

**NATIONAL REPORT OF GREECE
ON COMPLIANCE WITH 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”**

**November
2015**

NATIONAL REPORT OF GREECE

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Abbreviations

EEDRA: National Committee for Radioactive Waste Management

EEAE: Greek Atomic Energy Commission

JMD-Auth: Joint Ministerial Decision on “Procedures and requirements for the licensing of radioactive waste management facilities” (draft, to be issued after the entry into force of PD-RWM above).

JMD-1858: Joint Ministerial Decision No 131207/I3/27.08.2015, Government Gazette Folio No. 1858 B/27.08.2015, “National policy on the management of spent fuel and radioactive waste”.

LLW: Low Level Waste

MD-NatPro: National Programme (to be issued following ministerial approval, given in Appendix 2).

NCSR “D”: National Centre for Scientific Research “Demokritos”

PD-122: Presidential Decree No 122/2013, Government Gazette Folio No. 177/A/12.08.2013, “Transposition of Council Directive 2011/70/EURATOM establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste”.

PD-RWM: Presidential Decree on “Establishment of the national legislative, regulatory and organizational framework for the responsible and safe management of spent fuel and radioactive waste” (under approval, posted on the public consultation website, see <http://www.opengov.gr/ypepth/?p=2596>).

RM: Radioactive Material

RPR: Radiation Protection Regulations (Joint Ministerial Decision No 1014(ΦOP)94, Government Gazette Folio No 216 B/06.03.2001).

RS: Radioactive Source

RW: Radioactive Waste

SF: Spent Fuel

SRS: Sealed Radioactive Source

The Minister: the competent Minister for EEAE (currently, the Minister of Education, Research and Religious Affairs).

VLLW: Very Low Level Waste

VSLW: Very Short Lived Waste

Section A. Executive Summary

General information

This is the first National Report for the SF and RW management, in accordance with the provisions of PD-122 and Article 14 of Directive 2011/70/Euratom. The National Report gives the basic information on the management of SF and RW and summarizes the recent developments and achievements in implementing the national policy through the national programme.

Spent fuel and radioactive waste in Greece

Greece has no nuclear power plants. Spent fuel management is therefore relevant only in connection with the operation of the research reactor (GRR-1) at the National Centre of Scientific Research “Demokritos” (NCSR “D”). GRR-1 is licensed for extended shutdown and the irradiated fuel stored in the reactor is covered by an agreement with the US Department of Energy for shipment back to the USA until 2019.

Radioactive waste in Greece originates from medicine, research and industry, including waste from the past operation of GRR-1 (regeneration bed resins, irradiated objects, etc.).

Legacy RS, RM and RW from the past activities of research centers (e.g. NCSR “D”) exist and are temporarily stored on site, until a solution for their final management is reached. In addition, a large number of radioactive lightning rods and smoke detectors has been dismantled and temporarily stored on-site or is still in use. Finally, waste with Naturally Occurring Radioactive Materials (NORM) results from some industrial activities, while tens of tonnes of soil contaminated with NORM originated from phosphoric fertilizer industry are managed by landfill deposition.

The gross majority of the RW in Greece are Very Short Lived Waste (VSLW), Very Low Level Waste (VLLW) and Low Level Waste (LLW). Very little amount of Intermediate Level Waste (ILW) may potentially be produced from the decommissioning of the GRR-1. High Level Waste (HLW) does not exist.

The repatriation of RS and RM is the preferred option for the management of sealed sources. Since 1990, prior to the import of any radioactive source, a legal written declaration from the source manufacturer for accepting back the source after its useful life is necessary, as well as a legal written declaration from the source user for undertaking all financial and administrative provisions to export the source back to the manufacturer or other licensed storage/recycling facility abroad. Those RS that cannot be repatriated are temporarily stored on site, until a final solution is reached.

For liquid VSLW decay-and-clearance is the preferred management option, according to the clearance levels. Facilities operating delay tanks are hospitals/clinics for thyroid iodine therapies and NCSR “D” for the liquids originated in GRR-1 in the past.

Legislation

The Greek legislation relevant to the SF and RW management could be categorized in:

- Radioactive waste management acts: The Presidential Decree No 122/2013 (PD-122) which transposed the Council Directive 2011/70/Euratom and the Joint Ministerial Decision JMD-1858 specifying the “National policy on the management of SF and RW”, which was published in August 2015. The following acts are expected to be promulgated in 2016:
 - a) the national programme for the SF and RW management which has been developed and is in the phase of formal issuance in the form of Ministerial Decision (MD-NatPro, Appendix 2);
 - b) the Presidential Decree on “the establishment of the national legislative, regulatory and organizational framework for the responsible and safe management of SF and RW” (PD-RWM), which has been approved by the EEAE board, has been subjected to open public consultation and is tabled for signing by the ministers and examination by the State Council (posted on the public consultation website, see <http://www.opengov.gr/ypepth/?p=2596>);
 - c) a Joint Ministerial Decision concerning the “Procedures and requirements for the licensing of RW management facilities”, which has been approved by the EEAE board (JMD-Auth) and is to be issued after the entry into force of PD-RWM above.

Acts (b) and (c) above are secondary legislation pursuant to Presidential Decree 122/2013, which have been communicated in June 2015 to the DG ENER according to article 33 of the Euratom Treaty.

- Radiological protection: the radiation protection regulations (RPR) issued in 2001 are under review according to the Council Directive 2013/59/Euratom (BSS). In 2006, an act in the form of ministerial decision on the control of High Activity Sealed Sources (HASS) transposed the Council Directive 2003/122/Euratom.
- Nuclear safety: the main act is the Presidential Decree 60/2012 “Establishing a national framework for the nuclear safety of nuclear installations”, which transposes the Council Directive 2009/71/Euratom.

Regulator and relevant Organizations / parties

The Greek Atomic Energy Commission (EEAE) is the competent regulatory authority for the control, regulation and supervision in the fields of nuclear energy, nuclear technology, radiological and nuclear safety and radiation protection. EEAE keeps the national inventory for RW, RS and RM.

A disposal facility does not exist in Greece.

A centralized facility for interim storage of radioactive waste exists. The interim storage facility operates under the Institute of Nuclear and Radiological Sciences and Technology, Energy and Safety (INRASTES) of the National Center for Scientific Research “Demokritos” (NCSR “D”). The license of the facility was recently renewed by EEAE for the interim storage of RW and disused RS, low activity sources dismantling, characterization of RW, re-packaging and re-sorting of RW and RS and de-characterization and clearance of RW. A few facilities countrywide temporarily store RS and RM originated by their activities, until a solution for their final management is reached.

Establishment of a National Committee for the RW management (EEDRA) is provided by the PD-RWM and is expected to be formed and operate in 2016. EEDRA is constituted by representatives of all stakeholders in the management of RW in the country (e.g. ministries, interested parties, authorities).

Responsibilities

«The Minister» has the ultimate responsibility for the management of SF and RW (Article 4 Paragraph 1b of PD-122), as well as for supplementing, extending, maintaining and implementing the "national framework" and "national policy".

The prime responsibility for the safety of facilities or activities related to the management of SF and RW is assigned to the license holder / operator, according to the terms of PD-122, JMD-1858, PD-RWM, and JMD-Auth.

The RW management legislation provides that Greece is responsible for the management, including disposal, of RW produced in the country. The import of SF or RW for management, including disposal, is prohibited.

The producer bears the costs of managements of SF and RW.

Main achievements

The recent main achievements concerning the RW management are:

- **Completion of legislation**

Important acts of legislation have been produced in compliance with the Council Directive 2011/70/Euratom, i.e. the PD-122 for the transposition of that directive and the JMD-1858 for the "national policy".

In addition, acts have been drafted by EEAE and are to be promulgated soon, namely, the PD-RWM for the "national framework", the MD-NatPro for the "national programme" and the JMD-Auth for the "Procedures and requirements for the licensing of RW management facilities".

- **Upgrade and licensing of the RW interim storage facility of NCSR "D"**

The centralized interim storage facility for RW operated by the Institute of Nuclear and Radiological Sciences & Technology, Energy & Safety (INRASTES) of NCSR "D" has been upgraded regarding the building, human resources, working procedures, quality management system and physical protection. The license of the facility was renewed by EEAE for the interim storage of RW and disused RS, low activity sources dismantling, characterization of RW, re-packaging and re-sorting of RW and RS and de-characterization and clearance of RW. The legislative bases for the licensing of the facility were the RPR and PD-122.

- **Guidelines for the VSLW radioactive waste from nuclear medicine practices**

EEAE published in the Government Gazette guidelines for the procedures and accepting criteria for the clearance of RW originated in nuclear medicine centers. Specific / conditional clearance levels are provided, as well as guidelines to the

personnel of the nuclear medicine centers and the urban (ordinate) waste disposal sites.

- **Public dialogue and participation**

EEAE originated a dialogue with stakeholders involved in RW management. A workshop has been organized for presenting and discussing the national policy, national framework and national programme for SF and RW management. In producing the legal documents JMD-1858 and PD-RWM open public consultation took place; the drafts were posted to the “government transparency” website www.opengov.gr, where the interested parties and general public can review and make comments. The comments have been considered in the revision of the texts, while detailed public consultation reports have been produced and made publicly available see at <http://www.opengov.gr/ypepth/?p=2596> and <http://www.opengov.gr/ypepth/?p=2559>).

- **IRRS peer review**

In 2012, an IAEA Integrated Regulatory Review Service (IRRS mission) for the national regulatory framework, as well as for EEAE as the competent authority, was conducted. Radioactive waste management was included in the scope of the mission. A thorough action plan is now being implemented; the mission report is publicly available at EEAE website.

- **Radioactive source withdrawal project**

Although not in the period of reference, a RS and RM withdrawal project, conducted in the period 2001-2006, is worth mentioning. During that period, EEAE carried out a project on "Collection and disposal of disused radioactive sources from Greece" (project code: EMP 20/6.12.2000D; co-funded by EEAE and the Directorate of Environmental Planning of the Ministry of Environment; budget 1,367 million Euros). The project related to the identification, collection, sorting, management and withdrawal of disused RS and RM located in various facilities and radiological laboratories (industry, hospitals, educational institutions, etc.) countrywide. About 3,000 RS and RM of total radioactivity 120 TBq (3500 Ci) were collected and exported. Among these, there were 700 radioactive “needles” of Ra-226 and 10 high activity Co-60 and Cs-137 sources stored in hospitals and clinics.

The RS and RM were exported to an authorized recycling facility in Germany.

Future work

Challenges for future work include:

- More effective participation to the European projects for common actions and common solutions for the RW management final solutions.
- Planning the decommissioning of facilities and establishment of a comprehensive decommissioning programme. Decommissioning concerns the GRR-1, the interim storage facility of NCSR “D” and few other storage facilities with some RS or RM (e.g. radioactive lightning rods). RW from decommissioning works has to be evaluated, accommodated in the RW inventory estimation and addressed in the RW management programme.

- Effective functioning of EEDRA (newly formed committee) and effective implementation of the national programme roadmap.

Conclusion

Due to the lack of NPP for electrical power and the extended shut down of the GRR-1, RW is mainly restricted to legacy waste and waste from past activities.

At the moment, RW is stored until a solution for the final management is reached, while simple procedures for conditioning and treatment are being applied. RW management is performed under appropriate regulatory control in a safe and secure manner. Greece complies with the obligations arising from the requirements of the Council Directive 2011/70/Euratom.

Section B: Introduction

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” is transposed into the Greek legislation through the Presidential Decree No 122/2013, Government Gazette Folio No. 177/A/12.08.2013 (referred to as PD-122 hereafter).

The PD-122 provides for the issuance of additional, secondary legislation, legal documents as follows:

- Joint Ministerial Decision setting up the “National policy on the management of SF and RW” (referred to as JMD-1858 hereafter). The JMD-1858 was published in the Government Gazette Folio No. 1858/B/27.08.2015.
- The JMD-1858 empowers, in particular, the Greek Atomic Energy Commission (EEAE) to develop the initial (first) “national programme” referred to in Articles 11 and 12 of Council Directive 2011/70/Euratom.
- The above first “national programme” (referred to as MD-NatPro hereafter) has been developed, approved and is currently awaiting formal issuance, i.e. to be published in the Government Gazette in the form of Ministerial Decision. The national program is provided in Appendix 2, along with including the inventory of RW (Appendix 3) and the agreement concluded between NCSR “D” and the USA for the repatriation of the GRR-1 research reactor spent fuel (Appendix 4).
- Presidential Decree (referred as PD-RWM hereafter) on “the establishment of the national legislative, regulatory and organizational framework for the responsible and safe management of spent fuel and radioactive waste”. The PD-RWM has been drafted, approved by EEAE Board, subjected to public consultation (see at government website <http://www.opengov.gr/ypepth/?p=2596>) and, currently, is tabled for signing by the ministers and examination by the State Council.
- The PD-RWM provides for the issuance of an act in the form of Joint Ministerial Decision for the “Procedures and requirements for the licensing RW management facilities” (referred to as JMD-Auth hereafter). This text has been drafted, approved by the EEAE Board and is to be issued after the entry into force of PD-RWM. The texts of

PD-RWM and JMD-Auth have been submitted to the EC (DG ENER) under the terms of the Euratom Treaty Article 33.

The aforementioned acts, together with the Radiation Protection Regulations (RPR), constitute the regulatory framework for SF and RW management in Greece ("national framework"). In terms of reporting, EEAE has the responsibility to submit to the EC the "national report" and the "national programme" under Directive 2011/70/Euratom.

Greece has signed the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management on 5 September 1997. The Convention has been ratified by the Parliament in 2000 (Law 2824/2000).

In addition, Greece has transposed and implements the Council Directive 2003/122 regarding the control of the high activity sealed radioactive sources and orphan sources (HASS Directive), through a Joint Ministerial Decision issued in 2006 (Government Gazette Folio No. 859/B/10.07.2006).

The present report is the first national report of Greece under Article 14.1 of Council Directive 2011/70/Euratom. The report has been prepared in accordance with the guidelines provided to the Member States by the European Nuclear Safety Regulators Group (ENSREG) in document HLG p(2014-27) 137.

Overview of the management of spent fuel and radioactive waste

Greece has no nuclear power plants. SF management is therefore relevant only with respect to the operation of the research reactor (GRR-1) at the National Centre for Scientific Research "Demokritos" (NCSR "D"). GRR-1 is currently licensed for extended shutdown; the existing irradiated fuel stored in the reactor is covered by an agreement with the US Department of Energy for shipment back to the USA until 2019.

RW in Greece originates from medicine, research and industry. RW have been produced from the past operation of GRR-1 and other activities of the NCSR "D". Today radioactive waste includes:

- i. Solid and liquid RW (regeneration bed resins, activated and contaminated objects, etc.), historical and legacy RS originated from the past activities and operation of the research reactor GRR-1. These RW and RS are temporarily stored in the storage spaces and retention tanks of the GRR-1 and the interim storage facility of NCSR "D".
- ii. Disused and orphan RS and RM for which, by EEAE decision, there is a clear and urgent need – from the safety, security and radiation protection point of view - for immediate management. This category includes RS and RM detected in scrap metal, illicit trafficking, illicit actions, emergency situations, as well as RS and RM from bankrupt companies. These RS and RM are transferred to the interim storage facility of the NCSR "D".
- iii. Disused RS and RM, derived from activities of industrial, medical, research or other facilities, which cannot be repatriated or exported to a recycling facility abroad. They are temporarily stored in the premises of their holders, in storage spaces, until their final management. The possession and the temporary storage of such RS and RM are under regulatory control. To this end, specific terms are included in the conditions of the facility operation license, which are subject to EEAE's inspection.
- iv. Equipment and consumer products containing RM (e.g. smoke detectors, lighting rods, fluorescent signs, measurement devices, etc.), which completed their useful life and

cannot be exported for recycling, for any reason. These materials are temporarily stored either at the holder's premises, or at authorized facilities for radioactive lightning rod / smoke detector management. They may also be transferred to the interim storage facility of the NCSR "D".

- v. Radioactive materials or contaminated objects containing naturally occurring radioactive materials (NORM), which are stored on site, under regulatory control, in temporary storage spaces, until their final management. Furthermore, several tens of tonnes of soil containing very small amounts of NORM (above exemption levels), produced as by-product of phosphoric fertilizer industry, are deposited in land fields under regulatory control.
- vi. Liquid and solid RW from the operation of medical and research laboratories, which are managed by decay and clearance. The relevant files and records are kept by the operator and are subjected to EEAE's inspections.

Regulatory bodies and implementing organizations

The principal organizations / bodies involved in SF and RW management are:

Regulatory body – Greek Atomic Energy Commission (EEAE)

EEAE is the competent regulatory authority for the control, regulation and supervision in the fields of nuclear energy, nuclear technology, radiological and nuclear safety and radiation protection.

EEAE is operating as a public entity and enjoying full administrative and financial independence in relation to its duties. It operates under and is supervised by the Minister of Education, Research and Religious Affairs. Its mission is the protection of the public, the workers and the environment from ionizing radiation and artificially produced non-ionizing radiation. According to its statutory role, EEAE responsibilities include:

- development of safety procedures, regulations and legislation;
- licensing and inspection;
- environmental radioactivity monitoring;
- radiological surveillance;
- emergency preparedness and response;
- research in the fields of its competence;
- public information;
- international cooperation and national representations;
- education and training;
- personal dosimetry and calibration services.

EEAE implements an integrated management system according to IAEA GS-R-3 (Management System for Facilities and Activities). As of 2013 the integrated management system was certified according to the terms of ISO 9001:2008 standard.

The integrated management system incorporates all functions and individual accreditations of EEAE. In fact, starting from 2003, the quality management systems (QMS) of EEAE's major services and activities have been gradually accredited according to ISO/IEC 17025 (i.e. individual monitoring, calibration, gamma spectrometry

measurements, radon measurements and non-ionizing radiation measurements). Since 2011, an accreditation according to the terms of ISO/IEC 17020 standard has been acquired for the inspection activities performed and since 2013, a certificate verifying the compliance of EEAE with the ISO 29990:2010 standard was acquired regarding the scope "Design, development and provision of non-formal education and training in radiation protection and nuclear safety".

EEAE is funded by the governmental budget, as well as from licensing fees, revenues from services and R&D projects, covering adequately its operation needs.

National Centre for Scientific Research "Demokritos", NCSR "D"

The National Centre for Scientific Research "Demokritos" (NCSR "D" hereafter) is one of the most prominent research centers in Greece. It is a multidisciplinary research center focusing on several fields of natural sciences and engineering and hosting large laboratory facilities. The NCSR "D" is a self-administered governmental legal entity, under the supervision of the General Secretariat of Research and Technology of the Ministry of Education, Research and Religious Affairs.

NCSR "D" is a producer of RW as it disposes research laboratories using radioactive materials or other radiation devices. NCSR "D" consists of five Institutes. Among those, the Institute of Nuclear and Radiological Sciences & Technology, Energy & Safety (INRASTES) operates:

- the Greek Research Reactor (GRR-1). Currently, the research reactor is in extended shutdown. There is no spent fuel; Irradiated fuel and beryllium blocks are stored in a pool inside the reactor building. In a separate storage room of GRR-1 building, disused RS, RM and contaminated objects are temporarily stored.
- a system of 15 decay tanks, where water and liquids from the past operation of GRR-1, as well as from other laboratories of the NCSR "D", are stored for decay.
- a centralized facility for interim storage of radioactive waste, radioactive sources and materials. The license of the facility has been recently renewed by EEAE, for the interim storage of RW and disused RS, low activity sources dismantling, characterization of RW, re-packaging and re-sorting of RW and RS and de-characterization and clearance of RW. The legislative basis for the licensing of the facility is the Radiation Protection Regulations (RPR) and PD-122. In this storage facility waste from the research reactor, legacy waste and other radioactive sources and waste are temporarily stored.

The following is a brief summary of the main types of waste presently stored in facilities at NCSR "D": Sources at reactor building including Pu-Be (in hot cell), Contaminated items Disused contaminated or activated objects from the reactor, Liquid Waste in tanks, Regeneration bed resins in drums, Contaminated biological waste in concrete, Pu contaminated soil, Disused sealed radioactive sources in gauges and other industrial sources, Lightning rods, Contaminated metal objects, Smoke detectors, Neutron sources, Industrial radioactive sealed sources of low activity, Depleted uranium objects like containers, makeweight, shielding jaws, etc.

National Committee for Radioactive Waste Management

The National Committee for Radioactive Waste Management (EEDRA) is provided by PD-RWM. EEDRA is a collegiate body with advisory and supportive role towards “The Minister” on the implementation of the practical aspects of the national policy and national framework and on the coordination of the bodies involved in RW management. EEDRA is a 9-member committee nominated upon an EEAE act and consists of the EEAE President (Chair), a representative of the ministry responsible for EEAE (currently, Ministry of Education, Research and Religious Affairs), representatives of the Ministry of Environment, Ministry of Finance, Ministry of Development and Ministry of Health, a representative of the General Secretariat of Waste Management Coordination, a representative of EEAE and a representative of NCSR “D”. The members of EEDRA may be assisted by experts from the bodies they represent. In this way all institutional actors in RW management participate in EEDRA, reflecting the variety of the specific aspects in RW management, e.g. funding, environmental impact, local community issues, public information, etc.

As Greece is having a very small nuclear programme, the establishment of a separate Waste Management Organization (WMO) is not justifiable. With the establishment of EEDRA the collaboration between the organizations/bodies involved in RW management and the coordination of actions are ensured. EEDRA can be interpreted as having a WMO-like role in the country by being independent from the waste producers, maintaining its autonomy in relation to the regulatory authorities due to its diverse composition, and having a flexible, optimal and effective form.

The role and work of EEDRA is:

- a) To update the "national programme" of RW management from production to disposal in accordance with Articles 11 and 12 of PD-122, taking into account the needs of the country and the national policy.
- b) The preparation of financial plan and proposing funding sources for the implementation of the national programme for RW management.
- c) The presentation to the Government of studies or calls of tender for the implementation of actions under the "national programme".
- d) The monitoring and evaluation of the process and progress of the implementation of the actions undertaken under (c) above.
- e) To propose to “The Minister” on the issuance of the “scoping license” for the creation of radioactive waste management facilities.

EEDRA will be formed as soon as the PD-RWM is published in the Government Gazette.

Disposal facility

Greece does not have or operate a RW disposal facility.

