

News from the Division of Radiation, Transport and Waste Safety
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Focus on Europe

A Newsletter issue for the region

The IAEA [Strategic Approach](#) to Education and Training in Radiation, Transport and Waste Safety (2011–2020)¹ provides a framework for establishing a sustainable education and training infrastructure in Member States that addresses national needs for building and maintaining competence in radiation, transport and waste safety that is consistent with IAEA Safety Standards.

For this purpose, IAEA's General Conference² has encouraged Member States to develop a [national strategy](#) for education and training, underlining the fundamental importance of sustainable programmes for building competence in radiation, transport and waste safety, as a key component of safety infrastructure. Furthermore Member States that receive assistance from IAEA are obliged to apply [IAEA Safety Standards](#) which require, inter alia, governments to establish a **national policy and strategy for safety**, including **provisions for acquiring and maintaining the necessary competence nationally for ensuring safety**.

IAEA's Division of Radiation, Transport and Waste Safety is assisting Member States to develop their own national strategies in Europe via the Regional project RER/9/109 on "**Strengthening Education and Training Infrastructure, and Building Competence in Radiation Safety**", which includes, inter alia, **Regional Workshops on National Strategies** for education and training in radiation, transport and waste safety (see below).

IAEA's Regional Training Centres (RTCs) in Greece and Belarus are key partners in the European region.

¹ Note to the IAEA Board of Governors and General Conference '2010/Note 44'.

² IAEA General Conference Resolution GC(56)/RES/9

Building Sustainable Education and Training Infrastructures in Radiation Safety

The IAEA Secretariat and Member States in the European region have jointly designed the regional project RER/9/109 “Strengthening Education and Training Infrastructure and Building Competence in Radiation Safety” (2012-2015).

Objective

To strengthen radiation safety through; the development of sustainable and effective education and training programmes in radiation safety that are based on identified needs; and by building expertise in the field.

Outcomes

Participating Member States will develop a national strategy for education and training in radiation safety in line with the IAEA Strategic Approach 2011-2020. Increased expertise in radiation safety in the region consistent with the IAEA Safety Standards based on identified needs.

Outputs

Member States are familiarized with the IAEA methodology to establish a national strategy and procedures are agreed for its establishment. Information in RASIMS (Radiation Safety Information Management System) is updated.

RASIMS is an IAEA web-based platform that enables Member States and the Secretariat to jointly collect, analyse and view information on the national infrastructure for radiation, transport and waste safety.

Personnel are educated and trained in the relevant IAEA Safety Standards (including IAEA General Safety Requirements Part 3, [GSR Part 3](#)).

Project Activities

Competence in radiation protection is strengthened through the attendance at the IAEA Postgraduate

Educational Course in Radiation Protection and the Safety of Radiation Sources (PGEC). These courses are hosted at the RTCs in the region (see page 5).

Train-the-Trainers (TTT) workshops are organized for Radiation Protection Officers (RPOs). The TTT course is aimed at developing communication skills and familiarizing participants with the IAEA training material with a view to build a core of national trainers.

Radiation Protection Officer is defined in IAEA Safety Standards as a ‘person technically competent in radiation protection matters relevant for a given type of practice who is designated by the registrant, licensee or employer to oversee the application of relevant requirements’.

Workshops are held to: familiarize Member States with the IAEA methodology to establish a national strategy; to share experiences in developing the strategy, the related education and training programme; and the standard content of the curricula for various practices.

Expert missions can be requested by Member States to receive assistance on how to establish a national strategy. Representatives from the RTCs participate in the annual meetings of the Steering Committee on Education and Training in Radiation Protection and Waste Safety (Newsletter issue No. 1) and the PGEC directors.

Table 1 shows a summarized time schedule of project activities. The regional workshops (highlighted in green) organized in 2012 are presented in pages 3-4.

