

Annual
Activity Report
2019



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As we go through a period when our daily lives and priorities have changed due to the pandemic, the year 2019 looks distant and different compared to what we are experiencing today. Still, what makes the EEAE Annual Activity Report opportune is the concept of safety.

Safety is the concept that dominates in the current period and with which, by its very nature, the contents of our annual reports are inextricably linked. Radiation safety and protection of people against the radiation risks is the core of our mission and our ultimate goal.

The leading role of safety was highlighted in 2019 in a number of EEAE actions:

- (a) The main secondary legislation of the new Radiation Protection Regulations was completed. This confirms the country's commitment to a modern regulatory framework for radiation safety.
- (b) The assessment of potential nuclear or radiological emergency situations (ADKEA) was completed and submitted to the General Secretariat for Civil Protection. The risk assessment and protection strategies included in ADKEA will be used for the revision of the relevant emergency plans.
- (c) The repatriation of the spent fuel of the research reactor to the country of supply (USA) was accomplished in close cooperation with NCSR «Demokritos» (reactor owner). The repatriation of the fuel was one of the major milestones of the national programme for the safe management of spent fuel and radioactive waste.

While the above works are visible examples of our contribution to safety, most of our work is performed rather silently when we process regulatory documents, conduct inspections across the country, make measurements and analyses of samples, organize information and training events, respond to incidents, etc. All these activities carried out during 2019 are summarized in this publication and give an account of our contribution to the economy and society.

We believe that in 2019 the novelties introduced by the new regulatory framework for radiation protection were firmly established and the function of EEAE as a modern regulatory authority has been significantly consolidated.

Enjoy your reading!

Christos Housiadas
EEAE Chairman

Internal Organization



Profile

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

EEAE's mission is to protect the public, the exposed workers and the environment from ionizing and artificially produced non-ionizing radiation.

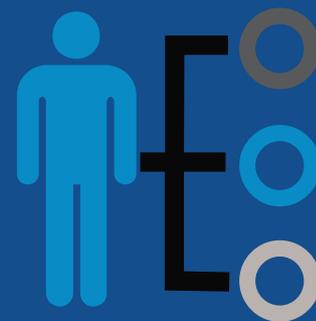
Vision

To operate as a modern regulatory authority, in the fields of radiation protection and radiological and nuclear safety, enjoying trust and recognition at national and international level, and as a model public service fulfilling its tasks responsibly.

Values

- **Integrity and impartiality.** We make decisions based on objective criteria and we recognize our individual responsibility towards serving the public interest.
- **Competence.** We ensure to hold expertise and we avail ourselves with opportunities of continuous scientific training.
- **Quality and Reliability.** We provide highly specialized accredited services, in compliance with international and european standards.
- **Transparency.** We disclose regulatory control information related to public health and environment protection, as well as information related to the EEAE's operation.
- **Social Responsibility.** We are aware of our responsibility towards the society.
- **Excellence.** We aspire to be a point of reference in the fields of radiological protection and nuclear safety.
- **Openness.** We are seeking the development of relations and exchange of knowledge with other relevant bodies at national and international level.

Administration



EEAE is governed by a seven-member Board. The composition of the Board is as follows:

CHAIRMAN

C. Housiadas

Research Director, National Centre for Scientific Research "Demokritos"

VICE-CHAIRMAN

N. Kallithrakas-Kontos

School of Mineral Resources Engineering, Technical University of Crete

MEMBERS

V. Kondylis

Associate Professor, Law School of National and Kapodistrian University of Athens

G. Pantelias

Emeritus Researcher, Institute of Nuclear & Radiological Sciences & Technology, Energy & Safety of National Centre for Scientific Research "Demokritos"

M. Anagnostakis

Associate Professor, School of Mechanical Engineering, Nuclear Engineering Department, National Technical University of Athens

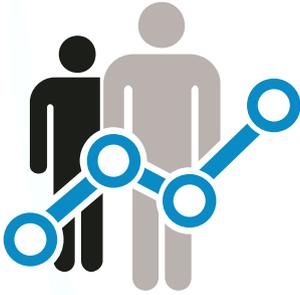
A. Fotopoulos

Professor of Nuclear Medicine, Department of Medicine, University of Ioannina

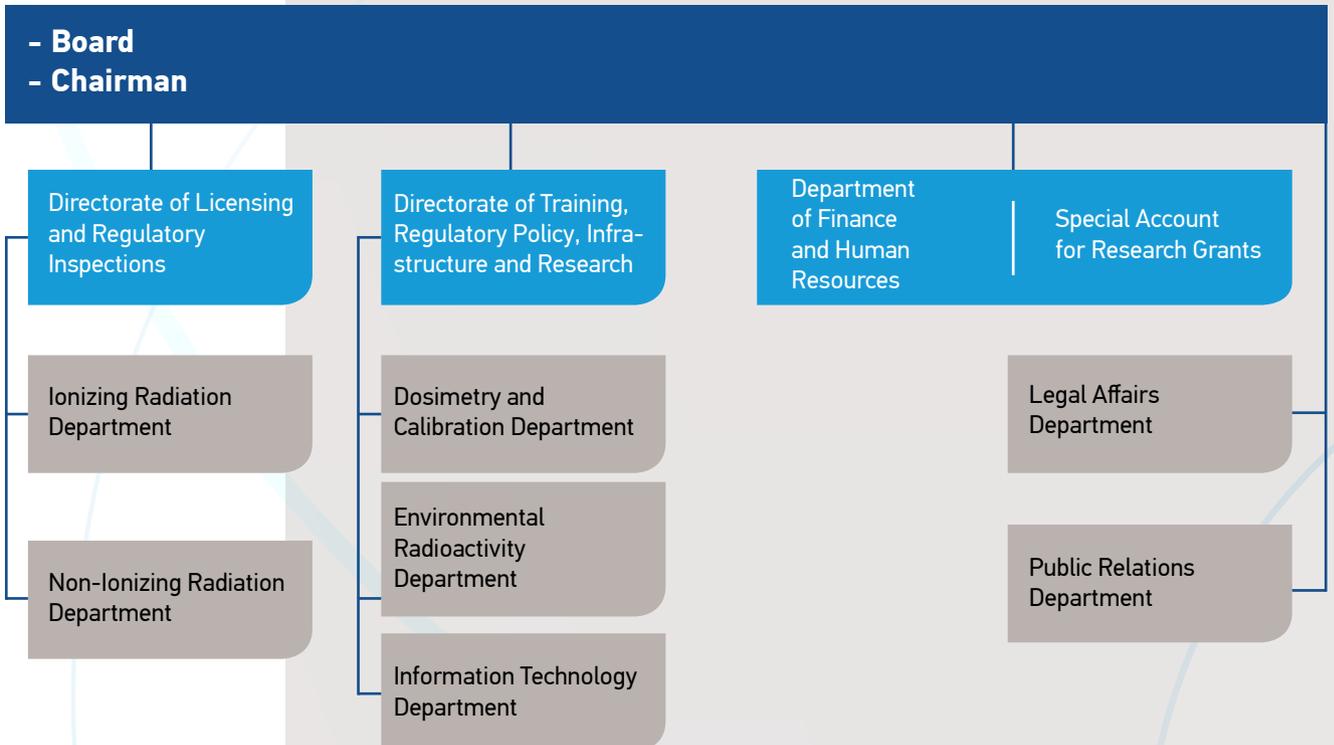
A. Karantanas

Professor of Radiology, School of Medicine, University of Crete

Human resources

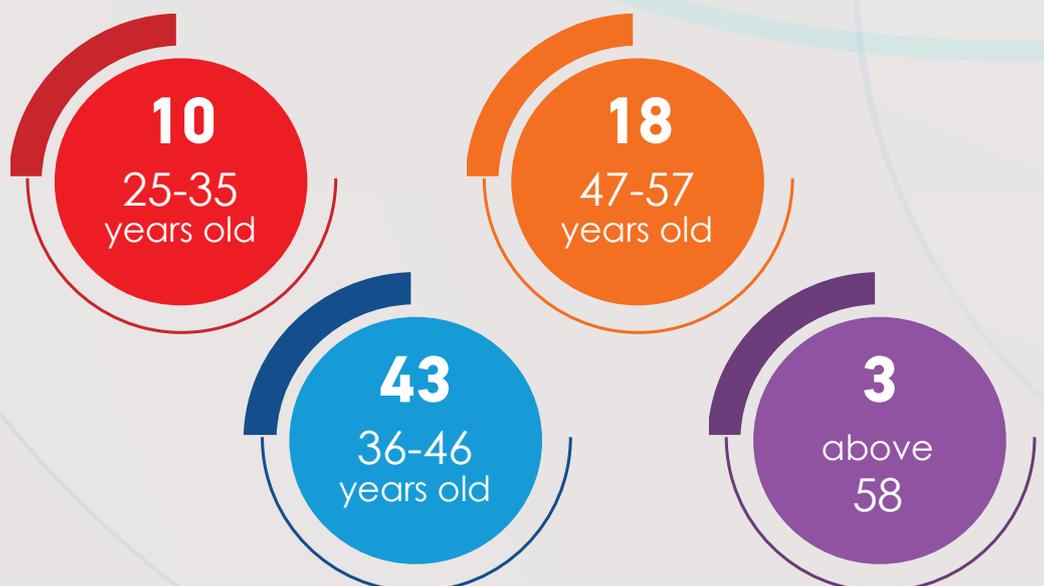


EEAE is currently employing **74 highly qualified persons**; most of them hold higher education degrees and postgraduate qualifications. Continuous training and participation in international scientific networks is strongly encouraged, as a means to enhance knowledge and expertise.



Organization structure of EEAE – the related presidential decree is in the process of being issued

Age distribution of personnel



12

Distribution by gender



men



women

Personnel categories



Special scientific personnel



Administrative personnel



Scientific and technical personnel

Employment status



Permanent personnel



Personnel under indefinite period contract



Personnel under fixed term contract



Personnel under project contract

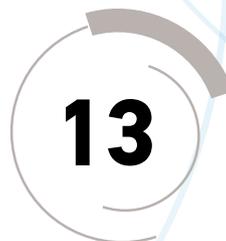
Education level



Doctoral



Post-graduate



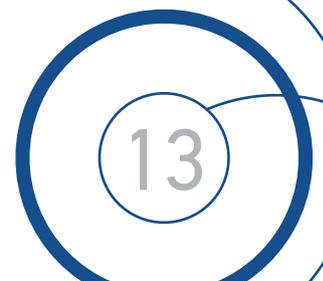
University education



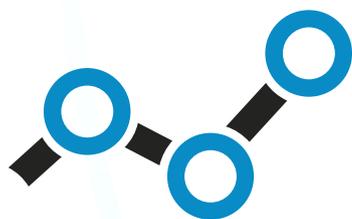
Secondary education



Compulsory education



Financial resources



Pursuant to Law 4310/2014, EEAE enjoys complete administrative and financial independence in exercising its regulatory functions. EEAE is financed by two sources:

- government funds and
- revenues from services, fees, funds coming from research and development projects (Special Account).

The proportion of each source to EEAE income for the year 2019 was 38% and 62% respectively.

In 2019 the 58% of the governmental financial support were transfer payments (OECD, IAEA). The rest part of the governmental financial support covered approximately the half of personnel costs (permanent staff).

Operational expenses (travel, equipment, consumables etc.) and the other half of personnel costs (contract staff) were covered by EEAE Special Account, i.e. by self-financing.

In 2019, yet another year, a budget surplus has been achieved for EEAE Special Account. The revenues were increased by 18.3 % and the expenses were increased by 10.8% compared to the year 2018.

Annex II presents detailed financial reporting for both funding sources.

Revision of EEAE price list

In 2019, as a follow-up to the adoption of the new Radiation Protection Regulations, the EEAE price list was revised.

The new price list was drawn up (a) in accordance with Article 45 of Law 4310/2014 providing for prudent management of resources by the regulatory authority and the imposition of fees “in an objective, transparent and proportionate manner” and (b) in correspondence with the new regulatory procedures.

The general trend of the new price list is the significant reduction of charges (e.g. MRIs’ approvals, individual monitoring for exposed workers, transport of radioactive materials and radiopharmaceutical products), without any impact to EEAE operation.

In general, the new price list is beneficial both for EEAE and the organizations subject to regulatory control.



the new price list reflects the new radiation protection regulations



the procedures are **simplified**



prices are **reduced** for all services



graded approach in line with the graded regulatory control

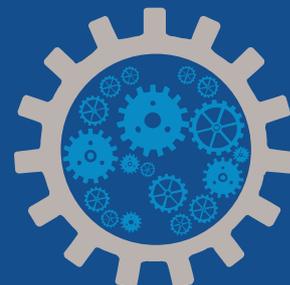
EEAE implements an integrated management system based on management by objectives. Our policy is to serve public interest in accordance with our vision, mission and values, by providing high quality services and regulatory work.

The integrated management system has been certified according to ISO 9001:2015 standard requirements and incorporates all EEAE functions and accreditations.