National Policy on SF and RW management

The national policy, through PD-122, JMD-1858 and PD-RWM, ensures that:

- Disposal of RW in Greece is only allowed for waste generated within the Greek territory, and takes place in an authorized disposal facility within the country. The import of RW within the country's borders for management, including disposal, is

prohibited. Until the establishment of the disposal facility, the storage of radioactive waste generated within the Greek territory is carried out in authorized interim storage facilities or storage areas (centralized or at RW producers' facilities).

- Research reactor spent fuel is returned permanently to a country where research reactor fuels are supplied or manufactured, based on an international agreement concluded compulsorily at the time of import of any nuclear fuel. The spent fuel of the GRR-1 was returned to the USA for the last time in 2005. The irradiated fuel currently stored in GRR-1 is under an agreement with the US DoE for return to the USA until 2019.
- For RS repatriation is the preferred management option (back-end solution).
- For the VSLW originating from nuclear medicine laboratories the decay and clearance options are applied.
- On a 10-year periodic basis, if necessary, withdrawal projects are carried out to export RS and RM to foreign authorized recycling facilities.
- The storage of RW, RS and RM does not constitute a final management solution. The temporary storage period is specified in the licensing conditions/terms of the facility or practice. Maximum storage periods are specified, namely, 100 years in centralized interim storage facility, 10 years in storage areas of the facility where the RW, RS or RM originated and 6 months for RW, RS or RM eventually produced in Greece by an entity under the jurisdiction of a third country (e.g. repairs in shipyards, foreign oil industry etc.).
- Greece supports the idea that sharing of common activities, practical solutions and R&D programmes in the context of agreements between the countries, taking into account the conditions specified in Directive 2011/70/Euratom is a beneficial, cost-effective and safe option, and is of view that it consists of a feasible, worth considering option.

National Framework on SF and RW management

Legislation

The laws and regulations relevant to the SF and RW management are given below.

1. Spent fuel and radioactive waste management

- Presidential Decree No. 122, Government Gazette Folio No. 177/A/12.08.2013, "Transposition of Council Directive 2011/70/EURATOM establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste";
- Joint Ministerial Decision No. 131207/I3/27.08.2015, Government Gazette Folio No. 1858/B/27.08.2015, "National policy on the management of spent fuel and radioactive waste".

Circulars – Decisions relevant to RW management

- EEAE Decision No. 2/214, Government Gazette Folio No. 1958/B/18.07.2014, “Specification of procedures for the release/acceptance of contaminated objects and radioactive waste from medical applications”;
- EEAE Decision No. 2.1/218/06.02.2015, Government Gazette Folio No. 948/B/26.05.2015, “Patients excreta release after nuclear medicine treatments (therapies)”;
- EEAE Decision No. P/105/241/03.08.2006, “Clearance levels of Naturally Occurring Radioactive Materials” (available at www.eeae.gr).

Legislation on SF and RW management, in progress

- “National Programme on the management of spent fuel and radioactive waste”, to be issued in the form of Ministerial Decision.
- Presidential Decree on “the establishment of the national legislative, regulatory and organizational framework for the responsible and safe management of spent fuel and radioactive waste”.
- Joint Ministerial Decision on “Procedures and requirements for the licensing of radioactive waste management facilities”.

2. Radiological protection

- Joint Ministerial Decision No. 1014 (FOR) 94, Government Gazette Folio No. 216/B/06.03.2001, “Approval of Radiation Protection Regulations”;
- Ministerial Decision No. 10828/(EFA)1897, Government Gazette Folio No. 859/B/10.07.2006, “Control of high-activity sealed radioactive sources and orphan sources” (transposition the Council Directive 2003/122/Euratom);
- Ministerial Decision No. 9087 (FOR) 1004, Government Gazette Folio No. 849/B/13.09.1996, “Operational protection of outside workers exposed to the risk of ionizing radiation during their activities in controlled areas”;
- Presidential Decree No. 83, Government Gazette Folio No. 147/A/03.09.2010, “Transposition of Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel into the Greek legislative framework”.

3. Establishment of the regulatory body

- Law No 4310/2014, Government Gazette Folio No. 258/A/08.12.2014, «Research, Technological development and innovation and other provisions”, Part E’ (Articles 39 – 46): “Management of nuclear energy - technology and radiation protection- Greek Atomic Energy Commission”;
- Presidential Decree No. 404, Government Gazette Folio No. 173/A/05.10.1993, “Organization of the Greek Atomic Energy Commission”.

4. Implementation of International Instruments

Greece has ratified the international conventions related to nuclear safety and radioactive waste management, with the following laws:

- Law No. 2480, Government Gazette Folio No. 70/A/14.05.1997, “Ratification of the Convention on Nuclear Safety”;
- Law No. 1758, Government Gazette Folio No. 44/A/10.03.1988, “Ratification of the Protocol Amending the Convention on Third Party Liability in the field of Nuclear Energy of 29 July 1960, as modified by the Additional Protocol of the 28 January 1964”;
- Law No. 1937, Government Gazette Folio No. 35/A/13.03.1991, “Ratification of the Convention in case of a Nuclear Accident or Radiological Emergencies”;
- Law No. 1938, Government Gazette Folio No. 36/A/13.03.1991, “Ratification of the Convention on Early Notification in case of a Nuclear Accident”;
- Law No. 2824, Government Gazette Folio No. 90/A/16.03.2000, “Ratification of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management”;
- Law No. 3787, Government Gazette Folio No. 140/A/07.08.2009, “Ratification of the Protocol Amending the Convention on Third Party Liability in the field of Nuclear Energy of 29 July 1960, as amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982”.

5. Nuclear installations and Nuclear research reactors

- Presidential Decree No. 60, Government Gazette Folio No. 111/A/03.05.2012, “Establishment of a National framework for the nuclear safety of nuclear installations” (transposition of the Council Directive 2009/71/Euratom of 25 June 2009);
- Ministerial Decision P/112/305, Government Gazette Folio No. 2877/B/26.10.2012, “Basic requirements – principles of nuclear safety and regulatory supervision of nuclear research reactors”.

6. Safeguards and non-proliferation

The Greek legislative framework related to safeguards and non-proliferation is the following:

- Legislation Decree No. 437, Government Gazette Folio No. 49/A/26.02.1970, “Ratification of the Nonproliferation Treaty signed on the 1 June 1968”;
- Safeguards agreement between Greece and IAEA signed on 17.11.1972;
- Law No. 1636, Government Gazette Folio No. 106/A/18.07.1986, “Ratification of the Convention on the Physical Protection of Nuclear Material”;
- Ministerial Decision No. 5408 /E3/2362/Φ.NSG, Government Gazette Folio No. 730/B/21.09.1993, “Control on Transfer of Nuclear Materials, Armament and Technologies Affecting National Defense and Security”;
- Law No. 2805, Government Gazette Folio No. 50/A/03.03.2000, “Ratification of the Additional Protocol under Article 3, Paragraphs 1 and 4, of the Nonproliferation Treaty”.

- Law No. 3990, Government Gazette Folio No. 159/A/13.07.2011, "Ratification of the Amendment of the Convention on the Physical Protection of Nuclear Material of 8 July 2005".

7. Emergency preparedness

In order to cope with emergency situations, Greece has enacted the General Plan for Civil Protection:

- Ministerial Decision No. 2025, Government Gazette Folio No. 12/B/19.01.1998, "Approval of the General Plan for Civil Protection, under the Code Name Xenokratis";
- Ministerial Decision No. 1299, Government Gazette Folio No. 423/B/10.04.2003, "Approval of the General Plan for Civil Protection, under the Code Name Xenokratis".

Annex "P" of Plan "Xenokratis" refers to radiological/nuclear emergencies. Other relevant acts are the following:

- Ministerial Decision 2739/94, Government Gazette Folio No. 165/B/15.03.1994, "Regulation for public information in the event of a radiological emergency";
- Law No. 3491, Government Gazette Folio No. 207/A/10.10.2006, Article 15: "Establishment of the supporting team for Nuclear, Radiological, Biological and Chemical Threats";
- Decision of the General Secretary for Civil Protection No ΕΠ 121/25.11.2011, "National Plan on CBRN threats" (classified).

Responsibilities

«The Minister» has the ultimate responsibility for the management of SF and RW, as well as to supplement, extend, maintain and implement the existing "national framework" and "national policy".

The licensee of a facility has the prime responsibility for safety and radiation protection and for compliance with the safety principles and radiation protection regulations, according to the national and European legislation and the applicable IAEA safety standards.

The producer of research reactor spent fuel has the prime responsibility for SF management until its final return to country that supplied/ manufactured the fuel.

The producer of RW has the prime responsibility for managing them either until their physical decay to the statutory clearance levels, based on current RPR, or transporting them to an authorized RW management facility within or outside the country.

The SF and RW producer bears their management costs. The SF and RW producer is required to have, according to the graded approach principle, the necessary financial resources, infrastructure and skilled manpower required for the safe processing, conditioning, transport, storage or clearance. Also is obliged to keep the binding principles of the national policy and the relevant national guidelines and international standards.

RW management principles

The protection of workers, public and environment is ensured by the application of radiation protection principles and the relevant provisions of the RPR, PD-122, JMD-1858, PD-RWM and JMD-Auth.

Each practice, work or activity related to the SF and RW management, before approval for the first time must be justified on the basis of socio-economic or other advantages granted in connection with possible health risks. Ongoing or existing SF and RW management practices can be reviewed by EEAE in the light of new and important evidence about their effectiveness. Unjustified SF and RW management practices are prohibited.

Dose constraints are set for the members of the public, as 100 $\mu\text{Sv}/\text{year}$ due to all applied SF and RW management practices, 50 $\mu\text{Sv}/\text{year}$ due to a single SF and RW management practice and 10 $\mu\text{Sv}/\text{year}$ due to discharges of liquids or gases from a particular SF and RW management practice. Dose constraints for radiation workers are set by the licensee and approved by EEAE.

Safety requirements for the RW management and for the disposal of RW are provided in legislation (PD-RWM, PD-Auth), including licensee obligations, evaluation and verification of safety, location, design and construction, operation, maintenance, decommissioning, etc.

The IAEA waste classification is applied, in general. The 100 days and 30 years half lives apply for distinguishing between very short lived and long lived RW, respectively. Very low level waste (VLLW) contains isotopes with half lives less than 30 y and activities about two orders higher than the exempted values. Waste with radionuclides with higher half times are considered as VLLW too (e.g. ^{226}Ra), if the activity is very low. Examples are objects using ^{226}Ra for luminance, smoke detectors with ^{241}Am , soil with NORM ^{226}Ra at low concentrations, etc. Low level waste (LLW) do not contain long lived (i.e. with $t_{1/2} > 30$ y) radionuclides. Long lived radionuclides (i.e. with $t_{1/2} > 30$ y) could be present in LLW, if the concentration is lower than 400 Bq/g on average for long lived alpha emitting radionuclides, or 10 kBq/gr for long lived beta and/or gamma emitting radionuclides. Although classification is related to the disposal options – which have not been determined yet – and the availability and suitability of the storage procedures and infrastructure, almost all (except very few cases) radioactive waste in Greece are classified as VSLW, VLLW or LLW, due to their activities and form. A very few RW which concern regeneration bed resins and activated or contaminated objects in connection with GRR-1 operation, as well as a few RM found in scrap metal, have not been classified yet.

For very short lived waste (VSLW) ($t_{1/2} < 100$ d) decay and clearance are employed. Generic and conditional clearance levels apply.

Sealed RS and other RM, after their useful life, are returned to the manufacturer or to an authorized recycling facility abroad. A legal written declaration from the source manufacturer for accepting back the source is necessary prior to the RS or RM import, as well as a legal written declaration from the source user for undertaking all financial and administrative provisions to export the source.

According to the Ministerial Decision No. 10282, Government Gazette Folio No. B/859/10.07.2006, "Control of high-activity sealed radioactive sources and orphan sources" (transposition the Council Directive 2003/122/Euratom), EEAE ensures appropriate resources to cover intervention costs relating to the recovery of orphan sources. The level of the required resources is specified by EEAE's Board and registered to the EEAE annual budget.

Decommissioning plans of GRR-1 have not been submitted to EEAE, yet. It may be anticipated that decommissioning of GRR-1, as well as decommissioning of the centralized interim storage facility of NCSR "D", will produce significant amount of RW (in activity and volume). There exist some other facilities (very few) whose decommissioning will produce limited amount of RW, (e.g. storage facility for lightning rods, isotope production cyclotron, and sterilization irradiator).

The inventory of RW, RS and RM is maintained by EEAE within the national radiation protection database and includes the necessary basic information, i.e. facility, location, operator, persons in charge, quantities, form, activities, etc. EEAE performs on regular basis on-site inspections to verify the accountability of the RW, RS and RM.

National Programme

The initial (first) national programme has been prepared by EEAE, pursuant to Article 7 of JMD-1858 and in accordance with the requirements of the Council Directive 2011/70/Euratom. The subsequent editions (review/updates) of the national programme will be undertaken by EEDRA.

The national programme, which is in the phase of formal issuance in the form of Ministerial Decision (MD-NatPro), is attached Appendix 2 (should be considered as draft). The national programme contains the following chapters:

- A. Objective and scope
- B. Legislative framework
- C. Implementation of the national policy for the SF and RW management
- D. Milestones and timelines of the national programme
- E. Inventory of SF and RW
- F. Solutions for the management of RS and RW

G. Research and development

H. Responsibilities in the implementation of the national programme and performance indicators

I. Estimated cost of the national programme and distribution in time

J. Financing of the national programme

K. Transparency and information

Peer review

In 2012, an Integrated Regulatory Review Service (IRRS mission) of the national regulatory framework, as well as of EEAE as the competent authority, was conducted. RW management was included in the scope of the mission. The full mission report is publicly available at EEAE website. More information about the mission is provided in Appendix 1, where the recommendations and suggestions pertaining directly to RW management are also listed. A thorough action plan is now being implemented. In the context of the efforts for implementation of the action plan and compliance with Council Directive 2011/70/Euratom requirements, EEAE invited two IAEA expert missions in Greece on the development of the national programme (held in May 2013 and September 2013).

Process to prepare the National Report

The hereof national report has been prepared by the Greek Atomic Energy Commission (EEAE).

Data for the inventory and the practices/procedures applied for the RW management procedures have been provided by the facilities - operators (licensees) in their reports, as submitted to EEAE under the authorization process.

The information given in this report is consistent with the national report for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (publicly available at EEAE website www.eeae.gr).

The content of the national programme, as well as the basic elements of the national framework for the SF and RW management, as reported in this document, were presented in detail and discussed in a workshop organized by EEAE on 22 July 2015. Representatives from the main stakeholders in RW management participated to the workshop, i.e. representatives from the General Secretariat for Coordination of Waste Management, the Ministry of Environment, Ministry of Health, NCSR “D”, Medical Physics Association.

The national framework for the SF and RW, in particular JMD-1858 and PD-RWM, underwent public consultation. The drafts were posted to the “government transparency” website www.opengov.gr, where the interested parties and general public can review and make comments. The comments have been considered in the revision of the texts, while detailed public consultation reports have been produced and made publicly available see at <http://www.opengov.gr/ypepth/?p=2596> and <http://www.opengov.gr/ypepth/?p=2559>).

Section C. Reporting article by article

Article 4: General principles

Article 4.1

4.1 Member States shall establish and maintain national policies on spent fuel and radioactive waste management. Without prejudice to Article 2(3), each Member State shall have ultimate responsibility for management of the spent fuel and radioactive waste generated.

The national policy is defined in article 4 of PD-122 and specified in JMD-1858. The basic principles are as follows:

- Disposal of radioactive waste in Greece is only allowed for radioactive waste generated within the Greek territory, and takes place in an authorized disposal facility within the country. The import of SF and RW within the country's borders for management, including disposal, is prohibited. Until the establishment of the disposal facility the storage of RW generated within the Greek territory is carried out in authorized interim storage facilities or storage spaces (centralized or at RW producers' facilities).
- Research reactor spent fuel is returned permanently to a country where research reactor fuels are supplied or manufactured, based on an applicable international agreements concluded compulsorily at the time of import of any nuclear fuel.
- For the sealed RS the repatriation is the prioritized (primary) management option. For liquid VSLW originating from nuclear medicine laboratories the decay and clearance options are applied.
- On a 10-year periodic basis, if necessary, withdrawal projects are carried out to export RS and RM to foreign authorized recycling facilities.
- The storage of RW, RS and RM does not constitute a final management solution. The temporary storage period is specified in the licensing conditions/terms of the facility or practice. Maximum storage periods are specified.
- Greece supports the idea of sharing of common activities, practical solutions and R & D programmes in the context of agreements between the countries.

According to article 4, paragraph 1 of PD-122 and the terms of PD-RWM «The Minister» has the ultimate responsibility for the management of SF and RW, as well as for supplementing, extending, maintaining and implementing the "national framework" and the "national policy".

Furthermore, according to PD-122, JMD-1858, PD-RWM and JMD-Auth

- the licensee of the facility has the prime responsibility for the safety and radiation protection and the compliance with the safety principles and radiation protection regulations, according to the Greek and European legislation and the applicable IAEA safety standards.
- the producer of research reactor spent fuel the has prime responsibility for its management until its final return to the supplying country.

- the RW producer has the prime responsibility for the management of RW either up to their physical decay to the statutory clearance levels of the current RPR, or their transport to an authorized RW management facility within or outside the country.
- the producer bears the management costs of the SF and RW.

Article 4.2

4.2 Where radioactive waste or spent fuel is shipped for processing or reprocessing to a Member State or a third country, the ultimate responsibility for the safe and responsible disposal of those materials, including any waste as a by-product, shall remain with the Member State or third country from which the radioactive material was shipped.

According to article 4, paragraph 2 of PD-122, in case that RW of Greek origin is shipped from the Greek state for processing in an EU Member State or in a third country, the ultimate responsibility for the safe and responsible disposal of those materials, including any waste generated as by-products remains with “The Minister”. Supervision of the safe and responsible disposal of these materials is assigned to EEAE.

Since now, only RS have been exported for recycling following a national project for identification, collection and export for recycling of radioactive sources (2001-2006). During the activities of the project, no RW was generated abroad that had to be returned to Greece.

According to PD-122, JMD-1858 and PD-RWM, in case of exporting RW, RS or RM for processing, recycling or other management, these shall be exported to a country whose technical, legislative or administrative facilities are adequate. All relevant points of the acts refer explicitly to an “authorized” facility. Shipments of RS, RM, RW and SF are ruled by the terms of the Presidential Decree No. 83/2010, “Transposition of Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel into the Greek legislative framework”.

Article 4.3

4.3 National policies shall be based on all of the following principles:

- (a) the generation of radioactive waste shall be kept to the minimum which is reasonably practicable, both in terms of activity and volume, by means of appropriate design measures and of operating and decommissioning practices, including the recycling and reuse of materials;*
- (b) the interdependencies between all steps in spent fuel and radioactive waste generation and management shall be taken into account;*
- (c) spent fuel and radioactive waste shall be safely managed, including in the long term with passive safety features;*
- (d) implementation of measures shall follow a graded approach;*
- (e) the costs for the management of spent fuel and radioactive waste shall be borne by those who generated those materials;*
- (f) an evidence-based and documented decision-making process shall be applied with regard to all stages of the management of spent fuel and radioactive waste.*

(a) Article 4, paragraph 3 of PD-122 defines the basic principles of national policy, including minimization of RW, recycling and reuse of materials. According to article 5 of JMD-1858 the producer of RW shall take all necessary, reasonably practicable, measures to minimize the volume and activity of RW. The measures are approved by EEAE, under the authorization of the relevant practice. Furthermore, all stakeholders involved in the use of RS or RW management ensure the reusability of RS from other interested users, where possible, before they become RW. On a periodic basis of decade, if deemed necessary, «The Minister» proclaims withdrawal programmes for the recycling of RS and RM to foreign authorized recycling facilities, so they do not become RW, and ensures the availability of the required funds.

There do not exist recycling facilities in Greece. Treatment basically concerns simple procedures for the dismantling of some consumer products (smoke detectors, lightning rods, etc.) resulting in volume minimization.

Medical and research laboratories using liquid or solid RM apply the decay and clearance method, by storing the short-lived radioactive waste at their premises. The conditions for storage are included in the terms of the operation license and are subjected to EEAE inspections.

(b) According to Article 4.3 of PD-122 the interdependencies between all steps in SF and RW generation and management shall be taken into account; in particular, for the existing RW storage facility at NCSR “D”, all RW management activities are performed so as to ensure the retrievability of the waste, until the final disposal option and the corresponding acceptance criteria are determined.

(c) According to article 6, paragraph 1 of PD-RWM, passive safety measures are specified in the disposal of RW; the evaluation of location, design, construction, operation and closure of a disposal facility must be undertaken in such a way as to achieve safety by passive means to the fullest and to minimize the need for measures and actions after the closure of the facility. Appropriate radiation protection supervision and control for the preservation of passive safety features should be applied, in order to comply with the provisions of the safety analysis report.

(d) According to article 5, paragraph 15 of JMD-1858, the requirements, decisions taken, the proposed solutions and regulatory inspections and audits, relating to the safe management of SF and RW follow a graded approach, i.e. reflect in a proportionate manner the relative risk. An example is the requirements for storage, decay and clearance, as applied in nuclear medicine laboratories and in the interim storage facility of the NCSR “D”.

(e) According to article 5, paragraph 2 of JMD-1858 and article 7, paragraph 5 of PD-RWM, the producer of RW has the sole responsibility of their management and bears the associated costs. The SF and RW producer is required, with graded approach, to have all the necessary financial resources to ensure the infrastructure and skilled manpower required for the safe processing, conditioning, transport, storage or clearance.

(f) According to RPR and PD-RWM (section 3, article 10) each practice, work or activity related to the management of radioactive waste requires a license in accordance with the current legislation, taking into account the graded approach. In the various stages of a RW management facility lifetime, in addition to other requirements provided by law, the following authorizations are required: a. Scoping License; b. Establishment License in a specific site; c. Design approval; d. Operation License; e. Decommissioning License; f. Approval for site release from regulatory control. In case of significant changes in terms of radiation protection and safety, or important modifications of the activities carried out there, a license amendment is required.

Article 4.4

Radioactive waste shall be disposed of in the Member State in which it was generated.