IAEA Staff

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Project Activities	Year			
	2012	2013	2014	2015
Education of personnel through the IAEA PGEC (English, Russian, in alternation)	☑		☑	
Train-the-Trainers workshop for Radiation Protection Officers (English, Russian)				☑
Workshops to disseminate IAEA methodology to establish a national strategy (English, Russian)	☑			
Workshops to share experiences and report on progress. Update of RASIMS. (English, Russian)		☑		
Expert missions to assist Member States to establish the national strategy		☑	☑	☑
Workshops to share experience on education and training programme and standard curricula. Update of RASIMS. (English, Russian)			☑	
Participation of representatives of the RTCs in the annual meetings of: IAEA Steering Committee on Education and Training in Radiation Protection and Waste Safety; PGEC directors	☑	☑	☑	☑

Table 1: Summary of project activities and time schedule (as out of January 2013).

Regional Workshops on National Strategies

Two IAEA regional workshops on **"Establishing a national strategy for education and training in radiation, transport and waste safety"** were organized for the European region in 2012, one in English and the other in Russian.

Background

According to the IAEA [Strategic Approach](#) to Education and Training in Radiation, Transport and Waste Safety 2011–2020, Member States are expected to assume ownership of the process for establishing sustainable education and training infrastructures to achieve the desired level of competence. The sustainability will be ensured through the development and implementation of national strategies to strengthen education and training in radiation, transport and waste safety, considering the needs at national level and optimizing the available resources across all Member States in the region. An approach based on four-interlinked phases (Figure 1), where the outcome of one phase is the starting point for the next phase, will be adopted: identification of the training needs; design of a national training programme; development and implementation of the national training programme; evaluation and feedback.

Location, Date, Language

- Lithuania, in collaboration with the Radiation Protection Centre, 18-20 April 2012, English.
- Tajikistan, in collaboration with the Nuclear and Radiation Safety Agency, 16-18 May 2012, Russian.

Purpose

- To provide Member States with a general understanding of the IAEA methodology for developing a national strategy for education and training in radiation, transport and waste safety

- To familiarize Member States with the relevant IAEA safety standards and guidance, providing requirements for education and training in radiation safety and supporting the development of national strategies;
- To collect from Member States preliminary information for the development of national strategies, including regulatory framework for education and training, human resources and training infrastructures in radiation safety

Scope and Nature

The workshops were structured into plenary sessions and working groups. Experts gave presentations and reviewed the work of the breakout groups. The participants gave presentations on national regulatory frameworks for education and training and on human resources and training infrastructures in the field of radiation safety.

The main reference documents for the workshops (Figure 2) were:

- Governmental, Legal and Regulatory Framework for Safety, IAEA General Safety Requirements Part 1, GSR Part 1
- Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards - Interim Edition, IAEA General Safety Requirements Part 3, GSR Part 3
- Building Competence in Radiation Protection and the Safe Use of Radiation Sources, IAEA Safety Guide, RS-G-1.4
- Draft Guidance on the IAEA methodology for establishing a national strategy for education and training in radiation, transport and waste safety.

Two regional workshops are planned for 2013: Belarus, 8-12 July 2013 (Russian); and Greece 8-12 July 2013 (English)



Fig. 1: Phases to establish and maintain a national strategy for education and training in radiation protection.



Fig. 2: Reference IAEA Safety Standards and documents for the workshops: GSR Part 1, GSR Part 3, RS-G-1.4, Draft guidance for establishing a national strategy.

Participants

In total 36 participants from 20 countries attended the workshops. The lecturers and facilitators were from IAEA Regional Training Centres in the region (Belarus and Greece), plus IAEA staff.

Workshop in Lithuania (Held in English):

Workshop Facilitators		
Panagiotis Dimitriou (Greece), Andrea Luciani (IAEA)		
Participants		
	Albania	GRILLO, Bardhyl PACI, Rustem
	Azerbaijan	EYVAZOV, Agil PASHAYEV, Ramin
	Bosnia and Herzegovina	LAGUMDZIJA, Armin MARINKOVIC, Jelena
	Bulgaria	GROZDANOV, Krassimir Assenov
	Croatia	DODIG, Damir VEINOVIC, Zelimir
	Estonia	REALO, Enn
	Georgia	KOBALIA, Nino
	Kazakhstan	IDRISSOVA, Marzhan
	Lithuania	ADLIENE, Diana GATELYTE, Leva TUMOSIENE, Kristina URBELIS, Algimantas
	The former Yugoslav Republic of Macedonia	GERSHAN, Vesna NIKOLOVA, Gordana
	Montenegro	JOVANOVIC, Slobodan
	Moldova	RAILEAN, Serghei
	Romania	PETRE, Doina
	Serbia	JOKSIC, Jasminka KNEZEVIC, Vuk

