus has established a comprehensive framework for nuclear and radiological safety and security, including an appropriate legislative framework for the responsible and safe management of radioactive waste, which is in line with the IAEA standards and the EU Acquis. The new Law on Protection against Ionizing Radiation and Nuclear and Radiological Safety and Security was adopted in 2018 (L. 164(I)/2018), and repealed and replaced the Protection against Ionizing Radiation and Nuclear Safety Law of 2002, as amended in 2009, 2011 and 2017.

The National Policy and Strategy on the Responsible and Safe Management of Radioactive Waste adopted in 2015 serves as the national commitment to address the country's waste issues in a coordinated, cooperative and sustainable manner, in line with the European Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste and other international obligations. The national waste management policy pays due account on the issues of waste minimization and graded approach, in line with national conditions and radiation hazards related to facilities and activities, in order to achieve the fundamental goal of safety, i.e. the protection of people and the environment from the harmful effects of radiation and in order for the fundamental safety principles to be applied.

In 2015 Cyprus established the National Programme on the responsible and safe management of radioactive waste in the Republic of Cyprus and submitted to the European Commission under the provisions of the Council Directive 2011/70/Euratom and national regulations. The National Programme reflects the country's status: no nuclear installations or uranium or thorium mines and the management of spent fuel in the country is prohibited by the existing legislation. The use of nuclear energy for the generation of electric power is not considered by the Government of Cyprus in the country's energy mix in the foreseeable future.

In addition, in 2019 the regulatory body established the National Policy and Strategy on Nuclear Safety and Radiation Protection.

The main origin of radioactive waste in Cyprus is from activities in the field of medicine, industry, and research. All sources or other radioisotopes used in Cyprus are produced abroad, mainly in the EU and the United States. Radioactive waste is produced in low volumes and very low radioactivity levels, for example waste in medical laboratories for nuclear medicine applications. The small amounts of short-lived radioactive waste produced in nuclear medicine departments are kept in storage until their activity is low enough to be disposed of as normal waste. Also, any amount of radioactive waste produced in research activities that cannot be disposed of as normal waste must be kept in storage until the activity is low enough to be disposed of as normal waste or exported/shipped abroad for appropriate management. In addition, scrap metal exported/shipped to various countries for processing/recycling are monitored for radioactivity prior to shipment. There are also some legacy sources used in the past in medical applications, in smoke detectors and in lightning rods. Transboundary movement consists of the repatriation or removal of disused sealed radioactive sources to suppliers or manufacturers or recyclers in other countries.

The authorization system is based on a graded approach. In implementing Policy and Strategy and Programme, Cyprus follows also the principles of minimization of the generation of radioactive waste in any form and avoidance of the importation of radioactive waste in any form.

The Ministry of Labour and Social Insurance (MLSI), acting through the Radiation Inspection and Control Service (RICS) / Department of Labour Inspection (DLI), is the sole regulatory body in Cyprus on radiation and nuclear safety and has the responsibility for the administration of the relevant legislation and authorisation of all facilities, sources and practices involving exposure to ionising radiation.

The Government decided to use the facility at the Nicosia General Hospital as a National Centralized Storage Facility and the license holder is the State Health Services Organisation, which covers the operation costs of the facility through the Governmental budget.

In 2017, Cyprus hosted the International Atomic Energy Agency International Regulatory Review Service (IRRS) which provides recommendation and suggestion to the regulatory body and the Government in all areas including radioactive waste management.

ARTEMIS observation

The team was informed that a revision of the new National Policy and Strategy on the Responsible and Safe Management of Radioactive Waste is ongoing and was provided with a copy of the draft text.

The main principles of National Policy and Strategy on radioactive waste and DSRS management, as well as of the National Programme are compatible with other existing policies and strategies in the country, for example the National Policy and Strategy on Nuclear Safety and Radiation Protection. The main method of management of short-lived institutional radioactive waste is the delay and decay approach, while for sealed radioactive sources a condition is posed to the licensees that they should have in place arrangements to return the source to the supplier or the manufacturer when the source completed its useful life or when the source becomes disused, whatever applicable. Legacy DSRS are stored in the National Centralized Storage Facility pending for final solution.

The ARTEMIS Review Team observed that no formal process is being implemented into the license conditions to clear radioactive waste and DSRS from regulatory control including the submission for approval by the regulatory body. During discussion, the ARTEMIS Review Team observed that there are no criteria in force in the regulatory framework for the justification of the practice related to radioactive waste management. The ARTEMIS Review Team was informed that this issue could be addressed as an internal procedure of the Integrated Management System of the regulatory body.

The ARTEMIS Review Team noted that the management of DSRS are not recognized in the current National Policy and Strategy on the Responsible and Safe Management of Radioactive Waste. Cyprus intends to adopt all the principles of the management of DSRS. This issue will be addressed by the new draft of the National Policy and Strategy, which is foreseen to be adopted by the end of 2022. The ARTEMIS Review Team observed that an update of the National Strategy for the management of DSRS and radioactive waste requires provisions for development and implementation.

Given the importance of management of DSRS in the country, Cyprus has supported the IAEA's Code of Conduct on the Safety and Security of Radioactive Sources in 2015, while it is further encouraged to express political support to the Guidance on the Management of Disused Radioactive Sources supplementary to the Code of Conduct.

The ARTEMIS Review Team noted that reuse and recycling of DSRS is applied, but these are substantially options that are implemented out of Cyprus. Reuse is partially implemented in the

country, but it is not explicitly recognized within the existing regulation. During the ARTEMIS discussion it is noted that it could be clarified in the revision of the National Policy and Strategy.

The ARTEMIS Review Team observed that Cyprus has developed three reports addressing similar subject areas of management of radioactive waste and disused sealed radioactive sources, one report to address the National Policy and Strategy, one report to address the National Programme and one report to address the IAEA Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention). All these documents address both national policy, national strategy and national inventory for radioactive waste and DSRS. From the three report, the national inventory is only detailed in the National Programme published in 2015. These documents are updated periodically on different timeframes. The ARTEMIS Review Team observed that there are some data inconsistencies and duplication of information in these reports.

In relation to the transfer of DSRS to the National Centralized Storage Facility, the ARTEMIS Review Team observed that it is not indicated if a transfer of liability of the DSRS is performed from the owner to the State Health Services Organization when a DSRS is sent to the National Centralized Storage Facility. In addition, it is not indicated if the State Health Services Organization becomes the new owner and if the State Health Services Organization shall be responsible to seek for a final solution (send abroad, reuse, recycling, declare as radioactive waste). The ARTEMIS Review Team observed that a time limit has not been established into the regulation until when the license holder is obliged to transfer DSRS to the National Centralized Storage Facility.