Prior to a shipment to a third country, the exporting Member State shall inform the Commission of the content of any such agreement and take reasonable measures

According to the national policy defined in article 4 of the PD-122 and specified in JMD-1858, the disposal of RW in Greece is only allowed for radioactive waste generated within the Greek territory, and takes place in an authorized disposal facility within the country. The import of SF and RW for management, including disposal, within the country's borders is prohibited. Until the establishment of a disposal facility the storage of radioactive waste generated within the Greek territory is carried out in authorized interim storage facilities or storage spaces (centralized or at RW producers' facilities). Furthermore, "The Minister" has the ultimate responsibility for management of SF and RW generated within the Greek territory. In case that RW of Greek origin is shipped from the Greek state for processing in an EU Member State or in a third country, the ultimate responsibility for the safe and responsible disposal of those materials, including any waste generated as by-products remains with "The Minister". Supervision of the safe and responsible disposal of these materials is assigned to EEAE.

Shipments of RS, RM, RW and SF are ruled by the terms of the Presidential Decree No. 83/2010, "Transposition of Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel into the Greek legislative framework".

Article 5: National framework

Article 5.1

Member States shall establish and maintain a national legislative, regulatory and organizational framework ('national framework') for spent fuel and radioactive waste management that allocates responsibility and provides for coordination between relevant competent bodies. The national framework shall provide for all of the following:

(a) a national Programme for the implementation of spent fuel and radioactive waste management policy;

(b) national arrangements for the safety of spent fuel and radioactive waste management. The determination of how those arrangements are to be adopted and through which instrument they are to be applied rests within the competence of the Member States;

(c) a system of licensing of spent fuel and radioactive waste management activities, facilities or both, including the prohibition of spent fuel or radioactive waste management activities, of the operation of a spent fuel or radioactive waste management facility without a license or both and, if appropriate, prescribing conditions for further management of the activity, facility or both;

(d) a system of appropriate control, a management system, regulatory inspections, documentation and reporting obligations for radioactive waste and spent fuel management activities, facilities or both, including appropriate measures for the post-closure periods of disposal facilities;

(e) enforcement actions, including the suspension of activities and the modification, expiration or revocation of a license together with requirements, if appropriate, for alternative solutions that lead to improved safety;

(f) the allocation of responsibility to the bodies involved in the different steps of spent fuel and radioactive waste management; in particular, the national framework shall give primary responsibility for the spent fuel and radioactive waste to their generators or, under specific circumstances, to a license holder to whom this responsibility has been entrusted by competent bodies;

(g) national requirements for public information and participation;

(h) the financing scheme(s) for spent fuel and radioactive waste management in accordance with Article 9.

(a) The initial (first) national programme has been prepared by EEAE, pursuant to Article 7 of JMD-1858 and in accordance with the requirements of the Council Directive 2011/70/Euratom. The subsequent editions (review/updates) of the national programme will be undertaken by EEDRA.

The national programme, which is in the phase of formal issuance in the form of Ministerial Decision (MD-NatPro), is attached Appendix 2 (should be considered as draft). The national programme contains the following chapters:

- A. Objective and scope
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- E. Inventory of SF and RW
- F. Solutions for the management of RS and RW
- G. Research and development
- H. Responsibilities in the implementation of the national programme and performance indicators
- I. Estimated cost of the national programme and distribution in time
- J. Financing of the national programme
- K. Transparency and information

(b) The national arrangements for the safety of SF and RW management are ruled by acts already in place or in the process of being promulgated soon, namely, PD-122, JMD-1858 , PD-RWM, JMD-Auth, MD-NatPro and RPR.

(c) According to RPR and PD-RWM (chapter 3, article 10) each practice, work or activity related to the RW management requires a license in accordance with the current legislation, taking into account a graded approach. In the various stages of a RW management facility lifetime, in addition to other requirements provided by law, the following authorizations are required: a. Scoping License; b. Establishment License in a specific site; c. Design approval; d. Operation License; e. Decommissioning License; f. Approval for site release from regulatory control.

The PD-Auth sets out the requirements and the procedures for the licensing of the facilities that have as primary object the management of RW.

(d) According to article 5, paragraph 1(d) of PD-122 and article 11 of PD-RWM the Greek Atomic Energy Commission (EEAE) implements and maintains a management system, a system of inspections and a system of regulatory controls for activities/facilities concerned with SF and RW management. EEAE has the right to perform regular and ad hoc inspections and safe operation verifications, which may be pre-announced or extraordinary, to ensure compliance with the regulatory requirements. The findings of audits and inspections, including any recommendations or requirements for improving the safety of the SF and RW facilities, are recorded in inspection reports, notified to the licensee and to all interested parties with a legitimate interest.

During the inspection, the licensee is required to allow and facilitate unrestricted access for inspectors at any point of the facility, access to documents or other sources of information concerning the safety of SF and RW management and allow communication with any member staff. In the event that the licensee refuses or impairs the conduct of the inspection, EEAE may request the assistance of the police authority.

EEAE has the right, if it finds discrepancies with the requirements of legislation or the conditions of a permit or approval, to proceed to an amendment, suspension or revocation of the license.

EEAE, as responsible for assessing the safety of SF and RW management facilities in the country, if appropriate, seeks the assistance of other agencies with appropriate expertise in the country or abroad. In order to assess specific aspects of the safety of SF and RW facilities, which are not within the responsibilities of EEAE, opinion of the competent national bodies is required.

In the process of licensing, the findings of EEAE from inspections, audits and safety assessments of the SF and RW management facilities are recorded and documented.

EEAE may require measures or improvements and / or changes in the facility or safety documents, when necessary, to maintain a high level of safety, especially if deviations from the terms of the license or the essential safety requirements of SF and RW management facilities are observed.

In case of failure by a licensee to the requirements of EEAE, EEAE may withdraw or suspend the license or the approval issued or EEAE may propose the suspension or revocation of the license and may recommend or impose sanctions in accordance with applicable laws and provisions.

(e) Article 19 of the PD-RWM sets sanctions and penalties for operators who violate the provisions of the legislation, by act or omission. Sanctions and penalties have various forms e.g. administrative (e.g. license withdrawal), finance (e.g. fine, forfeit), penal.

(f) PD-122, JMD-1858 and PD-RWM allocate the responsibilities to the bodies involved in RW management. «The Minister» has ultimate responsibility for the management of SF and RW. The licensee of the facility has the prime responsibility for the safety and radiation protection and the compliance with the safety principles and radiation protection regulations. The producer of research reactor SF has the prime responsibility for the SF management until its final return to the country which supplied / manufactured the fuel. The producer of RW has the prime responsibility of the RW management either up their physical decay to the statutory clearance levels of the current RPR or their transport to an authorized RW management facility within or outside the country.

(g) The information and public participation in the decision-making process for the management of RW is set by the provisions of article 10 of PD-122 on transparency and the

provisions of Article 10 of Ministerial Decision JMD-Auth on the authorization of RW management facilities.

JMD-Auth involves public at all stages of authorization/licensing of RW management facilities through open public consultation procedures. Such open consultation has been conducted, by means of the Government website www.opengov.gr, during the development of legislation acts PD-RWM and JMD-1858, and the comments received were considered to revise the drafts.

(h) The SF and RW producer bears their management costs, as set in PD-122, JMD-1858, PD-RWM and MD-NatPro.

The plan for the national programme financing is elaborated by the National Committee on Radioactive Waste Management (EEDRA). «The Minister» shall ensure the implementation of the financing plan, which will not necessarily draw on the state budget but will be oriented in raising resources through, as indicative, projects, structural funds, recovery of the deposit fund, etc.

A deposit fund is created for the financial security of the management of RW, RS and RM. The deposit fund operates under EEAE, in accordance with Article 10 of Ministerial Decision No. 10828/(EFA)1897, Government Gazette Folio No. 859/B/10.07.2006, “Control of high-activity sealed radioactive sources and orphan sources” (transposition the Council Directive 2003/122/Euratom). The deposit fund receives financial contributions from the owner of RS and RM or the RW producer, and may receive contributions from the Finance Ministry, upon reasoned opinion by EEDRA, or from other interested parties.

The deposit fund is used exclusively to finance the following:

- recovery of orphan sources and safe temporary storage of such sources;
- management of RW, RS and RM for which EEAE considers that there is immediate need for management for reasons of radiation protection and nuclear security, when the holder is unable to take action;
- export of RS or RM, which are under the jurisdiction of the Greek State (e.g. legacy items) or the holder has ceased to exist or is unable to deal with (e.g. due to bankruptcy), for recycling or management.

Article 5.2

Member States shall ensure that the national framework is improved where appropriate, taking into account operating experience, insights gained from the decision-making process referred to in Article 4(3)(f), and the development of relevant technology and research.

A number of means have been deployed in order for the Greek regime to be responsive to changes in technology, international best practice/standards and lessons learned from international operating experience. Such means are outlined below.

Greece participates to international treaties/conventions and bilateral agreements in the area of radiation safety.

Greece is implementing the Code of Conduct on the Safety and Security of RS and its supplement for import – export – transport of RS.

Greece has transposed and implements the European Council Directive 2003/122 regarding the control of the high activity sealed radioactive sources and orphan sources (HASS), through a Ministerial Decision.

Greece has signed the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management on 5 September 1997. The Convention has been ratified and entered into force on 16 March 2000.

In 2012, an Integrated Regulatory Review Service (IRRS mission) of the national regulatory framework, as well as of EEAE as the competent authority, was conducted. RW management was included in the scope of the mission. A thorough action plan is now being implemented; the mission report is publicly available at EEAE website. More information about the mission is provided in Appendix 1, where the recommendations and suggestions pertaining directly to RW management are also listed. Moreover, actions have been taken for the development and implementation of an integrated management system of the organization, its staff and its resources, according to the terms of ISO 9001 and the requirements of the IAEA Safety Standard, relevant to the management system for facilities and activities involving radiation, GS-R-3.

In the context of the effort to implement the IRRS action plan and to comply with Council Directive 2011/70/Euratom, EEAE participates actively to relevant IAEA projects (e.g. projects INT 9176, RER/9/107). In the same context EEAE has exploited IAEA expertise on RW and RS management, by inviting two IAEA expert missions in Greece on the development of the national programme (held in May 2013 and September 2013). Furthermore, several international workshops and seminars in this field have been organized under IAEA projects as, for instance: under project RER/9/107 on quality management systems in managing RW, in 2015; under project INT 9176 on SAFRAN software, in 2014.

Article 6: Competent regulatory authority

Article 6.1

Each Member State shall establish and maintain a competent regulatory authority in the field of safety of spent fuel and radioactive waste management.

The Greek Atomic Energy Commission (EEAE) is the competent regulatory authority for the control, regulation and supervision in the fields of nuclear energy, nuclear technology, radiological, nuclear safety and radiation protection.

EEAE is operating as public entity and enjoying full administrative and financial independence in relation to its duties. It operates under and is supervised by the Minister of Education Research and Religious Affairs. Its mission is the protection of the public, the workers and the environment from ionizing radiation and artificially produced non-ionizing radiation.

One of the purposes of EEAE is the safe management of spent fuel and radioactive waste (Article 43, par. 1(d), Law 4310/2014, Government Gazette Folio No. 258/A/08.12.2014).

Article 6.2

Member States shall ensure that the competent regulatory authority is functionally separate from any other body or organization concerned with the promotion or utilization of nuclear energy or radioactive material, including electricity production and radioisotope applications, or with the management of spent fuel and radioactive waste, in order to ensure effective independence from undue influence on its regulatory function.

EEAE is operating as a public entity and enjoying full administrative and financial independence in relation to its duties (Article 44, Law 4310/2014).

EEAE is governed by a 7 member Board. The recently established new legal framework (Law 4310/2014) provides terms on impediments and incompatibilities in the appointment of the Board members (Article 44 on management). This ensures the avoidance of conflicts of interests that could unduly influence regulatory decision making.

The effective independence of EEAE in the decision making process is ensured by the fact that the Board makes autonomous decisions on safety matters, without political or other interference. As of December 2014 these decisions are made open to the public through the EEAE's web site. Moreover, EEAE staff members are not allowed to have other job positions in the private or public sector.

Article 6.3

Member States shall ensure that the competent regulatory authority is given the legal powers and human and financial resources necessary to fulfil its obligations in connection with the national framework

According to its statutory role EEAE has the legal power to exercise the regulatory control of facilities and activities in the fields of radiation protection and radiation and nuclear safety. As described in detail in Article 43, par. 4 of the new Law 4310/2014 the competencies (legal powers) of EEAE include:

- development of safety procedures, regulations and legislation;
- licensing and inspection procedures;
- environmental radioactivity monitoring;
- radiological surveillance;
- emergency preparedness;
- research in the fields of its competence;
- public information;
- international cooperation and national representations;
- education and training;
- personal dosimetry and calibration services.

Specific mention in connection with the national framework is provided in Article 43, par. 4(kf), which confers to EEAE the competence to issue regulations to assure responsible and safe spent fuel and radioactive waste management.

The new Law 4310/2014 provides EEAE with and resources necessary for fulfilling its competences (legal powers), more specifically:

Provisions are in place (Article 43, par. 3) regarding EEAE's structure and organizational scheme, with detailed requirements for the staffing, their qualification, and the duties and responsibilities assigned to them.

Specific terms are provided for ensuring the adequacy of the revenues required for its operation (Article 45). EEAE is funded by the governmental budget, as well as from licensing fees and revenues from services, covering adequately its needs.

Article 7: License holders

Article 7.1

Member States shall ensure that the prime responsibility for the safety of spent fuel and radioactive waste management facilities and/or activities rest with the license holder. That responsibility cannot be delegated

Article 5, par. 1 of PD-RWM specifies the obligations and responsibilities of the licensee with respect to the safety requirements for the management of RW. In addition, according to Article 5, par. 1(f) of PD-122 and Articles 7 paragraphs 4 and 5 of PD-RWM:

The licensee of the facility has the prime responsibility for safety and radiation protection and the prime responsibility for compliance with the safety principles and radiation protection regulations, according to the Greek and European legislation and the applicable IAEA safety standards.

The producer of spent fuel has the prime responsibility for its management until their final return to the country which supplied or manufactured the fuel.

The producer of RW has the prime responsibility for managing the RW either up their physical decay to the statutory clearance levels based on current RPR, or their transport to an authorized RW management facility within or outside the country.

The SF and RW producer bears the management costs. The SF and RW producer, with graded approach, is required to have all the necessary financial resources, infrastructure and skilled manpower, as required for the safe processing, conditioning, transport, storage or clearance. Also is obliged to keep the binding principles of the national policy and the relevant national guidelines and international standards.

Article 7.2

Member States shall ensure that the national framework in place require license holders, under the regulatory control of the competent regulatory authority, to regularly assess, verify and continuously improve, as far as is reasonably achievable, the safety of the radioactive waste and spent fuel management facility or activity in a systematic and verifiable manner. This shall be achieved through an appropriate safety assessment, other arguments and evidence.

According to article 5 par. 1 of PD-RWM, licensees are required to implement a policy for SF and RW management that sets high priority on safety and promotes the safety culture, by appropriate administrative structure, with clear allocation of responsibilities and fixed communication lines. Furthermore, licensees are required to establish and implement an appropriate quality assurance programme and appropriate quality management system, a nuclear security programme and a programme of lifelong education and training for those

employees engaged in tasks related to safety, radiation protection and emergency response.

According to article 5, par. 2 of PD-RWM, the license holder is required to assess the safety of the installation in a systematic manner. The assessment of safety and security is documented in safety analysis documents and covers all stages of facility lifetime, taking into account the implications of ageing. The assessment of safety and security analysis reports should be updated periodically, and whenever appropriate, taking into account operating experience, changes or new knowledge, with respect to the particular characteristics of the site and the facility, international experience and developments in research and technology. The facility's safety and security level is verified through analysis, monitoring, audits and inspections to ensure that it remains at all stages of life in accordance with the design, safety requirements and operating conditions limits.

During inspections the quality assurance programmes are inspected and assessed. The licensee is required to submit to EEAE a safety assessment periodically (depending on the facility) – at least at every license renewal.

The operation license is valid for a specific period, depending on its terms and conditions and the category of the facility.

The JMD-Auth sets the procedures and the documents to be submitted for the authorization of a RW management facility (license issue or renewal). Among these documents the following are requested:

- Quality assurance and radiation protection programme, which includes as a minimum:
 - RW management procedures for each management stage and RW stream,
 - definition of controlled and supervised areas and works carried out in these areas,
 - RW classification,
 - measurement procedures and equipment,
 - control and response procedures for contamination of premises and workers,
 - verification measurements of radiation protection of sites and shielding adequacy study,
 - individual monitoring and personnel radiation protection,
 - methodology and results of the assessment of potential exposures of workers and population,
 - environmental radioactivity measurements and control of emissions and discharges,
 - periodic quality control programme,
 - procedures and systems for nuclear security and physical protection,
 - conditions and operation of primary and auxiliary equipment, including storage containers and shipping containers.
- Safety Analysis Report (SAR), which comprehensively documents a high level of safety at all stages of life of the facility. The SAR, includes at least the following:
 - Safety goals and safety requirements, as set in the design phase.
 - Thorough analysis of potential risks and impacts from the operation and use of the facility, including analysis of events during accidents together with the measures and the provisions of the plant to limit the consequences.
- Quality Management System, with particular reference to:
 - policy and commitment to safety and radiation protection,
 - the arrangements to ensure the necessary human and financial resources,
 - financial policy for the management of RW (cost, service charges, etc.)

- transparency and information to the public.

The interim storage facility of the NCSR “D” is – presently - the only RW management facility in the country. The latest comprehensive safety assessment was carried out in July 2014. The Safety evaluation Report (SER) by EEAE has been made publicly available (posted to EEAE’s web site).

Laboratories that produce RW from their practices (e.g. nuclear medicine, research laboratories) submit radiation protection reports every 3 years (for the renewal of the license), where, among others, RW management is addressed.

Article 7.3

As part of the licensing of a facility or activity the safety demonstration shall cover the development and operation of an activity and the development, operation and decommissioning of a facility or closure of a disposal facility as well as the post- closure phase of a disposal facility. The extent of the safety demonstration shall be commensurate with the complexity of the operation and the magnitude of the hazards associated with the radioactive waste and spent fuel, and the facility or activity.

According to article 10 of PD-RWM and articles 1 and 4 to 9 of JMD-Auth, each practice, work or activity related to the management of RW requires a license in accordance with the provisions of the current legislation, taking into account a graded approach. The system of licensing of RW management facilities, in addition to other requirements provided by law (urban planning, etc.), includes a series of licenses covering the development, operation and decommissioning phases as follows:

- a. Scoping License
- b. Establishment license in a specific site
- c. Design approval
- d. Operation License
- e. Decommissioning License
- f. Approval for site release from regulatory control

PD-RWM sets the safety requirements for the management (article 5) and the disposal (article 6) of RW. JMD-Auth substantiates these requirements by detailing the requirements for the above licenses. In particular, Article 7 of JMD-Auth sets the contents of the Safety Analysis Report (SAR).

The only centralized facility in the country for interim storage of RW, RS and RM operates under the Institute of Nuclear and Radiological Sciences & Technology, Energy & Safety (INRASTES) of NCSR “D”. The license of the facility has been recently renewed by EEAE (in July 2014), authorizing the following practices: interim storage of RW and disused RS; low activity sources dismantling; characterization of RW; re-packaging and re-sorting of RW and RS; de-characterization and clearance of RW.

The legislation mentioned before (PD-RWM, JMD-Auth) provides terms on decommissioning, closure and post-closure and sets the respective requirements for safety and authorization. Yet, decommissioning plans for the GRR-1 research reactor and the centralized interim storage facility of NCSR “D” have not been submitted. The submitted

SARs for these facilities do not include, for the time being, decommissioning, closure and post-closure plans.

Article 7.4

Member States shall ensure that the national framework require license holders to establish and implement integrated management systems, including quality assurance, which give due priority to safety and are regularly verified by the competent regulatory authority.

According to article 7, par. 4 of PD-122 the license holders are required to establish and implement integrated management systems, including quality assurance, which give due priority to safety in SF and RW management. EEAE is responsible to assess these systems.

Article 5, par. 1 of PD-RWM sets the obligations and responsibilities of the licensee, including the establishment and implementation of appropriate quality assurance programme and appropriate quality management system. Furthermore, as provided in article 19, par. 1 of PD-RWM, the SF and RW management facility license holder is required to have in place a quality assurance programme to ensure that all planned and systematic actions necessary for the satisfactory operation of structures, systems, components or procedures related to the SF and RW management are carried out. The quality assurance programme is approved by EEAE.

According to RPR, all medical laboratories, including radiotherapy and nuclear medicine laboratories (RW producers) are required to have quality assurance programmes, the content of which is approved and regularly inspected by EEAE.

The centralized interim storage facility of NCSR “D” has a quality assurance programme in place, which has been submitted to EEAE and is regularly inspected by EEAE.

Article 7.5

Member States shall ensure that the national framework require license holders to provide for and maintain adequate financial and human resources to fulfill their obligations with respect to the safety of spent fuel and radioactive waste management as laid down in paragraphs 1 to 4.

According to article 7, par. 5 of PD-122, the license holders shall provide and maintain adequate financial and human resources to fulfill their obligations with regard to the safety of SF and RW management.

According to article 5, par. 1 of PD-RWM, which sets the obligations and responsibilities of the license holder, the licensee is required to ensure adequate financial resources and scientific and technical support needed for safe and secure SF and RW management, as well as sufficient number of suitably qualified and trained staff. Furthermore, the licensee is required to establish and implement a programme of lifelong education and training for the employees engaged in tasks related to safety, radiation protection and emergency response.

Article 7, par. 5 of the PD-RWM provides that the SF and RW producer bears the associated management costs. The SF and RW producer, with graded approach, is required to have all the necessary financial resources and skilled manpower required for the safe processing, conditioning, transport, storage or clearance.

For the sustainability of the "national programme", a deposit fund is created for the financial security of the management of RW, RS and RM. The deposit fund operates under the EEAE, and receives financial contribution – among other – from the owner of RS and RM or the RW producer (Section Γ3 of “MD-NatPro” – see Appendix 2).

EEAE responsibilities include education and training in radiation protection for the workers involved in the management of SF and RW (article 7, par. 2 of PD-RWM).

