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Education and Training in Radiation, Transport and Waste Safety Newsletter

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Focus on Latin America

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 Conference[2] 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 Latin America via the Regional project RLA/9/070 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 Argentina and Brazil are key partners in the Latin-American 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 Latin-American region have jointly designed the regional project RLA/9/070 "Strengthening the Education and Training Infrastructure and Building Competence in Radiation Safety" (2012-2013).

Objective

To develop and implement in Member States a national strategy to strength the infrastructure for education and training in radiation, transport and waste safety, based on the needs and optimizing the available resources at national and regional level.

Outcomes

National radiation safety infrastructure strengthened through the availability of appropriately educated personnel that addresses the needs of the country.

Outputs

Enhancement of the regulatory framework in support of the infrastructure for education and training in radiation, transport and waste safety.

Identification of the education and training needs at the national level.

Development of the national strategy for education and training in radiation, transport and waste safety. Education and training programme are designed, based on the assessed needs and the existing resources.

Project Activities

The guidance on the IAEA methodology to establish a national strategy for education and training in radiation, transport and waste safety is translated into Spanish.

A regional workshop is organized to disseminate the guidance and to prepare, on the basis of that, the national strategy and the education and training programme in radiation, transport and waste safety. More detailed information about the meeting held in Brazil on this topic in 2012 is provided below.

In a preliminary step, expert missions can be requested by Member States to receive assistance to enhance the regulatory framework in support of the national infrastructure for education and training in radiation, transport and waste safety.

A regional workshop is organized on the identification of the training needs at national level, as first step for the establishment of the national strategy for education and traning. More detailed information about this meeting held in Bolivia on this topic in 2012 is provided below.

Expert missions can be requested by Member States to receive assistance on how to establish a national strategy and to develop the associated national education and training programme. In particular, the mission can assist Member States in the design of the national education and training programme on the basis of the identified education and training needs. Consideration will be given to plan train-the-trainers activities to build training capabilities at national level. The train-the-trainers modality is aimed at developing communication skills as well as familiarizing participants with IAEA training material with a view to building a core of national trainers in radiation protection. The target audience of the Train-the-Trainers workshops are normally the trainers of Ration Protection Officers.

> *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'.*

Regional meetings and wokshops are organized to evaluate and review available information, including existing training courses and material (provided by IAEA and Member States) and regulatory requirements. On the basis of the outcomes of the meetings, training material to be developed under the project to address the gaps in the training offers in the region is identified. Training material and programmes for relevant staff in different practices and for different levels of knowledge are eventually developed.

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). The courses are hosted at the IAEA Regional Trainng Centres (see below). Technicians are trained by attending courses on radiation protection.

Representatives of the Regional Training Centres 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.

Along the duration of the project, the Member States are requested to review and update the information provided in the education and training module (Thematic Safety Area 6: TSA6) in the Radiation Safety Information Management System (RASIMS).

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

The information provided in RASIMS for TSA6 will facilitate the monitoring of the progresses made in the establishment of the national strategy for education and training and on the development of the national education and training programmes.

In Table 1 the time schedule of the project activities is summarized. The regional workshops held in 2012 (highlighted in green) in Brazil and Bolivia are presented below.

IAEA Staff

Technical Officer: Mr Ronald Enrique Pacheco Jimenez (Department of Nuclear Safety and Security, Division of Radiation, Transport and Waste Safety).

Project Management Officer: Mr Raul Ramirez Garcia (Department of Technical Cooperation, Division for Latin America).