Workshop in Tajikistan (Held in Russian):

Workshop Facilitators		
Andrey I. Timoshchenko (Belarus), Julius Ziliukas (Lithuania)		
Participants		
	Armenia	TEMURYAN, Simon
	Azerbaijan	ASLANOV, Fikrat SADIGOV, Ilham
	Belarus	MARUDA, MIKALAI VASILEUSKAYA, Liudmila
	Kyrgyzstan	DUSHENOVA, Zhyldyz KAZYBAEV, Narynbek
	Latvia	KIZANE, GUNTA TREIMANIS, Valerijs
	Moldova	CROITORU, ION HUSTIUC, Victor
	Russian Federation	BOMBIN, ROMAN
	Ukraine	DATSENKO, VOLODYMYR

Workshop summary

Member States were informed about the IAEA methodology for establishing a national strategy for education and training. The participants made presentations according to the templates and guidance they were given prior to the workshop. The presentations included preliminary information on which to start identifying needs i.e.: data on practices and activities in each State, as well as details of national legislation and regulations for education and training in radiation, transport and waste safety. The presentations subsequently provided an important source of information that was used to update the profiles of the Member States in RASIMS for the Thematic Safety Area 6 on education and training. Participants also reviewed the IAEA draft guidance on a methodology to establish a national strategy, and proposed a road map for national stakeholders when establishing a national strategy.



Fig.3: Photographs from the workshops: opening of the workshop in Lithuania (left) and a group photo in Tajikistan (right).

IAEA Regional Training Centres

The IAEA Regional Training Centres (RTCs) for education and training in the field of radiation protection are centres that provide training in collaboration with IAEA. Within the IAEA Strategic Approach 2011-2020 the RTCs are assigned a key role in the development of competence in the region. This includes collaborating with IAEA to disseminate the methodology for establishing a national strategy for building competence through education and training to Member States in the region. To become an IAEA RTC, the centre has to meet the criteria established by the Steering Committee on Education and Training in Radiation Protection and Waste Safety. Additionally, the centre must host an IAEA Education and Training Appraisal (EduTA) mission and, on the basis of the outcomes of the mission, a long term agreement is signed between IAEA and the authorities of

the Member States hosting the RTC. The RTCs in Europe are hosted in Belarus and Greece (Figure 4). They provide training and support to Member States in Russian and English, respectively.



Fig. 4: IAEA Member States hosting the Regional Training Centres for education and training in radiation protection.

BELARUS International Sakharov Environmental University (ISEU)

Introduction

Education and training activities in the field of radiation safety are driven in Belarus by the growing demands of the use of radiation sources, especially in medical applications and by the decision of the government to introduce nuclear power. The Belarussian education and training system in the field of radioecology and radiation protection was developed mainly to cope with the needs of building competence following the Chernobyl accident. The country is now remodeling the programme towards education and training in nuclear power. The State programme on human resources development for nuclear power has been in effect since 2007. This programme involves 4 higher institutions (Belarus State University, Belarus National Technical University, International Sakharov Environmental University, Belarus State University of Electronics and Computer Science) and a number of special secondary colleges of the Ministry of Education, Joint Institute on Power Engineering and Nuclear Research of the National Academy of Sciences of Belarus, Ministry of Power Engineering, and the Ministry of Health.

In this framework, the International Sakharov Environmental University (ISEU) plays a central role in education and training in nuclear, radiation, transport and waste safety.

Training in nuclear and radiation safety

In ISEU, a basic understanding in radiation protection is provided to the students of all the courses. The Nuclear and Radiation Safety programme offered at the 1st (undergraduate) and 2nd level (master), and the post-graduate

re-training course on Radiation Protection and Safety of Radiation Sources all include specific curricula focussed on radiation protection.