Article 8: Expertise and skills

Member States shall ensure that the national framework require all parties to make arrangements for education and training for their staff, as well as research and development activities to cover the needs of the national Programme for spent fuel and radioactive waste management in order to obtain, maintain and to further develop necessary expertise and skills.

PD-122 and PD-RWM provides arrangements for the education and training for staff involved in SF and RW management.

Scientific staff of organizations involved in RW management participates in actions of the International Atomic Energy Agency (IAEA) and EU research & development projects on the management of RW and RM. It is particularly encouraged the participation in programmes aimed at exploring common waste management solutions (shared regional solutions).

In the current period, the ongoing programmes are:

- RER/9/107 «Strengthening Radioactive Waste Management Capabilities» (IAEA).
- INT/9/176 «Strengthening Cradle-to-Grave Control of Radioactive Sources in the Mediterranean Region» (IAEA).
- RER/9/120 «Supporting Decommissioning Implementation for Facilities Using Radioactive Material» (IAEA).
- JOPRAD «Joint Programme on Radioactive Waste Disposal» (Coordination and Support Action of the H2020 Euratom programme).
- RER/9/109 «Strengthening Education and Training Infrastructures and Building Competence in Radiation Safety» (IAEA). Within this project a Long Term Agreement (LTA) between the IAEA and the Government of Greece has been signed in 2011 to support the Greek Atomic Energy Commission as a Regional Centre in Europe for Radiation Transport and Waste Safety. The LTA has been ratified in 2012 by Law 4085/2012 (Government Gazette Folio No. 194/A/12.10.2012).

Article 9: Financial resources

Member States shall ensure that the national framework require that adequate financial resources be available when needed for the implementation of national Programmes referred to in Article 11, especially for the management of spent fuel and radioactive waste, taking due account of the responsibility of spent fuel and radioactive waste generators.

According to article 9 of PD-122, all bodies, competent or engaged in activities related to SF and RW management, ensure the availability of sufficient financial resources, as needed for the implementation of the national programme.

“The minister” ensures the development and implementation of the financial plan for the SF and RW management, including disposal (article 7, par. 1 of the PD-RWM).

One of EEDRA duties is the preparation of financial plan and proposing funding sources for the implementation of the national programme for SF and RW management.

«The Minister» shall ensure the implementation of the financing plan, which will not necessarily draw on the state budget but will be oriented in raising resources through, as indicative, projects, structural funds, recovery of the deposit fund, etc.

The SF and RW producers bears the associated management costs.

A deposit fund is created for the financial security of the management of RW, RS and RM. The deposit fund operates under EEAE, in accordance with Article 10 of Ministerial Decision No. 10828/(EFA)1897, Government Gazette Folio No. 859/B/10.07.2006, “Control of high-activity sealed radioactive sources and orphan sources” (transposition the Council Directive 2003/122/Euratom). The deposit fund receives financial contributions from the owner of RS and RM or the RW producer, and may receive contributions from the Finance Ministry, upon reasoned opinion by EEDRA, or from other interested parties.

The deposit fund is used exclusively to finance the following:

- recovery of orphan sources and safe temporary storage of such sources;
- management of RW, RS and RM for which EEAE considers that there is immediate need for management for reasons of radiation protection and nuclear security, when the holder is unable to take action;
- export of RS or RM, which are under the jurisdiction of the Greek State (e.g. legacy items) or the holder has ceased to exist or is unable to deal with (e.g. due to bankruptcy), for recycling or management.

Article 10: Transparency

Article 10.1

Member States shall ensure that necessary information on the management of spent fuel and radioactive waste be made available to workers and the general public. This obligation includes ensuring that the competent regulatory authority informs the public in the fields of its competence. Information shall be made available to the public in accordance with national legislation and international obligations, provided that this does not jeopardize other interests such as, inter alia, security, recognised in national legislation or international obligations.

According to article 10, par. 1 of PD-122 “The Minister” and, as applicable, other competent Ministers take the necessary steps in order the necessary information on the management of SF and RW to be available to workers and the general public. Pursuant to Law 4310/2014 one of EEAE’s competencies is to provide sufficient information to the general public and workers regarding its areas of responsibility [article 43, par. 4(g)].

JMD-Auth sets provisions for the involvement of public at all stages of authorization/licensing procedures for RW management facilities through web-based open consultation, as well as provisions for the participation in the consultation of regional authorities.

The inspection reports, the Safety Evaluation Reports (SER) and the licenses for the GRR-1 research reactor and the interim storage facility of NCSR “D” are made publicly available via the EEAE web site.

Article 10.2

Member States shall ensure that the public be given the necessary opportunities to participate effectively in the decision- making process regarding spent fuel and radioactive waste management in accordance with national legislation and international obligations.

The national framework for the SF and RW, in particular JMD-1858 and PD-RWM, underwent open public consultation. The drafts were posted to the “government transparency” website www.opengov.gr, where the interested parties and general public were able to review and make comments. The comments have been considered in the revision of the texts, while detailed public consultation reports have been produced and made publicly available see at <http://www.opengov.gr/ypepth/?p=2596> and <http://www.opengov.gr/ypepth/?p=2559>). In parallel, EEAE originated a dialogue among the stakeholders involved in RW management. A workshop has been organized for presenting and discussing the national policy, national framework and national programme for SF and RW management.

Article 11: National Programme

Article 11.1

Each Member State shall ensure the implementation of its national programme for the management of spent fuel and radioactive waste ('national programme'), covering all types of spent fuel and radioactive waste under its jurisdiction and all stages of spent fuel and radioactive waste management from generation to disposal.

Pursuant to Article 7 of JMD-1858 the Greek Atomic Energy Commission (EEAE) is empowered to develop the initial (first) “national programme” referred to in Articles 11 and 12 of Council Directive 2011/70/Euratom.

The above first “national programme” has been developed, approved and is currently awaiting formal issuance, i.e. to be published in the Government Gazette in the form of Ministerial Decision (MD-NatPro). Once approved, it becomes enforceable and is communicated to all stakeholders in order to harmonize their plans and actions. EEAE shall ensure notification to the Commission of the content of the “national Programme”.

MD-NatPro is a separate document and covers all types, currents and stages of the management of the SF and RW under the jurisdiction of the Greek State, from production to disposal, pursuant to Articles 11 and 12 of PD-122.

The national program is provided in Appendix 2, along with including the inventory of RW (Appendix 3) and the agreement concluded between NCSR “D” and the USA for the repatriation of the GRR-1 research reactor spent fuel (Appendix 4).

Article 11.2

Each Member State shall regularly review and update its national programme, taking into account technical and scientific progress as appropriate as well as recommendations, lessons learned and good practices from peer reviews.

According to article 8, par. 2 of PD-RWM, at least once every three years the "national programme" is reviewed and updated by the Greek Atomic Energy Commission (EEAE), upon agreement of the National Committee for Radioactive Waste Management (EEDRA).

Article 12: Contents of national Programme

The national programme, which is in the phase of formal issuance in the form of Ministerial Decision (MD-NatPro), is attached in Appendix 2 (should be considered as draft). The content of the national programme is outlined below:

A. Objective and scope

Definitions

B. Legislative framework

C. Implementation of the national policy for the SF and RW management

D. Milestones and timelines of the national programme

Action 1: Appointment, composition and functioning of the National Committee for Radioactive Waste Management (EEDRA).

Action 2: Inventory and Classification of Radioactive Waste

Action 3: Establishment of national facility for the interim storage and management of Radioactive Waste (EEPADRA)

Action 4: Withdrawal project of radioactive sealed sources and radioactive materials for recycling and / or management

Action 5: Decisions on national options for the management and disposal of radioactive waste

E. Inventory of SF and RW

F. Solutions for the management of RS and RW

G. Research and development

H. Responsibilities in the implementation of the national programme and performance indicators

I. Estimated cost of the national programme and distribution in time

J. Financing of the national programme

K. Transparency and information

APPENDICES

APPENDIX 1: 2012 IRRS mission in Greece

APPENDIX 2: National Programme (forthcoming)

APPENDIX 3: Inventory of radioactive waste, disused and orphan sources and materials and sources in use

APPENDIX 4: Contract for spent fuel of GRR-1 repatriation

APPENDIX 1: 2012 IRRS mission in Greece

At the request of the Government of the Hellenic Republic, an Integrated Regulatory Review Service (IRRS) mission to Greece has been arranged, which was conducted from 20 to 30 May 2012.

The purpose of this IRRS mission was to review the effectiveness of the Greek framework for safety and of the competent regulatory authority. The review compared the national regulatory framework for safety against IAEA safety standards. The mission was also used as an opportunity to exchange information and experience between the IRRS review team members and the EEAE counterparts in the areas covered by the IRRS.

The IRRS Review team carried out the review in the following areas: responsibilities and functions of the government; the global nuclear safety regime; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities of the regulatory body including the authorization, review and assessment, inspection and enforcement processes; development and content of regulations and guides; emergency preparedness and response; transport, control of medical exposure, occupational radiation protection, control of radioactive discharges and materials for clearance, environmental monitoring associated with authorized practices for public radiation protection purposes and the control of chronic exposures and remediation.

The IRRS mission also included the following regulatory policy issues for discussion: independence of the regulatory body, long term policy on waste management, clinical quality audits. The IRRS review addressed the facilities and activities regulated by EEAE which involve radiation sources in addition to the waste management facilities. The research reactor GRR-1 was out of the scope of this IRRS review, but will be included in the follow-up mission.

The IRRS team members observed the working practices during inspections carried out by EEAE, including discussions with the licensee personnel and management. In addition the IRRS team observed an emergency exercise which was conducted with representatives from multiple organizations.

The IRRS review team identified a number of good practices and made recommendations and suggestions highlighting the points where improvements will enhance the effectiveness of the regulatory framework and functions in line with the IAEA Safety Standards. The IRRS Team recognized that the action plan prepared by EEAE as a result of the self-assessment was closely correlated with the IRRS findings. The majority of IRRS Recommendations and Suggestions had been raised as issues during the self-assessment process, thus the action plan, proposed before the mission takes place, included a series of actions directly related to the fulfillment and implementation of the formulated Recommendations and Suggestions.

Recommendations related directly to waste management:

R3. The Government should provide for a graded approach in the implementation of the regulatory framework.

R4. The Government should establish and maintain a national policy and strategy for radioactive waste management including provisions for the decommissioning of facilities, management of radioactive waste and related financial provisions.

R5. The Government should expressly assign the prime responsibility for safety to the person or organization responsible for a facility or activity within the legal framework for radiation safety.

R13. GAEC* should further develop guidance on the format and content of the documents to be submitted by the applicant in support of an application for licensing of facilities and activities.

R14. GAEC should improve the implementation of a graded approach in the authorization process.

R15. GAEC should enforce the licensing requirements for all facilities at NCSR “Demokritos”, including the interim storage facility.

R17. GAEC should provide inspection results officially to the operator of the NCSR “Demokritos” waste storage facility, and ensure that the inspection findings are addressed.

R20. GAEC should establish safety requirements for decommissioning of facilities and pre- disposal management of radioactive waste.

Suggestions related directly to waste management:

S5. GAEC should consider revising its licensing approach in order to include conditions, limits and controls on licenses and or certificates of compliance.

S8. GAEC should consider incorporating a waste classification scheme into its regulatory system.

*GAEC is the previously used abbreviation for EEAE.

APPENDIX 2: NATIONAL PROGRAMME (forthcoming)



ΕΛΛΗΝΙΚΗ ΕΠΙΤΡΟΠΗ ΑΤΟΜΙΚΗΣ ΕΝΕΡΓΕΙΑΣ

«ΕΘΝΙΚΟ ΠΡΟΓΡΑΜΜΑ» ΓΙΑ ΤΗ ΔΙΑΧΕΙΡΙΣΗ ΑΝΑΛΩΘΕΝΤΩΝ ΚΑΥΣΙΜΩΝ ΚΑΙ ΡΑΔΙΕΝΕΡΓΩΝ ΑΠΟΒΛΗΤΩΝ

Αύγουστος 2015	«Εθνικό Πρόγραμμα»

**«ΕΘΝΙΚΟ ΠΡΟΓΡΑΜΜΑ»ΓΙΑ ΤΗ ΔΙΑΧΕΙΡΙΣΗ ΑΝΑΛΩΘΕΝΤΩΝ ΚΑΥΣΙΜΩΝ ΚΑΙ
ΡΑΔΙΕΝΕΡΓΩΝ ΑΠΟΒΛΗΤΩΝ»**

Περιεχόμενα

A. ΣΚΟΠΟΣ ΚΑΙ ΑΝΤΙΚΕΙΜΕΝΟ

Ορισμοί

B. ΝΟΜΟΘΕΤΙΚΟ ΠΛΑΙΣΙΟ

Γ. ΥΛΟΠΟΙΗΣΗ ΤΗΣ ΕΘΝΙΚΗΣ ΠΟΛΙΤΙΚΗΣ ΓΙΑ ΤΗ ΔΙΑΧΕΙΡΙΣΗ ΑΚΡΑ

Δ. ΟΡΟΣΗΜΑ ΚΑΙ ΧΡΟΝΟΔΙΑΓΡΑΜΜΑΤΑ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ

Δράση 1. Ορισμός, σύσταση και λειτουργία Εθνικής Επιτροπής Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΔΡΑ)

Δράση 2. Απογραφή και ταξινόμηση των Ραδιενεργών Αποβλήτων

Δράση 3. Καθορισμός της Εθνικής Εγκατάστασης Προσωρινής Αποθήκευσης και Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΠΑΔΡΑ)

Δράση 4. Πρόγραμμα απομάκρυνσης από τη χώρα κλειστών ραδιενεργών πηγών και ραδιενεργών υλικών για ανακύκλωση ή/και διαχείριση

Δράση 5. Αποφάσεις σχετικά με τις εθνικές επιλογές για τη διαχείριση και τελική διάθεση των ραδιενεργών αποβλήτων

Ε. ΑΠΟΓΡΑΦΗ ΑΝΑΛΩΘΕΝΤΩΝ ΚΑΥΣΙΜΩΝ ΚΑΙ ΡΑΔΙΕΝΕΡΓΩΝ ΑΠΟΒΛΗΤΩΝ

ΣΤ. ΛΥΣΕΙΣ ΓΙΑ ΤΗ ΔΙΑΧΕΙΡΙΣΗ ΡΑΔΙΕΝΕΡΓΩΝ ΠΗΓΩΝ ΚΑΙ ΡΑΔΙΕΝΕΡΓΩΝ ΑΠΟΒΛΗΤΩΝ

Ζ. ΈΡΕΥΝΑ ΚΑΙ ΑΝΑΠΤΥΞΗ ΣΧΕΤΙΚΩΝ ΜΕ ΤΟ ΕΘΝΙΚΟ ΠΡΟΓΡΑΜΜΑ

Η. ΕΥΘΥΝΗ ΥΛΟΠΟΙΗΣΗΣ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ ΚΑΙ ΔΕΙΚΤΕΣ ΑΠΟΔΟΣΗΣ

Θ. ΕΚΤΙΜΗΣΗ ΚΟΣΤΟΥΣ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ ΚΑΙ ΚΑΤΑΝΟΜΗ ΣΤΟ ΧΡΟΝΟ

Ι. ΧΡΗΜΑΤΟΔΟΤΗΣΗ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ

ΙΑ. ΔΙΑΦΑΝΕΙΑ ΚΑΙ ΕΝΗΜΕΡΩΣΗ

Συντομογραφίες

ΑΚ : Αναλωθέντα καύσιμα

ΡΑ : Ραδιενεργά απόβλητα

ΑΚΡΑ : Αναλωθέντα καύσιμα και ραδιενεργά απόβλητα

ΡΠ : Ραδιενεργές πηγές

ΡΥ : Ραδιενεργά υλικά

ΕΕΑΕ : Ελληνική Επιτροπή Ατομικής Ενέργειας

ΕΕΔΡΑ : Εθνική Επιτροπή Διαχείρισης Ραδιενεργών Αποβλήτων

ΕΕΠΑΔΡΑ : Εθνική Εγκατάσταση Προσωρινής Αποθήκευσης και Διαχείρισης Ραδιενεργών Αποβλήτων

A. ΣΚΟΠΟΣ ΚΑΙ ΑΝΤΙΚΕΙΜΕΝΟ

Σύμφωνα με το άρθρο 7 της υπ' αριθ. 131207/Ι3/27.08.2015 (Β' 1858) κοινής υπουργικής απόφασης (κ.υ.α.) περί «καθορισμού της εθνικής πολιτικής για τη διαχείριση των αναλωθέντων καυσίμων και των ραδιενεργών αποβλήτων», η Ελληνική Επιτροπή Ατομικής Ενέργειας (ΕΕΑΕ) συντάσσει και εισηγείται το αρχικό (πρώτο) σχέδιο του «εθνικού προγράμματος» των άρθρων 11 και 12 του π.δ.122/2013 (Α' 177), το οποίο υποβάλλει στον αρμόδιο για την ΕΕΑΕ υπουργό προς έγκριση. Μετά την έγκρισή του, καθίσταται εκτελεστό και κοινοποιείται σε όλους τους εμπλεκόμενους φορείς, προκειμένου να εναρμονίσουν τα συντασσόμενα από αυτούς σχέδια και δράσεις. Η ΕΕΑΕ μεριμνά για την κοινοποίηση στην Ευρωπαϊκή Επιτροπή του περιεχόμενου του «εθνικού προγράμματος».

Με το παρόν σχέδιο καθορίζεται το «εθνικό πρόγραμμα» για τη διαχείριση αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων (εφεξής ΑΚΡΑ), όπως αυτό προβλέπεται στην περ. α της παρ. 1 του άρθρου 5 του π.δ. 122/2013, και το οποίο καλύπτει όλους τους τύπους, τα ρεύματα και όλα τα στάδια της διαχείρισης ΑΚΡΑ που υπάγονται στη δικαιοδοσία του Ελληνικού κράτους, από την παραγωγή έως τη διάθεσή τους, σύμφωνα με τα άρθρα 11 και 12 του π.δ. 122/2013.

Το πεδίο εφαρμογής του παρόντος καθορίζεται στο άρθρο 2 της υπ' αριθ. 131207/Ι3/27.08.2015 (Β' 1858) κ.υ.α. «Καθορισμός της εθνικής πολιτικής για τη διαχείριση των αναλωθέντων καυσίμων και των ραδιενεργών αποβλήτων». Το πεδίο εφαρμογής καλύπτει όλους τους τύπους και ρεύματα αναλωθέντων καυσίμων (εφεξής ΑΚ) και ραδιενεργών αποβλήτων (εφεξής ΡΑ) που παράγονται από οποιεσδήποτε εγκαταστάσεις και δραστηριότητες, καθώς και όλες τις εν χρήσει ή εκτός χρήσης ραδιενεργές πηγές (εφεξής ΡΠ) και ραδιενεργά υλικά (εφεξής ΡΥ), τα οποία, ενδεχομένως, να καταστούν και να χαρακτηρισθούν ως ραδιενεργά απόβλητα στο μέλλον.

Ορισμοί

Για την εφαρμογή του παρόντος, ισχύουν οι ορισμοί του άρθρου 3 του π.δ. 122/2013, οι ορισμοί του άρθρου 3 της υπ' αριθ. 131207/Ι3/27.08.2015 (Β' 1858) κ.υ.α. «Καθορισμός της εθνικής πολιτικής για τη διαχείριση των αναλωθέντων καυσίμων και των ραδιενεργών αποβλήτων», καθώς επίσης και οι ακόλουθοι:

1. «Εθνική Εγκατάσταση Προσωρινής Αποθήκευσης και Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΠΑΔΡΑ)»: Εγκεκριμένη εγκατάσταση προσωρινής αποθήκευσης και διαχείρισης ραδιενεργών αποβλήτων, η οποία καθορίζεται με απόφαση του αρμοδίου για την ΕΕΑΕ υπουργού,*
2. «Εθνική Επιτροπή Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΔΡΑ)»: Συλλογικό όργανο με συμβουλευτικό, εισηγητικό και επικουρικό ρόλο στον αρμόδιο για την ΕΕΑΕ υπουργό, σχετικά με την υλοποίηση των πρακτικών πτυχών της «εθνικής πολιτικής» και του «εθνικού πλαισίου», την ανεύρεση των σχετικών εφαρμοστέων λύσεων και τον συντονισμό των φορέων που εμπλέκονται κατά περίπτωση σε θέματα διαχείρισης ΑΚΡΑ.*

Το παρόν σχέδιο «εθνικού προγράμματος» ενεκρίθη από το Διοικητικό Συμβούλιο της ΕΕΑΕ στην 229^η Συνεδρίαση στις 03.04.2015 και αποτελεί το «εθνικό πρόγραμμα» για τη διαχείριση ΑΚΡΑ. Το «εθνικό πρόγραμμα» κοινοποιείται στην ΕΕ κατ' εφαρμογή του άρθρου 15 της Οδηγίας 2011/70/ΕΥΡΑΤΟΜ.

B. ΝΟΜΟΘΕΤΙΚΟ ΠΛΑΙΣΙΟ

1. Το παρόν «εθνικό πρόγραμμα» λαμβάνει υπόψη την υπάρχουσα νομοθεσία, ιδίως:
 - 1.1 Τον ν. 4042/2012 (Α'24) περί διαχείρισης αποβλήτων και ποινικών κυρώσεων.
 - 1.2 Τις διατάξεις του Κεφαλαίου Ε' «Διαχείριση πυρηνικής ενέργειας, τεχνολογίας και ακτινοπροστασίας – Ελληνική Επιτροπή Ατομικής Ενέργειας (ΕΕΑΕ)» του ν. 4310/2014 (Α' 258) «Έρευνα, Τεχνολογική Ανάπτυξη και Καινοτομία και άλλες διατάξεις».
 - 1.3 Τις διατάξεις του άρθρου 46 περί κυρώσεων του ν. 4310/2014 (Α' 258).
 - 1.4 Τις διατάξεις του π.δ. 122/2013 (Α' 177) «Προσαρμογή της ελληνικής νομοθεσίας στην Οδηγία 2011/70/ Ευρατόμ του Συμβουλίου της 19ης Ιουλίου 2011 περί

* Η ΕΕΔΡΑ και η ΕΕΠΑΔΡΑ προβλέπονται στο άρθρο 7 («φορείς») του σχεδίου π.δ. περί θεσπίσεως εθνικού νομοθετικού, ρυθμιστικού και οργανωτικού πλαισίου για την υπεύθυνη και ασφαλή διαχείριση αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων, το οποίο είναι υπό έκδοση, κατ' εφαρμογή της παρ. 1 του άρθρου 5 του π.δ. 122/2013.