Project Activities	Year 2012	Year 2013
Translation in Spanish of the guidance on the IAEA methodology to establish a national strategy for education and training in radiation, transport and waste safety.	☑	
Regional workshop for the preparation of the national strategy and the education and training programme in radiation, transport and waste safety.	☑	☑
Expert missions to provide assistance to Member States in activities related to the enhancement of the regulatory framework in support of the national infrastructure for education and training in radiation, transport and waste safety.	☑	☑
Regional Workshop on the identification of the education training needs at national level.	☑	
Expert missions can be requested by Member States to receive assistance on how: – To establish a national strategy for education and training in radiation, transport and waste safety (seminars at national level to familiarize key-stakeholders with the IAEA methodology developed for that purpose); – To develop the associated national education and training programme. In particular, the mission can initially assist Member States in: o Assessment of the national education and training needs; o Design of the national education and training programme, on the basis of the identified education and training needs.	☑	☑
Design of the national education and training programme based on the adopted national strategy and identified needs:		
– Expert mission to assist the conduction of national train-the-trainers courses	☑	☑
– Regional train-the-trainers courses.	☑	☑
Regional meetings and wokshops are organized to evaluate and review available information, including existing training courses and material (provided by IAEA and Member States) and regulatory requirements.		
Training material to be developed under the project to address the gaps in the training offers in the region is identified.		☑
Training material and programmes for relevant staff in different practices and for different levels of knowledge are eventually developed.		
Personnel are trained at postgraduate level by attending the Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources (PGEC) at the IAEA Regional Trainng Centres.	☑	☑
Technicians are trained by attending courses on radiation protection.	☑	☑
Representatives from the IAEA Regional Training Centres participate in the annual meeting of: – 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 Workshop on National Strategies

A Regional workshop for the **"Preparation of the national strategy and the education and training programme in radiation, transport and waste safety"** was organized in Spanish for the Latin-American region in 2012.

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 the 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 education and training programme; development and implementation of the national education and training programme; evaluation and feedback.

Location, Date, Language

- Brazil, in collaboration with the Comisión Nacional de Energía Nuclear (CNEN) - Instituto de Radioproteçao e Dosimetria (IRD); 27-31 August 2012, Spanish.

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 develop an action plan to establish the national strategy in education and training in radiation, transport and waste safety.

Scope and Nature

The workshop was structured in plenary sessions and in working groups. The experts gave presentations and reviewed the work of the breakout groups. The participants also gave presentations on examples of activities in regard to the first steps of the process to establish a national strategy for education and training.
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.

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, 13 participants from 13 countries attended the workshops. IAEA staff attended the workshop to facilitate the work of the participants.

Workshop Facilitator

Ronald Enrique Pacheco Jimenez (IAEA)

Participants

Brazil	DA SILVA, Aucyone Augusto da Silva
Belize	BODDEN, John Paul
Chile	VILLALOBOS PINO, Belgica
Cuba	GUILLEN CAMPOS, Alba
Dominican Republic	FERREIRA CAPELLÁN, José Miguel
Ecuador	CHÉRREZ REINOSO, Carlos Manuel
Guatemala	FEIJOÓ SÁNCHEZ, Carmen Jacqueline Patricia
Mexico	JIMÉNEZ ROJAS, Mardonio
Paraguay	VILLANUEVA DE DÍAZ, Zulma Stella
Peru	MEDINA FLORES, Edgard Edilfio
Uruguay	CABRAL MOLINA, Walter Sergio
Venezuela	GIL, Aleida

Results

Member States were informed about the IAEA methodology for establishing a national strategy for education and training in radiation, transport and waste safety. The Spanish translation of the guidance on the IAEA methodology was presented and provided to the participants to facilitate the activities of the workshop.

Presentations were given by IAEA staff on the first three steps for establishing the national strategy: analysis of training needs; design of the national education and training programme; development and implementation of the national education and training programme. Discussions were held by the participants in working groups after each presentation to consider the feasibility, and to point out the challenges and possible solutions in the implementation of each step for establishing the national strategy. Outcomes of the work of the groups were presented in plenary.

The participants gave presentations providing examples of the initiatives taken at national level in relation to the different steps to establish the national strategy. Participants from Cuba, Chile and Peru provided examples and shared considerations about their experience and the lesson learned in the analysis of education and training needs, the design of the national education and training programme, and the development and implementation of the national education and training programme.

The participants developed a workplan to establish the national strategy for education and training, adapting the general scheme provided in Annex II of the guidance. The workplan specifies the actions to be taken to complete each step of the methodology to establish the national strategy. For each action, the main stakeholders at the national level were identified and the time frame for the completion of the action was given.

Fig.3: Photographs from the workshops: group photo (left) and work in groups (right).