The ARTEMIS Review Team was informed that an update of the national strategy for the management of DSRS and radioactive waste is planned and notes that provisions for its development and implementation, in particular human and financial resources, should be included.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *An update of the national strategy for the management of DSRS and radioactive waste is planned and will require provisions for its development and implementation, in particular, human and financial resources.*	
(1)	**BASIS: SF-1 Principle 7, para 3.29 states that:** *"Radioactive waste must be managed in such a way as to avoid imposing an undue burden on future generations; that is, the generations that produce the waste have to seek and apply safe, practicable and environmentally acceptable solutions for its long-term management. The generation of radioactive waste must be kept to the minimum practicable level by means of appropriate design measures and procedures, such as the recycling and reuse of material."*
(2)	**BASIS: GSR Part 5, Requirement 1 states that**: *"The government shall provide for an appropriate national legal and regulatory framework within which radioactive waste management activities can be planned and safely carried out. This shall include the clear and unequivocal allocation of responsibilities, the securing of financial and other resources, and the provision of independent regulatory functions. Protection shall also be provided beyond national borders as appropriate and necessary for neighbouring States that may be affected".*
R1	**Recommendation: The Government should ensure that provisions, particularly human and financial resources, are in place to update and implement the national strategy for the management of DSRS and radioactive waste.**

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *In relation to the transfer of DSRS to the National Centralised Storage Facility, the ARTEMIS Team observed that it is not indicated if the liability is transferred from the owner to the State Health Services Organization when the decision is taken to send the DSRS to the National Centralised Storage Facility. The ARTEMIS Team observed that a time limit has not been established into the regulation until which the license holder is obliged to transfer DSRS to the National Centralised Storage Facility.*	
(1)	**BASIS: IAEA GSR Part 5, Requirement 1, para 3.4 states that** *"Matters that have to be considered by the government include:* *— Setting clearly defined legal, technical and financial responsibilities for organizations involved in predisposal radioactive waste management activities; […]"*
(2)	**BASIS: IAEA GSR Part 5, Requirement 2, para 3.6 states that** *"The national strategy for radioactive waste management has to outline arrangements for ensuring the implementation of the national policy. It has to provide for the coordination of responsibilities. It has to be compatible with other related strategies such as strategies for nuclear safety and for radiation protection."*
(3)	**BASIS: Guidance on the management of disused radioactive sources, Chapter IX, para 17 ident f states that:** *"Each State should ensure that the regulatory body ensures, within its jurisdiction, that responsibility for the safety and security of a disused source is defined when the disused source is transferred to a third party, such as a carrier, a supplier, or the operator of a storage, waste processing or disposal facility."*
(4)	**BASIS: Guidance on the management of disused radioactive sources, Chapter IX, para 19 ident c states that:** *"Each State should ensure that the regulatory body sets an appropriate time limit for short-term storage of a disused source, contingent upon availability of other management options.*
R2	**Recommendation: The regulatory body should ensure that responsibility is allocated when DSRS is transferred to the National Centralized Storage Facility.**
S1	**Suggestion: The regulatory body should consider establishing a time limit for the license holder to transfer DSRS to the National Centralized Storage Facility.**

2. NATIONAL STRATEGY

Cyprus position

The National Strategy for Radioactive Waste Management and the associated milestones, timeframes and progress indicators are expressed in a document titled *National Programme on the responsible and safe management of radioactive waste in Cyprus* (the National Programme), which was 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.

The National Programme includes a series of activities and the framework of implementation, as milestones and timeframes for the achievement of these milestones, which represent realistic and achievable interim targets, linked to the completion of an important elements of the programme, and form an integral part of each management step of an individual or group of waste streams. Milestones and timeframes are defined for tasks relevant to several or all streams, as applicable. Timeframes for some important milestones are placed in a medium-term basis, as these milestones and timeframes might be influenced by or dependent on socio-political processes and decisions and possibly also by scientific and technical advancements.

Timeframes are presented as short-term, medium and long-term planning basis. Timeframes for some important milestones are placed in a medium-term basis, as these milestones and timeframes might be influenced by or dependent on socio-political processes and decisions and possibly also by scientific and technical advancements. Thus, short-term basis means up to 5 years, while medium-term means from 5 to 15 years. Based on the milestones and associated timeframes, a set of activities has been selected as "key performance indicators" in 2015, in order to better monitor the progress in the implementation of the national programme.

ARTEMIS observation

Cyprus provided the status of the recommendations addressed by a TC Expert Mission on DSRS to Cyprus to assist the country on the categorization and solution provision for the management of DSRS performed in 2017. The ARTEMIS Review Team observed that some progress has been made since this mission. Actions to consolidate the national inventory are still ongoing and a campaign, which has been postponed as a result of the pandemic, has been rescheduled

to be conducted in the coming months. The ARTEMIS Review Team considers that this step is crucial.

The ARTEMIS Review Team was informed that the National Policy and Strategy will be finalized using the outcomes and findings of the ARTEMIS mission and recommendations coming from the 7th Joint Convention review meeting in 2022. It is expected that a new version of the National Policy and Strategy will be issued by the end of 2022. In this respect, the ARTEMIS Review Team observes that long-term management options need to be further addressed, including aspects such as:

- consolidating the national inventory of DSRS and radioactive waste;
- identifying DSRS which cannot be shipped abroad;
- investigating possible management options for these DSRS;
- identifying a disposal solution;
- establishing a roadmap for implementing the disposal solution;
- assigning adequate financial and human resources for the implementation of the disposal solution.

The ARTEMIS Review Team was also informed about a potential merging of existing policy, strategy and programme documents into a single document.

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RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *The ARTEMIS Review Team has been informed that the National Policy and Strategy will be updated using the outcomes and findings of the ARTEMIS mission and recommendations coming from the Joint Convention meeting. The ARTEMIS Review Team observes that long-term management options need to be further addressed.*	
(1)	**BASIS: SF-1 Principle 7, para 3.29 states that**: *"Radioactive waste must be managed in such a way as to avoid imposing an undue burden on future generations; that is, the generations that produce the waste have to seek and apply safe, practicable and environmentally acceptable solutions for its long-term management. The generation of radioactive waste must be kept to the minimum practicable level by means of appropriate design measures and procedures, such as the recycling and reuse of material."*
(2)	**BASIS: GSR Part 5 Requirement 2 states that**: "*National policy and strategy on radioactive waste management to ensure the effective management and control of radioactive waste, the government shall ensure that a national policy and a strategy for radioactive waste management are established. The policy and strategy shall be appropriate for the nature and the amount of the radioactive waste in the State, shall indicate the regulatory control required, and shall consider relevant societal factors. The policy and strategy shall be compatible with the fundamental safety principles and with international instruments, conventions and codes that have been ratified by the State".*
R3	**Recommendation: The Government should update the national strategy for DSRS and radioactive waste management to address the long-term solutions, including aspects such as:** **- consolidating the national inventory of DSRS and radioactive waste;** **- identifying DSRS which cannot be shipped abroad;** **- investigating possible management options for these DSRS;** **- identifying a disposal solution;** **- establishing a roadmap for implementing the disposal solution;** **- assigning adequate financial and human resources for the implementation of the disposal solution.**

3. INVENTORY OF SPENT FUEL AND RADIOACTIVE WASTE

Cyprus position

- **Definition and classification scheme of radioactive waste**

A national radioactive waste classification scheme has been adopted and supports the arrangements on the management of radioactive waste, taking into account the specific types and properties of radioactive waste in consistency with IAEA General Safety Guide No. GSG-1 adopted by Cyprus. The classification of radioactive waste is detailed in the section 2.8 of the National Policy and Strategy (2015, revised draft since February 2022).

- **Inventory of radioactive waste and estimation of future arisings**

RICS/DLI is responsible for managing 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 and DSRS, kept up to date and appropriate records are maintained.

The national inventory of radioactive waste and DSRS is attached as Annex in the National Programme (2015 data). The national inventory provides a set of information, such as:

a. The radionuclide content;
b. The amount, composition, chemical and physical form;
c. The location;
d. The origin and history, including previous and present "owners"; and
e. Estimations of future arisings.

The national inventory on DSRS has been updated in detail through an IAEA expert mission in November 2017. The inventory remains nearly unchanged since then. Cyprus estimates that the current quantities/volumes of radioactive waste will not change significantly in the medium and long-term. Estimations of an increase of 1 m^3 per decade (2030, 2040, 2050) performed by the regulatory body originate from predictions on the increase of diagnoses and treatments to patients using radioactive substances. Future amounts of radioactive waste of various categories for storage and disposal are also estimated to less than 9, 10 and 11 TBq of medical waste (disposed of as regular waste, through the sewage system) for the years 2030, 2040, 2050, respectively. Future contributions which might occur if radioactive sources are found in scrap metal are not considered significant.