θεσπίσεως κοινοτικού πλαισίου για την υπεύθυνη και ασφαλή διαχείριση αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων (ΕΕ L 199/ 02.08.2011)».

- 1.5 Το π.δ. 4/2014 (Α'9) περί σύστασης ΓΓ Συντονισμού Διαχείρισης Αποβλήτων.
- 1.6 Τις διατάξεις των Κανονισμών Ακτινοπροστασίας, κοινή υπουργική απόφαση (κ.υ.α.) υπ' αριθμ. 14632 (ΦΟΡ) 1416 19.07.1991 (Β' 539).
- 1.7 Την κοινή υπουργική απόφαση (κ.υ.α.) υπ' αριθμ. ΥΠΕΧΩΔΕ/ΕΥΠΕ/οικ. 107017/05.09.2006 (Β' 1225) περί «εκτίμησης των περιβαλλοντικών επιπτώσεων ορισμένων σχεδίων και προγραμμάτων, σε συμμόρφωση με τις διατάξεις της οδηγίας 2001/42/ΕΚ «σχετικά με την εκτίμηση των περιβαλλοντικών επιπτώσεων ορισμένων σχεδίων και προγραμμάτων» του Ευρωπαϊκού Κοινοβουλίου και του Συμβουλίου της 27ης Ιουνίου 2001».
- 1.8 Την κοινή υπουργική απόφαση (κ.υ.α.) 39624/2209/Ε103/25.09.2009 (Β' 2076) περί εξορυκτικής βιομηχανίας.
- 1.9 Την κοινή υπουργική απόφαση (κ.υ.α.) οικ.146163/08.05.2012 (Α' 1537) περί διαχείρισης νοσοκομειακών αποβλήτων.
- 1.10 Την υπουργική απόφαση Π/112/305/26.10.2012 (Β' 2877) περί Πυρηνικής Ασφάλειας Ερευνητικών Αντιδραστήρων.
- 1.11 Την κοινή υπουργική απόφαση (κ.υ.α.) οικ. 1649/45/15.01.2014 (Β' 45) περί συμμετοχής του κοινού.
- 1.12 Την κοινή υπουργική απόφαση (κ.υ.α.) υπ' αριθ. 131207/Ι3/27.08.2015 (Β' 1858) περί «καθορισμού της εθνικής πολιτικής για τη διαχείριση των αναλωθέντων καυσίμων και των ραδιενεργών αποβλήτων».

2. Επιπρόσθετα, στο «εθνικό πρόγραμμα» ελήφθησαν υπόψη – πέραν της οδηγίας 2011/70/Ευρατόμ – η Οδηγία 2013/59/ΕΥΡΑΤΟΜ για τον «καθορισμό βασικών προτύπων ασφαλείας για την προστασία από τους κινδύνους που προκύπτουν από ιοντίζουσες ακτινοβολίες», σχετικές κατευθυντήριες γραμμές της ΕΕ, όπως ΕΝΕΦ (European Nuclear Energy Forum) Guidelines for the establishment and notification of National Programmes (2013), ENSREG (European Nuclear Safety Regulators Group) Final Member States Guidelines for Reports to the Waste Directive (2014), EU guide, EC Radiation Protection No 179 Study on the current status of radioactive sources in the EU (2014), INPRO (International Project on Innovative Nuclear Reactors and Fuel Cycles) Shared Disposal options (2012), κλπ καθώς και σχετική βιβλιογραφία του Διεθνούς Οργανισμού Ατομικής Ενέργειας (ΔΟΑΕ), όπως ενδεικτικά : SSG 23 για

Waste management, SSR 5 για Disposal, GSR Part 6 για Decommissioning, NWT14 για Storage Facilities, Safety Analysis Report για Waste, RS-G-1.7 για Exemption and Clearance.

3. Το παρόν σχέδιο είναι σε πλήρη συμφωνία με τα σχέδια νομοθεσίας που έχουν καταρτιστεί (σε διαδικασία έκδοσης) για την πλήρη και ουσιαστική ενσωμάτωση της οδηγίας 2011/70/Ευρατόμ σχετικά με τη διαχείριση των ΑΚΡΑ. Ειδικότερα:

- 3.1 το σχέδιο π.δ. «Περί θεσπίσεως εθνικού νομοθετικού, ρυθμιστικού και οργανωτικού πλαισίου για την υπεύθυνη και ασφαλή διαχείριση αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων» (βλ. <http://www.opengov.gr/yppepth/?p=2596>),

- 3.2 το σχέδιο κ.υ.α. «Διαδικασίες και απαιτήσεις αδειοδότησης εγκαταστάσεων διαχείρισης ραδιενεργών αποβλήτων» (κατ' εξουσιοδότηση της παρ. 5 του άρθρου 10 του σχεδίου π.δ. του προηγούμενου σημείου 3.1).

4. Επίσης, ελήφθησαν υπόψη τα σχόλια που κατατέθηκαν κατά τη διαδικασία ανοικτής διαβούλευσης (opengov.gr) του προαναφερθέντος σχεδίου π.δ. (σημείο 3.1 παραπάνω) και της υπ' αριθ. 131207/Ι3/27.08.2015 (Β' 1858) κ.υ.α. (σημείο 1.12 παραπάνω).

Γ. ΥΛΟΠΟΙΗΣΗ ΤΗΣ ΕΘΝΙΚΗΣ ΠΟΛΙΤΙΚΗΣ ΓΙΑ ΤΗ ΔΙΑΧΕΙΡΙΣΗ ΑΚΡΑ

Οι αρχές της "εθνικής πολιτικής" καθορίζονται στα άρθρα 4 και 5 της κοινής υπουργικής απόφασης (υπ' αριθ. 131207/Ι3/27.08.2015 (Β' 1858)) «καθορισμός της εθνικής πολιτικής για τη διαχείριση των αναλωθέντων καυσίμων και των ραδιενεργών αποβλήτων (ΑΚΡΑ)». Για την υλοποίηση των αρχών της "εθνικής πολιτικής" εφαρμόζονται οι παρακάτω κατευθυντήριες οδηγίες:

1. Αναφορικά με την ασφάλεια και την ακτινοπροστασία πληθυσμού και περιβάλλοντος:
 - 1.1. Ο κάτοχος ΡΠ, ΡΥ ή ΡΑ έχει την κύρια ευθύνη της διαχείρισής τους, μέχρι της αποστολής τους σε εγκεκριμένη εγκατάσταση διαχείρισης ΑΚΡΑ (εντός ή εκτός της Ελλάδος) ή της φυσικής τους απομείωσης στα θεσμοθετημένα επίπεδα

αποδέσμευσης με βάση τους εκάστοτε ισχύοντες Κανονισμούς Ακτινοπροστασίας.

- 1.2. Η χρονική διάρκεια της προσωρινής αποθήκευσης ΡΠ, ΡΥ ή ΡΑ καθορίζεται στην παράγραφο 11 του άρθρου 5 της υπ' αριθ. 131207/13/27.08.2015 (Β' 1858) κ.υ.α. περί «καθορισμού της εθνικής πολιτικής για τη διαχείριση των αναλωθέντων καυσίμων και των ραδιενεργών αποβλήτων».
 - 1.3. Η ΕΕΑΕ αναλαμβάνει το συντονισμό των εμπλεκόμενων φορέων και νομικών ή φυσικών προσώπων για τη ασφαλή διαχείριση έκθετων και εκτός χρήσης ΡΠ, για τις οποίες ο κάτοχος είναι άγνωστος, αδυνατεί να τις διαχειριστεί (π.χ. χρεωκοπία) ή έχει πάψει να υφίσταται.
 - 1.4. Η ΕΕΑΕ θέτει τα κριτήρια για το χαρακτηρισμό μιας έκθετης ή εκτός χρήσης ΡΠ ή ΡΥ ως ραδιενεργό απόβλητο.
 - 1.5. Η ΕΕΑΕ θέτει τα κριτήρια για την κατηγοριοποίηση των ΡΠ ή ΡΥ, τα κριτήρια για τα επίπεδα πυρηνικής προστασίας ΡΠ ή ΡΥ καθώς και τα κριτήρια για την ταξινόμηση των ΡΑ.
2. Αναφορικά με την ελαχιστοποίηση παραγωγής και διαχείρισης ΑΚΡΑ:
- 2.1. Απαγορεύεται η εισαγωγή αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων με σκοπό την διάθεσή τους εντός των συνόρων της χώρας.
 - 2.2. Κλειστές ραδιενεργές πηγές και υλικά επαναπατρίζονται μετά το πέρας της ωφέλιμης χρήσης τους, εκτός αν αυτά μπορεί να αποθηκευτούν, προσωρινά, προς απομείωση και αποδέσμευση.
 - 2.3. Εφόσον είναι εφικτό, ραδιενεργές πηγές επαναχρησιμοποιούνται από άλλον ενδιαφερόμενο χρήστη προκειμένου αυτές να μην καταστούν εκτός χρήσης και ραδιενεργά απόβλητα.
 - 2.4. Διενεργούνται προγράμματα απόσυρσης κλειστών ΡΠ και ΡΥ, με σκοπό την εξαγωγή τους για ανακύκλωση σε εγκεκριμένες εγκαταστάσεις του εξωτερικού.
 - 2.5. Ο παραγωγός ΡΑ ή ο κάτοχος ΡΑ φροντίζει για την ελαχιστοποίηση του όγκου και της ενεργότητας των ΡΑ, όσο είναι λογικά εφικτό. Προς τούτο, στα πλαίσια της αδειοδότησης, ο κάτοχος επεξεργάζεται και προσωρινά αποθηκεύει ΡΑ, ώστε η διαχείρισή τους να καταστεί ευκολότερη.
 - 2.6. Ο παραγωγός των ΡΑ αποδεσμεύει ραδιενεργά υλικά, με την προϋπόθεση ότι τηρούνται τα θεσμοθετημένα επίπεδα αποδέσμευσης με βάση τους εκάστοτε ισχύοντες Κανονισμούς Ακτινοπροστασίας.

3. Αναφορικά με τη βιωσιμότητα του «εθνικού προγράμματος», δημιουργείται ταμείο παρακαταθήκης για τη χρηματοοικονομική ασφάλεια της διαχείρισης των ραδιενεργών αποβλήτων και ραδιενεργών πηγών και υλικών.
- 3.1. Το ταμείο παρακαταθήκης λειτουργεί ως χωριστός κωδικός στον Ειδικό Λογαριασμό Κονδυλίων Έρευνας (ΕΛΚΕ) της ΕΕΑΕ, σύμφωνα με το άρθρο 10 της απόφασης υπ' αριθμ. 10828 /ΕΦΑ(1897)/10.7.2006 (Β' 859) «Έλεγχος των κλειστών πηγών υψηλής ραδιενέργειας και των έκθετων πηγών» και τροφοδοτείται από οικονομική συνεισφορά του κατόχου των ΡΠ και ΡΥ ή του παραγωγού ΡΑ, εφόσον αυτή αποτελεί όρο της αδειοδότησής του ή κατόπιν συναίνεσης του ιδίου του κατόχου. Το ταμείο μπορεί επίσης να τροφοδοτείται από κονδύλια του υπουργείου Οικονομικών, κατόπιν αιτιολογημένης εισήγησης της ΕΕΔΡΑ, ή από κονδύλια άλλου ενδιαφερομένου / εμπλεκόμενου φορέα.
- 3.2. Οι αποταμιεύσεις του ταμείου διατίθενται αποκλειστικά, και αφού λάβει γνώση η ΕΕΔΡΑ, για τις παρακάτω δραστηριότητες διαχείρισης ΡΠ, ΡΥ ή ΡΑ:
- 3.2.1. την ανάκτηση έκθετων πηγών και την ασφαλή προσωρινή τους αποθήκευση,
- 3.2.2. τη διαχείριση ΡΑ, ΡΠ και ΡΥ, για τα οποία η ΕΕΑΕ κρίνει ότι συντρέχει άμεση ανάγκη διαχείρισής τους, για λόγους ακτινοπροστασίας και ασφάλειας και πυρηνικής προστασίας και για τα οποία ο κάτοχός τους αδυνατεί να τα διαχειριστεί,
- 3.2.3. την εξαγωγή ΡΠ ή ΡΥ προς ανακύκλωση ή διαχείριση, τα οποία τελούν υπό τη δικαιοδοσία του ελληνικού δημοσίου (π.χ. ιστορικές πηγές, κληρονομία) ή ο κάτοχός τους έχει πάψει να υφίσταται ή αδυνατεί να τα διαχειριστεί (π.χ. χρεωκοπία, κλπ.).

Δ. ΟΡΟΣΗΜΑ ΚΑΙ ΧΡΟΝΟΔΙΑΓΡΑΜΜΑΤΑ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ

Παρακάτω δίδονται τα βασικά ορόσημα (Δράσεις) και τα χρονοδιαγράμματα του «εθνικού προγράμματος». Ως αρχή χρόνου λαμβάνεται η ημερομηνία έκδοσης του προβλεπόμενου στην παρ. 1 του άρθρου 5 του π.δ. 122/2013, προεδρικού διατάγματος περί θεσπίσεως του «εθνικού πλαισίου» για την υπεύθυνη και ασφαλή διαχείριση ΑΚΡΑ (βλ. παράγραφο 3 του μέρους Β του παρόντος).

Δράση 1. Ορισμός, σύσταση και λειτουργία Εθνικής Επιτροπής Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΔΡΑ).

- 1.1. Εντός τριών μηνών (3) ορίζονται τα μέλη της ΕΕΔΡΑ.
- 1.2. Εντός ενός (1) μηνός από τη σύστασή της, η ΕΕΔΡΑ συνέρχεται σε σώμα, ενημερώνεται για το έργο της και ξεκινά τον προγραμματισμό των δράσεών της.

	Δράση	1 ^ο έτος												2 ^ο έτος												>
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
1	Εθνική Επιτροπή Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΔΡΑ)																									
1.1	Σύσταση ΕΕΔΡΑ																									
1.2	Λειτουργία ΕΕΔΡΑ																									---

Δράση 2. Απογραφή και ταξινόμηση των Ραδιενεργών Αποβλήτων

- 2.1. Εντός ενός (1) έτους, η ΕΕΑΕ πραγματοποιεί την απογραφή των ΡΑ και την κοινοποιεί στον αρμόδιο για την ΕΕΑΕ υπουργό και την ΕΕΑΔΡΑ, όπως προκύπτει από την εθνική βάση δεδομένων ΑΚΡΑ, ΡΠ, ΡΥ και πυρηνικών καυσίμων που τηρεί η ΕΕΑΕ. Η απογραφή αφορά τόσο στα υφιστάμενα όσο και στα δυνητικά ΑΚΡΑ, δηλαδή σε αυτά που, κατ' εκτίμηση της ΕΕΑΕ, προκύψουν στο μέλλον. Ο κατάλογος με την απογραφή περιέχει, τουλάχιστον, στοιχεία για το είδος, μορφή, κατάσταση, ισότοπο, ραδιενέργεια, ποσότητα, περιέκτη, στοιχεία κατόχου και τοποθεσία.
- 2.2. Εντός δύο (2) ετών, η ΕΕΑΕ εισηγείται τα ρεύματα (διαχείρισης) ΑΚΡΑ. Με βάση αυτά και την απογραφή ΑΚΡΑ, η ΕΕΑΕ προβαίνει στην ταξινόμηση των ΑΚΡΑ.

	Δράση	1 ^ο έτος												2 ^ο έτος											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
2	Απογραφή Ραδιενεργών Αποβλήτων																								
2.1	Απογραφή και ταξινόμηση ΡΑ																								
2.2	Καθορισμός ρευμάτων ΡΑ																								

Δράση 3. Καθορισμός της Εθνικής Εγκατάστασης Προσωρινής Αποθήκευσης και Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΠΑΔΡΑ)

- 3.1. Εντός ενός (1) έτους» η ΕΕΑΕ καθορίζει και κοινοποιεί τα κριτήρια με τα οποία μία εγκατάσταση διαχείρισης ραδιενεργών αποβλήτων μπορεί να οριστεί ως ΕΕΠΑΔΡΑ. Τα κριτήρια βασίζονται στην απογραφή των ΑΚΡΑ, τα αντίστοιχα ρεύματα, την τοποθεσία, την "εθνική πολιτική" και τις μεθόδους και τεχνικές λύσεις προσωρινής αποθήκευσης και διαχείρισης (εξαιρουμένης της διάθεσης) των ΑΚΡΑ.
- 3.2. Εντός των επόμενων έξι (6) μηνών από την ολοκλήρωση του βήματος 3.1, διερευνώνται και αξιολογούνται από την ΕΕΑΕ οι προτάσεις για τον καθορισμό της ΕΕΠΑΔΡΑ και, εφόσον πληρούνται τα κριτήρια επιλογής, η ΕΕΑΕ μετά από γνωμοδότηση της ΕΕΔΡΑ γνωμοδοτεί σχετικά στον αρμόδιο για την ΕΕΑΕ υπουργό.
- 3.3. Παράλληλα εξετάζεται η δυνατότητα αξιοποίησης της ήδη εγκεκριμένης εγκατάστασης διαχείρισης ραδιενεργών αποβλήτων και πηγών, η οποία λειτουργεί στο Ινστιτούτο Πυρηνικών & Ραδιολογικών Επιστημών & Τεχνολογίας (ΙΠΡΕΤΕΑ) του ΕΚΕΦΕ «Δημόκριτος», ως ΕΕΠΑΔΡΑ. Στην περίπτωση που εκδηλωθεί σχετικό ενδιαφέρον από το ΕΚΕΦΕ «Δημόκριτος», η ΕΕΑΕ αξιολογεί την πρόταση αναβάθμισης της εγκατάστασης, και, εφόσον ικανοποιούνται τα κριτήρια του βήματος 3.1, η ΕΕΑΕ γνωμοδοτεί σχετικά για την έκδοση της υπουργικής απόφασης καθορισμού της ως ΕΕΠΑΔΡΑ.
- 3.4. Εντός του επόμενου ενός (1) έτους από την ολοκλήρωση του βήματος 3.2 ή 3.3, ξεκινά σταδιακά η λειτουργία της ΕΕΠΑΔΡΑ. Η ΕΕΑΕ προβαίνει στην αδειοδότηση της εγκατάστασης και λειτουργίας, σύμφωνα με τα ισχύοντα περί αδειοδότησης εγκαταστάσεων διαχείρισης ΑΚΡΑ.
- 3.5. Εντός του επόμενου ενός (1) έτους από την ολοκλήρωση του βήματος 3.4, η ΕΕΠΑΔΡΑ λειτουργεί πλήρως.

	Δράση													
3	Εθνική Εγκατάσταση Προσωρινής Αποθήκευσης και Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΠΑΔΡΑ)													
		1 ^ο έτος				2 ^ο έτος		3 ^ο έτος		4 ^ο έτος		5 ^ο έτος		>
3.1	Καθορισμός κριτηρίων επιλογής της ΕΕΠΑΔΡΑ													
3.2	Αξιολόγηση προτάσεων για ΕΕΑΠΑΔΡΑ													
3.3	Εξέταση δυνατότητας αξιοποίησης της εγκατάστασης του ΙΠΡΕΤΕΑ - ΕΚΕΦΕ «Δ» ως ΕΕΠΑΔΡΑ													
	Καθορισμός ΕΕΠΑΔΡΑ													
3.4	Αδειοδότηση – Σταδιακή λειτουργία ΕΕΠΑΔΡΑ													
3.5	Ολοκλήρωση πλήρους λειτουργίας ΕΕΠΑΔΡΑ													
	Συνεχής λειτουργία ΕΕΠΑΔΡΑ													...

Δράση 4. Πρόγραμμα απομάκρυνσης από τη χώρα κλειστών ραδιενεργών πηγών και ραδιενεργών υλικών για ανακύκλωση ή/και διαχείριση.

Το όλο πρόγραμμα θα πραγματοποιηθεί κατά τρόπο ανάλογο, όπως με το πρόγραμμα «Συλλογή και απομάκρυνση μη χρησιμοποιούμενων ραδιενεργών πηγών από τον Ελλαδικό χώρο» (Κωδικός Έργου: ΕΜΠ 20/6.12.2000 Δ/νση Περιβαλλοντικού Σχεδιασμού του ΥΠΕΧΩΔΕ, προϋπολογισμού 1,367,000 Ευρώ, με απορρόφηση κονδυλίων 100%) την περίοδο 2001-2006. Σημειωτέον ότι το προηγούμενο αυτό πρόγραμμα χαρακτηρίστηκε ως «καλή πρακτική» (“Good Practice”) στις απολογιστικές συνελεύσεις της Κοινής Σύμβασης για την ασφάλεια της διαχείρισης αναλωθέντων καυσίμων και την ασφάλεια της διαχείρισης ραδιενεργών αποβλήτων (Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management). Τα βήματα είναι τα παρακάτω:

- 4.1. Εντός τριών (3) μηνών, η ΕΕΑΕ κατόπιν εγκρίσεως από τον αρμόδιο Υπουργό διενεργεί το νέο πρόγραμμα για την απομάκρυνση από τη χώρα κλειστών ΡΠ και ΡΥ για ανακύκλωση ή/και διαχείριση.
- 4.2. Εντός του επόμενου ενός (1) έτους από την ολοκλήρωση του βήματος 4.1, η ΕΕΑΕ εντοπίζει και καταγράφει τις ΡΠ και ΡΥ της επικράτειας, που μπορούν να εξαχθούν προς ανακύκλωση ή διαχείριση. Στις ΡΠ και στα ΡΥ αυτά, περιλαμβάνονται τόσο οι έκθετες και οι εκτός χρήσης ραδιενεργές πηγές, όσο και αυτές, που σύμφωνα με το προγραμματισμό των κατόχων τους, θα καταστούν εκτός χρήσης πηγές στο άμεσο μέλλον.
- 4.3. Παράλληλα, κατά τη διάρκεια του βήματος 4.2, η ΕΕΑΕ προβαίνει στην εκτίμηση του κόστους του προγράμματος και καθορίζει το κόστος συμμετοχής των κατόχων των πηγών και υλικών που πρόκειται να ανακυκλωθούν.