In the framework of continuous improvement, EEAE aims at the full harmonization of its integrated management system with internationally established requirements for governing radiation regulatory authorities and facilities (IAEA Safety Standards, Leadership and Management for Safety, GSR Part 2).

We firmly intend to incorporate safety culture in our management system and to further enhance safety culture in the organization's internal structure.

Integrated Management System



Accreditations/certifications:

- activities accredited according to ISO/IEC17025:2005 standard:
 - » measurements of low-frequency and high-frequency electromagnetic fields;
 - » measurements with whole body and extremity dosimeters;
 - » alpha and gamma spectrometry measurements;
 - » radon measurements;
 - » calibrations in radiotherapy, diagnostic radiology, radiation protection, individual monitoring.

In 2019 preparation work for compliance with the ISO/IEC 17025:2017 requirements was completed.

- inspections are accredited according to ISO/IEC 17020:2012 standard (Type A Inspection Body, performing inspections in medical, industrial, research and educational facilities where ionizing radiation is used).

- certification according to ISO/IEC 29993:2017 standard for the design, development and provision of non-formal education and training in the fields of radiation protection and nuclear security.

Strategic goals



1 Enhancement of radiation protection and nuclear safety

- Monitoring of the implementation of the regulatory framework for radiation protection
- Update of the plans for nuclear or radiological emergency preparedness and response
- Implementation of the national programme for the management of disused radioactive sources and radioactive waste
- Promoting safety culture, especially justification and optimization – Ongoing education and training of radiation professionals.

2 Upgrading the social role of EEAE

- Design and implementation of innovative public awareness actions
- Implementation of pilot information programmes about radiation (e.g. for young people, schools, emergency situations)
- Establishment of systematic interaction with interested parties.

3 Strengthening the organization and management competence of EEAE

- Continuous evaluation and improvement of the Integrated Management System with emphasis on risk management (risk-informed decision-making)
- Rational management of available resources and adoption of best practices
- Continuous training of EEAE staff, especially on new technologies
- Upgrading of infrastructure and provided services based on electronic governance and innovation

EEAE is supported by high-end technological infrastructure. During 2019, most of the upgrading and improvement work was related to the following:

- software upgrading for EEAE website;
- software upgrading for EEAE personnel computers;
- redesigning EEAE databases and partial outsourcing of upgrading;
- implementation of actions for information systems security improvement;
- installation and configuration of a central hub for wireless network management at EEAE building;
- support and maintenance of the information technology of the radiation detection systems installed in the country's entry points.

The national radiation protection database is an important supportive tool for EEAE's operation and includes:

- the National Dose Registry, where information related to workers occupationally exposed to ionizing radiation and the recorded doses are kept;
- data regarding undertakings where radiation practices are conducted (shielding, licenses, personnel, etc.);
- the inventory of radioactive sources used in the country;
- data regarding the transport of radioactive materials at national level;
- results of environmental radioactivity measurements;
- results of in-situ inspections and measurements of electromagnetic radiation.

Information systems



Personal data protection

The issue of personal data protection is addressed by EEAE with caution. In 2019, actions were taken to fully comply with the General Data Protection Regulation. Indicatively, we posted at EEAE website our Privacy Policy as well as information per category of data subjects.

Also, the necessary technical actions (e.g. cookies, email settings) were completed. In addition, an impact assessment has been carried out about the data kept at the National Dose Registry.

Health and safety at work

EEAE, aiming at ensuring a safe and healthy working environment, disseminates relevant information among its personnel and implements the necessary measures. EEAE is supported by a Health and Safety Advisor and an Occupational Medical Doctor; a Workplace Health and Safety Committee has been established. Moreover, a Radiation Protection Officer

has been appointed since a part of EEAE personnel are occupationally exposed workers. In 2019, EEAE continued to implement actions on improving working and safety conditions. One of those was the renovation of meeting and lecture rooms at EEAE building.

Radiation safety

The regulatory field

a. Ionizing radiation

In Greece, as in all modern societies, radiation is broadly used in medical applications for diagnosis and treatment, industry, scientific research, education, telecommunications etc.

Radiation uses are subject to regulatory control with the aim to ensure safety.

Table 1 presents numerical data about the undertakings applying radiation practices.

Table 1. Number of undertakings applying radiation practices (2019)

Classes or types of practices	Number of undertakings
Radiotherapy	46
Diagnostic and interventional radiology	1,253
Veterinary (registered in EEAE database)	357
Transport of radioactive materials	7
Dental (registered in EEAE database)	8,272
Nuclear medicine	159
Use of radiation sources in industrial applications	378
Use of radiation sources for sterilization purposes	14
Use of radiation sources for research purposes	200
Special facilities	
Large sterilization unit	1
Isotopes production units	2
Research Nuclear Reactor (in extended shutdown state)	1
Tandem Accelerator	1
Interim storage facility of radioactive sources and waste	1

Regarding the use of non-ionizing radiation in the medical field, the only application subject to regulatory control is Magnetic Resonance Imaging (MRI). In total, the year 2019 353 MRI systems were in operation throughout the country.

A full list of the undertakings using ionizing radiation in medical applications and magnetic resonance imaging throughout the country is available at EEAE website. It is a constantly

updated map where details about operational aspects (equipment, licensing documents) are given.

Information about undertakings with special facilities and practices, as well as about the transport of radioactive materials, is also available at EEAE website.

Apart from the radiation practices presented in Table 1, the new regulatory framework for radiation protection is also applied on the following cases:

- **import of medical products- pharmaceuticals.** By the term “medical products-pharmaceuticals” we mean all such products, including radio-pharmaceuticals, which contain, or are designed to contain, radionuclides to be used for diagnostic or therapeutic or research purposes. The undertakings concerned were informed about the new regulatory requirements and the licensing process has begun.

- **industry sectors and applications including naturally-occurring radioactive material** that may lead to exposure of workers or members of the public which cannot be disregarded from a radiation protection point of view, e.g. oil and gas production, phosphorus and phosphate fertiliser production, energy production based on coal etc. Industries which may be subject to regulatory control have been informed by EEAE, in order to implement the requirements of the new Radiation Protection Regulations. In particular, they need to identify all materials that may contain natural radionuclides and to assess whether their practices may result in the presence of natural radionuclides in water.

The same regime also applies to enterprises involved in final disposal, recycling, re-use of naturally-occurring radioactive materials or residues recycling of such materials in building materials. The radiological characterization of all materials likely to contain natural radionuclides shall be carried out by laboratories certified in accordance with the requirements of established standards and procedures (especially in accordance with ISO requirements), or recognized by EEAE. In 2019 EEAE recognized one laboratory as having the capacity to conduct such radiological analyses.

- **building materials.** Article 75 of the Presidential Decree 101/2018 foresees regulatory control for specific building materials (set out in Annex XIII of the Presidential Decree). The regulatory control is based on the determination of the activity concentrations of the radionuclides (Bq/kg).

EEAE issued in 2019 a recommendation (266th EEAE Board meeting, 20.12.2019) on the utilization in indoor spaces of such building materials. The recommendation was communicated to the Ministry of Environment and Energy and is also available at EEAE website.

b. Non-ionizing radiation

In the field of artificially produced non-ionizing radiation, EEAE carries out inspections in the vicinity of **mobile phone base stations, radio and TV antennas, radars, satellite earth stations, power lines and substations and artificial tanning devices.** A detailed presentation of the antenna stations electromagnetic radiation measurements (several thousands) performed throughout the country is available at EEAE website.



c. Our contribution to society and economy

EEAE contribution to the national economy and the society is substantial and multifaceted, as its role relates to quite a number of people, institutions and economic activities. The interested bodies and persons related to EEAE activities include:

- exposed workers – there are **more than 12,500 exposed workers** in our country;
- patients undergoing medical diagnostic examinations and treatments by the use of ionizing and non-ionizing radiation;
- more than **300 enterprises and companies** in the fields of industry, commerce, transport etc.;
- local authorities;
- education and research institutions;
- authorities involved with the protection of the environment, public health and emergency planning;
- embassies and permanent representations to international organizations.

The mission of EEAE is socially oriented, focusing on the protection of the public, the workers and the environment. Indicatively, it is noted that during 2018, **hundreds of information requests** were submitted to EEAE - 113 of these questions were submitted online - mostly in relation to electromagnetic radiation from antennas, licensing and operation of radiation medical facilities, education matters and exposure of pregnant women to radiation. Especially in the cases of pregnant women undergoing medical radiation examinations, either for treatment purposes or in case of women not knowing whether they are pregnant or not, there is a lot of concern regarding the consequences of the radiation to the foetus. In such cases, EEAE estimates or calculates the dose to the foetus, the probability for direct or stochastic effects, as well as the probability for the occurrence of abnormalities or IQ impairment. EEAE's investigation of such cases is actually life-saving, by preventing unjustified pregnancy terminations. In 2019, at least **15 such cases were recorded**.

EEAE within the framework of its competencies issues regulatory acts and makes proposals for new legislation, including the drafting of the respective documents (Laws, Presidential Decrees, Ministerial Decisions). In particular, EEAE prepares and proposes the necessary legislation for the transposition of the EURATOM Directives into national legislation. Furthermore, EEAE contributes, if needed, to the preparation of legislation proposed by other Ministries or Authorities.

In 2019 the following acts were issued:

- Ministerial Decision 135966/2019 (Government Gazette No. 5116/B/31.12.2019) “Implementation of existing exposure situation strategies”;
- Ministerial Decision 134069/2019 (Government Gazette No. 5000/B/ 31.12.2019) “Amendment of the Decision P/112/1057/2016 (B’ 241) ‘Establishment of requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption, in compliance with the Council Directive 2013/51/EURATOM of 22th of October 2013’ “;
- Law 4635/2019 (Government Gazette No. 167/A/30.10.2019) “Invest in Greece and other provisions” (Part IA’, Chapter A’ “Licensing and control of land-based antennas”);
- EEAE Decision 1/262/2019 (Government Gazette No.3275/B/27.08.2019) “Amendment of the Decision 1/261/07.06.2019 (B’ 2621/28.06.2019) of the Greek Atomic Energy Commission ‘Pricing of the services provided by the Greek Atomic Energy Commission (EEAE)’ “;
- EEAE Decision 1/261/2019 (Government Gazette No. 2621/B/28.06.2019) “Pricing of the services provided by the Greek Atomic Energy Commission (EEAE)”;
- EEAE Decision 4/263/2019 (Government Gazette No. 3271/B/27.08.2019) “Amendment of the Decision 4a/261/07.06.2019 (2460/B’ /21-6-2019) of the Greek Atomic Energy Commission ‘Mechanisms for the recognition of radiation protection experts, medical physics experts and occupational health services, authorization of dosimetry services and acceptance of radiation protection officers’ “;
- EEAE Decision 4a/261/2019 (Government Gazette No. 2460/B/21.06.2019) “Mechanisms for the recognition of radiation protection experts, medical physics experts and occupational health services, authorization of dosimetry services and acceptance of radiation protection officers”;
- EEAE Decision 4b/261/2019 (Government Gazette No. 2460/B/21.06.2019) “Determination of dose constraint for individual dose that members of the public receive from the planned operation of a specified radiation source”;
- EEAE Decision 4c/261/2019 (Government Gazette No. 2460/B/21.06.2019) “Specific measures for the safe management and control of high-activity sealed sources”;
- EEAE Decision 4d/261/2019 (Government Gazette No. 2460/B/21.06.2019) “Determination of the ways that individual monitoring results are submitted to EEAE”;
- Ministerial Decision 45872/2019 (Government Gazette No. 1103/B/03.04.2019) “Procedures for the regulatory control of practices of ionizing radiation – approval and recognition of services and experts”;
- EEAE Decisions 8/264/2019 (Government Gazette No. 3990/B/01.11.2019), 5/261/2019 (Government Gazette No. 2460/B/21.06.2019) and 2c/258/2019 (Government Gazette No. 225/B/04.02.2019), all of them having as subject the “Amendment of the Decision 1/232/09.10.15 (B 1074/15.4.2016) of the Greek Atomic Energy Commission ‘Transfer of competencies and signature rights of the EEAE Board to the Chairman, to Heads of Directorates and Departments and to personnel members of EEAE”.

Guidelines



EEAE issues guidelines with the aim to facilitate compliance with the radiation protection regulatory framework. The guidelines do not lay down new regulations but provide clarification on specific subjects.

In 2019 we issued **10 guidelines**. Seven of them were drafted by working groups of the Hellenic Association of Medical Physicists, on the basis of relevant international and European protocols and concern quality control protocols and criteria for the acceptance of medical equipment.

- KA-EEAE-KO-062019-01, Rev.1: Guidelines for education, information and training programmes in radiation protection for practices including medical exposure (non-medical staff).
- KA-EEAE-KO-072019-01, Rev.1: Guidelines for education, information and training programmes in radiation protection for practices including medical exposure (medical doctors participating in X-ray guided procedures).
- KA-EEAE- KO- 112019-01: Guidelines for periodic quality control protocols of diagnostic radiology and dental radiology systems.