ARTEMIS observation

- **Inventory of radioactive waste and estimation of future arisings**

The ARTEMIS Review Team has been informed that two databases (RAIS and Excel file) are used by RCIS/DLI. The Excel database is used continuously and the data included in the Excel file is transferred every month to the RAIS database. The Excel file is the one developed by the IAEA experts during the expert mission in 2017. Under the license conditions, the operator has to notify any modification of the inventory to the regulatory body. The National Centralized Storage Facility has its own excel file for its own inventory based on the same template. Each hospital has its own system in place. The ARTEMIS Review Team has been informed that there is no periodic cross checks of the inventory established by the operators, unless during inspections. The National Inventory of disused sealed radioactive sources and of radioactive

waste in Cyprus is provided in an annex to the National Programme published in 2015 and the National Programme is publicly available.

The national inventory register (MS Excel application) has been improved during and after the IAEA expert mission held in 2017 but remains incomprehensive. RICS/DLI recognizes that continuous efforts are needed and support is expected through IAEA TC projects (2020-2024), which is planned to be extended. It will include a campaign to collect radioactive lightning conductors (RLC), other DSRS, and potential radioactive waste. The national inventory will be updated accordingly.

RICS/DLI indicated to the ARTEMIS Review Team that the DSRS stored in the ISO container have been already transferred to the National Centralized Storage Facility at the NGH. Nevertheless, some DSRS remain in the RICS/DLI premises. The ARTEMIS Review Team notes that there is no license for the storage at the RICS premises. This storage is considered by RICS/DLI as an interim solution pending the possible removal of these DSRS to the country of origin (US) or their transfer to the National Centralized Storage Facility, but the final decision has not been taken yet. Their removal and transfer to the US have not been performed due to the pandemic. These sources are under the ownership of the Government.

Regarding the written agreement with the supplier or manufacturer, the ARTEMIS Review Team observes that there is no timeframe in the regulations to ensure that DSRS shall be returned to the supplier after the end of their service life.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *Some DSRS remain in the RICS/DLI premises pending a final solution. The campaign to collect Radioactive Lightning Conductors (RLC) has to be completed.*	
(1)	**BASIS: GSR Part 5 Requirement 11 states that :** *"Waste shall be stored in such a manner that it can be inspected, monitored, retrieved and preserved in a condition suitable for its subsequent management. Due account shall be taken of the expected period of storage, and, to the extent possible, passive safety features shall be applied. For long term storage in particular, measures shall be taken to prevent degradation of the waste containment."*
R4	**Recommendation: The regulatory body should ensure that all DSRS and radioactive waste are stored in a licensed storage facility.**

4. CONCEPTS, PLANS AND TECHNICAL SOLUTIONS FOR DSRS AND RADIOACTIVE WASTE MANAGEMENT

Cyprus position

- **DSRS for repatriation**

In Cyprus, the competent authority grants, *inter alia*, authorisations for the import of sealed radioactive sources for use in Cyprus, even when they are to be used in Cyprus temporarily or in the short-term, only on condition that the operator or undertaking engaged in practices with such sources concludes a written agreement with the supplier or manufacturer that the sources will be accepted back after the completion of their use or the end of their useful life. These sources are under regulatory control, from their arrival in Cyprus to their dispatch to their manufacturer or supplier abroad.

Where agreements for the return of DSRS between operators or undertakings in Cyprus and manufacturers or suppliers in other countries exist, the return of the DSRS to the country of origin and to the organisation responsible for further management in that country, as applicable, is considered as a final solution. It is considered that DSRS for which no further use is foreseen or considered in Cyprus and which cannot be exported in a reasonable timeframe are ultimately considered as radioactive waste.

The takeback agreement has been implemented in the country since 20 years ago, without failure. For Categories 1 to 3 SRS, in practice, financial insurance can cover all the cost dealing the repatriation. For orphan sources, a financial security system has been implemented and is managed by the Government budget in a form of an extraordinary fund. There is no specific fund for this issue.

- **DSRS for storage/disposal**

DSRS that cannot be repatriated/exported are stored in Cyprus until their disposal is possible at a national or regional level, in case such a solution is made available. The preferable option is the centralized storage of such sources, and, in the long-term, their disposal through appropriate channels. The option of long-term centralized storage, under current circumstances offers a safe and secure, medium-term management solution, but it does not provide a sustainable solution in the long-term.

- **Radioactive waste from medical or research nuclear applications (hospitals, laboratories, etc.)**

In Cyprus, whenever appropriate, short-lived radioactive waste originating from medical or research applications (e.g. hospitals conducting nuclear medicine practices or research laboratories) is stored for decay until its activity is low enough to be disposed of as normal waste (activity below clearance levels prescribed in the Law). As mentioned elsewhere, low 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.

- **Orphan sources/contaminated material**

In Cyprus, a system exists for the control of orphan sources and other radioactively contaminated material. RICS is responsible to ensure the availability of an appropriate regulatory system for the control and recovery of orphan sources and other contaminated material. In practice, the legislative and regulatory framework governing the recovery of orphan sources is defined in the Protection from Ionising Radiation and Nuclear and Radiological

Safety and Security (Standards for the Control and Recovery of Orphan Radioactive Sources and for the Response to Emergencies due to Orphan Sources) Notification of 2019 (R.A.A. 328/2019). Currently, legacy DSRS, such as lightning rods, smoke detectors, education sources etc. are stored in the storage facility at the Nicosia General Hospital.

- **National Centralized Storage Facility**

The Cyprus government has decided to use the existing DSRS storage unit at Nicosia General Hospital as a national centralized long-term storage facility for DSRS, which belongs to the State Health Services Organisation (operator). This facility is considered sufficient to satisfy the existing and foreseen needs in the storage of DSRS, in parallel with the government's efforts to repatriate as many DSRS from past activities as possible.

Forthcoming IAEA TC missions is expected to assist RICS/DLI to make a decision to have or not a separate license for the National Centralized Storage Facility. The Nicosia General Hospital/State Health Services will be the host and the operator of the facility.

- **Potential construction and operation of a disposal facility**

Taking into consideration that by applying with consistence the “takeback” principle of any new source imported/shipped to Cyprus to the supplier or the manufacturer does not lead to the production of any new significant quantities of radioactive waste. In Cyprus, there is no metal scrap recycling industries where potential DSRS could result in the contamination of large bulk amounts of recycled metal. Reprocessing facilities are available in foreign countries and the option of sending Cyprus’s legacy or any other new waste for reprocessing, conditioning and recycling could be investigated and weighted with other options available. Due to the nature and the amounts of radioactive waste in Cyprus, at present there are no plans for the siting, design, construction, operation, closure and post-closure control of a disposal facility or facilities.

ARTEMIS observation

- **DSRS for repatriation**

Even if it has not been observed in the past 20 years that some takeback agreements failed to apply as planned for SRS reaching their end of their lifetime, the ARTEMIS Review Team notes that in case of failure of the takeback agreement, financial insurance are in place as required by the regulations issued in 2018. For the management of orphan sources, a financial security system has been implemented and is managed by the government in a form of an extraordinary budget to manage possible options for repatriation or removal. There is no specific fund for this issue. The ARTEMIS Review Team considers that some provisions should be implemented by the government to allocate a dedicated fund for the management of such situations. (See Recommendation 7 about the need to establish a dedicated fund for the management of radioactive waste and DSRS covering existing and future needs).