- 4.4. Εντός των επόμενων έξι (6) μηνών από την ολοκλήρωση των βημάτων 4.2 και 4.3, οι συναρμόδιοι φορείς ανευρίσκουν τα τυχόν απαραίτητα κονδύλια για τη διενέργεια του προγράμματος.
- 4.5. Εντός του επόμενου ενός (1) έτους από την ολοκλήρωση του βήματος 4.4, η ΕΕΑΕ εκδίδει προδιαγραφές και διενεργεί διεθνή διαγωνισμό για την ανάθεση σε εγκεκριμένη εγκατάσταση διαχείρισης ραδιενεργών πηγών και ραδιενεργών υλικών του εξωτερικού, του έργου απόσυρσης και διαχείρισης των ΡΠ και ΡΥ (ανάδοχος του έργου).
- 4.6. Εντός των επόμενων τριών (3) ετών από την ολοκλήρωση του βήματος 4.5, πραγματοποιείται η συλλογή, επεξεργασία και συσκευασία των ΡΠ και ΡΥ. Στο μέρος αυτό του προγράμματος συμμετέχουν οι κάτοχοι των ΡΠ και ΡΥ, ο ανάδοχος του έργου, η ΕΕΑΕ και η ΕΕΠΑΔΡΑ.
- 4.7. Στο ίδιο διάστημα πραγματοποιείται η εξαγωγή των ΡΠ και ΡΥ από τον ανάδοχο του έργου.

Δράση													
4	Πρόγραμμα απομάκρυνσης από τη χώρα κλειστών ραδιενεργών πηγών και ραδιενεργών υλικών για ανακύκλωση ή/και διαχείριση												
		1° έτος			2° έτος			3° έτος			4° έτος		
4.1	Έναρξη προγράμματος												
4.2	Εντοπισμός και καταγραφή ΡΠ και ΡΥ (μελλοντικά εκτός χρήσης)												
4.3	Εκτίμηση κόστους προγράμματος και κόστος συμμετοχής												
4.4	Εντοπισμός κονδυλίων												
4.5	Σύνταξη προδιαγραφών & διενέργεια διεθνούς διαγωνισμού												
4.6	Συλλογή, επεξεργασία, συσκευασία των ΡΠ και ΡΥ												
4.7	Εξαγωγή πηγών στην ανάδοχη εταιρεία												

Δράση 5. Αποφάσεις σχετικά με τις εθνικές επιλογές για τη διαχείριση και τελική διάθεση των ραδιενεργών αποβλήτων

Με βάση τις ανάγκες της χώρας και τη διεθνή εμπειρία προβλέπεται ότι μια (1) εγκατάσταση θα είναι αρκετή για την κάλυψη όλων των αναγκών της Ελλάδας αναφορικά με τη διάθεση των ραδιενεργών αποβλήτων. Όσον αφορά το μέγεθός της, προβλέπεται να αντιστοιχεί σε αυτό ενός μικρού εργοταξιακού - βιομηχανικού χώρου, έκτασης ολίγων στρεμμάτων. Η δημιουργία τέτοιας εγκατάστασης, απαιτεί πολύχρονες μελέτες ραδιολογικών επιπτώσεων, μελέτες περιβαλλοντικών επιπτώσεων, πάσης φύσης γεωλογικές μελέτες, μελέτες συνεπειών φυσικών καταστροφών, κλπ., όπως εμπεριστατωμένα προβλέπεται στα άρθρα 5 και 6 του σχεδίου π.δ. «Περί θεσπίσεως

εθνικού νομοθετικού, ρυθμιστικού και οργανωτικού πλαισίου για την υπεύθυνη και ασφαλή διαχείριση αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων» (βλ. <http://www.opengov.gr/yperth/?p=2596>). Επίσης, απαιτεί να ληφθούν υπόψη κοινωνικοί, λειτουργικοί, οικονομικοί και περιβαλλοντικοί παράγοντες, καθώς και τα αναπτυξιακά σχέδια στην περιοχή. Τέλος, απαιτείται πλήρης διαφάνεια και συνεργασία όλων των εμπλεκόμενων φορέων, συμπεριλαμβανομένων και των τοπικών κοινωνιών.

Προαπαιτούμενο για τη δράση αυτή είναι να έχει ολοκληρωθεί η απογραφή των ραδιενεργών αποβλήτων, υφισταμένων και μελλοντικών, και να έχει αποφασισθεί ο τρόπος διάθεσής τους, για κάθε ρεύμα ΡΑ.

Η επιλογή της μιας (1) τοποθεσίας για την μία (1) αυτή εγκατάσταση θα γίνει σταδιακά, επιλέγοντας, κατ' αρχήν έναν αριθμό πιθανών τοποθεσιών που πληρούν συγκεκριμένα κριτήρια, τα οποία θα καθοριστούν από την ΕΕΔΡΑ και τους εμπλεκόμενους φορείς. Με βάση τα αποτελέσματα συγκεκριμένων μελετών που θα διενεργηθούν στις τοποθεσίες / περιοχές αυτές και τα κριτήρια, θα επιλεγθεί, σταδιακά, η τελική τοποθεσία. Επισημαίνεται, ότι το παρόν αρχικό (πρώτο) «εθνικό πρόγραμμα» δεν έχει στόχο την εξεύρεση και επιλογή της τελικής τοποθεσίας, αλλά την περιγραφή του οδικού χάρτη των διαδικασιών που απαιτούνται. Σε επόμενες αναθεωρήσεις του «εθνικού προγράμματος» θα καθορίζονται, σταδιακά, τα επόμενα βήματα.

Τα στάδια της δράσης αυτής συνοψίζονται:

- 5.1. Εντός πέντε (5) ετών, οι φορείς υλοποίησης του «εθνικού προγράμματος» διερευνούν και εισηγούνται σχετικά με:
 - 5.1.1. Τις επιλογές διάθεσης για τα υφιστάμενα ρεύματα ΡΑ.
 - 5.1.2. Τις τεχνικές λύσεις διάθεσης ανά ρεύμα ΡΑ.
 - 5.1.3. Το περιεχόμενο και την έκταση γεωλογικών μελετών, των μελετών περιβαλλοντικών επιπτώσεων, μελετών ανάλυσης ασφάλειας που απαιτούνται για τη δημιουργία εγκατάστασης διάθεσης ΡΑ (ανά ρεύμα ΡΑ).
 - 5.1.4. Την αναγκαιότητα, το αντικείμενο και την έκταση προγραμμάτων έρευνας και ανάπτυξης σχετικά με τις επιλογές και τεχνικές διάθεσης ΡΑ και του είδους της προς δημιουργία εγκατάστασης διάθεσης ΡΑ (ανά ρεύμα ΡΑ).

5.2. Εντός των επόμενων δέκα (10) ετών, οι φορείς υλοποίησης του «εθνικού προγράμματος» διερευνούν και εισηγούνται σχετικά με:

5.2.1. Τα κριτήρια για την επιλογή και την αξιολόγηση της τοποθεσίας όπου μπορεί να δημιουργηθεί εγκατάσταση διάθεσης ΡΑ.

5.2.2. Θέματα που αφορούν στην παύση της εγκατάστασης διάθεσης ΡΑ και την ενδεχόμενη απελευθέρωση της περιοχής από ρυθμιστικούς ελέγχους.

5.2.3. Θέματα και θέσεις του κοινού, τοπικής αυτοδιοίκησης και της κοινωνίας σχετικά με τη δημιουργία εγκατάστασης διάθεσης ΡΑ (συμπεριλαμβανομένων, ενδεχομένως, και προτάσεων για πιθανά αντισταθμιστικά οφέλη και εφαρμογή τους).

5.2.4. Προτάσεις πιθανών τοποθεσιών για τη δημιουργία της μίας (1) εγκατάστασης διάθεσης ΡΑ.

Δράση		Έτη														
5	Αποφάσεις για τις Εθνικές Επιλογές Διαχείρισης και τελικής Διάθεσης Ραδιενεργών Αποβλήτων	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
5.1	Οι φορείς υλοποίησης του «εθνικού προγράμματος» διερευνούν και εισηγούνται															
5.1.1	Τις επιλογές διάθεσης για τα υφιστάμενα ρεύματα ΡΑ															
5.1.2	Τις τεχνικές λύσεις διάθεσης ανά ρεύμα ΡΑ															
5.1.3	Το περιεχόμενο και την έκταση μελετών περιβαλλοντικών επιπτώσεων, ανάλυσης ασφάλειας, κ.α.															
5.1.4	Την αναγκαιότητα, το αντικείμενο και την έκταση προγραμμάτων έρευνας και ανάπτυξης															
5.2	Οι φορείς υλοποίησης του «εθνικού προγράμματος» διερευνούν και εισηγούνται															
5.2.1	Τα κριτήρια για την επιλογή και την αξιολόγηση της τοποθεσίας εγκατάστασης διάθεσης															
5.2.2	Θέματα παύσης της εγκατάστασης διάθεσης ΡΑ και απελευθέρωσης της περιοχής															
5.2.3	Θέματα και θέσεις του κοινού, τοπικής αυτοδιοίκησης και της κοινωνίας															
5.2.4	Πιθανές τοποθεσίες για τη δημιουργία της μίας (1) εγκατάστασης διάθεσης ΡΑ															

Ε. ΑΠΟΓΡΑΦΗ ΑΝΑΛΩΘΕΝΤΩΝ ΚΑΥΣΙΜΩΝ ΚΑΙ ΡΑΔΙΕΝΕΡΓΩΝ ΑΠΟΒΛΗΤΩΝ

1. Η Ελληνική Επιτροπή Ατομικής Ενέργειας πραγματοποιεί την εθνική απογραφή αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων, η οποία ανανεώνεται σε συνεχή και συστηματική βάση.

2. Η εθνική απογραφή των ραδιενεργών αποβλήτων λαμβάνει υπόψη:

2.1 Τα στερεά ραδιενεργά απόβλητα (ρητίνες, ενεργοποιημένα και ραδιορυσσάσιμα αντικείμενα, κλπ.) και ραδιενεργές πηγές που έχουν προκύψει από τις δραστηριότητες και τη λειτουργία του ερευνητικού αντιδραστήρα (GRR-1) και

- των ινστιτούτων του ΕΚΕΦΕ «Δημόκριτος», και τα οποία (ραδιενεργά απόβλητα) φυλάσσονται στην εγκατάσταση διαχείρισης ραδιενεργών αποβλήτων και πηγών του Ινστιτούτου Πυρηνικών & Ραδιολογικών Επιστημών & Τεχνολογίας (ΙΠΡΕΤΕΑ) και στους χώρους του ερευνητικού αντιδραστήρα GRR-1.
- 2.2 Τα υγρά ραδιενεργά απόβλητα που προκύπτουν από τις δραστηριότητες και τη λειτουργία των ινστιτούτων του ΕΚΕΦΕ «Δ», τα οποία φυλάσσονται στην εγκατάσταση δεξαμενών του κέντρου μέχρι την απομείωσή τους.
- 2.3 Εκτός χρήσης και έκθετες ΡΠ και ΡΥ για τα οποία, με υπόδειξη της ΕΕΑΕ, προέκυψε ανάγκη άμεσης διαχείρισης και φύλαξης για λόγους ακτινοπροστασίας του πληθυσμού και τα οποία έχουν μεταφερθεί στην εγκατάσταση διαχείρισης ραδιενεργών αποβλήτων και πηγών του Ινστιτούτου Πυρηνικών & Ραδιολογικών Επιστημών & Τεχνολογίας (ΙΠΡΕΤΕΑ) του ΕΚΕΦΕ «Δημόκριτος».
- 2.4 Εκτός χρήσης ΡΠ και ΡΥ, τα οποία προέκυψαν από δραστηριότητες εγκαταστάσεων (π.χ. βιομηχανίες, ιατρικά εργαστήρια ακτινοβολιών, ερευνητικά εργαστήρια, κλπ.) και φυλάσσονται στις εγκαταστάσεις των κατόχων τους, σε χώρους προσωρινής αποθήκευσης, μέχρι την εξεύρεση λύσης για την τελική τους διαχείριση. Η κατοχή και η προσωρινή φύλαξη αυτών εντάσσεται στους όρους λειτουργίας της εγκατάστασης και υπόκειται σε έλεγχο από την ΕΕΑΕ.
- 2.5 Συσκευές και καταναλωτικά προϊόντα που περιέχουν ραδιενεργά υλικά (π.χ. πυραυλικά, αλεξικέραυνα, όργανα ελέγχου/μέτρησης, κλπ.), τα οποία προέκυψαν από τις αντίστοιχες δραστηριότητες αφού ολοκληρώθηκε ο ωφέλιμος χρόνος χρήσης τους και τα οποία δεν μπορούν να εξαχθούν για ανακύκλωση, άμεσα. Σήμερα τα υλικά αυτά φυλάσσονται προσωρινά είτε στην εγκατάσταση διαχείρισης ραδιενεργών αποβλήτων και πηγών του Ινστιτούτου Πυρηνικών & Ραδιολογικών Επιστημών & Τεχνολογίας (ΙΠΡΕΤΕΑ) του ΕΚΕΦΕ «Δημόκριτος», ή στις εγκαταστάσεις των κατόχων τους, μέχρι την εξεύρεση λύσης για την τελική τους διαχείριση.
- 2.6 Έκθετες ΡΠ και ΡΥ, τα οποία εντοπίστηκαν κατά την εισαγωγή, τη διαχείριση ή την κατεργασία παλαιών σιδηρομεταλλευμάτων (scrap metal). Οι ΡΠ και τα ΡΥ φυλάσσονται, σήμερα, σε χώρους προσωρινής αποθήκευσης των εγκαταστάσεων στις οποίες εντοπίστηκαν, μέχρι την εξεύρεση λύσης για την τελική τους διαχείριση.
- 2.7 Ραδιενεργά υλικά ή ραδιορυσσάσιμα αντικείμενα που περιέχουν φυσική ραδιενέργεια (Naturally Occurring Radioactive Material - NORM), τα οποία

φυλάσσονται σε χώρους προσωρινής αποθήκευσης των εγκαταστάσεων από τις οποίες προέκυψαν ή εντοπίστηκαν, και για τα οποία απαιτείται εξεύρεση λύσης για την τελική τους διαχείριση.

- 2.8 Ραδιενεργά απόβλητα από δραστηριότητες ιατρικών και ερευνητικών εργαστηρίων ακτινοβολιών, τα οποία διαχειρίζονται από τα εργαστήρια. Η διαχείριση περιλαμβάνει είτε την αποδέσμευσή τους βάσει των κριτηρίων αποδέσμευσης / απόρριψης ή την προσωρινή τους φύλαξη στα εργαστήρια, μέχρι την απομείωσή τους. Τα σχετικά αρχεία διαχείρισης αποβλήτων τηρούνται στα εργαστήρια.
- 2.9 Τα ακτινοβολημένα καύσιμα και τα αναλωθέντα καύσιμα του Ερευνητικού Αντιδραστήρα (GRR-1) μέχρι αυτά να εξαχθούν βάσει της σύμβασης μεταξύ ΕΚΕΦΕ «Δημόκριτος» και US Department of Energy Savannah River Operations Office, και των διατάξεων του ν. 1636/1986 (Α' 106) «Κύρωση Σύμβασης για τη Φυσική Προστασία Πυρηνικού Υλικού».
- 2.10 Ραδιενεργά απόβλητα τα όποια προκύπτουν από την αποξήλωση εγκαταστάσεων, ιδίως όσα προκύπτουν με βάση το σχέδιο αποξήλωσης (decommissioning plan) του GRR-1.
3. Η ΕΕΑΕ τηρεί την εθνική βάση δεδομένων των εν χρήσει ραδιενεργών πηγών. Οι πηγές αυτές εντάσσονται στα δυνητικά ραδιενεργά απόβλητα. Τα σχετικά αρχεία υπάρχουν στην ηλεκτρονική βάση δεδομένων της ΕΕΑΕ.
4. Η ταξινόμηση των ραδιενεργών αποβλήτων πραγματοποιείται με βάση τις εκάστοτε ισχύουσες κατευθυντήριες γραμμές ασφάλειας του Διεθνούς Οργανισμού Ατομικής Ενέργειας (ΙΑΕΑ), λαμβάνοντας υπόψη το είδος, την ενεργότητα, το ρεύμα διαχείρισης και τις λύσεις διάθεσης των αποβλήτων.

ΣΤ. ΛΥΣΕΙΣ ΓΙΑ ΤΗ ΔΙΑΧΕΙΡΙΣΗ ΡΑΔΙΕΝΕΡΓΩΝ ΠΗΓΩΝ ΚΑΙ ΡΑΔΙΕΝΕΡΓΩΝ ΑΠΟΒΛΗΤΩΝ

Οι υφιστάμενες λύσεις στη διαχείριση των ΡΠ, ΡΥ και ΡΑ είναι :

1. Ο επαναπατρισμός κλειστών ΡΠ και ΡΥ. Ο επαναπατρισμός αποτελεί την προτιμητέα λύση για όλες της ΡΠ και ΡΥ, πριν καταστούν και χαρακτηρισθούν ραδιενεργά

- απόβλητα και διασφαλίζεται από έγγραφες βεβαιώσεις του κατόχου της πηγής και της κατασκευάστριας εταιρείας της πηγής, κατά την εισαγωγή της ΡΠ ή του ΡΥ.
2. Η εξαγωγή ΡΠ και ΡΥ, πριν καταστούν και χαρακτηρισθούν ραδιενεργά απόβλητα, σε εγκεκριμένες εγκαταστάσεις ανακύκλωσης και διαχείρισης ραδιενεργών υλικών.
 3. Η προσωρινή αποθήκευση ΡΠ και ΡΥ, τα οποία δεν μπορούν να επαναπατρισθούν ή εξαχθούν σε εγκαταστάσεις διαχείρισης ΡΠ και ΡΥ, μέχρι εξεύρεσης λύσης για την τελική τους διάθεση.
 4. Η αποδέσμευση, σύμφωνα με τα θεσμοθετημένα όρια αποδέσμευσης. Εφόσον απαιτείται, τα ΡΑ αποθηκεύονται προσωρινά μέχρι την απομείωσή τους. Αφορά ραδιενεργά απόβλητα:
 - VSLW (very short lived waste) παραγόμενα κυρίως από ιατρικά εργαστήρια πυρηνικής ιατρικής και ερευνητικά εργαστήρια, των οποίων ο χρόνος ημιζωής είναι μικρότερος των 100 ημερών.
 - VLLW (very low level waste) που περιέχουν ραδιονουκλίδια με χρόνο ημιζωής πάνω από 100 ημέρες, αλλά η συνολική αρχική τους ενεργότητα, πριν την απομείωσή τους, είναι μικρή (μικρότερη του 1 kBq). Αφορά υγρά και στερεά κατάλοιπα από βιολογικά πειράματα που διενεργούνται σε ερευνητικά εργαστήρια με μικρές ποσότητες H-3, C-14, P-32, P-33.
 5. Προσωρινή αποθήκευση όλων των LLW (low level waste) και ILW (intermediate level waste) μέχρι εξεύρεσης λύσης για την τελική τους διάθεση.

Z. ΕΡΕΥΝΑ ΚΑΙ ΑΝΑΠΤΥΞΗ ΣΧΕΤΙΚΩΝ ΜΕ ΤΟ ΕΘΝΙΚΟ ΠΡΟΓΡΑΜΜΑ

Επιστημονικό προσωπικό των φορέων που συμμετέχουν στη διαχείριση των ραδιενεργών αποβλήτων συμμετέχουν σε δράσεις και προγράμματα ανάπτυξης και έρευνας του Διεθνούς Οργανισμού Ατομικής Ενέργειας (IAEA) και της ΕΕ σχετικά με τη διαχείριση ραδιενεργών αποβλήτων και ραδιενεργών υλικών. Ιδίως ενθαρρύνεται η συμμετοχή σε προγράμματα που στοχεύουν στη διερεύνηση κοινών λύσεων διαχείρισης αποβλήτων (shared regional solutions).

Την τρέχουσα περίοδο, οι συμμετοχές σε προγράμματα είναι:

- RER/9/107 «Strengthening Radioactive Waste Management Capabilities» (IAEA).
- INT/9/176 «Strengthening Cradle-to-Grave Control of Radioactive Sources in the Mediterranean Region» (IAEA).
- RER/9/120 «Supporting Decommissioning Implementation for Facilities Using Radioactive Material» (IAEA).
- JOPRAD «Joint Programming on Radioactive Waste Disposal» (EE).

Η. ΕΥΘΥΝΗ ΥΛΟΠΟΙΗΣΗΣ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ ΚΑΙ ΔΕΙΚΤΕΣ ΑΠΟΔΟΣΗΣ

1. Την τελική ευθύνη για την έγκριση και υλοποίηση του «εθνικού προγράμματος» σε θέματα διαχείρισης ΑΚΡΑ έχει ο αρμόδιος για την ΕΕΑΕ υπουργός.
2. Η ΕΕΑΕ μεριμνά για την εφαρμογή του «εθνικού προγράμματος» και εισηγείται δράσεις για την τακτική επανεξέταση και αναπροσαρμογή του (άρθρο 11, π.δ. 122/2013).
3. Η ΕΕΑΕ συντάσσει και εισηγείται το παρόν αρχικό (πρώτο) σχέδιο «εθνικού προγράμματος», το οποίο υποβάλλει στον αρμόδιο για την ΕΕΑΕ υπουργό προς έγκριση (άρθρο 7 της υπ' αριθ. 131207/Ι3/27.08.2015 (Β' 1858) κ.υ.α «Καθορισμός της εθνικής πολιτικής για τη διαχείριση των αναλωθέντων καυσίμων και των ραδιενεργών αποβλήτων»).
4. Μετά την έγκρισή του, το «εθνικό πρόγραμμα» κοινοποιείται, με μέριμνα της ΕΕΑΕ, στην ΕΕ και στους εμπλεκόμενους φορείς.
5. Οι επικαιροποιήσεις του «εθνικού προγράμματος» γίνονται μέσω της Εθνικής Επιτροπής Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΔΡΑ). Σημειωτέον ότι, σύμφωνα με το καταρτισθέν σχέδιο π.δ. «Θέσπιση εθνικού νομοθετικού, ρυθμιστικού και οργανωτικού πλαισίου για την υπεύθυνη και ασφαλή διαχείριση αναλωθέντων καυσίμων και ραδιενεργών αποβλήτων», το οποίο εκδίδεται κατ' εφαρμογή της παρ. 1 του άρθρου 5 του π.δ. 122/2013, για τις μετέπειτα εκδόσεις του «εθνικού προγράμματος» απαιτείται η σύμφωνη γνώμη της ΕΕΔΡΑ.