- KA-EEAE-KO-112019-02: Guidelines for periodic quality control protocols of computed tomography (CT) systems.
- KA-EEAE-KO-112019-03: Guidelines for quality control protocols of mammography systems.
- KA-EEAE-KO-112019-04: Guidelines for periodic quality control protocols of interventional radiology/cardiology systems.
- KA-EEAE-KO-122019-01: Guidelines for the specific conditions for the classification of controlled areas and supervised areas.
- KA-EEAE-KO-122019-02, Rev.1: Guidelines for quality control protocols of linear accelerators.
- KA-EEAE-KO-122019-03: Guidelines for periodic quality control protocols of radiotherapy systems.
- KA-EEAE-KO-122019-04: Guidelines for quality control protocols of brachytherapy systems.

Licensing and inspections of ionizing radiation practices

The ionizing radiation practices are subject to regulatory control, which is conducted on the basis of a graded approach and includes two main stages: (a) the notification or authorisation, i.e. registration or licensing, of practices, which is completed by issuing a notification number, a registration certificate or a license, depending on the type of practice and (b) inspections of appropriate frequency. MRI applications (non-ionizing radiation) in medicine are also under regulatory control.

Review and assessment of documents for authorisation purposes

In 2019 EEAE reviewed **1,597 application documents** submitted by undertakings for authorisation purposes. **The average time needed by EEAE to complete review and assessment was 35 days.** Table 2 presents the number of reviews conducted in 2019 per practice.

Table 2. Review and assessment of application documents for authorisation purposes (by means of registration or licensing) submitted by undertakings in 2019

Classes or types of practices	Licensing	Registration
Radiotherapy	11	
Diagnostic and interventional radiology	336	357
Import of radioactive sources	86	
Veterinary	5	34
Transport of radioactive materials	34	
Dental	17	375
Nuclear medicine	66	30
Use of radiation sources in industrial radiography and in geological surveys	10	
Use of radiation sources in other industrial applications	44	68
Use of radiation sources for sterilization purposes	1	
Use of radiation sources for research purposes	17	15
Special practices (management of radioactive materials, isotopes production)	2	
Magnetic Resonance Imaging (MRI)	89	
Total	718	879

Inspections

EEAE conducts in situ radiation protection inspections, based on graded approach, in order to verify the compliance with the regulatory requirements and the authorisation terms. The inspections carried out by EEAE are “scheduled”, following the annual inspections plan, or “extraordinary”, which are conducted in cases that the compliance with radiation protection regulations needs

to be investigated (especially upon complaints, events, allegations, etc.).

Inspections are also carried out in cases of newly established undertakings, upon the submission of the necessary documents.

In 2019, the total number of inspected undertakings was 311.

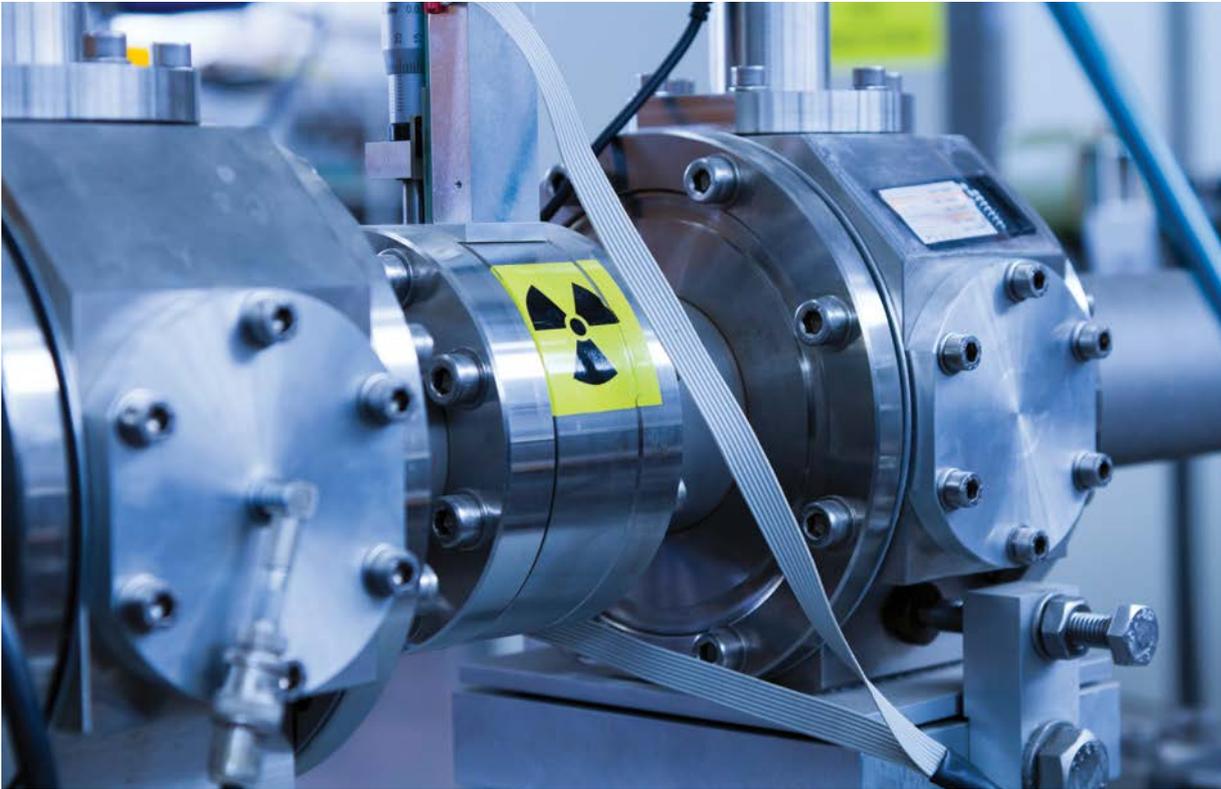
Table 3. Number of inspections in undertakings (2019)

Classes or types of practices	Public sector	Private sector	Total
Radiotherapy	4	2	6
Diagnostic and interventional radiology	54	122	176
Import of radioactive sources	0	0	0
Veterinary		5	5
Transport of radioactive materials	1	1	2
Dental		14	14
Nuclear medicine	2	9	11
Use of radiation sources in industrial radiography and in geological surveys	1	16	17
Use of radiation sources in industrial applications and for security purposes	4	38	42
Use of radiation sources for sterilization purposes	0	0	0
Use of radiation sources for research purposes	5	1	6
In vitro medical applications		1	1
Magnetic Resonance Imaging (MRI)	4	24	28
Special practices (management of radioactive materials, isotopes production)	2	1	3
Total	77	234	311

The number of “extraordinary” inspections carried out in 2019 were 22: 11 of them in undertakings applying diagnostic and interventional radiology practices, 1 in nuclear medicine practices, 8 in industrial applications and 2 in transport of radioactive materials. The inspections are carried out “with prior notice” (the undertaking is notified in advance for the inspection) or “without prior notice”. In 2019 **EEAE carried out 40 “without prior notice” inspections** in undertakings (13% of the total number of inspections).

The inspection results could be summarized to the following points:

1. the undertakings ensure satisfactorily the objectives of radiation protection and safety for the workers, the public, the patients and the environment;
2. a period of time is needed in order for the undertakings to achieve full compliance with the requirements of the new radiation protection regulatory framework. The initial indications are encouraging; the majority of non-compliance cases can be attributed to inadequate understanding of the new terminology and new procedures.



Specifically:

1. There were not found cases of non-compliance posing a serious concern from the radiation protection point of view; in this regard, enforcement procedure was initiated only in two cases of non-compliance. Where necessary, recommendations were given to undertakings in order to take corrective action within a specified time-frame.

2. The undertakings are expected to develop, revise or intensify their actions with respect to:

- Education and training of exposed workers.
- Medical surveillance programmes of exposed workers.
- Identification of ways in which potential exposures or accidental and unintended medical exposures could occur.
 - Drafting or updating of their emergency response plans.

- Management of radioactive sources and radioactive materials.

A detailed report about the findings of inspections in 2019 is available at www.eeae.gr.

Other activities

- Pursuant to the transitional provisions of the Ministerial Decision 45872/2019 (Government Gazette No.1103/B/03.04.2019) several licenses, i.e. transport licences, licences for special industrial applications, licences for external workers, were re-issued.
- A national report entitled “Implementation of Code of Conduct on the safety and security of radioactive sources and its associated guidance on the import and export of radioactive sources” was submitted to IAEA.

Inspections of non-ionizing radiation applications

EEAE has the statutory responsibility for the protection of the general public and the environment from artificially produced non-ionizing radiation and provides relevant information to any interested party.

High frequency electromagnetic fields

EEAE participates in the licensing procedure of telecommunication antenna stations, by reviewing the electromagnetic emissions technical studies and environmental studies. Furthermore, EEAE is the competent authority to perform in-situ inspections and measurements in order to ascertain the compliance with the general public exposure safety limits.

a. Electromagnetic emissions studies – issuing expert opinions

In 2019 2,441 complete files (applications) were submitted to SILYA, the online platform of the Hellenic Telecommunications and Post Commission (EETT), accompanied by an equal number of electromagnetic emissions studies. Following the studies review, **expert opinions were issued in 2,143 cases**; additional data were requested in 348 cases.

b. Environmental impact studies reports

In 2019 EEAE received 57 environmental impact studies from the General Secretariats of

Decentralized Administrations.

EEAE provided its approval for 73 environmental impact studies, including pending cases from previous years. As was the case in previous years, further revisions were required in a number of studies.

In September 2019 an online platform for the management of environmental impact studies and of relevant expert opinions was launched.

c. In-situ inspections and measurements

EEAE monitors the compliance with the general public exposure safety limits for high-frequency electromagnetic fields:

- (a) in the context of the legal obligation to inspect ex officio, on an annual basis, at least the 20% of the licensed by the Hellenic Telecommunications and Post Commission (EETT) antenna stations operating in urban areas;
- (b) upon request by EETT or any person or entity.

In 2019, inspections and in situ measurements of high-frequency electromagnetic fields levels were performed by EEAE or authorized external contractors, **in the vicinity of 2,102 antenna stations** throughout the country.

ex-officio inspections



2,102

expert opinions



2,143

In summary:

- The greatest part of high-frequency electromagnetic fields measurements referred to measurements in the vicinity of mobile phone base stations (90%). The remaining part referred to measurements in the vicinity of radio and TV antenna stations (3%) and measurements in the vicinity of fixed telephony antenna stations and antennas of Internet service providers (7%).
- The percentage of ex officio measurements is

about 98% of the total number of inspections performed in the vicinity of antenna stations. 31 measurements were carried out upon request of natural or legal persons.

- The greatest part of measurements (33%) referred to antenna stations installed in the Region of Attica.

In-situ measurements were performed in the vicinity of 58 radio antenna stations and 12 TV antenna stations, outside urban areas, in areas that are practically “antenna parks”.

• In addition to the aforementioned total number of measurements, inspections in 5 radar system facilities of the Hellenic Civil Aviation Authority and the Hellenic Armed Forces, as well as in VHF antennas (not included in the EETT list of licensed antenna stations), were performed.

d. Access to measurement results

The results of measurements carried out in antenna stations are being published at:

<http://eeae.gr/επιτόπιες-μετρήσεις-ηλεκτρομαγνητικών-πεδίων>.

The website presents the results of approximately 17,000 inspections carried out from 01.07.2008 to 31.12.2019. These measurements have been performed in the vicinity of about 10,100 antenna stations. In several antenna stations measurements have been performed more than once (i.e. on different dates), the results of which are presented separately. The interconnection of EEAE and EETT websites (keraies.eett.gr) allows the visitors to be redirected from the measurements result page in the vicinity of an antenna station of their choice to the corresponding page that presents the licensing details of the particular antenna station, and vice versa.

e. Cases of non-compliance with the general public exposure safety limits

In 2019, as a result of in-situ measurements in the

vicinity of antenna stations providing telecommunication and other kinds of services throughout the country, **non-compliance with the general public exposure safety limits in locations accessible by the general public was ascertained, in 4 cases**; in 2 of these cases possible non-compliance with the public exposure safety limits was ascertained.

All these cases **concerned locations outside urban areas**, where a large number of high-power antenna stations are installed (such as radio and TV station antennas, radar antennas, etc.), in areas that are practically “antenna parks”.

EEAE promptly informed the licensing authority (EETT) for each one of these cases.

Within urban areas, no case of non-compliance or possible non-compliance with the general public exposure safety limits was identified.

National Observatory of Electromagnetic Fields

The Observatory is supported by a network of 513 broadband and frequency-selective fixed and mobile stations for the measurement of high-frequency electromagnetic fields and ensures the direct access to measurement results for the public through the website

<http://paratiritirioemf.eeae.gr>.