Regional Workshop on Assessment of Training Needs

Following the workshop organized in Brazil in August 2012 (see above) aimed at familiarizing Member States with the guidance on the IAEA methodology to establish a national strategy for education and training in radiation, transport and waste safety, a regional workshop for the for the **"Assessment of training needs in radiation protection"** was organized in Spanish for the Latin-American region in 2012.

Background

The IAEA methodology to establish a national strategy for education and training in radiation, transport and waste safety was disseminated during the workshop in Brazil in August 2012, where the participants were asked to draft an action plan for a practical implementation of the national strategy, particularely considering role and functions of concerned country's stakeholders.

The first step to establish a national strategy for education and training in radiation, transport and waste safety is the identification of the training needs, which includes:

- Collection of information about the education and training requirements in radiation protection and safety specified in the legal and regulatory framework;
- Collection of information about facilities and activities undertaken in the country;
- On the basis of the collected information, assessment of the number of personnel that will require training.

Location, Date, Language

- Bolivia, in collaboration with the Instituto Boliviano de Ciencia y Tecnología Nuclear (IBTEN), 10-12 December 2012, Spanish.

Purpose

- To identify the education and training needs in radiation, transport and waste safety in each Member State, on the basis of the IAEA methodology to establish a national strategy for education and training in radiation, transport and waste safety (Figure 4).

Scope and Nature

The workshop was structured in plenary sessions and in working groups. The experts gave presentations and reviewed the work of the breakout groups. The participants also gave presentations on the national regulatory framework for education and training in radiation protection and safety, on the main practices and activities undertaken in the country, and on the relevant training courses and programmes available at national level.

Methodologies on how to collect the information necessary to assess the training needs within the process to establish a national strategy were discussed.

The main reference documents and sources of information for the workshop were:

- 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;
- States' national legislation and regulations for education and training in radiation protection and safety (in respect with IAEA General Safety Requirements GSR Part 1 and GSR Part 3);
- States' records on the practices and activities with use of ionizing radiations.

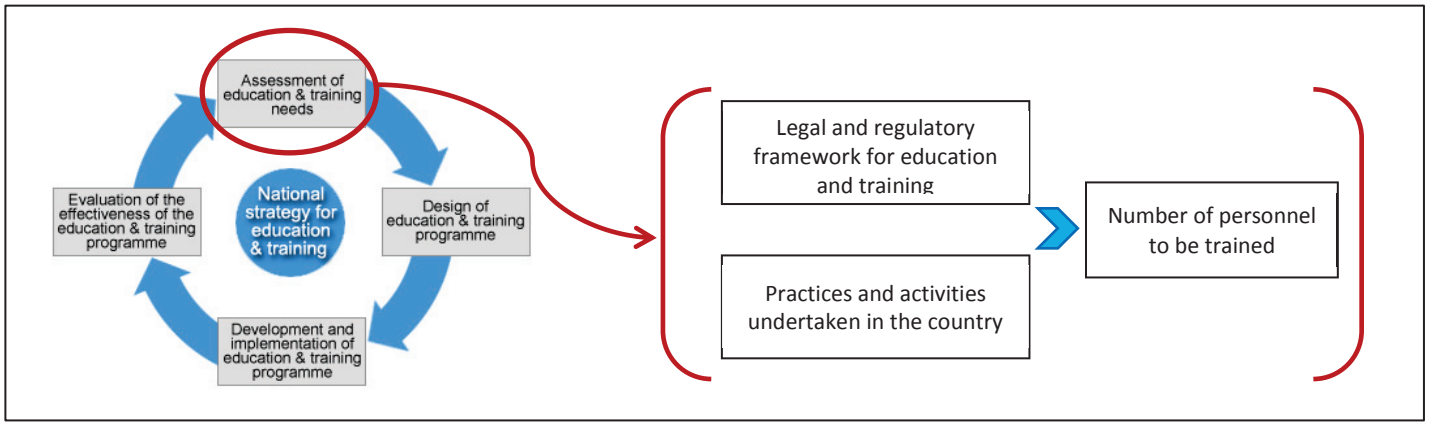

Fig.4: Assessment of the education and training needs in the framework of a national strategy for education and training in radiation, transport and waste management.

Participants

In total, 13 participants from 13 countries attended the workshops. IAEA staff attended the workshop to facilitate the work of the participants.