6. Οι βασικοί δείκτες επίδοσης, οι οποίοι καταδεικνύουν την υλοποίηση και εφαρμογή του «εθνικού προγράμματος» είναι :

	Περιγραφή Στόχου	Στόχος
1	Τήρηση των χρονοδιαγραμμάτων και ορόσημων (κεφάλαιο Δ του παρόντος):	
	• Σύσταση και Λειτουργία Εθνικής Επιτροπής Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΔΡΑ)	Απόκλιση < 3 μηνών / βήμα
	• Καθορισμός Εθνική Εγκατάσταση Προσωρινής Αποθήκευσης και Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΠΑΔΡΑ)	Απόκλιση < 3 μηνών / βήμα
	• Πρόγραμμα Απομάκρυνσης κλειστών ραδιενεργών πηγών για ανακύκλωση	Απόκλιση < 3 μηνών / βήμα
	• Αποφάσεις σχετικά με τις εθνικές επιλογές για την διαχείριση και τελική διάθεση των ραδιενεργών αποβλήτων	Απόκλιση < 1 έτος / βήμα
2	Αριθμός επιθεωρήσεων της ΕΕΑΕ στις υφιστάμενες εγκαταστάσεις διαχείρισης ΡΑ	> 10 / έτος
3	Αριθμός συνεδριάσεων της ΕΕΔΡΑ	> 2 έτος
4	Εκταμίευση κονδυλίων	> 75 % των αιτουμένων
5	Αριθμός πηγών και υλικών φυλασσομένων σε επί τόπου χώρους φύλαξης των ιδίων κατόχων / χρηστών τους	Μηδενισμός εντός 5-ετίας
6	Αριθμός ερευνητικών & αναπτυξιακών προγραμμάτων στη διαχείριση ΡΑ, όπου συμμετέχουν Ελληνικοί φορείς	> 2 (ανά πάσα στιγμή)
7	Αριθμός αναρτήσεων στο διαδίκτυο για ενημέρωση κοινού σε θέματα διαχείρισης ΡΑ, σχεδίων και λήψης αποφάσεων	> 5 / έτος
8	Αριθμός εκθέσεων ασφάλειας & εκθέσεων αξιολόγησης υφισταμένων εγκαταστάσεων & φορέων	1 / έτος /εγκατάσταση

Θ. ΕΚΤΙΜΗΣΗ ΚΟΣΤΟΥΣ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ ΚΑΙ ΚΑΤΑΝΟΜΗ ΣΤΟ ΧΡΟΝΟ

Η εκτίμηση του κόστους για την επίτευξη των βασικών οροσήμων (1 - 5) του κεφαλαίου Δ και η κατανομή του στο χρόνο παρουσιάζεται στους παρακάτω πίνακες 1 – 5 (οι χρόνοι αναφέρονται μετά τη δημοσίευση του προβλεπόμενου στη παρ. 1 του άρθρου 5 του π.δ. 122/2013 προεδρικού διατάγματος).

Δράση 1. Ορισμός, σύσταση και λειτουργία Εθνικής Επιτροπής Διαχείρισης Ραδιενεργών Αποβλήτων ΕΕΔΡΑ: **Μηδενικό κόστος**

Δράση 2. Απογραφή και ταξινόμηση των Ραδιενεργών Αποβλήτων: **Μηδενικό κόστος**

Δράση 3. Καθορισμός της Εθνική Εγκατάσταση Προσωρινής Αποθήκευσης και Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΠΑΔΡΑ) : Εκτίμηση κόστους **1,500 k€**

	1 ^ο έτος	2 ^ο έτος	3 ^ο έτος	4 ^ο έτος	5 ^ο έτος
Κριτήρια επιλογής της ΕΕΠΑΔΡΑ	0 k€				
Αξιολόγηση εγκαταστάσεων		0 k€			
Καθορισμός ΕΕΠΑΔΡΑ		0 k€			
Αναβάθμιση – Σταδιακή λειτουργία			300	400	
Λειτουργία				800	

Δράση 4. Πρόγραμμα απομάκρυνσης από τη χώρα κλειστών ραδιενεργών πηγών και ραδιενεργών υλικών για ανακύκλωση ή/και διαχείριση: Εκτίμηση κόστους **3,100 k€**

	1 ^ο έτος	2 ^ο έτος	3 ^ο έτος	4 ^ο έτος	5 ^ο έτος
1. Εντοπισμός και καταγραφή πηγών (υφιστάμενων & δυνητικών)	0				
2. Εντοπισμός κονδυλίων		0			
3. Πρόσκληση ενδιαφέροντος εγκαταστάσεων διαχείρισης πηγών		50			
4. Αξιολόγηση εγκαταστάσεων – Ανάθεση έργου		50			
5. Συλλογή, επεξεργασία και συσκευασία ραδιενεργών πηγών			500	250	250
6. Εξαγωγή ραδιενεργών πηγών προς ανακύκλωση				1,000	1,000

Δράση 5. Αποφάσεις σχετικά με τις εθνικές επιλογές για την διαχείριση και τελική διάθεση των ραδιενεργών αποβλήτων: **Μηδενικό κόστος**

Σημείωση: Το κόστος υλοποίησης των αποφάσεων για τη διάθεση των ΡΑ θα εκτιμηθεί σε μεταγενέστερο στάδιο, όταν θα έχουν καθορισθεί οι επιλογές διαχείρισης και διάθεσης ΡΑ, ανά ρεύμα ΡΑ

I. ΧΡΗΜΑΤΟΔΟΤΗΣΗ ΤΟΥ ΕΘΝΙΚΟΥ ΠΡΟΓΡΑΜΜΑΤΟΣ

1. Η κατάρτιση του σχεδίου χρηματοδότησης και η εισήγηση τρόπων για την ανεύρεση των σχετικών κονδυλίων, το οποίο δεν θα προκαλεί αναγκαστικά επιβάρυνση του κρατικού προϋπολογισμού αλλά θα προσανατολίζεται στην άντληση πόρων μέσω, ενδεικτικά, προγραμμάτων, διαρθρωτικών ταμείων, αξιοποίηση του ταμείου παρακαταθήκης της παραγράφου Γ3 του παρόντος, κλπ. πραγματοποιείται από την Εθνική Επιτροπή Διαχείρισης Ραδιενεργών Αποβλήτων (ΕΕΔΡΑ).
2. Η ΕΕΑΕ, κατόπιν εγκρίσεως από το αρμόδιο υπουργείο, διενεργεί προσκλήσεις ενδιαφέροντος και διαγωνισμούς για την εκπόνηση μελετών και για την κατασκευή των προβλεπομένων από το «εθνικό πρόγραμμα» έργων με βάση τα σχετικά χρονοδιαγράμματα.

ΙΑ. ΔΙΑΦΑΝΕΙΑ ΚΑΙ ΕΝΗΜΕΡΩΣΗ

Στα πλαίσια ενημέρωσης του κοινού, ο αρμόδιος για την ΕΕΑΕ υπουργός, η ΕΕΑΕ και η ΕΕΔΡΑ αναρτούν στο διαδίκτυο τα σχετικά πρακτικά συνεδριάσεων, τα κείμενα και τα έγγραφα που αφορούν το «εθνικό πρόγραμμα». Επίσης, σε συνεχή βάση αναρτώνται πληροφορίες και τα σχετικά αναπτυξιακά και εκπαιδευτικά προγράμματα του Διεθνούς Οργανισμού Ατομικής Ενέργειας (ΙΑΕΑ) και της ΕΕ.

APPENDIX 3: Inventory of radioactive waste, disused and orphan sources and materials and sources in use

TABLE 1 : Resins in drums										
Location:		Interim storage facility of NCSR "Demokritos"								
Form		Resins								
Origin:		Past activities of GRR-1, NCSR "Demokritos"								
Properties:		Radiological, Physical, chemical								
Status:		In drums								
Processing options:		Characterization in progress. Disposal option has not been decided								
Update:		September 2015								
Characterization completed										
Waste classif.	Storage room	Type	# Drums	Volume, L/drum	Weight, kg/drum	Total Weight, kg	Total activity, MBq	Nuclides (main)	Maximum C _A / drum, Bq/g	Total MBq
VLLW & LLW	A & B (*)	Resins	158	200	100	15800	245	Ag-108m	4.8	15
								Cs-137	160	213
								Eu-152	2	4
								Co-60	6.2	13
(*) : LLW are stored in building A (56 drums) & VLLW in building B (102 drums). Reference date for activities 2011.										

TABLE 2 : Radioactive waste produced from GRR-1**Location:** NCSR "Demokritos"**Type:** Sediment, liquid and activated/contaminated objects**Origin:** Past activities of GRR-1, NCSR "Demokritos"**Properties:** Radiological, Physical, chemical**Status:****Processing options:** Characterization in progress. Disposal option has not been decided, yet**Update:** September 2015**Solid Waste**

Waste classif.	Storage room	Form	# Drums	Volume, L	Total activity, kBq	Nuclides (main)	Total Activity kBq
LLW	NCSR "D"	Sediment	1	2	300	Ag-108m	50
						Cs-137	
						Eu-152	30
						Co-60	220

Reference date for activities 2011

Solid Waste

Waste classif.	Storage room	Form	# Drums	Volume	Dose rate at 5 cm	Nuclides (main)	Total Activity kBq	Remarks
ILW	B	Metal parts from GRR-1	1 (cement shielding)	< 0.01 m ³	~ mSv/h	Co-60	(*)	Metal objects (e.g. screws) from GRR-1
LLW	A	Objects in drums	53	10 m ³	< 4 µSv/h	Co-60, Cs-137, Ag-108m, Eu-152	(*)	From GRR-1
Historical Waste	B	Objects in drums	100	20 m ³	< 50 µSv/h	(*)	(*)	From GRR-1 and connected facilities
Historical Waste	B	cemented sludge	50	10 m ³	~ 100 nSv/h	Cs-137	(*)	From GRR-1 and connected facilities
Historical Waste	NCSR "D"	Objects in drums	50	10 m ³	~ 100 nSv/h	(*)	(*)	From GRR-1 and connected facilities

(*) to be defined

Table 2 cont'd

TABLE 2 : continued							
Liquid waste							
Waste classif.	Storage room	Form	# Tanks	Volume, L	Total activity, MBq	Nuclides (main)	Total Activity kBq
VLLW	Liquid waste storage	Water	15	8944	5.70E+05	H-3	5.70E+05
						Cs-137	47
						Co-60	51
Reference date for activities 2011							

TABLE 4 : Disused sources				
Location: see table				
Type: Disused sources stored at NCSR "D" and at user's facilities (on site)				
Origin: Past -current activities of operator				
Properties: Radiological				
Status: Raw material				
Processing options: Awaiting for recycling				
Update: August 2015				
Location	Source Category	# sources	Total activity, MBq	Nuclides
Interim Storage NCSR "D, Building A	1			
	2	1	2.18E+07	Co-60
	3	42	4.53E+05	Cs-137, Am-241/Be, Sr-90, Co-60
	4	7	1.67E+03	Co-60, Kr-85, Cs-137
	5	209	4.99E+04	Co-60, Cs-137, Ir-192, Sr-90, Mn-54, Ra-226, Am-241, C-14, Pm-147
On site (facilities countrywide and in GRR-1 storage room)	1	3	5.22E+08	Co-60
	2			
	3	4	5.92E+05	Am-241, Pu-239/Be
	4	57	6.07E+05	Cs-137, Am-241, Ra-226, Th-232, Eu-152
	5	210	2.03E+05	Ra-226, Ni-63, Co-60, Cs-134, Cs-137, Sr-90, Kr-85, Pb-210, U-238, Am-241, Hg-203, Mn-54, Ba-133, Na-22, Co-57
Total		533	5.46E+08	

TABLE 5 : Radioactive material					
Location:	Interim Storage NCSR "D and on-site at other facilities (storage)				
Type:	Consumer products, Instruments, contaminated objects				
Origin:	Past activities of operator, illicit trafficking				
Properties:	Radiological				
Status:	Raw material				
Processing options:	Characterization in progress. Disposal option has not been decided, yet				
Update:	August 2015				
Location	Type	Origin	# items / quantity	Activity	Nuclides
Interim Storage NCSR "D	Lighting rods	Collected from sites	154	~ 50 MBq/item	Am-241, Ra-226
	Smoke detectors	Collected from sites	3107	~ 0.03 MBq/item	Am-241
	Consumer products, instruments, objects	Vehicle instruments, lamps, depU blocks	2298	various (*)	Ra-226, Am-241, Th-232, Sr-90, depU
	Contaminated soil, objects	Illegal actions, illicit trafficking	3 drums	(*)	Pu-238, Pu-239, Pu-240, Pu-241
	Metal plates with evaporated Pu-238	Illegal actions, illicit trafficking	250	(*)	Pu-238, Pu-239, Pu-240, Pu-241. Evaporation on metal plates
On-site (in facilities, countrywide)	Lightning rods	Activities of user	472	50 MBq/item	Am-241, Ra-226
	Consumer products, instruments, objects	Vehicle instruments, lamps	10 drums	(*)	Ra-226
	Insineration Ash	Scrap metal industry	50-100 m ³	(*)	Cs-137
	Contaminated objects with NORM	Excavation industry	100 m ³	Max activity concentration, C _A =5E3 Bq/g	Ra-226
(*) unknown at the moment, to be defined					

TABLE 6 : Orphan sources					
Location: On site					
Type: Orphan surces stored on site, where they detected (metal industies, scrap metal facilities, customs)					
Origin: Scrap Metal					
Properties: Radiological					
Status: Raw material					
Processing options: Characterization in progress. Disposal option has not been decided, yet					
Update: August 2015					

TABLE 7 : In use Sealed Radiation Sources & other material				
Location: see table				
Type: SRS, consumer products				
Origin: In use				
Properties: Radiological				
Status: In use				
Processing options: After useful life : Repatriation, reuse, recycling or disposal (to be defined)				
Update: August 2015				
Location	Category	# sources	Total activity, MBq	Nuclides
On site	1	36	6.53E+10	Co-60, Cs-137
	2	97	1.05E+09	Ir-192, Se-75, Cs-137, Co-60
	3	28	8.52E+06	Am-241, Cs-137, Ir-192, Co-60,
	4	415	1.68E+06	Co-60, Cs-137, Am-241, Ir-192, Sr-90, Ra-226, Se-75, Cf-252, Gd-153, Eu-152
	5	1822	1.60E+06	Ra-226, Ni-63, Co-60, Cs-134, Cs-137, Sr-90, Kr-85, Pb-210, U-238, Am-241, Hg-203, Mn-54, Ba-133, Na-22, Co-57, Eu-152, Cd-109, Pm-157
Total		2398	6.64E+10	
Location	Category	# sources	Activity, MBq	Nuclides
On site	Lighning rods	~ 1000	~ 50 MBq/item	Am-241, Ra-226
	Smoke detectors	unkown	~ 0.03 MBq/item	Am-241

APPENDIX 4: Contract for spent fuel of GRR-1 repatriation

CONTRACT NO. DE-GI09-05SR22469

BETWEEN THE

**UNITED STATES DEPARTMENT OF ENERGY
SAVANNAH RIVER OPERATIONS OFFICE**

AND

**NATIONAL CENTRE FOR SCIENTIFIC RESEARCH
“DEMOKRITOS”
INSTITUTE OF NUCLEAR TECHNOLOGY**

Greece

**TERMS AND CONDITIONS FOR
THE ACCEPTANCE OF
FOREIGN RESEARCH REACTOR SPENT NUCLEAR FUEL
AT THE SAVANNAH RIVER SITE**

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THIS Contract, entered into this 22 day of August 2005, by and between the UNITED STATES DEPARTMENT OF ENERGY (hereinafter referred to as "DOE"), and National Centre for Scientific Research "Demokritos" Institute of Nuclear Technology, 15310 located at Ag. Paraskevi Attiki, Greece, (hereinafter referred to as "Customer").

WITNESSETH THAT:

WHEREAS, the National Defense Authorization Act for Fiscal Year 1994 authorizes receipt and management of foreign research reactor spent nuclear fuel in the United States subsequent to completion by DOE of an Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, No. DOE/EIS-0218F (the "EIS") covering such fuel; and

WHEREAS, Special Nuclear Material, as defined herein, of United States origin has been irradiated in the nuclear research reactor GRR-1 (the "Reactor" as defined herein) operated at Ag. Paraskevi Attiki, Greece; and

WHEREAS, DOE has indicated its willingness, as set forth in a Record of Decision ("ROD"), issued by the Department on May 13, 1996, and revised on July 22, 1996, July 10, 2000, and November 22, 2004 to accept for management and disposition, under certain conditions specified in the ROD, Authorized Material as defined herein, which has been discharged from the Reactor and which is covered by the eligibility criteria specified in the EIS; and

WHEREAS, the parties have agreed to the terms and conditions set forth in this Contract applicable to the receipt of Authorized Material; and

WHEREAS, this Contract is executed under the authority of the United States Department of Energy Organization Act of 1977 and the United States Atomic Energy Act of 1954, as amended, and the Agreement for Cooperation in the Peaceful Uses of Nuclear Energy between the United States of America and the European Atomic Energy Community signed November 7, 1995, in Brussels, Belgium; and

WHEREAS, it is DOE's intent to treat similarly situated reactor operators and participating facilities fairly, equitably and in accordance with the principles of the Reduced Enrichment for Research and Test Reactors ("RERTR") program while maintaining its flexibility to address unanticipated circumstances; and

WHEREAS, the Customer agrees not to use HEU in the Reactor after the signing of this Contract.

NOW, THEREFORE, the parties hereto mutually agree as follows:

ARTICLE I - DEFINITIONS

The following terms, as used herein, shall have the following meanings:

A. "Appendix A": A document describing the physical and chemical characteristics, approximate isotopic composition, and dimensions and weight of a homogeneous batch of Authorized Material for transport to DOE in a Shipment Batch as defined herein. Sample Appendix A is attached to this document. An "Appendix A" shall be submitted to DOE for each batch of Authorized Material with different material characteristics. The current revision is revision 8, September 2000.

B. "Appendix B": A document, attached to this Contract, describing transportation package acceptance criteria for a Transport Package, as defined herein. The current revision is revision 9, September 2000.

C. "Appendix C": A document describing the history of the Authorized Material designated for shipment to DOE in the applicable Appendix A, including any available information concerning its fabrication, use and the conditions under which the Authorized Material heretofore has been stored.

D. "Authorized Material": Irradiated spent nuclear fuel elements, and fresh nuclear fuel elements from the Reactor containing uranium enriched in the United States that meet the requirements set forth in the EIS and the ROD. Designation of material as "Authorized Material" becomes effective upon DOE's issuance of a written "Authorization to Ship" to Customer pursuant to Article IV, Prerequisite for Commencement of Shipping.

E. "Canned" or "Canning": The placing of Degraded, Failed, or Materially Damaged fuel in sealed aluminum canisters (i.e., "Cans") prior to shipment as specified in Appendix B.

F. "Contracting Officer": The person executing this Contract on behalf of the United States Government and DOE, including his/her successor and any duly authorized representative of any such person.

G. "Crop or Cropping": The removal of aluminum material by sawing or other mechanical means from the top and/or bottom of nuclear fuel assemblies without disturbing the fuel meat, fuel meat cladding, or the assembly's core configuration.

H. "Customer": The entity entering into this Contract with DOE (i.e. National Centre for Scientific Research "Demokritos" Institute of Nuclear Technology, Ag. Paraskevi Attiki, Greece).

I. "Days": All references to days herein shall refer to calendar days.

J. "Degraded Fuel": Spent nuclear fuel with cladding breaches which result from corrosion, pitting, nodules, mechanical alterations or other mechanisms which cause the fuel meat to be exposed to its surroundings. Special treatment for handling, transportation or storage may be required depending on cask certificate requirements. Fuel with cladding defects which do not penetrate to the fuel meat are *not* considered "Failed Fuel" or "Degraded Fuel".

K. "Designated Agent": Entities designated by DOE to perform requirements of this Contract for DOE, which may include, but not be limited to, the Westinghouse Savannah River Company and DOE's Contractor.

L. "DOE": The United States Department of Energy.

M. "DOE's Contractor": The organization performing directly for DOE to provide services required to prepare, package, load and securely transport spent nuclear fuel from foreign countries to SRS.

N. "Equipment": International Standards Organization (ISO) containers and any special handling tools/devices provided by Customer that are necessary to facilitate shipment and unloading of Authorized Material.

O. "Failed Fuel": Spent nuclear fuel that has either been removed from a reactor due to operational concerns; has some physical damage such as warpage, deformations, nodules, corrosion, or pitting that exposes the fuel meat; exceeds radioactivity levels; or has any other condition identified by the Customer which may require special treatment for handling, storage or transportation. "Failed Fuel" is a generic term used to represent any spent fuel which is suspected of having a condition which may require special treatment to meet the requirements for handling, storage and/or transportation. Special treatment may include, but is not limited to configuration changes, canning, change of cask type or change in baskets, etc. Any special treatment such as canning shall be consistent with the cask, transport certificate, and/or storage requirements. Degraded Fuel and Materially Damaged Fuel are subsets of the generic "Failed Fuel", but are more descriptive of the actual fuel condition. Acceptance of Failed Fuel discharged from the reactor after May 12, 2006 or shipped to SRS after May 12, 2009, requires specific approval by DOE. Approval will be granted only if the Failed Fuel can be stored safely for the period of time that interim storage is required prior to ultimate disposition.

P. "Highly enriched uranium (HEU)": Uranium with more than 20 percent of the uranium-235 isotope, used for making nuclear weapons and also fuel for some isotope-production, research, naval propulsion, and power reactors.

Q. "Joint Shipment": A shipment which consists of Transport Packages from different DOE customers on one or more ocean vessels designed to arrive and be offloaded at the Charleston Naval Weapons Station at the same agreed upon date.

R. "Low enriched uranium (LEU)": Uranium enriched until it consists of up to 20 percent uranium-235. Used as nuclear reactor fuel.