The Observatory was designed and implemented with funds from the Digital Convergence Operational Programme. The owner of the Observatory is the General Secretariat of Telecommunications and Postal Services, Ministry of Digital Governance, and the operating entity is EEAE.

The Observatory web portal had 5,152 visits in 2019.

The Observatory's report of operation for the year 2019 is available at: https://paratiritiri-oemf.eeae.gr/images/news/EEAE_EPHP_report_2019.pdf. The report presents the measurements' aggregated statistical data from the network of monitoring stations for each Prefecture for the year 2019 and a comparison to those of years 2018 and 2017.

The recorded levels of electromagnetic radiation are essentially far below the limits set by the national legislation.

Low frequency electromagnetic fields

In 2019, **63 inspections and in situ measurements** of low frequency electromagnetic fields have been performed, either upon request or ex officio. From the measurements performed in 2019, in the vicinity of all types of lines, sub-stations and facilities of the electric power transmission and distribution system throughout the country, **one case of non-compliance with the general public exposure safety limits was identified.**

The case was related to the electric field intensity limit value, in the vicinity of power lines, in an area accessible by the general public. EEAE promptly informed the competent bodies about this case, in order to take all required remedial actions.

Other activities

- Completion of 5 online tenders, which started in the end of the year 2018, for the assignment to external contractors of a specific number of electromagnetic radiation measurements across the country.
- Provision of written replies/information documents as a response to 47 requests submitted by citizens and/ or entities and to 81 email messages concerning electromagnetic fields.
- Participation in the Hellenic Organization for Standardization (ELOT) committees work on human protection from exposure to electromagnetic fields.
- Participation in the supervision and management team of the National Observatory of Electromagnetic Fields.
- Investigation of exposures from applications for cosmetic or entertainment purposes which use sources of artificially produced optical radiation (AVRA project).

EEAE coordinates and implements the environmental radioactivity monitoring programme by the following means:

Telemetric environmental radioactivity monitoring network

The telemetric environmental radioactivity monitoring network consists of two subsystems: the network of total-gamma ray in air measurements and the network of atmospheric aerosol radioactivity measurements.

The network of total-gamma ray in air measurement consists of 24 dose rate monitoring stations throughout the country. Alarm is recorded when the rate values of total-gamma ray in air exceed the predefined values. The measurement results are transferred to the central management station and recorded in a database.

The network of atmospheric aerosol radioactivity measurements consists of 3 monitoring stations located in Northern Greece. These stations perform measurements of natural and artificial alpha and beta radiation, as well as gamma spectrometry to detect artificial isotopes (e.g. ^{137}Cs , ^{131}I). The measurements are integrated every 30 minutes and are recorded in a database at the network's central station.

All monitoring stations work continuously, 24 hours, 365 days a year. The average daily values are published at EEAE website, as well as the European Radiological Data Exchange Platform (EURDEP).

Coordination of drinking water radioactivity monitoring

In the context of the radiological monitoring of water intended for human consumption, **1,425 certificates** of compliance were issued in 2019. Increased concentrations of natural radioisotopes were detected in 2 cases. EEAE promptly informed the Ministry of Health and the local authorities, in order to take all the necessary measures.

In 2019, EEAE renewed the approval for the radiological analysis in drinking water samples for 2 measuring laboratories.

Radon measurements

419 radon measurements were performed in dwellings and workplaces, as well as for inter-comparison purposes. The majority was performed under the national radon map project.

Combating radioactive material illicit trafficking

Within the framework of actions for combating radioactive material illicit trafficking, radiation detection systems have been installed at entry points of Greece. More specifically, fixed automatic radiation detection systems are installed at six customs stations.

Portable radiation detection equipment for performing secondary inspections has been additionally provided to 35 more customs offices, 20 border police stations and five offices of the Hellenic Coast Guard.

In cooperation with the customs authorities, EEAE centrally controls and monitors all radiation related incidents online. The Independent Public Revenue Authority contracted to EEAE the maintenance and calibration of the aforementioned detection systems.

In 2019, the computational system of alarms management and its interaction with the detection systems was upgraded.

In addition, EEAE provides to customs personnel training for the use of radiation detection equipment (fixed and portable) and alarm management.

In case of emergency, EEAE activates its response mechanisms and notifies the IAEA Incidents and Trafficking Database (ITDB).

Safeguards of nuclear material

In 2019, 4 on-site inspections (Euratom, IAEA) for purposes of nuclear material safeguards were carried out in Greece, as foreseen in the relevant European and international conventions.

Verification visit under article 35 of Euratom Treaty

From 11 to 13 December 2019 an EC (DG Energy) experts team conducted in Greece a verification visit under Article 35 of Euratom Treaty. According to Article 35 provisions, Member States are required to have in place infrastructure for the environmental radioactivity monitoring in air, water and soil.



Verification visit at the National Technical University of Athens (environmental radioactivity monitoring station)

The verification concerned the existing facilities for routine monitoring of environmental radioactivity in Athens, as well as the infrastructure for emergency monitoring of environmental radioactivity. In this context, the verification included visits at measuring laboratories (EEAE, National Technical University of Athens, NCSR 'Demokritos' and a laboratory authorised to perform radiological analyses in drinking water) as well as demonstration of technical equipment (EEAE, Fire Brigade at Athens International Airport 'El. Venizelos').

The main conclusions and the technical report will be published at EEAE website as soon as they are finalized.

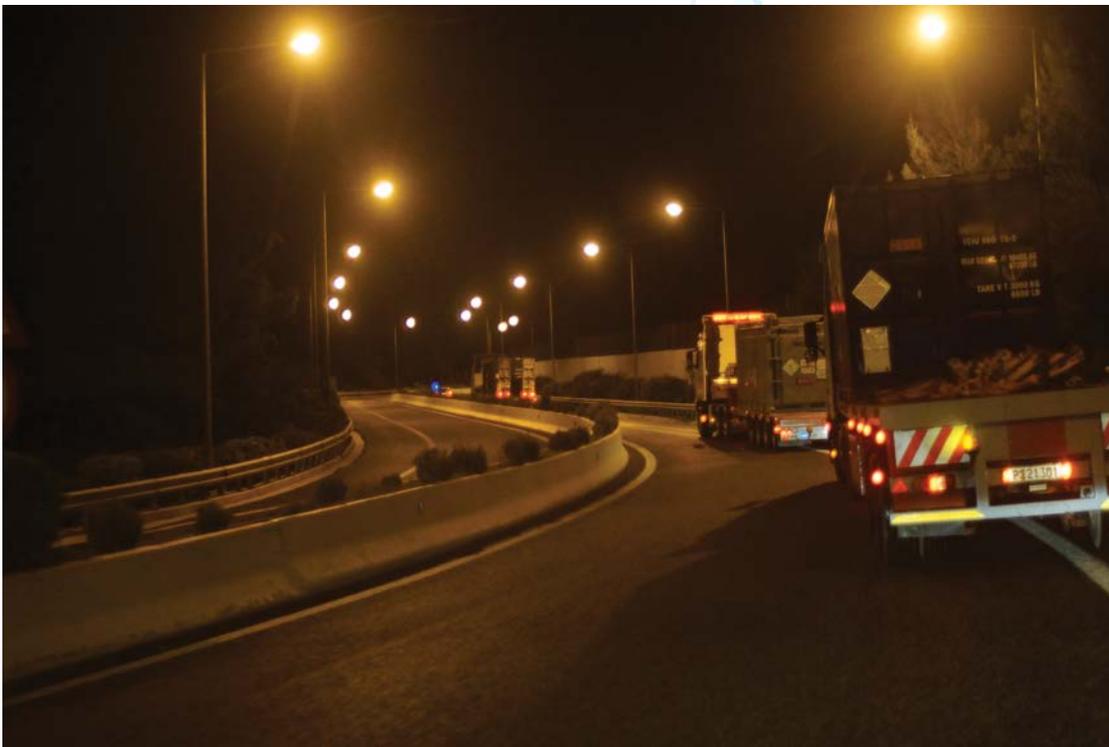
Management of radioactive waste

During 2019 some major steps for the implementation of the national programme for the safe management of spent fuel and radioactive waste were taken. Specifically:

- The spent fuel from the research reactor of NCSR “Demokritos” was returned to the supplier country (USA) in February 2019, according to the provisions of a bilateral agreement between NCSR “Demokritos” and US DoE. The repatriation of the irradiated fuel was one of the major milestones of the national programme for the safe management of spent fuel and radioactive waste. The successful repatriation of the fuel required months of work in close cooperation with NCSR “Demokritos” and included a number of arrangements with involved parties at European, international and national level (police, port authorities, customs offices).
- The National Committee for Radioactive Waste Management (EEDRA) proposed the revision (version 2) of the national programme for the safe management of spent fuel and radioactive waste (the initial version 1 was issued in 2015).

The revised programme was approved by EEAE Board and was submitted to the competent Minister. The revised version of the programme provides as the optimal technical option for the radioactive waste disposal the combination in one facility of (a) an engineered near surface disposal facility and (b) a surface trench.

- An invitation for an international peer review in the area of radioactive waste management has been addressed to the International Atomic Energy Agency (IAEA). The international peer review with the code name ARTEMIS (Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation) is coordinated by IAEA and covers the conventional obligation for EU Member States, as foreseen in the Council Directive 2011/70/ Euratom. The invitation was accepted by IAEA and the mission has been scheduled to take place in 2023.



Transportation of spent nuclear fuel from NCSR “Demokritos” to the port of Piraeus

Services

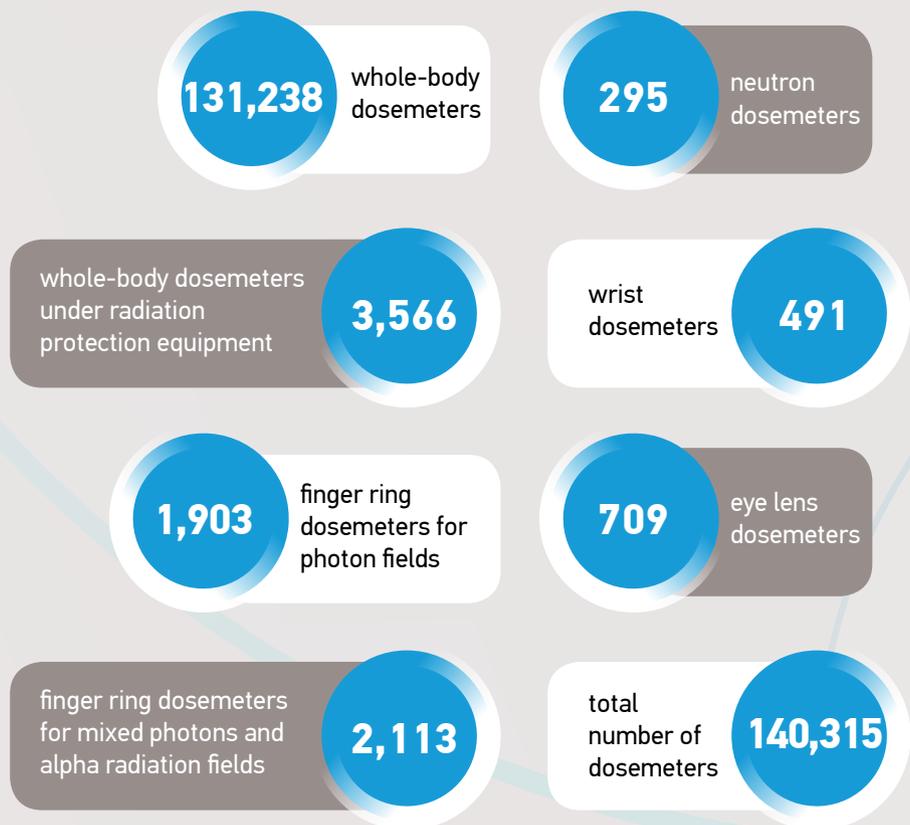
Individual monitoring of exposed workers

EEAE performs the individual monitoring of workers occupationally exposed to ionizing radiation from external exposure (more than 12,000 individuals).

Radiation dose is monitored by passive detectors (thermoluminescent dosimeters), worn by workers on specific parts of their body. Personal dosimeters are being used to verify the compliance with the dose limits specified in the Radiation Protection Regulations.

All measurement results are recorded to the National Dose Registry kept by EEAE.

In 2019, **the number of distributed dosimeters was 140,315, increased by 2.5%** in comparison with the year 2018. The largest percentage increase (7.5%) is observed in finger ring dosimeters for workers in mixed β and γ radiation fields, followed by eye lens dosimeters (3.7%).



Number of dosimeters distributed in 2019 per type

The 96% of the dosimeters distributed in 2019 were whole-body dosimeters. The measurements of whole body dosimeters are performed in terms of personal dose equivalent at depth 10 mm, $H_p(10)$, which, in most cases, is the best estimation for the effective dose.

The evolution of the annual average personal dose equivalent for the years 2011-2019 for whole body dosimeters is presented in diagram 1.