The ARTEMIS Review Team observes that there is no timeframe in the regulations requiring that a DSRS shall be returned to the supplier after the end of its service life. RICS/DLI considers that the repatriation should be done within a reasonable timeframe and pushes the operators for that. In general, it is observed by RICS that the repatriation is effective because there is a need to replace the DSRS by a new one.

- **National Centralized Storage Facility**

ARTEMIS Review Team observes that the decision has been taken by the Government to establish a National Centralized Storage Facility in the premises of the Nicosia General Hospital (Self Assessment Report, update 2022, p.52). The regulatory body considers that this practice is not a new practice as the license of the NGH addresses already the management of DSRS and radioactive waste. According to the IAEA expert mission held in 2017, one of the recommendations was to license the national Central Storage Facility specifically as such. RICS/DLI informed the ARTEMIS Review Team that the National Centralized Storage Facility will be regulated under the existing single license of the NGH. RICS/DLI is expecting the next IAEA TC mission to take the decision or not to have a separate license. The NGH/State Health Services will be the host and the operator of the facility.

The ARTEMIS Review Team considers that the use of the existing storage facility as a National Centralized Storage Facility to store and condition DSRS and radioactive waste management from all producers in the country including legacy or orphan DSRS and radioactive waste will imply that the operator will be able to characterize, dismantle, and re-condition DSRS and radioactive waste for reuse, recycling or repatriation/exportation abroad when possible. A comprehensive safety assessment needs to be developed to ensure that all activities are addressed, all risks are mitigated and responsibilities are clear. Accordingly, the ARTEMIS Review Team considers that the regulatory body should review and modify the license of the operator of the National Centralized Storage Facility as necessary.

It has been indicated that a number of IAEA TC missions should be performed before the end of 2022 concerning the development of a safety assessment for the National Centralized Storage Facility, the estimation of costs for the storage of DSRS and including a campaign for the recovery Radioactive Lightning Rods (RCL). Most of the actions within these projects have been postponed due to the pandemic. The regulatory body is waiting for the outcomes of these missions to enhance their capability in the management of DSRS and radioactive waste in the country. Regarding capacity building, the regulatory body should consider taking advantages from the IAEA TC projects to enhance their capability in the field of radioactive waste management including DSRS (See Recommendation R8 of the Chapter 7).

No specific information has been provided to the public about this decision because the storage facility already existed and has accepted already some DSRS in the past. The ARTEMIS Review Team considers that Cyprus should pay due attention to the involvement of interested parties in the process of decision making in particular concerning the licensing process for the National Centralized Storage Facility at the NGH.

- **Potential construction and operation of a disposal facility**

The ARTEMIS Review Team observes that the storage of radioactive waste and DSRS may be an option for the management of radioactive waste and DSRS for the next several decades. This option does not however provide a sustainable long-term solution.

The ARTEMIS Review Team notes also that in the frame of the Cyprus National Report (October 2020) for the 7th Review Meeting of the Joint Convention, it is recognized that the shipment/repatriation of all DSRS abroad is considered 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 at that time. In particular, the ARTEMIS Review Team notes that the Government should assess the option of Borehole Disposal of Sealed Radioactive Sources method (BOSS). This option is not explicitly addressed in the draft version of the National

Policy and Strategy (draft of February 2022) provided in the Advance Reference Materials of the ARTEMIS mission.

Regarding long term solutions, the ARTEMIS Review Team considers that Cyprus should investigate options for the long-term management of radioactive waste and DSRS and related steps and timeframes should be established (See Recommendation R2 of the Chapter 2).

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *There is no timeframe in the regulations requiring that a DSRS shall be returned to the supplier after the end of its service life.*	
(1)	**BASIS: IAEA GSR Part 5, Requirement 1, para 3.4 states that** *"Matters that have to be considered by the government include:* *— Setting clearly defined legal, technical and financial responsibilities for organizations involved in predisposal radioactive waste management activities; […]"*
(2)	**BASIS: Code of Conduct on The Safety And Security Of Radioactive Sources (2004) Article 20, para. e) vii) states that:** *"Every State should ensure that the regulatory body established by its legislation has the authority to attach clear and unambiguous conditions to the authorizations issued by it, including conditions relating to the safe and secure management of disused sources, including, where applicable, agreements regarding the return of disused sources to a supplier.*
(3)	**BASIS: Guidance on the management of disused radioactive sources, Chapter XII, para 24 states that "***When return to a supplier is the selected option for a disused source, the State should consider requiring that prior to the acquisition of the radioactive source, the user has an agreement with the supplier for its return once it becomes disused. In this agreement, consideration should be given to at least the following elements: a. An undertaking by the supplier to take the disused source within a specified time period;"*
S2	**Suggestion: The regulatory body should consider establishing a timeframe in the regulatory provisions to ensure that a DSRS shall be returned to the supplier after the end of its service lifetime.**

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *A comprehensive safety assessment needs to be developed to ensure that all activities that will performed in the National Centralized Storage Facility are addressed, all risks are mitigated and responsibilities are clear. Accordingly, the regulatory body should review and modify the related license.*	
(1)	**BASIS: GSR Part 5, Requirement 3 states that:** *"The regulatory body shall establish the requirements for the development of radioactive waste management facilities and activities and shall set out procedures for meeting the requirements for the various stages of the licensing process.* *[…]* *The regulatory body shall provide for the issuing, amending, suspension or revoking of licences, subject to any necessary conditions.* *The regulatory body shall carry out activities to verify that the operator meets these conditions*."
(2)	**BASIS: GSR Part 3, Requirement 29, para 3.122 states that**: "*Before authorization of a new or modified practice, the regulatory body shall require the submission of, and shall review, the safety assessments (paras 3.29–3.36) and other design related documents from the responsible parties that address the optimization of protection and safety, the design criteria and the design features relating to the assessment of exposure and potential exposure of members of the public."*
(3)	**BASIS: GSR Part 1 (Rev 1), Requirement 22, para 4.27 states that: "***The regulatory body shall ensure that regulatory control is stable and consistent. The regulatory body shall emphasize the continuous enhancement of safety as a general objective. However, it shall also recognize the risks associated with making modifications to well established practices. Prospective changes in regulatory requirements shall be subject to careful scrutiny, to evaluate the possible enhancements in safety that are to be achieved. The regulatory body shall also inform, and consult interested parties in relation to the basis for such proposed changes in regulatory requirements".*
R5	**Recommendation: The regulatory body should review and modify the license of the operator of the National Centralized Storage Facility as necessary according to the safety assessment to ensure all activities are addressed, all risks are mitigated and responsibilities are clear.**

5. SAFETY CASE AND SAFETY ASSESSMENT OF RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT ACTIVITIES AND FACILITIES

Cyprus position

- **General requirements**

There are no radioactive waste management facilities in Cyprus. Each license holder is responsible for the safe management of the waste it produces, which in Cyprus takes the form of storage for decay and discharge of radioactive waste, according to legislative and regulatory requirements. The radioactive waste management is not licensed separately from the rest of practices conducted by each license holder, but the regulatory body grants one single license for all the practices conducted by each license holder, subject to general and specific conditions attached to the license.

- **Safety assessment**

In Cyprus, the law requires the license holder to perform a comprehensive and systematic safety assessment to demonstrate that hazards posed by their installations are adequately controlled. The safety assessment shall be periodically reviewed, assessed and verified. The safety assessment is carried out at various stages, including the siting decision, design, construction, building, commissioning, operation, maintenance, shutdown and dismantling or demolition of an installation under the responsibility of the license holder.