S. "Materially Damaged Fuel": Spent nuclear fuel whose physical condition is warped, deformed, not structurally sound, or whose arrangement or physical condition prohibits or restricts normal handling operations. Materially Damaged Fuel does not cause fuel meat to be exposed. This term is used to describe any spent fuel where the physical condition requires special treatment for handling, transportation, or storage purposes only.

T. "Mitigation Action Plan": The "Mitigation Action Plan for the Implementation of a Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Fuel," dated August 1996, or latest revision DOE Office of Spent Fuel Management, is a document that sets forth a plan to minimize the likelihood that any individual involved in the transportation and handling of spent fuel from foreign research reactors will not receive a radiation dose in excess of the United States regulatory limit.

U. "Reactor": The nuclear research reactor GRR-1 operated at Ag. Paraskevi Attiki, Greece.

V. "Shipment Batch": The Authorized Material designated in one or more Appendix A's to be shipped in a single ocean vessel and delivered to SRS.

W. "SRS": The DOE Savannah River Site facility located in Aiken, Allendale and Barnwell counties in the State of South Carolina, United States of America.

X. "Special Nuclear Material": (1) Plutonium or uranium enriched in the isotope U-233 or in the isotope U-235, and any other material which DOE, pursuant to the provisions of the Atomic Energy Act of 1954, as amended, determines to be Special Nuclear Material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

Y. "Transport Package": A packaging receptacle, which may include radioactive contents, used for transportation of the Authorized Material.

ARTICLE II - SCOPE

This Contract provides the terms and conditions applicable to shipments to DOE of Authorized Material. Shipments may include Degraded, Failed, or Materially Damaged Authorized Material if it is shipped in accordance with the requirements of Appendix B.

ARTICLE III - DELIVERY OF AUTHORIZED MATERIAL

A. DOE or DOE's Contractor at DOE's direction shall directly deliver Authorized Material to SRS via the planned route and, except as otherwise provided in this Contract, DOE shall receive Authorized Material.

B. Customer shall submit proposed Appendix A's not less than one-hundred eighty (180) days in advance of a delivery date proposed by DOE for a Shipment Batch, unless otherwise agreed

between the parties in writing. DOE or DOE's Contractor will provide technical support to the Customer by assisting in the development and submission of applicable Appendix A's. DOE agrees that not less than ninety (90) days prior to the proposed delivery date, DOE shall, by facsimile, either confirm the proposed delivery date or suggest a reasonable alternate date, unless otherwise agreed between the parties in writing.

C. Customer shall make a good faith effort to provide an Appendix C for each Shipment Batch. However, unavailability of an Appendix C shall not constitute grounds for DOE to postpone or refuse receipt of a Shipment Batch.

D. DOE shall be under no obligation to accept material that is not Authorized Material.

E. DOE may deliver the Authorized Material through Joint Shipments.

ARTICLE IV - PREREQUISITE FOR COMMENCEMENT OF SHIPMENT

The parties agree that DOE is under no obligation to accept Authorized Material for which any segment of its transport from the Reactor to SRS commences prior to DOE's issuance of a written "Authorization to Ship" to Customer and DOE's Contractor indicating DOE's readiness to safely receive the Authorized Material. DOE will use its best efforts to provide a written "Authorization to Ship" to Customer and DOE's Contractor no later than thirty (30) days prior to the scheduled departure of a Shipment Batch. Subject to Article XII, Excused Non-Performance, herein, DOE shall not withhold its "Authorization to Ship" for reasons that would be contrary to the nonproliferation objectives specified in the EIS and ROD or inconsistent with the principles of the RERTR program, and in determining whether and when to issue such an authorization, shall take into account the parties' reasonable operational needs and constraints.

ARTICLE V - OPERATIONAL ASPECTS OF SHIPMENTS

A. Customer shall take the following actions with respect to delivering Authorized Material to SRS:

1. Customer shall comply with all applicable international and United States Federal and State laws and requirements governing shipments made under this Contract. These laws and requirements include, but are not limited to, the EIS and ROD; regulations of the country in which the Authorized Material is located; International Atomic Energy Agency (IAEA) regulations; and the applicable regulations, directives, and orders of DOE, the United States Nuclear Regulatory Commission (NRC), and the United States Department of Transportation (DOT).
2. Customer shall not disclose any shipping plans or shipment information, or the individual details comprising such plans or information including schedules, itineraries and other items set forth in 10 CFR 73.21(b), except to the agencies of the United States or Customer's governmental agencies in the Customer's country with a specific need to implement the transportation activities.

3. Deleted

4. Customer shall adhere to Sections A (except Section A.2(c) and A.2(g)), B, C, and K of Appendix B.

5. Customer shall submit to DOE three (3) copies (in English) of those documents required to be submitted under Appendix B.

6. Customer shall obtain the required import and export licenses, necessary permits, other licenses, certificates of transport and any other documentation required for transportation of the Transportation Packages within the Customer's country for each Shipment Batch. Customer shall assist DOE or DOE's contractor in a transportation planning process within the Customer's country which will ensure all the necessary transportation documentation is prepared pursuant to Article V. A. 1. herein.

7. As requested by DOE, Customer shall assist DOE or DOE's Contractor in security planning to address the physical protection of the Authorized Material from departure from the Reactor to embarkation at the Customer's port of export. The Customer shall be responsible for coordinating with the Customer country's law enforcement agency(s) to establish local law enforcement involvement during this portion of the shipment.

8. Customer shall identify any material which is Degraded, Failed, or Materially Damaged which must be Canned prior to shipment. Criteria for Degraded, Failed, or Materially Damaged material is contained in Appendix B of this Contract. For any fuel that Customer will not Can, Customer shall provide written certification to DOE that material is not Degraded, Failed or Materially Damaged. This certification shall be provided no later than ninety (90) days prior to the scheduled departure of a Shipment Batch. Certification shall include a statement that the Authorized Material was not removed from the Reactor core as a result of cladding failure or any other failure that would require special handling or packaging for transportation or storage.

9. Customer shall permit DOE, or its designated agent, to conduct an on-site inspection at the Reactor of fuel or material and any associated records prior to its shipment to SRS. Such an inspection may include, but is not limited to, (1) visual inspection of the fuel or material, (2) review of any records associated with fuel or reactor performance, and (3) tests or samples to confirm integrity of fuel cladding and water quality. Customer shall permit DOE, or its designated agent, to observe loading and Canning activities.

10. Customer shall coordinate Transport Package loading operations with necessary IAEA activities so that the Transport Packages are not loaded until an IAEA representative is present or IAEA provides a written determination to the Customer that IAEA's presence is not required.

11. Customer shall load Authorized Material into the Transport Packages and prepare Transport Packages for transportation in accordance with the Transport Package license and certification requirements.

12. Customer shall determine Canning requirements, if any, for any Authorized Material which is identified as Degraded, Failed, or Materially Damaged according to procedures provided by DOE or DOE's Contractor pursuant to Article V.B.4, prior to commencement of shipment of Authorized Material.

13. Customer shall provide to DOE a written description of the observable physical condition of the Authorized Material and written certification by Customer as to the condition of the Authorized Material, either by hand delivery or by facsimile, at the time the Transport Package(s) is loaded.

14. Customer shall be responsible for all technical and mechanical labor, equipment available to the Customer or equipment used at the Customer's facility, except DOE's contractor supplied Equipment, necessary to accomplish delivery of the Authorized Material to the point of title transfer.

B. DOE or DOE's Contractor shall take the following actions with respect to delivering Authorized Material to SRS:

1. Once title to the Authorized Material transfers to DOE, DOE is responsible for complying with all applicable international and United States Federal and State laws and regulatory requirements governing shipments made under this Contract. These laws and requirements include, but are not limited to, the EIS, and ROD; and Mitigation Action Plan; regulations of the foreign nations in which the Authorized Material is located or through which it will be transported; International Atomic Energy Agency (IAEA) regulations; International Maritime Organization (IMO) regulations in force and adopted by the United States at the time of shipment; and the applicable regulations of DOE, the United States Nuclear Regulatory Commission (NRC), the United States Coast Guard (USCG) and the United States Department of Transportation (DOT).

2. DOE or DOE's Contractor shall comply with all applicable NRC regulations governing public disclosure of any shipping plans or shipment information, or the individual details comprising such plans or information, unless such agency provides written relief from any otherwise applicable regulation.

3. DOE or DOE's Contractor shall provide the certified Transport Packages and Equipment to the Customer. Customer shall load and prepare the Authorized Material pursuant to Article V.A.11.

4. DOE or DOE's Contractor shall provide procedures, material, and equipment (if the equipment is not available at the reactor site) for Canning of fuel which does not meet the requirements as set forth in Appendix B herein.
5. DOE or DOE's Contractor shall observe Canning and loading activities to ensure each Transport Package is loaded with Authorized Material in accordance with Transport Package license and certification requirements, and if necessary assist in these activities.
6. DOE or DOE's Contractor shall assist the Customer when requested in obtaining the required import and export licenses and shall assist in obtaining all other required documentation for each Shipment Batch pursuant to Article V.A.6 herein.
7. DOE or DOE's Contractor shall prepare a security plan to address the physical protection of the Authorized Material from the Reactor to SRS. DOE or DOE's Contractor is responsible for providing physical protection as required by the DOE approved security plan that exceeds established law enforcement for the area of transport including within the Customer's country.
8. DOE is responsible for physical security of the Authorized Material after departure from the Customer's country.

ARTICLE VI - SHIPMENT NOT YET IN TRANSIT

A. For a shipment previously authorized under Article IV, Prerequisite for Commencement of Shipment, herein, but where the Authorized Material has not yet left the Reactor site, DOE may postpone shipment of Authorized Material from departing the Reactor site for transport to the United States for reasonable cause, including, but not limited to, the following:

1. Changes to Customer's approved Appendix A's that DOE determines may invalidate DOE's criticality analysis or dropped fuel analysis. Changes that may invalidate DOE's criticality analysis or dropped fuel analysis include, but are not limited to:
 - a) changes in the specific Transport Package scheduled to be used to transport the Authorized Material less than 60 days prior to the scheduled shipping date;
 - b) discovery of an error in the approved Appendix A; or
 - c) discovery of the need to Can or repackage fuel not previously identified as requiring Canning.
2. Failure by Customer to load Authorized Material and prepare the Transport Package(s) in a manner consistent with the scheduled delivery date for such Authorized Material.

3. Failure by Customer to permit DOE or its designated agent to conduct the onsite inspection or observation described in Article V.A.9 herein.
4. Failure by Customer to provide the information required to be submitted by Article V.A.13 herein.
5. Where DOE determines that bona fide United States national security concerns require that an urgent shipment of spent fuel, fresh fuel or target material meeting the acceptance criteria of the ROD must be made from another specific facility prior to receipt of Customer's spent fuel.
6. Where DOE determines that commencing the shipment as authorized may now present unacceptable security risks.
7. Delay in schedule due to another DOE customer within the same Joint Shipment.

B. Any shipment postponed under this section shall be rescheduled for the earliest practicable shipment date. DOE shall not bear any storage costs at the Reactor site related to postponement of shipment.

ARTICLE VII - SHIPMENT IN TRANSIT

A. If the delivery of Authorized Material to, or the receipt of Authorized Material by, DOE is prevented by any reason set forth in Article XII, Excused Nonperformance, herein after such Authorized Material has left the Reactor and is in transit to SRS, DOE and Customer shall use their best efforts to provide a location for the temporary safe storage of such Authorized Material. The Parties agree that the temporary safe storage of such Authorized Material may include, but is not limited to the Reactor site. Further, DOE shall not be charged for temporary storage of the Authorized Material stored at the Reactor site. The duration of such temporary storage shall be only for as long as the excused nonperformance issues exist.

B. If the impediment remains in force beyond ninety (90) days, Customer agrees to assist DOE in arranging for relocation of the Authorized Material from temporary storage to a location where the Authorized Material shall be managed and dispositioned in a manner agreed to by the parties, which may result in temporary safe storage of such Authorized Material at the Reactor site without charge for storage to DOE.

ARTICLE VIII - TITLE

Title to all Authorized Material owned by Customer and delivered hereunder shall vest in the United States upon loading onto the ship at Customer's port of export.

ARTICLE IX - FURTHER ASSURANCES

A. Customer represents and warrants to DOE that it has the power and authority under the laws of Greece to enter into this Contract and to consummate all of the obligations required of Customer by this Contract. DOE represents to Customer that it has the power and authority under the laws of the United States to enter into this Contract.

B. This Contract is, when signed, a valid and binding obligation of Customer and DOE, enforceable against either in accordance with its terms.

C. Customer shall request DOE to accept under the provisions of this Contract all irradiated spent nuclear fuel elements and fresh nuclear fuel elements from the Reactor that satisfies DOE's acceptance criteria as specified in the EIS and ROD, regardless of whether such spent fuel is in storage at the Reactor at the time the Contract becomes effective or is discharged from the Reactor by May 13, 2016. Subject to the terms and conditions of this Contract, DOE shall accept such material at any time until May 13, 2019, in accordance with Article XIII, Term of Contract. Failed Fuel discharged after May 13, 2006 or received by DOE after May 12, 2009 requires specific approval by DOE.

D. Customer agrees to use its best efforts to cooperate with DOE or DOE's Contractor in performing the Contractor's obligations under this Contract.

E. Customer agrees not use highly enriched uranium in the Reactor after the signing of this contract.

F. After any shipment performed within the Calendar Year 2005, Customer agrees that if during the term of this Contract, there is a change to the economic status of the country from which the Customer's spent fuel is transported, as published in the annual edition of "The World Bank Development Report" (published annually in October) from "Other Than High Income Economies" to "High Income Economies," the Customer shall enter into good faith negotiations to modify this Contract incorporating the fee structure and other relevant terms and conditions similar to those included in contracts with other "High Income Economies". The changed status shall apply to all shipments arriving in the United States in the next Fiscal year (starting October 1) following the Fiscal year in which the change in economic status is published. The fee shall be in accordance with the *Establishment of the Fee Policy for Acceptance of Foreign Research Reactor Spent Nuclear Fuel*, 61 Federal Register 26,507-08 (May 28, 1996) and any subsequent Federal Register notices associated with the fee policy for acceptance of foreign research reactor spent nuclear fuel.

ARTICLE X - DOE OBLIGATIONS

A. DOE shall fulfill its obligations, or take actions, under this Contract either directly or through its Contractor(s) or its Designated Agents.

B. DOE shall take all reasonable steps to accept all Authorized Material prior to May 13, 2019, subject to the terms and conditions of this contract; however, if the quantity of Authorized Material requested to be shipped to SRS prior to the expiration of the program exceeds operational constraints, DOE may reject such Authorized Material. The parties agree that DOE reserves the right to determine which Authorized Material shall be accepted and which shall not be accepted. DOE shall not accept Authorized Material after the program expires on May 12, 2019.

ARTICLE XI - CONSIDERATION

A. Unless otherwise mutually agreed in writing, or specified herein, delivery of Authorized Material shall be made and paid for by DOE, destination SRS. Under this Contract, DOE agrees to bear all reasonable costs for the shipment, acceptance and management by DOE of Authorized Material accepted under this Contract.

B. Customer shall transfer title to Authorized Material to DOE in accordance with Article VIII, Title. Customer shall perform Customer's obligations under this Contract at no cost to DOE including, but not limited to, the Customer's obligations under Article V.A herein.

ARTICLE XII - EXCUSED NON-PERFORMANCE

A. Neither DOE nor Customer shall be liable to the other under this Contract for damages occasioned by failure to perform their respective obligations under this Contract if such failure arises out of causes beyond the control and without the fault or negligence of the party so failing to perform. Examples of such force majeure include, but are not limited to:

1. Acts of God;
2. War;
3. Strikes;
4. Weather;
5. Riots or demonstrations; or
6. Criminal or terrorists acts.

B. Neither DOE nor Customer shall be liable to the other under this Contract for damages occasioned by failure to perform their respective obligations under this Contract if such failure arises out of any of the following causes:

1. Acts of national legislative bodies;

2. Acts of States or local governments or authorities, whether or not reasonably foreseeable, except where such acts are preempted by the Atomic Energy Act of 1954, as amended, or by other applicable Federal law or by the Supremacy Clause of the United States Constitution, in which case neither party shall act to infringe upon the right to legal or other recourse available to either party; or
3. Decisions of judicial bodies with competent jurisdiction.

ARTICLE XIII - TERM OF CONTRACT

This Contract shall become effective upon execution by both parties and shall continue in effect until all Authorized Material has been accepted by DOE at SRS, unless the Contract is terminated earlier by mutual agreement of DOE and Customer. Acceptance of Authorized Material by DOE may occur in accordance with the terms of this Contract at any time until May 13, 2019; provided, however, that all Authorized Material must be discharged from the Reactor prior to May 13, 2016. DOE shall not accept material after May 12, 2019.

ARTICLE XIV - MEASUREMENTS OF MATERIAL QUANTITIES AND PROPERTIES

A. Authorized Material delivered hereunder may be measured by DOE upon receipt at SRS unless DOE determines, upon notice to Customer, that it is in the best interests of the United States Government to adopt other available evaluation techniques. Measurements may include, but shall not be limited to, determinations as to weight, size, chemical composition and isotopic composition, as appropriate. Measurements of composition shall be performed by the methods of Non Destructive Analysis (NDA) using the existing (or modified) Under Water Neutron Coincidence Counter (UWNCC).

B. Customer shall provide DOE with evidence and documentation of the weight of the Authorized Material and any modifications to the Authorized Material.

ARTICLE XV - MODIFICATION AUTHORITY

A. The Contract is not subject to modification except by written agreement signed by DOE's and Customer's representatives; as to DOE, this representative shall be the duly authorized Contracting Officer as specified below. Any such written modification shall be explicitly identified as a modification to this Contract.

B. Notwithstanding any other provision of this Contract, the duly authorized Contracting Officer shall be the only individual authorized by DOE to:

1. Accept Authorized Material not conforming with applicable Appendix A information or the requirements of Appendix B;

2. Waive any requirement of this Contract; or
3. Modify any term or condition of this Contract upon mutual consent.

ARTICLE XVI - COMMUNICATIONS

Except as otherwise may be provided in this Contract, all communications pursuant to this Contract from either party to the other shall be in writing and shall be sent to the following addresses:

TO DOE: Contracts Management Division
ATTN: D. L. Campbell
United States Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, SC 29802
Voice number: (803) 952-7732
Facsimile Number: (803) 952-9452
Email: Donnie04.Campbell@srs.gov

For Technical Information Communications, send a copy of all written communications to:

Program Manager
United States Department of Energy
National Nuclear Security Administration
Foreign Research Reactor Spent Nuclear Fuel Acceptance Program
Savannah River Operations Office
P.O. Box A
Aiken, SC 29802
Facsimile Number: (803) 725-8856

Technical Point of Contact: Chuck Messick
Voice Number: (803) 725-9494
Email: charles.messick@srs.gov

TO Customer: Dr. Nicolas Catsaros
Head Research Reactor Laboratory
N.C.S.R. "Demokritos"
15310 Ag. Paraskevi Attiki
P.O.B. 60228 Greece

Voice Number: +30 210 650 3712
Fax Number: +30 210 653 3431
Email: nicos@ipta.demokritos.gr

ARTICLE XVII - RIGHT TO USE AND PUBLISH INFORMATION

DOE shall have the right to publish and use information or data developed by DOE as the result of any service, analysis or test performed under this Contract for Customer, subject to statutory or regulatory restrictions imposed by other United States Government agencies. However, unless required by law or regulation, DOE shall not publicly disclose information properly designated by Customer as proprietary.

ARTICLE XVIII - ASSIGNMENT

Neither this Contract, nor any interest herein or claim hereunder, shall be assigned or transferred by Customer, without the express written approval of DOE.

ARTICLE XIX - JOINT SHIPMENTS

DOE may conduct Joint Shipments with other DOE customers desiring to ship Authorized Material to SRS to arrive and be offloaded at the Charleston Naval Weapons Station at the same agreed upon date.

ARTICLE XX - APPLICABLE LAW

This Contract and the performance thereunder shall be governed by applicable United States laws and regulations and shall be interpreted in accordance with applicable Federal law.

ARTICLE XXI - ENTIRE AGREEMENT

This Contract contains the entire agreement between the parties with respect to the acceptance by DOE of irradiated spent fuel elements and fresh nuclear fuel elements owned by Customer from the Reactor, and supersedes all prior understandings, negotiations, oral agreements or written agreements between the parties.

ARTICLE XXII - NO THIRD PARTY BENEFICIARIES

This Contract is solely for the benefit of DOE and Customer, and shall create no rights in favor of, nor may it be enforced by, any other party, person or entity.

ARTICLE XXIII - AVAILABILITY OF FUNDS

DOE's obligations arising as a result of this Contract are contingent upon the availability of appropriated funds.

ARTICLE XXIV - DISPUTE RESOLUTION

DOE and Customer shall use their best efforts to resolve any dispute arising out of the formation, validity or performance of this Contract as well as the rights of the parties relating thereto within thirty (30) days after receipt of notice of a dispute unless such time period is extended by mutual agreement of the parties. Either party shall notify the other in writing within ten (10) days following its determination that a dispute shall exist, setting forth in the written notice the relief that is requested and the basis for such relief. The other party will respond within ten (10) days with a written statement and explanation of its position. If the dispute is not resolved within twenty (20) days after the initial notification, either party may elect to pursue a remedy in a federal court of the United States with jurisdiction over the parties and the subject matter of the dispute.

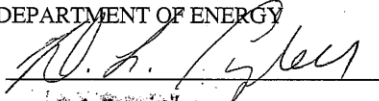
IN WITNESS WHEREOF, the parties hereto have executed this Contract in several counterparts on the day and year first above written.

UNITED STATES OF AMERICA

BY: UNITED STATES DEPARTMENT OF ENERGY

BY:

TITLE:


D.L. Campbell
Contracting Officer

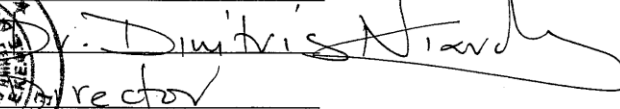
CUSTOMER:

BY:

TITLE:



N. C. S. R. "Demokritos"


Director

WITH THE CONCURRENCE OF
THE EURATOM SUPPLY AGENCY

BY:

TITLE:

Christian WAETERLOOS
Director General
Euratom Supply Agency