The value of the annual average personal dose equivalent at depth 10 mm as recorded by whole body dosimeters and the corresponding value without zero measurements were calculated to 0.64 mSv and 3.05 mSv, respectively. In comparison with the year 2018 there was a decrease by 8% and 9% respectively.

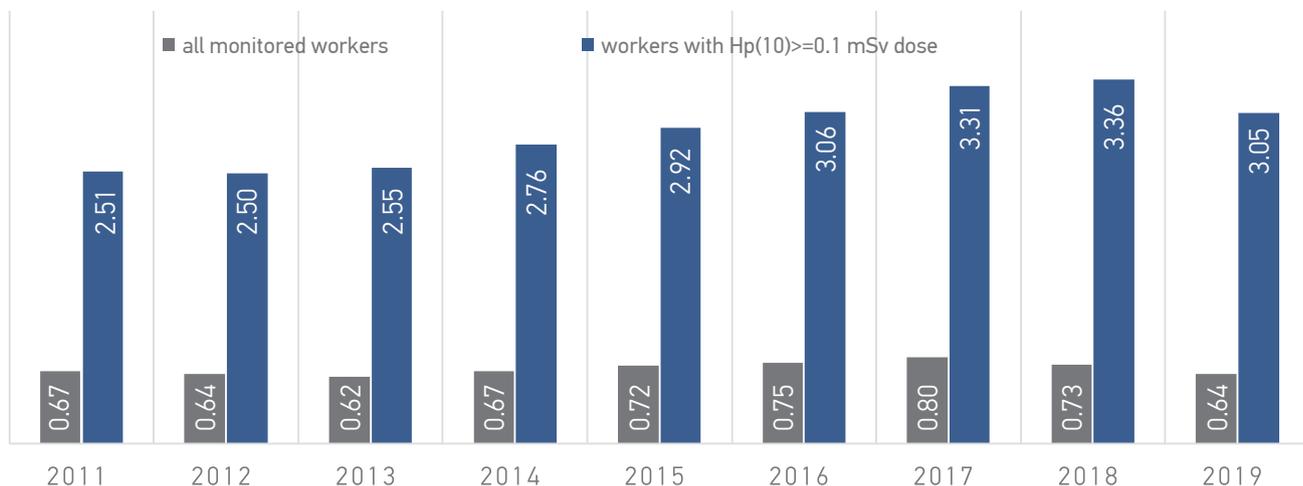


Diagram 1. Evolution of the annual average personal dose equivalent at depth 10 mm (mSv) for the period 2011-2019 for whole body dosimeters

The eye lens dosimeter has been used by 131 exposed workers within the last 5 years. In many cases the recorded eye lens dose may be found to be significant (diagram 2) and the need for radiation protection measures becomes evident.

In order to increase awareness on the subject, relevant information material has been uploaded at EEAE website.

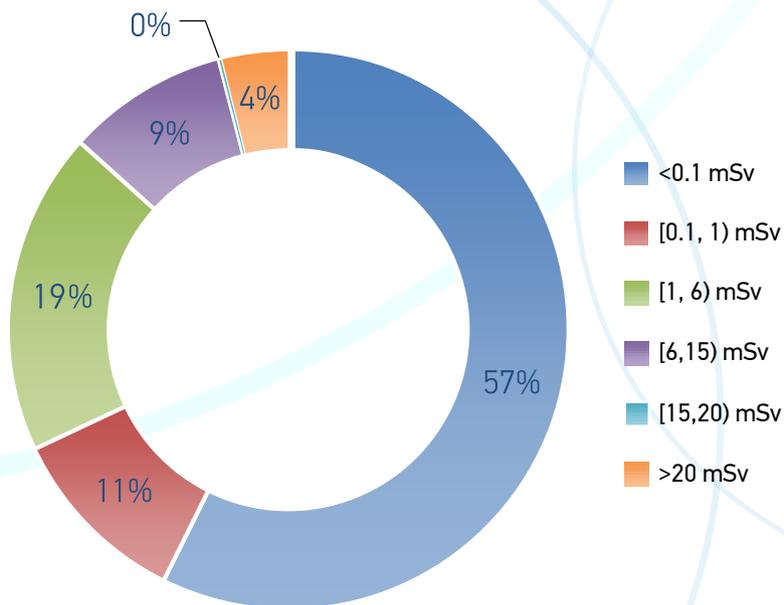


Diagram 2. Distribution of eye lens annual doses for the year 2019

In total, 383 workers used the finger ring dosimeters in 2019. The majority (64%) recorded an annual dose lower than 1 mSv. Moreover, 34% of them recorded doses between 1 and 150 mSv. Doses with values ranging from 150 to 500 mSv (diagram 3) were recorded only for 2% of the workers.

In 2019, a new finger ring dosimeter appropriate to be used in photon fields was designed and developed by EEAE with the use of a 3-D printer. Some of the advantages of the new dosimeter are that it fits well to the user's finger, the indelible label where the dosimeter's single code number is written, the ease of replacement and the low cost.

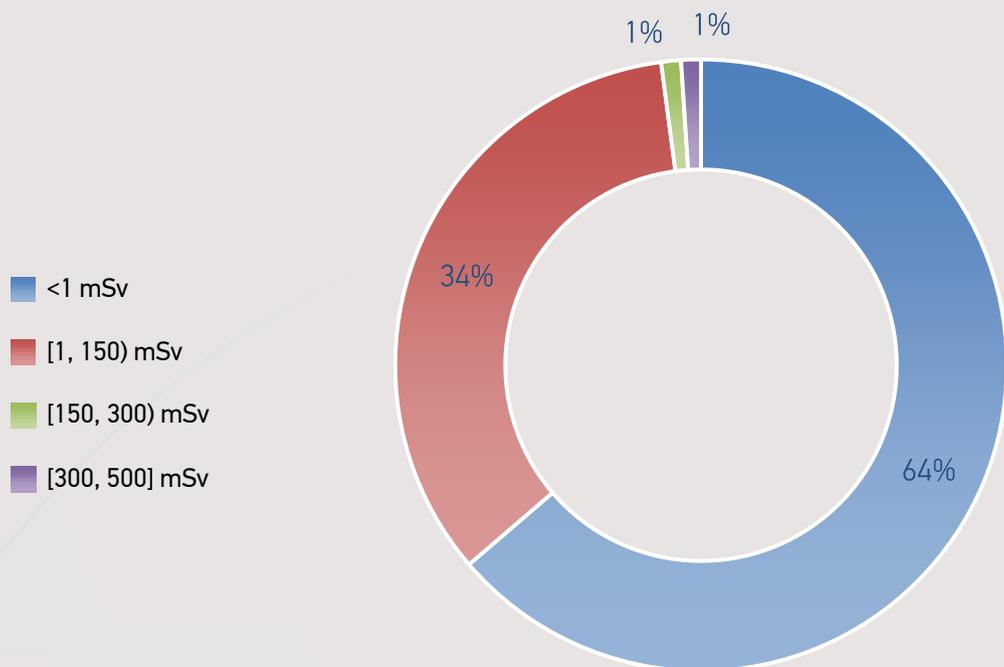


Diagram 3. Distribution of annual extremity doses (finger ring dosimeters)

It should be noted that, although there were no recorded cases with dose values above the annual limit, the real dose values in extremities received by the workers may be significant higher than the recorded values since the dose recorded at the basis of the fingers can often be lower than the one at the finger tips.

Aircrew doses

Aircrew personnel doses are calculated by the air-

line companies with the use of appropriate computer software and are submitted to EEAE in order to be recorded to the National Dose Registry. In 2019 the doses of **1,979 aircrew workers** from 4 airlines were recorded to the National Dose Registry. The 25% of them are pilots and the 75% passenger cabin crew. The calculated doses concern the year 2018. There were no cases of exceeding the value of 6 mSv, as **the maximum value of effective dose was calculated to be 2.52 mSv.**

Table 3. Notable numbers for the year 2019

Total number of workers monitored	12,741
Number of exposed workers receiving a dosimeter for the first time	865
Total number of distributed dosimeters	140,315
Percentage of dosimeters that were not returned	1.44%
Number of workers monitored receiving doses below the reporting level	10,017
Annual average personal dose equivalent at depth 10 mm, Hp(10)	0.64 mSv
Annual average personal dose equivalent at depth 10 mm, Hp(10) (values higher than the reporting limit)	3.05 mSv
Number of cases above the investigation level	21
Number of cases exceeding the dose limit for the effective dose	1
Number of cases exceeding the dose limit for the eye lens	3

Investigation of cases where personnel received doses above the limits

EEAE investigates the cases that the workers received an effective dose exceeding 6 mSv. In addition, the cases of increased extremity doses above 180 mSv, which is the 1/3 of the Hp(0.07) equivalent dose limit, as well as the cases of doses exceeding the values of 15 mSv for the eye lens, are also investigated.

Upon the completion of the investigation, the recorded doses are re-assessed by the Radiation Protection Officer and the final outcome is sent to EEAE in order to be registered in the National Dose Registry.

In 2019 **there were 21 cases** in which the effective dose exceeded 6 mSv (investigation level). The investigation showed that in 5 cases the dosimeters were not properly managed; in 15 cases the increased effective dose was the result of heavy workload. The investigation for one of these cases is still ongoing.

The abovementioned investigated cases include **one case of exceeding the annual effective dose limit and 3 cases of exceeding the annual eye lens dose limit** (the limit is 20 mSv).

Other activities

• **Participation in intercomparison exercises.** The Dosimetry Department participated in **2 intercomparison exercises**, one for eye lens dosimeters and one for finger ring dosimeters. The results for eye lens dosimeters were highly satisfactory, since after their irradiation at 3 levels of exposure and 4 different radiation qualities, their response in terms of accuracy and conformity was excellent.

The results of finger ring dosimeters intercomparison were equally satisfactory. The dosimeters were sent for irradiation in two European laboratories, in 6 different photons and β radiation energies and in three levels of exposure.

• **Re-design of the national Dose Registry.**

The re-design of the National Dose Registry began in 2019. The electronic version of the dose registry was launched in the beginning of '90s and now will be improved with interactivity features, in order to remain a valuable tool for the radiation protection of exposed workers in the coming de-cades.

• **Evaluation of provided services.**

In 2019, a quantitative survey was carried out based on a satisfaction questionnaire in order to determine the level of satisfaction among the users of the dosimetry services. 537 questionnaires were completed out of the 1,460 totally distributed. The 97% of respondents report that they are "very satisfied" or "satisfied"; the options "very dissatisfied" and "dissatisfied" were not chosen by the respondents. The level of satisfaction remains significantly high with an average value of 4.77 for all six questions and is higher than the respective value of previous years' surveys.

Services Calibration of ionizing radiation instruments

The Ionizing Radiation Calibration Laboratory has developed and maintains the national standards (Gy, Sv, Cb/kg) for ionizing radiation (γ , X and β). The laboratory officially collaborates with the Hellenic Institute of Metrology (EIM) and is the National Metrology Laboratory in the field of Ionizing Radiation.

In 2019:

- **584 calibrations** were performed and 293 certificates were issued. Most of the calibrations refer to personal dosimeters as passive detectors (TLD) and to active personal dosimeters.

A significant percentage of calibrations refers to survey meters used for radiation measurements. In addition, on-site visits for 29 radioactivity detectors used in 7 ships were carried out.

- Calibrations of **dosemeters** and survey meters used by special units of Fire Service (9 instruments) and radioisotopes identifiers used in 14 customs offices for combating illicit trafficking of radioactive material (in total 60 instruments) were also carried out.

Table 4. Number and categories of instruments calibrated in 2019, including the dosimeters of the European intercomparison exercise

Categories	Instruments
Radiotherapy ionization chambers and electrometers	17 chambers and 7 electrometers
Diagnostic radiology – mammography dosimeters	74
Diagnostic radiology kVp-meters – chronometers	47
Portable radiation detectors -Survey meters	126
Personal dosimeters with passive detectors-Pencil type dosimeters (intercomparison exercise)	2,047
Active personal dosimeters	74

The Ionizing Radiation Calibration Laboratory was selected for 4th time as the irradiation laboratory for the European intercomparison exercise for whole body dosimeters organized by the scientific network EURADOS (European Radiation Dosimetry Group). In 2019 the intercomparison was about extremity dosimeters and eye lens dosimeters.

Table 5 presents details about the irradiations carried out by the Ionizing Radiation Calibration Laboratory in the context of EURADOS intercomparison exercises. Also, new irradiation energies were developed: N-30, W-80 and W-110.

Table 5. Number of irradiations carried out in the context of EURADOS intercomparison exercise

Year	Number of participating laboratories	Number of irradiated dosimeters	Energy
2008 Whole-body dosimeters	62	1,240	Cs-137, Co-60, N-60, N-150
2012 Whole-body dosimeters	89	1,068	Cs-137, Co-60
2018 Whole-body dosimeters	119	2,064	Cs-137, Co-60
2019 Extremity dosimeters (finger rings, wrist) and eye lens dosimeters	113	1,808	Cs-137, Co-60, W-80, W-110, N-30

The Ionizing Radiation Calibration Laboratory participated successfully in annual intercomparison exercises in the fields of radiotherapy and radiation protection organized by the International Atomic Energy Agency (IAEA).