The regulatory body has issued a dedicated code of practice on the safety assessment of facilities and activities as the Protection against Ionising Radiation and Nuclear and Radiological Safety and Security (Code of Practice on Risk Assessment) Notification of 2020.

- **Notification and authorisation**

An applicant requesting authorisation is required to demonstrate that adequate levels of nuclear or radiological safety, security and radiation protection are ensured in its facility. The extent and the details in the documentation submitted through the application for an authorisation is commensurate with the size and nature of the risk associated with the facility and its characteristics. Examples of information to be provided in an application for authorisation are listed in the self-assessment report of Cyprus. For registration, the above information is requested following a graded approach. Licenses are granted on conditions. The conditions are specified in accordance with the type and the risk associated.

With the exception of practices on the transport, import or export of radioactive sources or radiation generators that are subject to licensing (some types of practices fall under registration requirements), the conditions of the license are examined by the Technical Licensing Committee (TLC), which is advisory to the regulatory body. The TLC comprises representatives and/or technical advisors from six ministries (with competence in issues relevant to the procedure, such as environmental issues, transport, public health, medical equipment, commerce, energy, industry, radiation protection etc.), while representatives of local authorities are invited to participate as observers, with the right to speak but not to vote.

- **Review and assessment**

The regulatory body of Cyprus reviews and assesses information related to safety, security and protection against ionising radiation, whether these are submitted by the applicant or obtained from other sources, in order to determine whether installations, practices and activities to be performed by the applicant comply with the regulatory requirements and the terms, requirements or conditions specified in the authorisation. The review and assessment of

information for an installation, practice or activity is proportional to the radiation hazards associated with the installation or practice or activity, following the graded approach.

- **Inspection**

The Law allocates the responsibility to the regulatory body to establish a system of inspection to enforce the provisions of the Law and to initiate surveillance and corrective action where necessary. The regulatory body of Cyprus has established an inspection programme, taking into account the potential magnitude and nature of the hazard associated with practices, a general assessment of radiation protection issues in the practices, and the state of compliance. Inspectors are empowered to perform actions, such as, to carry out tests, investigations and surveys; to require the presentation of any register, notice, document etc. that is necessary for the purposes of any inspection, test, formal investigation or survey; to require any person to answer relevant questions or/and to facilitate and assist them; to make measurements, take photographs, make recordings and/or to take samples of any items or substances.

ARTEMIS observation

- **Safety assessment**

RICS presented during the mission the existing "Code of Practice for Safety Assessment". This document contains exhaustive guidance to cover all relevant issues regarding the development, update and review of safety assessment for the workers and for the public in normal and accidental situations.

The RICS considers that the development of a safety assessment for the National Centralized Storage Facility is a high priority. In 2015, the Medical Physics Department of the NGH developed a scenario to assess the consequences of a loss of a shielding accident but a comprehensive safety assessment has not yet been developed. The safety assessment for the National Centralized Storage Facility will be performed by the Medical Physics Department of the Nicosia General Hospital. The NGH considers having the sufficient knowledge to develop the safety assessment due to the experience they have about the management of DSRS. If necessary, the NGH can seek for external consultation for developing the safety assessment using the secure funds of the NGH. ARTEMIS Review Team observes that Cyprus could also require the support of the IAEA expert missions to assist the operator in developing a safety assessment for the National Centralized Storage Facility. The outcomes of the safety assessment should be the basis to define the waste acceptance criteria for the National Centralized Storage Facility.

- **Review and assessment**

RICS/DLI will review the safety assessment and will ask also for assistance from the IAEA, if necessary. The ARTEMIS Review Team was informed that the draft license conditions for the National Centralized Storage Facility were already developed by RICS but not yet submitted to the Technical Licensing Committee (TLC) for advice and to the NGH. These conditions will be updated after an expert mission organized within the Technical Cooperation Programme of the IAEA.

- **Inspection**

RICS has a limited number of staff to perform inspections. For the NGH, one or two inspections are performed by year because it is a major hospital. Two inspections have already been performed in 2022. In the follow-up actions implemented after the IRRS mission in 2017, a general inspection programme has been included in the RICS/DLI Inspection Manual but there

is no specific programme and procedure for the inspections for the management of radioactive waste and DSRS.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *A comprehensive safety assessment has not been developed for the National Centralized Storage Facility.*	
(1)	**BASIS: GSR Part 5 Requirement 4 states that** *"The operator shall carry out safety assessments and shall develop a safety case, and shall ensure that the necessary activities for siting, design, construction, commissioning, operation, shutdown and decommissioning are carried out in compliance with legal and regulatory requirements."*
(2)	**BASIS: GSR Part 5, Requirement 4, para 3.11 states that** "*Depending on the complexity of the operations and the magnitude of the hazards associated with the facility or the activities concerned, the operator has to ensure an adequate level of protection and safety by various means, including:* *- Derivation of operational limits, conditions and controls, including waste acceptance criteria, to assist with ensuring that the predisposal radioactive waste management facility is operated in accordance with the safety case;* *- Preparation and implementation of appropriate operating procedures, including monitoring."*
R6	**Recommendation: The operator of the National Centralized Storage Facility should develop a comprehensive safety assessment and submit it for review to the regulatory body.**

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *RICS/DLI has no specific programme and procedure for the inspections for the management of radioactive waste and DSRS.*	
(1)	**BASIS: GSR Part 5 Requirement 3 states that** *"The regulatory body shall provide for the issuing, amending, suspension or revoking of licences, subject to any necessary conditions. The regulatory body shall carry out activities to verify that the operator meets these conditions. Enforcement actions shall be taken as necessary by the regulatory body in the event of deviations from, or noncompliance with, requirements and conditions."*
(2)	**BASIS: GSR Part 5, Requirement 3, para 3.8 states that** *"To facilitate compliance with regulatory requirements, the regulatory body has to do the following:* *- Document the procedures that apply to the mechanisms for compliance verification and enforcement."*
S3	**Suggestion: The regulatory body should consider including into the existing Inspection Manual a specific programme and procedure for the inspections of the National Centralized Storage Facility.**

6. COST ESTIMATES AND FINANCING OF RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT

Cyprus position

The availability of financial resources to implement the radioactive waste management strategy is ensured by the Government. This also includes the provision of financial resources for the regulatory body to fulfil its obligations within the national radioactive waste management framework. Cyprus has no nuclear installations and therefore there is no spent fuel to manage.

The "polluter pays" principle is established in the Law. Radioactive waste generators must ensure that adequate financial resources are available when needed to fulfil their obligations with respect to the safe radioactive waste management and for the implementation of the national radioactive waste management. The regulatory body is responsible to ensure that a financial security system is established to cover the costs related with the recovery, management, control and disposal of orphan sources.

The Government has decided to establish a centralized storage facility at the Nicosia General Hospital, as an interim management solution pending disposal. The operation costs of the facility are covered by the State Health Services Organisation through the Governmental budget. The Government has authorised the State Health Services Organisation to define fees for the acceptance of DSRS in the facility but this definition is pending external assistance within project CYP9008 of the Technical Cooperation Programme of the IAEA. Four Category 2 DSRS kept at the centralized storage facility were removed abroad in December 2020 with the assistance of the IAEA, and the storage facility now contains only Category 4 and 5 sources.

Authorization for the import of new sealed radioactive sources is granted on condition that the operator concludes a written agreement with the supplier or manufacturer that the sources will be accepted back at the end of their useful life.

The Government considers hard to justify the construction and viable operation of a disposal facility in Cyprus, taking into account the existence of the storage facility at the NGH and the amount of future waste and DSRS that is expected. Furthermore, a radioactive waste management fund has not been established for the same reasons.