The Nuclear and Radiation Safety programme was initiated in 2008 and aims to train specialists with a higher education to be able to work in both the fields of nuclear and radiation safety, within nuclear power plants as well as in any other facility with application of ionizing radiation sources, radiation monitoring and radioactive waste management. The total duration of the programme is 5 years and the students are awarded the title of 'Engineer'. Two options are available for the students who enroll in the second level (master):

- the 'scientific and pedagogical' course on nuclear and radiation safety (1 year);
- A 2-year Master programme to train specialists for regulatory authorities, and institutions where a deeper professional training is required.

A programme on medical physics was introduced in Belarus in May 2012. In ISEU, the first undergraduate students are expected to be admitted in September 2013.

IAEA Postgraduate educational course on radiation protection and the safety of radiation sources

ISEU hosts the IAEA Postgraduate educational course on radiation protection and safety of radiation sources (PGEC), based on the IAEA standard syllabus and lasting 5 and a half months. At the end of the course, participants defend their project work within a specific area of radiation protection and, depending on the decision of the State Commission, are awarded a diploma with the qualification Radiation Protection Specialist.

Supplementary courses available in other institutions

There are several 1 to 2 week training courses available for professional advancement in the field of radiation protection provided by ISEU as well other national institutions:

- in the industrial field: National Institute on Higher Education (NIHE), ISEU, Belarussian – Russian University (BRU), and Institute of re-training and professional updating of the Ministry of Emergency of the Republic of Belarus;
- in public health: NIHE, Belarus Medical Academy of Post-Graduate Education (BelMAPO).

ISEU staff are encouraged to take part in many of the courses in radiation protection.

Physical infrastructures and human resources

ISEU has the facilities and equipment to conduct various training courses on radiation protection:

- laboratories equipped with up-to-date radiation measuring equipment (semiconductor gamma-spectrometers, liquid scintillation spectrometer, scintillation beta-gamma- spectrometers and radiometers, gaseous counters, alpha-spectrometer, dosimeters of different kinds, equipped radiochemistry laboratory);
- lecture and computer rooms;
- training material in Russian.

Educated and skilled personnel are also available for organizing and providing training in radiation protection courses. About 120 local lecturers and instructors have been involved in the PGEC from different institutions in Minsk and Gomel:

- Institute of Physics (laboratory on nuclear physics);
- Institute of Power Engineering and Nuclear Problems (reprocessing spent fuel, neutron generator, industrial accelerators and other irradiators);
- Radioactive Waste Storage Facility “Ecores”;
- Institute of Radiobiology;
- Institute of Radiology;
- Centre of Radiation Medicine and Human Ecology;
- Centre of Oncology and Medical Radiology;
- BELSTANDART (office for standard radiation measurements);
- Central Laboratory for Environmental Radiation Monitoring of the Hydrometeorological Service;
- ATOMTECH (the leading enterprise producing radiation measuring equipment);
- ATOMNADSOR (regulatory authority of Belarus in radiation protection and safe use of radiation sources);
- Laboratories of Polesky Radioecological Reservation;
- Radiation laboratory of the Ministry of Forestry;
- Centre for Emergency Response of the Ministry of Emergency;
- Border Guard Centre for illicit traffic control.

Highlights

Seven PGECs have been held in Belarus since 2001 comprising of 141 participants from 19 countries. The 8th PGEC commenced on October 2012 has 13 participants from 9 countries. There are 22 collaborating centres and

institutions with specialists and facilities that are involved in the PGEC.

The 2-week regional training course on monitoring during nuclear or radiological emergency held in 2011 was attended by 32 participants.

New national regulations consistent with the IAEA General Safety Requirements Part 3 (GSR Part 3) were established in December 2012. IAEA requirements and the International Commission on Radiological Protection (ICRP) recommendations are taken into account in the development of academic programmes and syllabi.