Diagram 4 presents the number of intercomparison exercises in which the Ionizing Radiation Calibration Laboratory participated during the years 2000-2019. In all cases the results were within the limits, confirming the high quality of the calibration services.

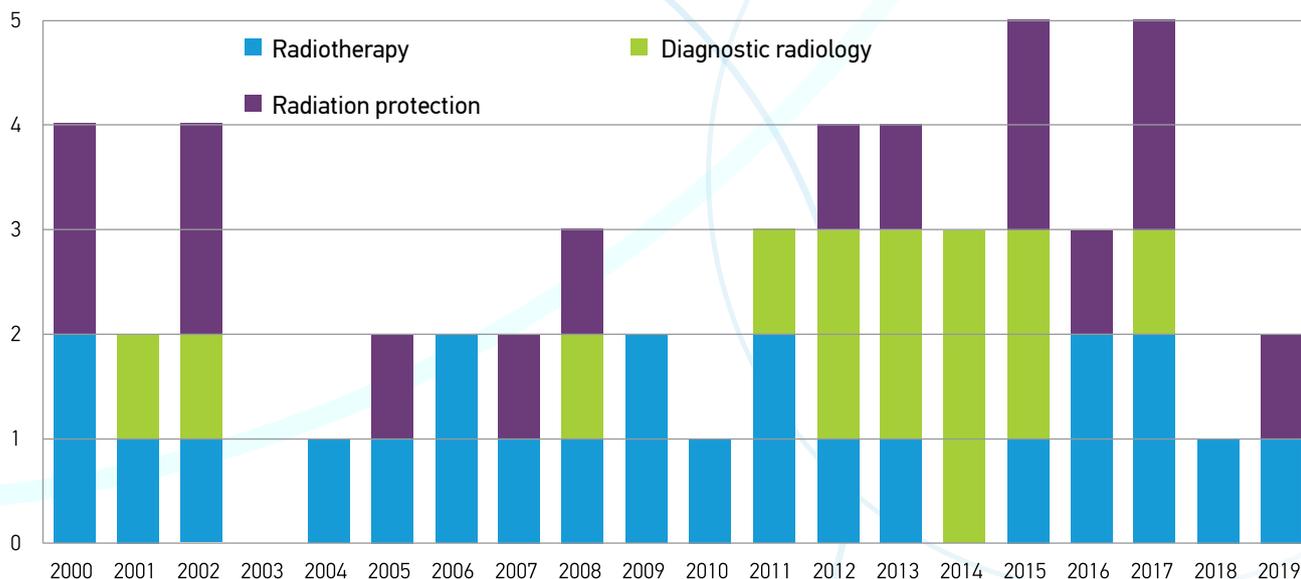
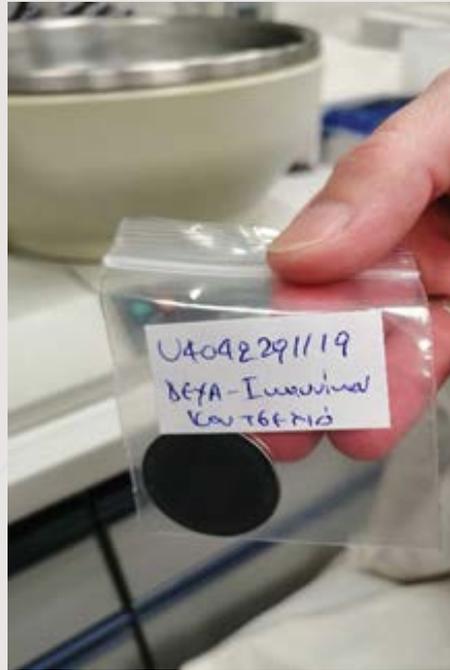


Diagram 4. Intercomparisons during the years 2000-2019

In 2019 a customer satisfaction survey was carried out through a questionnaire that was sent electronically. In a total of 100 clients, 21 responses were received. Customer satisfaction from calibration services reached 4.75 (5 is the highest mark). The last five years there has been an improvement of the customer satisfaction concerning the timing of issuing of calibration certificates.

In April 2019 the Ionizing Radiation Calibration Laboratory presented to the Technical Committee for Quality of EURAMET the quality system that applies in line with the ISO/IEC 17025:2017 requirements. The inspection outcome was satisfactory and there were not cases of non-compliance.

Services Measurements of environmental samples



Laboratory measurements are performed by EEAE in the context of the provision of services. These measurements involve:

- samples of soil, water, food, air filters etc., by alpha and gamma spectroscopic analysis and total α/β radiation measurements;
- radiological analysis of drinking water and water samples from tanks, lakes and drills for detection of radioisotopes;
- food products intended for exportation or domestic distribution;
- imported materials and commodities;
- building materials and materials intended for industrial production of building materials;
- materials with increased levels of natural radioactivity (Naturally Occurring Radioactive Material, NORM);
- areas with increased levels of natural radiation (locations of phosphogypsum deposition, areas with increased levels of radon in indoor air);
- objects / materials with increased radiation detected during scrap metals surveys.

α -spectroscopy
measurements



326

γ -spectroscopy
measurements



284

Measurements by liquid
scintillation counter



459

Measurements in environmental samples in 2019

Radiological monitoring in scrap metals import

The import of scrap metals in the country requires a radioactivity measurement certificate, issued by the country of origin. On the basis of this document, EEAE issues the import permit. In situ surveys are performed by EEAE, if required. In 2019 **104 in situ measurements** of total gamma radiation were performed prior to issuing certificates of radioactivity. **894 certificates of radioactivity were issued** by EEAE for scrap imports and exports.

The fixed radiation detection systems alarms installed in scrap industries all over Greece were **activated 9 times**.

Intercomparison exercises

In 2019 the Environmental Radioactivity Department participated in 3 intercomparison exercises. The first concerned the measurement of artificial radionuclides in water, the second was about the measurement of total α/β radiation and tritium in water and the third was about the analysis of biological samples. In this last one, EEAE was distinguished as the best laboratory in the analysis of ^{14}C and as second-best laboratory in the analysis of samples using the technique of γ -spectroscopy.

New equipment

In 2019, the α -spectroscopy measurement system was upgraded with 12 detectors.

EEAE, in cooperation with General Secretariat of Civil Protection (GSCP), draws up plans for responding to radiological or nuclear emergencies. At operational level, EEAE contributes to the implementation of “Xenokratis” General Plan for Civil Protection regarding radiological/nuclear emergencies. Also, EEAE participates in the emergency response teams of the National Emergency Plan for Chemical, Biological, Radiological and Nuclear (CBRN) threats, as well as in the early notification systems of the EU and the International Atomic Energy Agency (IAEA).

In 2019, EEAE completed and submitted to GSCP **the assessment of potential nuclear or radiological emergency situations in the country (ADKEA)**. This work was based on international standards, and where necessary, computational analysis was carried out on the basis of hypothetical, but realistic, scenarios. ADKEA introduces changes in the management of emergency situations, in compliance with the requirements of the latest European directives. The risk assessment and protection strategies included in ADKEA will be used for the revision of the relevant emergency plans.

No accident or incident with radiological consequences for the public or the environment occurred in Greece in 2019. The recorded radioactivity levels (ambient dose rate of total gamma radiation in the air) were within normal range.

In 2019 the following radiological incidents were reported:

- **Notification for inspection of suspicious postal mail, January 2019**

EEAE was notified on January 9, 2019 that postal envelopes were received by a number of educational institutions and other bodies.

Upon a request by the General Secretariat for Civil Protection, EEAE carried out a radiological survey on January 10, 2019 to one of the places (university campus in Athens) where the postal mail was sent. There were no radiological findings.

- **Technical problem during a brachytherapy practice, October 2019**

EEAE was informed by an undertaking authorised to apply brachytherapy practices that during a planned treatment by means of a system using an iridium source (Ir-192) of 114 GBq, there was a sound signal indicating error and the source failed to return to the shielding position.

The undertaking activated its emergency plan and conducted a thorough investigation of the incident, as well as an assessment of the doses received by the staff and the patient who was under treatment that time.

The patient effective dose was estimated to be 75.5 mSv. This value corresponds to the 0.8% of the total effective dose received by the patient during the treatments (radiotherapy and brachytherapy). The dose received by the workers who entered the room was estimated to be 1.45 mSv. However, the recorded dose by dosimeters (placed under the radiation protection apron) was zero.

The undertaking informed the patient and sent to EEAE reports about the incident and the consequences.

- **Cases of radiation detection in municipal waste**

EEAE was notified in 4 cases for the detection of radiation in municipal waste landfills. Considering that the garbage trucks collect household waste exclusively, it seems that in all cases the radiation was originated by patients subjected to radioisotope examinations or treatments. No further actions or measures were required, since there was no radiological risk.

Regarding training, preparedness and response, EEAE participated in the following exercise:

- **ConvEx-2b, 26-28 March 2019.** This exercise was coordinated by the International Atomic Energy Agency (IAEA). The arrangements in place for the implementation of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency were tested.

- **ConvEx-2d, 23-24 October 2019.** This exercise was organized by the International Atomic Energy Agency (IAEA), in cooperation with the competent regulatory authority of Sweden. Aim of the exercise was the evaluation of the emer-

gency management arrangements in case of nuclear or radiological emergency situation, due to a nuclear security event.

- **ECUREX-2019, 21 November 2019.** This exercise was organized by the European Commission, in cooperation with the competent regulatory authority of the Czech Republic. Aim of the exercise was the evaluation of the communication arrangements and procedures used in case of nuclear or radiological emergencies in Europe. The ECURIE platform used for early notification and information exchange was also tested.



Internal meeting during the emergency response exercise ConvEx-2d

EEAE provides education, continuous training and information in radiation safety. The educational activities are supported by EEAE scientific personnel; laboratory infrastructure and inspection equipment are also available to the trainees. EEAE has adopted **the blended learning approach, with the main tool being the electronic platform for asynchronous distance learning (e-learning)** which operates at edu.eeae.gr.

Actions implemented in 2019

• Training seminars

» Training seminar in cooperation with the Hellenic Society of Vascular and Endovascular Surgery, on patients and personnel radiation protection during interventional procedures using radiation. The seminar was attended by **43 vascular surgeons**.

» Training seminar regarding the identification and detection of radioactive sources. The seminar was attended by **9 officers of Police special unit**.

» 6 training seminars (Fire Service of the Athens International Airport Eleftherios Venizelos & 5th Fire Service Station of Thessaloniki) with the aim to provide basic background knowledge to the participants regarding the identification and detection of radioactive sources. The seminars were attended by **111 firefighters**.

» Training seminar for advisors of safe transport of dangerous goods Class 7 (radioactive materials). The seminars were attended by **2 persons**.

• Participation in the Inter-University Postgraduate Course in Medical-Radiation Physics

In October 2019, the Inter-University Postgraduate Course in Medical-Radiation Physics started with the participation of 15 students for the academic year 2019-2020.

Recognition of studies programmes in radiation protection

» Recognition of study programme for the provision of training in radiation protection for medical doctors, non-radiologists, participating in radiologically-guided invasive procedures, 2nd Dept. of Radiology, Medical School of the National and Kapodistrian University of Athens (264th EEAE Board meeting, 18.10.2019).

Actions implemented by EEAE as IAEA Regional Training Center in Europe and Central Asia for radiation, transport and waste safety

EEAE as IAEA Regional Training Center in Europe and Central Asia for radiation, transport and waste safety, organized and hosted in Athens the following meetings:

- Project coordination meeting, IAEA RER9140 “Strengthening Protection of Radiation Workers and Occupational Exposure Monitoring”, 28-30 January 2019, 29 participants.



- IAEA E-learning development workshop, 8-12 Απριλίου 2019, 11 participants from EEAE, NCSR “Demokritos”, the National Technical University of Athens and the National and Kapodistrian University of Athens.
- Interregional Project Coordination Meeting, IAEA technical cooperation project INT9184 “Enhancing Transport Safety Infrastructure in Mediterranean Region Member States through Sustainable Collaboration”, 13-17 May 2019, 16 participants.

Protection and the Safety of Radiation Sources was completed. The course lasted 22 weeks and it was attended by 19 participants. To implement the course, EEAE collaborates with the National and Kapodistrian University of Athens, the National Technical University of Athens, the University of Ioannina and the NCSR “Demokritos”. Ms. Ana C. Raffo-Caiado, Director of the IAEA’s Technical Cooperation Division for Europe, attended the closing ceremony.



Visit of the Director of the IAEA’s Technical Cooperation Division for Europe to EEAE

- Regional EuCAS Experts’ Meeting on the Importance of Information Exchange with Neighboring Countries in the Event of a Nuclear or Radiological Emergency, 4-6 September 2019, 11 participants.
- Interregional Training Course on Inspections for Transport of Radioactive Material, 2-6 December 2019, 14 participants.