ARTEMIS observation

Cyprus is a country with a small number of operators generating radioactive waste, mostly DSRS, decommissioned lightning rods, smoke detectors, and low activity sources used in the past in secondary education schools.

Authorization for the import of new sealed radioactive sources is granted on condition that the sources are accepted back at the end of their useful life. In practice, the operator takes out insurance to cover the return of the source to its supplier or manufacturer. This is considered a good performance.

The Government established a centralized storage facility at the NGH but this is suitable only as an interim management solution pending disposal. No concrete steps have been taken regarding a final disposal facility nor a radioactive waste management fund. The current situation does not demonstrate a long-term commitment of the Government for the management of existing and expected radioactive waste.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *A dedicated fund for the management of radioactive waste, covering existing and future needs has not been established.*	
(1)	**BASIS: GSR Part 1, Requirement 10, para. 2.33 states that:** *"Appropriate financial provision shall be made for:* *[…]* *(b) Management of radioactive waste, including its storage and disposal;* *[…]."*
R7	**Recommendation: The Government should establish a dedicated fund for the management of radioactive waste, covering existing and future needs.**

7. CAPACITY BUILDING FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT – EXPERTISE, TRAINING AND SKILLS

Cyprus position

The Government is responsible to create opportunities to develop understanding, skills and general capacity concerning radioactive waste management of all individuals whose tasks require specific competences in this field. All parties involved in the implementation of the national framework on the management of radioactive waste are required to make arrangements for education and training (E&T) for their staff, in order to obtain, maintain and to further develop the necessary expertise and skills. The need to make provision for a system to ensure building and maintaining the competence of all parties having responsibilities in relation to the safety of facilities and activities was addressed in recommendation R5 of the report of the IRRS mission from 2017 for Cyprus.

RICS/DLI ensures the coordination of educational, scientific or other bodies responsible for providing E&T relevant to nuclear safety and radiation protection. A bilateral agreement with the Greek Atomic Energy Commission has been established, covering cooperation on radiation protection, nuclear and radiological safety, security issues and exchange of information. Frequent E&T events are organised and knowledge, experiences and expertise are shared between the two authorities. Staff from RICS/DLI and other institutions are also involved 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.

RICS/DLI is currently staffed with four Labour Inspection Officers and two additional officers are expected still in 2022. The staffing needs of RICS/DLI were assessed in 2010 by an independent external audit organization, resulting in a recommendation for a staff of 12 inspectors. Some critical steps for DSRS and radioactive waste management (performing and reviewing a safety assessment for the centralized storage facility, estimation of costs for the storage of DSRS, consolidation of inventory of radioactive sources) are dependent on external assistance within the Technical Cooperation Programme of the IAEA. The need to provide RICS/DLI with adequate human and financial resources was already addressed in recommendation R5 of the report of the IRRS mission from 2017 for Cyprus.

The Waste Regulations provide that the regulatory body ensures that the national framework requires all parties to also make arrangements for research and development (R&D) activities to cover the needs of the national programme for radioactive waste management. The national programme issued in 2015 states that plans and activities for continuing R&D, aiming at improving waste characterization, reduction of waste generation and overall safety, improved disposal implementation, etc, shall be based on the experience and operational feedback and make use of competence networks and platforms, reviews and international developments.

ARTEMIS observation

Progress has been made in the establishment of standards for E&T of relevant individuals. However, the universities in Cyprus offer limited education opportunities at BSc level and none at MSc level in fields relevant to radioactive waste management, radiation protection, and nuclear safety, and this will continue to have a negative impact in the availability of human resources for the operators, the regulatory body and other essential experts (e.g., medical physics expert, radiation protection expert).

Although progress in the staffing levels of RICS/DLI is expected still this year, the target value of 12 officers is still far from being achieved, continuing to have a negative impact in the capacity of the regulatory body to discharge its functions. There is no programme to retain the capacity building in the management of DSRS and radioactive waste promoted by the IAEA Technical Cooperation Programme (or other external entities or organizations) and reduce reliance on these entities over time.

No systematic R&D activities on waste management exist in Cyprus and that can add uncertainties to the effective mid- and long-term capacity in the country to implement a National Programme on Radioactive Waste and Spent Fuel Management.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *There is no programme to retain the capacity building in the management of DSRS and radioactive waste promoted by external entities and reduce reliance on these entities over time.*	
(1)	**BASIS: SSR 5 Requirement 1, para 3.7 states that:** *"Matters that have to be considered include:* *(a)…* *(e) Ensuring that the necessary scientific and technical expertise remains available both to the operator and for the support of independent regulatory reviews and other national review functions…".*
(2)	**BASIS: GSR Part 1 (Rev. 1) Requirement 11 states that:** *"The government shall make provision for building and maintaining the competence of all parties having responsibilities in relation to the safety of facilities and activities."*
R8	**Recommendation: The Government and all bodies responsible for management of DSRS and radioactive waste should ensure programmes for capacity building take full advantage of support provided by external entities such that reliance on those entities reduces over time.**

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *No systematic R&D activities on waste management exist in the country and that can add uncertainties to the effective mid- and long-term capacity to implement a National Programme on Radioactive Waste and Spent Fuel Management.*	
(1)	**BASIS: GSR Part 1 (Rev. 1) Requirement 1, para 2.3 states that:** *"In the national policy and strategy, account shall be taken of the following: …* *(e) The provision and framework for research and development".*
(2)	**BASIS: GSR Part 1 (Rev. 1) Requirement 10, para 2.32. states that:** *"The government shall make provision for appropriate research and development programmes in relation to the disposal of radioactive waste, in particular programmes for verifying safety in the long term".*
S4	**Suggestion: The Government should consider assessing Research and Development needs for the implementation of the National Programme on DSRS and Radioactive Waste Management and making provisions of human and financial resources for Research and Development.**

APPENDIX A: TERMS OF REFERENCE

ARTEMIS Review of the National Radioactive Waste Management Programme of the Republic of Cyprus

Terms of Reference

1. Introduction

On 15 May 2018, the Department of Labour Inspection (hereinafter the Counterpart), on behalf of the Government of the Republic of Cyprus (hereinafter Cyprus), requested the International Atomic Energy Agency (hereinafter the IAEA) to organize and carry out, in the fourth quarter of 2020, an Integrated Review Service for Radioactive Waste and Spent Fuel, Decommissioning and Remediation (ARTEMIS), as required by Article 14(3) of the European Council Directive 2011/70/EURATOM of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (hereinafter the EU Waste Directive).
The review will be organized by the Department of Nuclear Safety and Security and the Department of Nuclear Energy of IAEA. It will be performed on the basis of the relevant IAEA safety standards and proven international practice and experience, by an international peer review team selected by the IAEA.
Due to the impact of the COVID-19 international situation, specifically travel restrictions, the mission was postponed to 14-18 June 2021 and later to 23-27 May 2022.

2. Objective

The ARTEMIS review (also referred to as the "mission") will provide an independent, international evaluation of Cyprus' radioactive waste management programme, considering the elements required by Article 14(3) of the Directive.
The review will assist Cyprus in further improving its national framework on the management of radioactive waste.

3. Scope

The ARTEMIS review will address the national framework and the national programme for safe and sustainable radioactive waste management in Cyprus.
The review will focus on the following domains (as described in the ARTEMIS Guidelines document): (a) national policy, framework and strategy; (b) predisposal management of radioactive waste, including the management of disused sealed radioactive sources; and (c) disposal of radioactive waste, where relevant.