Establishing the national strategy

Several elements necessary for the establishment of a national strategy for education and training in radiation, transport and waste safety are already in place in Belarus. Since 2008 the State programme on education and training for nuclear energy is in place. It includes the programme on Nuclear and Radiation Safety, which is not only aimed at nuclear energy but also for other radiation applications. The system of professional education (*secondary and tertiary levels*) is governed by educational standards and academic plans endorsed by the Ministry of Education. Only academic and training plans authorized by the Ministry of Education are for re-training and professional advancement. The methodology for establishing educational standards and new academic plans for training and professional advancement is being developed and is expected to be completed and implemented in 2013.



Fig.5: ISEU Certificate of accreditation for ISO 9001.

Quality control for education and training is carried out by the established procedure of appraisal and accreditation (every 5 years) – this is under the responsibility of the Department of Quality Control for Education and Training within the Ministry of Education. A Quality Management System (QMS) according to ISO 9001 was

introduced in 2009 in all higher education institutions and organizations providing re-training and professional advancement. All leading universities and organizations providing training in radiation protection are now certified within the QMS.

GREECE

Greek Atomic Energy Commission (GAEC)

Introduction

The Greek Atomic Energy Commission (GAEC) is the competent national regulatory authority in the fields of radiological protection and nuclear safety. Its mission is the protection of the public, workers and the environment from ionizing and artificially produced non-ionizing radiation. Among its responsibilities is the provision of education and training in radiation protection and nuclear security.

Since 2003, GAEC has acted as the IAEA's Regional Training Centre (RTC) for Radiation, Transport and Waste Safety in Europe in the English language. Following the successful completion of the EduTA mission in 2008, a Long Term Agreement (LTA) was signed in 2011 between the Greek Government and the IAEA to support GAEC as an RTC in Europe. The LTA was ratified by Law (No. 4085, Official Gazette Folio No. 194, First issue) in October 2012.

The fulfilment of GAEC's role as an RTC entails mainly: (a) the organization and hosting of IAEA's Postgraduate Educational Course on Radiation Protection and the Safety of Radiation Sources (PGEC). The course follows the IAEA's Standard Syllabus, lasting 18-22 weeks.

(b) the organization and hosting of specialized training courses in various thematic areas, including nuclear security, emergency response, radiation detection techniques, Train-the-Trainers.

By the end of 2012, GAEC has hosted 4 PGECs and 17 training courses/seminars. A total of 70 students have attended the PGEC, and a further 373 people have participated in seminars and workshops. The implementation of both types of training is the outcome of close cooperation with IAEA.

Resources

The RTC's education and training activities are fully supported by the GAEC management and personnel, including funding if necessary. The RTC is coordinated by the Division of Education, Research and Development and supported by the Division of Licensing and Inspections. The Course Director, Ass. Prof. P. Dimitriou, is supported by a highly-skilled secretariat, responsible for the organization of education and training events, plus a team of scientific personnel capable of performing lectures and presenting IAEA material.

The successful implementation of this endeavor also requires the support of other national organizations. Thus,

in line with its organizational values, GAEC identified the need to form a national network of collaborating institutions in order to provide high quality services for education and training in radiation safety. This network is composed of:

- the National Center of Scientific Research (NCSR) "Demokritos";
- the Faculties of Medicine and Physics of the University of Athens;
- the National Technical University of Athens;
- the Faculty of Medicine of the University Ioannina;
- public and private hospitals in the area of Athens.

Furthermore, technical visits are organized in NCSR "Demokritos" facilities (research reactor, TANDEM accelerator, non-destructive testing facility, interim waste storage facility, production of isotopes, biodosimetry laboratory), industrial facilities (e.g. cyclotron, irradiator) and in places where radiation detection systems are installed (e.g. customs offices).

These institutions, along with GAEC, facilitate RTC activities by providing lecturers and trainers, as well as access to their state-of-the-art infrastructure. Both accessibility and availability of facilities and information are ensured by GAEC's role as the regulatory authority, hence creating a suitable learning environment for the participants.

In terms of human resources, RTC needs are covered by a roster of about 50 local lecturers (GAEC staff, researchers, academic staff) and a small number of invited lecturers. GAEC avails for RTC courses, 26 qualified staff members (which is more than 1/3 of its personnel) with experience as inspectors, regulators, emergency response team members, laboratory personnel.