Cooperation with other bodies

In the context of the IAEA programmes for the provision of technical support to other countries and in the context of bilateral agreements, EEAE and partner institutions hosted 13 scientists who visited Greece for training purposes (fellowships, scientific visits). Also, EEAE availed its infrastructure to 2 students for their bachelor’s thesis.

In March 2019 **the 6th cycle of the Post graduate Educational Course in Radiation**

Research is a significant pillar of EEAE activities. It is conducted in order to support its operational work and to reinforce the scientific expertise of personnel. The research activity of EEAE is reflected in its participation in several research programmes.

Ongoing projects funded by national and European sources in 2019 are presented below:

• **Assessment of activities at national level on protection against ionizing and non-ionizing radiation - Awareness-raising Actions (AVRA), NSRF 2017-2020**

In 2017 the implementation of the project “Assessment of activities at national level on protection against ionizing and non-ionizing radiation - Awareness-raising Actions” was launched with the code name AVRA, which is funded by the National Strategic Reference Framework (NSRF) under the “Action for Strategic Development of Research and Technology Entities” of Operational Programme “Competitiveness Entrepreneurship and Innovation”.

AVRA project aims at (a) establishing a scientific method on the overall assessment of the radiation protection system and the evaluation of the regulatory framework in the economy and society and (b) awareness raising of the public and specific target groups on radiation, especially through innovative education and information actions.

More specifically, AVRA project includes the following topics:

- » Conducting a national survey of knowledge, attitudes and perception related to radiation.
- » Definition and evaluation of indicators on radiation protection, focusing on workers, public and the environment.
- » Education - information provision with emphasis on the use of new technologies (e.g. mobile phone and tablet apps) and aiming at raising public awareness on radiation safety issues.
- » Implementation of promotion actions and dissemination of the project results.

• **Enhancing stakeholder participation in the governance of radiological risks for improved radiation protection and informed decision-making (ENGAGE), Horizon 2020, 2017-2019**

The project ENGAGE begun in 2017 and was completed in 2019. ENGAGE aimed at enhancing

the radiological risks management by strengthening and improving the engagement process of all stakeholders in matters of policies and practices related to radiation protection. It was funded by the “CONCERT-European Joint Programme for the Integration of Radiation Protection Research” within the scope of Horizon 2020. 13 organizations were participating in the project.

• **Coping with uNcertainties For Improved modelling and DEcision making in Nuclear emergenCiEs (CONFIDENCE), Horizon 2020, 2017-2019**

The project CONFIDENCE begun in 2017 and was completed in the end of 2019.

The project aimed at understanding, reduction and management of uncertainties related to meteorological and radiological data, and the propagation of those uncertainties within the Decision Support Tools systems, including the pollutant dispersion, dose evaluation, food chain modeling and protective measures simulation. Social ethical and communication parameters were also addressed. It was funded by the “CONCERT European Joint Programme for the Integration of Radiation Protection Research” within the scope of Horizon 2020 and is supported by 32 organizations.

• **Research capabilities for radiation protection dosimeters (DOSEtrace), EMPIR EURAMET, 2018-2021**

The research project DOSEtrace aims at the optimization of measurements in the field of radiation protection. The optimization relates to the equipment used and the procedures for measuring and evaluating the doses to humans and the environment.

The purpose of the project is to establish and harmonize calibration procedures in the field of radiation protection, so that the calibration uncertainty does not exceed 5%. Emphasis is given to the dosimetric standards used in external irradiation and to the sub-standards used in eye lens dosimetry.

13 European organizations participate in the project. The project is structured in 6 work packages, divided into a total of 16 sub-tasks. EEAE participates in the majority of tasks.

• **Validation and Estimation of Radiation skin Dose in Interventional Cardiology (VERIDIC), Horizon 2020, 2018–2020**

The project VERIDIC focuses on patient-specific dose calculation in interventional cardiology. Its main objective is the harmonization of radiation dose structured report and the validation of skin dose calculation software products in interventional cardiology, which will optimize radiation protection of patients.

Based on the findings, standards for digital dose reporting will be proposed and protocols for acceptance testing and quality control will be developed. The establishment of interventional reference levels and of dose reduction strategies are also within the project objectives. A total of 10 European organizations are part of the project under the coordination of the Belgian Research Center SCK-CEN. EEAE participates in one working package.

• **Personal Online Dosimetry Using computational Methods (PODIUM), Horizon 2020, 2018–2020**

The research project PODIUM is funded by the “CONCERT- European Joint Programme for the Integration of Radiation Protection Research” within the scope of Horizon 2020. The main objective of PODIUM project is to improve occupational dosimetry by an innovative approach: the development of an online dosimetry application based on computer simulations, which will calculate individually the occupational doses, without the use of physical dosimeters.

A total of 7 European organizations are part of the program under the coordination of the Belgian Research Center SCK-CEN. EEAE participates in 3 work packages.

• **Safe Cross-Border Transportation of Hazardous Materials: Orphan Radioactive Sources (STRASS), Interreg-IPA CBC, 2018–2020**

The project STRASS is implemented within the framework of the “Interreg-IPA CBC” to strengthen cooperation and socio-economic development at the cross-border area of Greece and the Republic of North Macedonia.

The project deals with “green transportation” and specifically with the challenge to minimize

the risks of accidents and pollution with hazardous materials, including the radioactive ones. The main objective of the project is to familiarize non-experts in the radiological field, such as customs officers, with radiation detection, radiation risks, and relaying technical information obtained by scientific experts. 6 organizations are participating in the project.

• **Train the trainees – Train the future trainers in radiation protection and nuclear technology, ERASMUS+, 2018–2020**

The project is implemented under the framework of the European project ERASMUS+ and the purpose is the development of an education and training (E&T) programme on radiation protection and nuclear technology, using technological capabilities as well as administrative and communication skills in the fields of radiochemistry and medical applications, environmental radioactivity, nuclear reactors and waste management. For each field e-learning and video-live learning activities as well as educational seminars are expected to be developed. 11 European organizations, among which EEAE, participate in the project.

• **European Joint Programme on Radioactive Waste Management (EURAD), Euratom Research and Training Programme, 2019 –2023**

EURAD aims to the development of a robust and sustained science, technology and knowledge management programme that supports timely implementation of radioactive waste management activities. The Joint Programme is structured in 13 Working Packages (WPs) aiming to support Member States in developing and implementing their national R&D programmes for the safe long-term management of the full range of different types of their radioactive waste.

EEAE participates in the WP “Waste management routes in Europe from cradle to grave” (ROUTES) that focuses on collaboration between Member States, nuclear and non-nuclear ones, on sharing experience and knowledge about safety in waste management. 52 organizations participate in the programme.

A list of publications is presented in Annex I.

EEAE develops partnerships with counterpart organizations of other States, European institutions, international organizations and scientific networks in the context of the national presence of the country at the international level regarding our regulatory objects.

Activities for the year 2019 are highlighted below:

National report on nuclear safety

EEAE prepared in August 2019 and submitted to the International Atomic Energy Agency (IAEA) the national report on nuclear safety, ahead of the 8th Review Meeting of the Contracting Parties to the Convention on Nuclear Safety scheduled to take place in spring 2020. The report is available at:

http://eeae.gr/attachments/article/6451/CNS_Greek_report_2019.pdf

Participation in the event ‘Celebrating the 100th Edition of the PGEC in Radiation Protection and the Safety of Radiation Sources-Vision for the Future’

On the margins of the 63rd General Conference of the International Atomic Energy Agency (IAEA) the IAEA Department of Technical Cooperation organized the event ‘Celebrating the 100th edi-

tion of the PGEC in Radiation Protection and the Safety of Radiation Sources-Vision for the Future’ to recognize the attainment of an important milestone by the Agency’s Post-graduate Education Courses (PGECS).

EEAE, as IAEA Regional Training Center in Europe and Central Asia for radiation, transport and waste safety, hosts this PGEC and was invited to participate in the panel discussion during the event.

Hosting of the 19th European ALARA Network workshop

EEAE hosted in Athens from 26 to 29 November 2019 the 19th European ALARA Network workshop ‘Innovative ALARA tools’ jointly organized with the PODIUM (Personal Online Dosimetry Using Computational Methods) project. The online dosimetry applications for the individual monitoring of exposed workers, the development of software for exposure monitoring and the contribution of artificial intelligence in ionizing radiation practices were some of the topics discussed during the workshop.

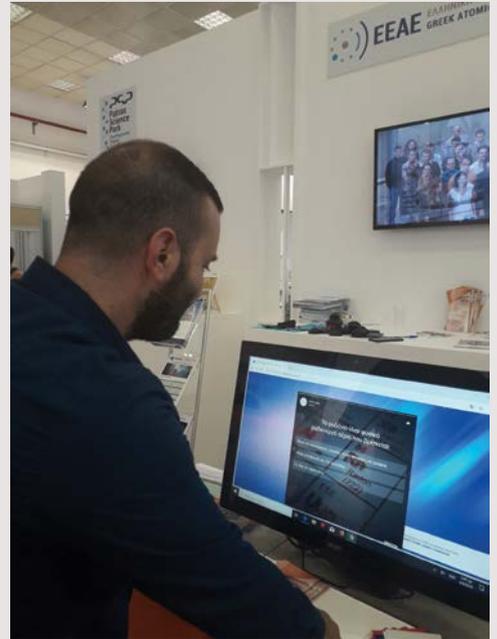


Representation of Greece in the panel discussion of the event celebrating the 100th Edition of the PGEC

Public information

Provision of information to the public and the State authorities is an institutional obligation of EEAE. Within this framework, in 2019:

- 2 press releases were issued;
- information was provided to 12 questions posed by members of the Hellenic Parliament in the context of parliamentary control. Most of the questions were related to electromagnetic fields radiation, in the vicinity of certain antenna stations;
- 2 newsletters were distributed electronically;
- school visits were organized and the students were informed about the daily applications of radiation;
- EEAE participated in the Science and Technology Festival held during 3 -7 April, 2019, by organizing a “Science Café” under the title “How savvy are you about radiation”;
- EEAE participated in the 84th Thessaloniki International Fair during 7-15 September 2019, by exposing information actions about radiation;
- EEAE personnel were invited in several information events organized by other bodies and participated with presentations. More specifically, EEAE presentations were given at the following events:



- » Global System for Mobile Communications Association (GSMA) EMF Forum, organized in Brussels on October 15, 2019. The EEAE presentation was entitled “Perceptions, attitudes and knowledge of the public opinion in Greece about radio signals: national survey results”;
- » information event “Contribution of the Research Centres to the management of natural disasters” organized by the National Observatory of Athens on November 29, 2019. The EEAE presentation was entitled “Systematic approach to the development of emergency response plans”.



Information events about the new Radiation Protection Regulations

Following the promulgation of the Ministerial Decision 45872/2019 (Government Gazette No. 1103/B/03.04.2019), the new radiation protection framework was presented in a series of events. More specifically, EEAE presentations were given at the following events:

- information event which was hosted at the Konstantopouleio General Hospital, in cooperation with the hospital’s Medical Physics Department on April 18, 2019;
 - information event which was organized by the Medical Physics Unit, 2nd Dept. of Radiology, Medical School, National and Kapodistrian University of Athens and hosted at Attikon Hospital, on September 30, 2019;
- » information event organized on January, 19 2019 by the Hellenic Association of Medical Physicists; EEAE presentation was entitled “Diagnostic Reference Levels: current situation in Greece”;

- information event which was hosted at the Papageorgiou General Hospital in Thessaloniki, in cooperation with the hospital's Medical Physics Department on October 11, 2019;
- session organized by the Hellenic Association of Medical Physicists during the 24th Inter-university Radiology Conference, held in Patra on November 16, 2019.

Moreover, the website of EEAE was updated in order to be in line with the new radiation protection regulatory framework. The update concerned website structure and content, in order to provide a comprehensive description of the notification and authorization procedures for practices subject to regulatory control.

Informing the Standing Committees on Production and Trade and the Standing Committee on Social Affairs of the Hellenic Parliament

On October 16, 2019, EEAE Chairman informed the members of the Standing Committee on Production and Trade and the Standing Committee on Social Affairs of the Hellenic Parliament about specific provisions of a bill concerned with the electromagnetic fields measurements and the National Observatory of Electro-magnetic Fields.

European communication campaign “Getting the right image for my patient”

EEAE participated in the European communication campaign

“Getting the right image for my patient” launched on November 8, 2019 (International Day of Radiology) and supported by 19 countries. Its aim was to raise awareness on the appropriate use of medical radiological examinations. The campaign was an initiative of HERCA (Heads of the European Radiological Protection Competent Authorities).

Social media

EEAE holds official accounts in social media, such as Facebook, Twitter, Instagram and YouTube. Posting content on social media enhances the dissemination of information in a broader audience.