The following domains are out of scope of the review: (a) decommissioning of facilities; (b) spent fuel management; and (c) remediation of sites contaminated by radioactive materials.
Management of naturally occurring radioactive material and management of residues from mining and milling are also out of scope of this review, as such activities do not exist in Cyprus.
Results from the 2017 IRRS mission to Cyprus will be taken into account, where relevant and appropriate to avoid unnecessary duplication.

4. Basis for the review

The ARTEMIS review will be based on the relevant IAEA safety standards and proven international practice and experience, following the guidelines of the ARTEMIS review service. The review will take into consideration the requirements laid by the EU Waste Directive. A graded approach will be implemented by the review team in order to take into account the specificities in Cyprus.

5. Reference material

Reference material should include a set of documents, reports, data, and other supporting materials relevant to and depending straight on the scope of the review as specified in Section 3. The list of reference material is provided in **Annex 1**, which is subject to update and should be finalized by 1 March 2022.
Reference material for the purpose of the ARTEMIS review will be submitted in English to the ARTEMIS mission webpage on the Global Nuclear Safety and Security Network (GNSSN) of the IAEA.

6. Modus operandi

The working language of the mission will be English.
The ARTEMIS review mission will be postponed to 23 to 27 May 2022 in Nicosia, Cyprus.
The provisional review mission schedule is provided in **Annex 2**.
The timeline for the key steps of the review process is provided below:

- Self-assessment questionnaire: already made available to Cyprus by IAEA
- Preparatory Meeting: 9-10 January 2020, Nicosia, Cyprus
- Notification by IAEA to the Counterparts on the team composition: by 1 December 2021
- Submission of documents: by 1 March 2022 (including the self-assessment report)
- Submission of questions based on the preliminary analysis of the reference material and the self-assessment report by the review team to the Counterpart: by 30 April 2022

The Liaison Officer of the Counterpart is Mr Michalis Tzortzis.
The organizations to be involved in the review are:

- Department of Labour Inspection; Ministry of Labour, Welfare and Social Insurance
- Nicosia General Hospital
- Large oncology center(s)

7. International peer review team

The IAEA will convene a team of international experts to perform the ARTEMIS review according to the ARTEMIS Guidelines and these Terms of Reference. The team will consist of:

- Three qualified and recognized international experts from government authorities, regulatory bodies, waste management organizations, and/or technical support organizations with experience in the safe management of radioactive waste and DSRS;

- Two IAEA staff to coordinate the mission. The Coordinator of the ARTEMIS review is Mr Zhiwen Fan from the Waste and Environmental Safety Section of the Department of Nuclear Safety and Security of IAEA. The Deputy Coordinator is Ms Vivian Pereira Campos from the Waste Technology Section of the Department of Nuclear Energy of IAEA;
- One IAEA staff for administrative support.

A senior staff member from the Department of Nuclear Safety and Security of IAEA will oversee the closure of the review.
The Team Leader of the review team will be Mr Patrice Francois from IRSN, France. The IAEA will inform the Counterpart on the composition of the proposed review team, as scheduled under Section 6 on modus operandi.
The review mission may include up to two observers, including the possibility of one observer from the European Commission. The Counterpart will be notified of any proposed observers. The presence of any observer must be agreed with the Counterpart not later than 1 March 2022.

8. Reporting

The findings of the ARTEMIS review, conclusions, recommendations, suggestions and, if applicable, good practices will be documented in a review report. The report shall reflect the collective views of the review team members and not necessarily individual of the team member, neither those of their respective organization or Member State or the IAEA.
Prior to its finalization, the draft report will be delivered to the Counterpart for fact-checking.

9. Funding of the ARTEMIS review

The cost estimate for the ARTEMIS review covers both preparatory meeting and the review mission, and includes travel costs, per diem of the peer review team (external experts and the IAEA staff) in line with the IAEA Financial Regulations and Rules.
The review will be funded by the Government of Cyprus, through the budget of the Counterpart. The cost of the ARTEMIS review is estimated to the amount of 16000 EUR, to be paid to the IAEA as voluntary contribution before the start of the mission. Cyprus is aware that the review cost includes 7% programme support costs.
If the actual cost of the ARTEMIS review exceeds the estimated voluntary contribution, Cyprus agrees to cover such additional cost to the IAEA. Similarly, if the actual cost is less than the estimated voluntary contribution, any excess will be refunded to Cyprus through the Counterpart.

These Terms of Reference were agreed on 10 January 2020 between the IAEA and the Department of Labour Inspection, on behalf of the Government of Cyprus, during the preparatory meeting held in Nicosia, Cyprus, 9-10 January 2020. These Terms of Reference were revised in March 2022 due to postponed date for ARTEMIS review mission to 23-27 May 2022.

Annex 1: List of reference material (updated 1 March 2022)

A. Legislation

1. The Protection against Ionising Radiation and Nuclear and Radiological Safety and Security Law of 2018 (L. 164(I)/2018)
2. 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)
3. 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)
4. The Protection from Ionising Radiation and Nuclear and Radiological Safety and Security (Standards for the Control and Recovery of Orphan Radioactive Sources and for the Response to Emergencies due to Orphan Sources) Notification of 2019 (R.A.A. 328/2019)

B. Other documents

5. National Policy and Strategy on RWM (2015)
6. National Programme on RW and DSRS Management (2015)
7. **Draft** revised National Policy and Strategy on RWM (2022)
8. Third National Report to the European Commission on the implementation of the Directive 2011/70/Euratom (2021)
9. The 7th Joint Convention Review Meeting National Report (2020)
10. Country Review Report from the 6th Joint Convention Review Meeting (2018)
11. The 8th Convention on Nuclear Safety Review Meeting National Report (2019)
12. Questions and answers as concerns the Cyprus national report to the 7th Joint Convention Review Meeting (2022)
13. Report on the "IAEA TC RER0041 – Expert mission to assist the country on the categorisation and solution provision for the management of DSRS" (2017)
14. 2017 IRRS report (2017)
15. IRRS 2017 Findings Implementation Progress Report
16. ARTEMIS self-assessment report
17. Safety assessment of the DSRS storage facility at the Nicosia General Hospital
18. License conditions granted to the Nicosia General Hospital, State Health Services Organisation (concerning RWM and storage facility)
19. **Draft** license conditions for the centralized DSRS storage facility at the Nicosia General Hospital, State Health Services Organisation
20. IZOTOP final report on the removal of high activity disused sealed radioactive sources from Cyprus (February 2021)

Annex 2. AGENDA

Time	Sun, 22 May 2022	Mon, 23 May 2022	Tue, 24 May 2022	Wed, 25 May 2022	Thur, 26 May 2022	Fri, 27 May 2022	Sat, 28 May 2022
9:00-10:30	Arrival of the ARTEMIS review team members	**Opening** General presentations / group photo	3. Inventory	6. Cost Estimates and Financing	Presentation of Recommendations and Suggestions to the Counterparts and discussions	Discussions with the Counterparts on the draft report	Departure of the Team Members
10:30-11:00		Coffee break	Coffee break	Coffee break	Coffee break	Coffee break	
11:00-12:30		1. National Policy and Framework	4. Concepts, Plans and Technical Solutions	7. Capacity Building - Expertise, Training, Skills	Drafting of the report	Finalizing the draft report	
12:30-13:30		Lunch	Lunch	Lunch	Lunch	Lunch	
13:30-14:45		2. National Programme (strategy)	5. Safety Case and Safety Assessment	Any further discussions, if required, or drafting of the report	**16:00** Draft report to be sent to the Counterparts	**13:30-15:00** Delivery of final draft report – Group photo **Closure**	
14:45-15:00		Coffee break	Coffee break	Coffee break	Coffee break		
15:00-16:00		Discussion	Discussion	ARTEMIS team meeting at the hotel - Finalization of Recommendations and Suggestions and Drafting of the report	Counterparts review the draft report	Departure of the Team Members, if convenient	
16:30	ARTEMIS team meeting at the hotel	ARTEMIS team meeting at the hotel	ARTEMIS team meeting at the hotel				
		Drafting of the report	Drafting of the report		Social event		