GAEC infrastructure, such as classrooms, laboratories and technical equipment that is used in regular inspections and emergency response actions, are available for RTC courses. The practical sessions take place mainly in the following GAEC laboratories, which are accredited according to ISO/IEC 17025:

- Ionizing Radiation Calibration Laboratory (National metrology laboratory in the field of Ionizing Radiation).
- Personal Dosimetry Laboratory (external individual monitoring of more than 12,000 occupationally exposed workers on a monthly basis, plus internal dosimetry services; the doses are registered at the National Radiation Protection Database since 1969).
- Environmental Radioactivity Monitoring Laboratory (the monitoring programme includes the telemetric environmental radioactivity monitoring network and

laboratory measurements in samples of soil, food, drinking water, air filters).

Highlights

The unique combination of being a regulatory authority and an IAEA RTC makes GAEC the reference point in terms of education and training at both the national and regional level.

Viewing the operation of RTC from a national perspective, it is clear that its operation in Greece has set the foundations for the establishment of a sustainable national education and training system. The expertise gained (e.g. Train-the-Trainers courses); the sharing of international experience; the IAEA approach and guidelines; plus the active involvement of other educational bodies have all proved valuable and have contributed significantly in building the national strategy and strengthening the safety culture in the country.

After the 2008 EduTA mission, GAEC implemented an action plan requiring the development of a national strategy for education and training in radiation, transport and waste safety. The evaluation of educational and training needs was based on information taken from the National Radiation Protection Database. The national capabilities and resources, along with the international context, were considered as well. An overview of the education and training possibilities offered by the Greek Universities was also necessary. Appropriate educational material has been developed for the implementation of the national education and training programme. Mechanisms for the evaluation of effectiveness and

adequacy are also in place. The recently established quality management system for the training activities (ISO 29990:2010) is expected to ensure GAEC's continuing suitability, adequacy and effectiveness.

The operation of an IAEA Regional Training Centre in the English language in Greece also signifies major benefits for the region including, inter alia

- Facilitating the cooperation among regulatory authorities in the region;
- Forming a network of young professionals;
- Sharing experience and knowledge between new and established authorities and in radiation facilities.



Fig. 6: Practical exercise during the PGEC hosted at GAEC.

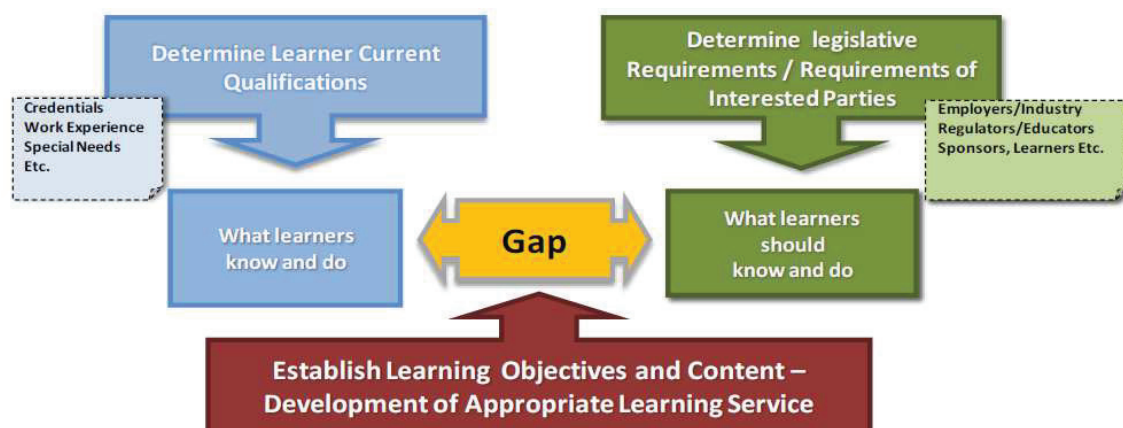


Fig. 7: The learning needs analysis procedure implemented under the ISO 29990: a contribution to the establishment of the national strategy for education and training in radiation, transport and waste safety.

Impressum

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