E-governance

In 2019 EEAE posted at the national platform of electronic governance “Diavgeia” 6,830 administrative documents relating to procurement orders, individual administrative acts, approval of missions and travel expenses, etc.

Open data

EEAE, pursuant to Law 4305/2014 (Government Gazette No. 237/A/2014) on public disposition and further use of public documents, information and data, has recorded all documents and data at its disposal and issued a relevant Act on their open access.



Visitors
68,956



Page views
855,299



Registered users
of e-services
1,509

“ Getting
the right image
for my patient ”

A European communication campaign
to promote the appropriate use of
medical imaging



**Annex I:
Publications**



Publications in scientific journals

M. Lasithiotakis, D.C. Xarchoulakos, C. Potiriadis, "A radiation dosimetry assessment of workers in Greek style rotisseries that use pellets contaminated by ^{137}Cs and ^{90}Sr ", *Radiation Protection Dosimetry*, December 2019, Vol. 185, Issue 3, pp. 331–342

S. Foteinis, N. Kallithrakas-Kontos, M. Kolovou, M. Nikolaki, G. Takoudis, C. Potiriadis, V. Skanavis, N. Kalligeris, C. Housiadis, C.E. Synolakis, "Spatial and Temporal Heterogeneity of ^{134}Cs and ^{137}Cs in Topsoil after the Fukushima Daiichi Nuclear Power Plant Accident and the Importance of Tsunami Debris Management", *Environmental Processes*, 2019, Vol. 6, pp. 561–579

M.C. Lépy, C. Thiam, M. Anagnostakis, R. Galea, D. Gurau, S. Hurtado, K. Karfopoulos, J. Liang, H. Liu, A. Luca, I. Mitsios, C. Potiriadis, M.I. Savva, T.T. Thanh, V. Thomas, R.W. Townson, T. Vasilopoulou, M. Zhang "A benchmark for Monte Carlo simulation in gamma-ray spectrometry", *Applied Radiation and Isotopes*, December 2019, Vol. 154, Article number 108850

C. Potiriadis, I. Kazas, C. Papadimitropoulos, C.P. Lambropoulos, "Miniature neutron spectrometer for space", *Journal of Instrumentation*, November 2019, Vol. 14

M. Christopoulou, E. Karabetos, "Evaluation of RF and ELF Field Levels at Children Playground Sites in Greece from 2013 to 2018", *Bioelectromagnetics*, vol. 40 (8), 2019, pp. 602–605

T. Perko, M. Van Oudheusden, C. Turcanu, C. Pözl-Viol, D. Oughton, C. Schieber, T. Schneider, F. Zölzer, C. Mays, M. Martell, S. Baudé, I.C. de Witte, I. Prlic, M. C. Cantone, S. Salomaa, T. Duranova, S. Economides, S. Molyneux-Hodgson "Towards a strategic research agenda for social sciences and humanities in radiological protection", *Journal of Radiological Protection*, volume 39, 2019, pp. 766–782

G.A. Gourzoulidis, C. Kappas, E. Karabetos, "Development of a flowchart system for the risk assessment of occupational exposure to low and high frequency electromagnetic fields", *Hellenic Journal of Radiology*, 2019, 4(1): 18–25

R.P. Kollaard, E. Carinou, M. Ginjaume, L. Struelens, "How to establish an adequate system for eye lens dose monitoring: A proposal for typical workplaces",

Radiation Protection Dosimetry, 2019, doi: 10.1093/rpd/ncz009

D.C. Xarchoulakos, K. Kehagia "A study of various self deposition solutions for ^{210}Po in tap water", *Journal of Radioanalytical and Nuclear Chemistry*, 2019, pp.419–424

Presentations in conferences

K.L. Karfopoulos, D. Mitrakos, K. Kehagia, C. Potiriadis, E. Carinou, C. Housiadis, "Challenges and arrangements for the regulatory control of the activities involving NORM within the framework of the transposition of the 2013/59/EURATOM Directive in Greek legislation", 9th International Symposium on Naturally Occurring Radioactive Material, 23–27 September 2019, Denver, Colorado, USA

K.L. Karfopoulos, D. Mitrakos, K. Kehagia, C. Potiriadis, "Initiatives for the enhancement of the regulatory and metrological infrastructures needed to ensure radiation safety in industrial activities involving NORM in TC Europe", 9th International Symposium on Naturally Occurring Radioactive Material, 23–27 September 2019, Denver, Colorado, USA

K. Kehagia, D. Xarchoulakos, M. Kolovou, K.L. Karfopoulos, C. Potiriadis, "Environmental monitoring programme around a phosphogypsum disposal area", 9th International Symposium on Naturally Occurring Radioactive Material, 23–27 September 2019, Denver, Colorado, USA

V. Tafli, E. Carinou, E. Karabetos, C. Housiadis, "Exploring societal perception and safety culture of radiation in Greece", RICOMET 2019 - Social Science and Humanities in Ionising Radiation Research, 1–3 July 2019, Barcelona

E. Carinou, S. Economides, C. Hourdakakis, C. Housiadis, C. Potiriadis, V. Tafli, "Interested parties' involvement in the transposition of the BSS directive: the national experience", RICOMET 2019 - Social Science and Humanities in Ionising Radiation Research, 1–3 July 2019, Barcelona

D.C. Xarchoulakos, N. Kallithrakas-Kontos, K. Kehagia. "Preconcentration of uranium from urine on a complexing membrane", 2nd International Conference on Radioanalytical and Nuclear Chemistry, 6–10 May 2019, Budapest

Annex II: Financial report



Pursuant to Law 4310/2014, EEAE enjoys complete administrative and financial independence in exercising its regulatory functions. EEAE is financed by two sources:

- government funds and
- revenues from services, fees, funds coming from research and development projects (Special Account).

A large part of the governmental financial support are transfer payments for the annual national contributions to international organizations (OECD, IAEA), while the rest part covers approximately the half of personnel costs (permanent staff). Operational expenses (travel, equipment, consumables etc.) and the other half of personnel costs (contract staff) are covered by EEAE Special Account, i.e. by self-financing.

For the year 2019:

- the proportion of each funding source contribution to the revenues was 38% from the government budget and 62% from the Special Account;
- transfer payments reached 58% of the total government funds;

- a budget surplus has been achieved for EEAE Special Account, for yet another year. The amount of invoiced revenues of the Special Account reached 5,131,804,10 euros (except interest), increased by 18.3% compared to 2018;

- the Special Account expenses reached 2,669,660,91 euros, presenting an increase of 10.8% compared to 2018.

Article 45 of Law 4310/2014 provides that the fees and any fines collected by EEAE are used for funding the costs of any nature, as required to ensure sufficient financial and human resources for the support of EEAE work, in order to achieve its goals and responsibilities and to improve its efficiency.

The following pages present:

- detailed information of the Special Account budget-report for 2019, including the respective balance sheet;
- government budget data for 2019; and
- budget for both funding sources for 2020.

Financial Statement of EEAE Special Account

Budgetary year 2019 (01.01.2019-31.12.2019), amounts in euros

	2019	2018
Non-current Assets		
Tangible assets		
Other equipment and multiannual depreciation costs	12.99	12.01
Total	12.99	12.01
Intangible fixed assets		
Other intangible assets	15,500.00	17,500.00
Total	15,500.00	17,500.00
Total of non-current assets	15,512.99	17,512.01
Current Assets		
Financial assets and down payments		
Trade debtors	4,483,838.76	4,192,443.06
Other debtors	159,257.54	151,206.38
Prepaid expenses and accrued income	3,466,354.00	2,616,592.03
Cash and cash equivalents	24,591,758.29	22,857,603.75
Total of current	32,701,208.59	29,817,845.22
Total assets	32,716,721.58	29,835,357.23
Net assets		
Unallocated reserves		
Carried forward	28,636,394.39	26,572,013.80
Surplus of current financial year	2,804,267.08	2,064,380.59
Total net assets	31,440,661.47	28,636,394.39
Liabilities		
Short-term liabilities		
Commercial liabilities	440,247.75	292,725.68
Income Tax	0.00	0.00
Other Tax and duties payable	52,598.99	33,905.46
Social Security Contributions Payable	0.00	0.00
Other Liabilities	483,151.52	489,650.99
Expenditure estimates and deferred income	300,061.85	382,680.71
Total Liabilities	1,276,060.11	1,198,962.84
Total net assets and Liabilities	32,716,721.58	29,835,357.23

Head of Special Account Secretariat
Dimitrios Bouras

Agia Paraskevi,
12.06.2020

EEAE Chairman
Christos Housiadas

Income Statement of EEAE Special Account

Budgetary year 2019 (01.01.2019-31.12.2019), amounts in euros

	2019	2018
Turnover (net)	5,131,804.10	4,338,615.61
Other usual income	0.00	0.00
	5,131,804.10	4,338,615.61
Provisions to employees	-1,005,399.22	-912,787.41
Depreciations of tangible fixed and intangible assets	-102,699.24	-110,117.65
Other costs and damages	-1,558,190.80	-1,375,301.83
Other profits and income	328,055.23	93,064.28
Interests and similar funds (net amount)	14,068.66	43,531.81
Results before taxes	2,807,638.73	2,077,004.81
Income Tax	-3,371.65	-12,624.22
Year's results after taxes	2,804,267.08	2,064,380.59

Head of Special
Account Secretariat
Dimitrios Bouras

Agia Paraskevi,
12.06.2020

EEAE Chairman
Christos Housiadas

Governmental budget appropriations for EEAE, years 2019 και 2020 (amounts in euros)

	Budget 2019	Report 31.12.2019	Budget 2020
Personnel cost	906,000.00	938,631.69	900,000.00
Transfer payments	1,994,000.00	1,972,211.78	0.00
Goods and capital equipment supplies (the national programme of radioactive waste management is included)	580,000.00	462,822.89*	580,000.00
Total	3,480,000.00	3,373,666.36	1,480,000.00

* the amount of 450,000 euros was transferred to the budget of NCSR "Demokritos"

2019 Financial results and 2020 Budget of EEAE Special Account (amounts in euros) for main categories of costs and revenues

	2019 Budget	31.12.2019 Report	2020 Budget
Year's revenues			
Services - fees	3,842,500.00	5,131,804.10	4,520,500.00
Other profits (interest, revenue from provisions)	50,000.00	14,068.66	50,000.00
	3,892,500.00	5,145,872.76	4,570,500.00
Programme Subsidies			
IAEA (RTC), EU, other	488,752.00	328,055.23	705,454.00
Total Income	4,381,252.00	5,473,927.99	5,275,954.00
Year's expenses			
Staff wages and expenses	1,318,975.00	1,005,399.22	1,287,122.00
Third parties fees and expenses	182,900.00	122,551.44	151,300.00
Travel expenses	325,010.00	193,072.65	216,700.00
Purchase of fixed equipment	690,600.00	102,699.24	655,800.00
Exhibitions, demonstrations and conference expenses	37,600.00	71,130.41	78,500.00
Donations - Grants	0.00	5,260.00	0.00
Consumables (dosemeters, etc.)	40,700.00	33,108.92	111,900.00
Project assignments via tenders (antenna measurements etc.)	520,500.00	639,833.72	520,400.00
Telecommunication costs	129,800.00	130,699.25	147,000.00
Insurance premiums	8,000.00	6,266.88	14,500.00
Repairs - maintenance	188,700.00	175,248.97	565,200.00
Transport expenses	40,300.00	10,108.41	20,000.00
Operating and other expenses	105,126.00	174,281.80	310,202.00
Total Expenses	3,588,211.00	2,669,660.91	4,078,624.00



EEAE surroundings covered in snow, Agia Paraskevi, January 8, 2019.



Participants of the IAEA project "Strengthening Protection of Radiation Workers and Occupational Exposure Monitoring" meeting, Athens, January 28, 2019.

*Transportation of spent
nuclear fuel, Piraeus,
February 2019.*



*Science café
on radiation
at the Science and
Technology Festival,
Athens, April 5, 2019.*





The participants of the 6th cycle of the Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources, Athens, March 22, 2019.



Joint meeting of the European Association of Competent Authorities for the safe transport of radioactive materials (EACA) and the Mediterranean Region Transport Network (MedNet), Athens, May 16, 2019.

EUCAS Network Working Group Meeting,
Athens, 4-6 September 2019



Visit of the Deputy
Minister of Development
and Investments, C.
Dimas, and the General
Secretary for Research
and Technology, A.
Kyriazis, at EEAEE's
stand at Thessaloniki
International Fair,
September 7, 2019.

The Greek delegation during the 63rd IAEA General Conference, Vienna, September 16, 2019.



Information day on the new radiation protection regulations, Thessaloniki, October 11, 2019.

19th ALARA workshop on Innovative tools, Athens, 26-29 November, 2019.



EEAE presentation in the information event "Contribution of Research Centers to natural disasters response", Athens, November 29, 2019.



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GREEK ATOMIC ENERGY COMMISSION

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