APPENDIX B: RECOMMENDATIONS, SUGGESTIONS OR GOOD PRACTICES

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
1.	NATIONAL POLICY AND FRAMEWORK FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT	R1	The Government should ensure that provisions, particularly human and financial resources, are in place to update and implement the national strategy for the management of DSRS and radioactive waste.
		R2	The regulatory body should ensure that responsibility is allocated when DSRS is transferred to the National Centralized Storage Facility.
		S1	The regulatory body should consider establishing a time limit for the license holder to transfer DSRS to the National Centralized Storage Facility.
2.	NATIONAL STRATEGY FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT	R3	The Government should update the national strategy for DSRS and radioactive waste management to address the long-term solutions, including aspects such as: - consolidating the national inventory of DSRS and radioactive waste; - identifying DSRS which cannot be shipped abroad; - investigating possible management options for these DSRS; - identifying a disposal solution; - establishing a roadmap for implementing the disposal solution; - assigning adequate financial and human resources for the implementation of the disposal solution.
3.	INVENTORY OF SPENT FUEL AND RADIOACTIVE WASTE	R4	The regulatory body should ensure that all DSRS and radioactive waste are stored in a licensed storage facility.
4.	CONCEPTS, PLANS AND TECHNICAL SOLUTIONS FOR SPENT FUEL AND RADIOACTIVE WASTE MANAGEMENT	S2	The regulatory body should consider establishing a timeframe in the regulatory provisions to ensure that a DSRS shall be returned to the supplier after the end of its service lifetime.
		R5	The regulatory body should review and modify the license of the operator of the National Centralized Storage Facility as necessary according to the safety assessment to ensure all activities are addressed, all risks are mitigated and responsibilities are clear.

Area		R: Recommendations S: Suggestions G: Good Practices	Recommendations, Suggestions or Good Practices
5.	**SAFETY CASE AND SAFETY ASSESSMENT OF RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT ACTIVITIES AND FACILITIES**	**R6**	The operator of the National Centralized Storage Facility should develop a comprehensive safety assessment and submit it for review to the regulatory body.
		S3	The regulatory body should consider including into the existing Inspection Manual a specific programme and procedure for the inspections of the National Centralized Storage Facility.
6.	**COST ESTIMATES AND FINANCING OF RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT**	**R7**	The Government should establish a dedicated fund for the management of radioactive waste, covering existing and future needs.
7.	**CAPACITY BUILDING FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT – EXPERTISE, TRAINING AND SKILLS**	**R8**	The Government and all bodies responsible for management of DSRS and radioactive waste should ensure programmes for capacity building take full advantage of support provided by external entities such that reliance on those entities reduces over time.
		S4	The Government should consider assessing Research and Development needs for the implementation of the National Programme on DSRS and Radioactive Waste Management and making provisions of human and financial resources for Research and Development.

APPENDIX C: LIST OF ACRONYMS USED IN THE TEXT

DLI – Department of Labour Inspection
DSRS – Disused Sealed Radioactive Sources
EU – European Union
IAEA – International Atomic Energy Agency
ILW – Intermediate Level Waste
IRRS – Integrated Regulatory Review Service
MLSI – Ministry of Labour and Social Insurance
NGH – Nicosia General Hospital
R&D – Research and Development
RICS – Radiation Inspection and Control Service
SRS – Sealed Radioactive Sources
TSO –Technical and Scientific support Organization
TLC-Technical Licensing Committee

APPENDIX D: IAEA REFERENCE MATERIAL USED FOR THE REVIEW

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Fundamental Safety Principles, Safety Fundamentals No. SF-1, Vienna (2006).

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements No. GSR Part 1 (Rev. 1), Vienna (2016).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, Leadership and Management for Safety, General Safety Requirements No. GSR Part 2, IAEA, Vienna (2016).

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014).

[5] INTERNATIONAL ATOMIC ENERGY AGENCY, Safety Assessment for Facilities and Activities, IAEA Safety Standards Series No. GSR Part 4, IAEA, Vienna (2009).

[6] INTERNATIONAL ATOMIC ENERGY AGENCY, Predisposal Management of Radioactive Waste, IAEA Safety Standards Series No. GSR Part 5, IAEA, Vienna (2009).

[7] INTERNATIONAL ATOMIC ENERGY AGENCY, Decommissioning of Facilities, IAEA Safety Standards Series No. GSR Part 6, IAEA, Vienna (2014).

[8] INTERNATIONAL ATOMIC ENERGY AGENCY, Disposal of Radioactive Waste, IAEA Safety Standards Series No. SSR 5, IAEA, Vienna (2011).

[9] INTERNATIONAL ATOMIC ENERGY AGENCY, Nuclear Energy Basic Principles, Nuclear Energy Series, NE-BP, Vienna (2008).

[10] INTERNATIONAL ATOMIC ENERGY AGENCY, Radioactive Waste Management and Decommissioning Objectives, Nuclear Energy Series, NW-O, Vienna (2011).

[11] INTERNATIONAL ATOMIC ENERGY AGENCY, Policies and Strategies for Radioactive Waste Management, IAEA Nuclear Energy Series No. NW-G-1.1, IAEA, Vienna (2009).

[12] INTERNATIONAL ATOMIC ENERGY AGENCY, Policies and Strategies for the Decommissioning of Nuclear and Radiological Facilities, IAEA Nuclear Energy Series No. NW-G-2.1, IAEA, Vienna (2012).

[13] INTERNATIONAL ATOMIC ENERGY AGENCY, Policy and Strategies for Environmental Remediation, IAEA Nuclear Energy Series No. NW-G-3.1, IAEA, Vienna (2015).

[14] INTERNATIONAL ATOMIC ENERGY AGENCY, Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, IAEA International Law Series No. 1, IAEA, Vienna (2006).

[15] INTERNATIONAL ATOMIC ENERGY AGENCY, Safety Glossary – Terminology used in Nuclear Safety and Radiological Protection, IAEA, Vienna (2018).

[16] Official Journal of the European Union No. L 199/48 from 2nd Aug 2011, COUNCIL DIRECTIVE 2011/70/EURATOM of 19 July 2011 establishing a Community framework

for the responsible and safe management of spent fuel and radioactive waste, Brussels (2011).

[17] INTERNATIONAL ATOMIC ENERGY AGENCY, Guidance on the Management of Disused Radioactive Sources, IAEA, Vienna (2018).

[18] INTERNATIONAL ATOMIC ENERGY AGENCY, Code of Conduct on the Safety and Security of Radioactive Sources, IAEA, Vienna (2004).

APPENDIX E: LIST OF PARTICIPATNS

IAEA Review Team

Mr Patrice FRANÇOIS, ARTEMIS Team Leader, France

Ms Tamara DJUROVIC, Reviewer, Montenegro

Mr José MARQUES, Reviewer, Portugal

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Mr Michalis Tzortzis, Department of Labour Inspection

Mr Demetris Sakkas, Department of Labour Inspection

Ms Melpo Agathocleous, Department of Labour Inspection

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Mr Prodromos Kaplanis, State Health Services Organisation

Mr Charalambos Yiannakkaras, State Health Services Organisation

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