Results

Participants who did not attend the previous workshop were introduced to the methodology to assess the training needs in the framework to establish a national strategy for education and training in radiation, transport and waste safety.

Information on States' national regulatory framework for education and training in radiation protection and safety were collected, main practices and activities undertaken, and on the relevant training courses and programmes available at national level. On the basis of this information, each participant in the workshop assessed the education and training needs foreseen in the following years for different practices and activities and for different categories of personnel including qualified experts, radiation protection officers, workers and health professionals.

During the working group session, participants pointed out the importance of the involvement of all the relevant national stakeholders when assessing the education and training needs. The regulatory body, professional societies, public and private providers of training in radiation protection (including academic and non-academic institutions and organizations) were identified as key-contributors.

The participants also pointed out that a reliable assessment of the education and training needs for some practices and activities (such as in the medical field, particularly for diagnostic radiology) might require additional efforts due to the large number of facilities available in the countries.

Workshop Facilitator

Ronald Enrique Pacheco Jimenez (IAEA)

Participants

Bolivia	MIRANDA CUADROS, Alberto Augusto SAIRE ARUQUIPA, Edgar
Brazil	DA SILVA, Aucyone Augusto da Silva
Chile	VILLALOBOS PINO, Belgica
Costa Rica	MADRIGAL DÍAZ, Carlos Manuel
Cuba	RODRIGUEZ RODRIGUEZ, Maidelys Rosa
Dominican Republic	FERREIRA CAPELLÁN, José Miguel
Ecuador	VILLALBA BARRERA, Fernando Patricio
Guatemala	FEIJOÓ SÁNCHEZ, Carmen Jacqueline Patricia
Honduras	MALDONADO GARCÍA, Alejandro
Mexico	JIMÉNEZ ROJAS, Mardonio
Panama	RODRIGUEZ, Mario
Paraguay	VILLANUEVA DE DÍAZ, Zulma Stella
Peru	MEDINA FLORES, Edgard Edilfio
Uruguay	CABRAL MOLINA, Walter Sergio
Venezuela	GIL, Aleida MACHADO, Rubén

Fig.5: Participants in the workshop held in Bolivia on 10-12 December 2012.

Prácticas que usan fuentes de radiación	Número de instalaciones			Experto Cualificado (QE)			Oficial de Protección Radiológica (RPO)		
	Existentes	Previstas (<5 años)	Total	Existentes	Requeridos estimados	A ser capacitados	Existentes	Requeridos estimados	A ser capacitados
INDUSTRIAL y de INVESTIGACIÓN									
Radiografía industrial	11	2	13				3	13	10
Instalaciones de irradiador industrial (industrial y de investigación)	2		2				2	2	0
Calibradores industriales y perfilaje	38	7	45				38	45	7
Actividades de investigación: uso de fuentes selladas y no selladas	12	3	15	0	7	7	12	15	3
Aceleradores o reactores de investigación	2		2	0	2	2	2	2	0

Fig.6: Example of a country's assessment of the education and training needs for qualified experts and radiation protection officers for some practices and activities in the industrial field (in Spanish).

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 Traning 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 Latin America are hosted in Argentina and Brazil (Figure 7). They provide training and support to Member States in Spanish and Portugues, respectively.

Fig.7: IAEA Member States hosting the Regional Training Centres for education and training in radiation protection.

ARGENTINA
Autoridad Regulatoria Nuclear (ARN)

Introduction

The Governement of Argentina signed in 2008, after the completion of an EduTA mission, a long-term agreement with IAEA in accordance with the relevant IAEA General Conference Resolutions to support the National Regulatory Authority (ARN) as a Regional Training Centre (RTC) in Latin America and the Caribbean for Nuclear, Radiation, Transport and Waste Safety. The commitment of ARN, in line with its policies and strategies, builds on more than 30 years of successfully running the Postgraduate Educational Courses on Radiation Protection and the Safety of Radiation Sources (PGEC), and the Postgraduate course on Nuclear Safety, in partnership with the School of Engineering of the University of Buenos Aires and under the auspices of the IAEA.

In the last 33 years, about 1000 professionals (55% non-Argentinean) of the region were trained in the areas of Radiological Protection and Nuclear Safety (Figure 8).

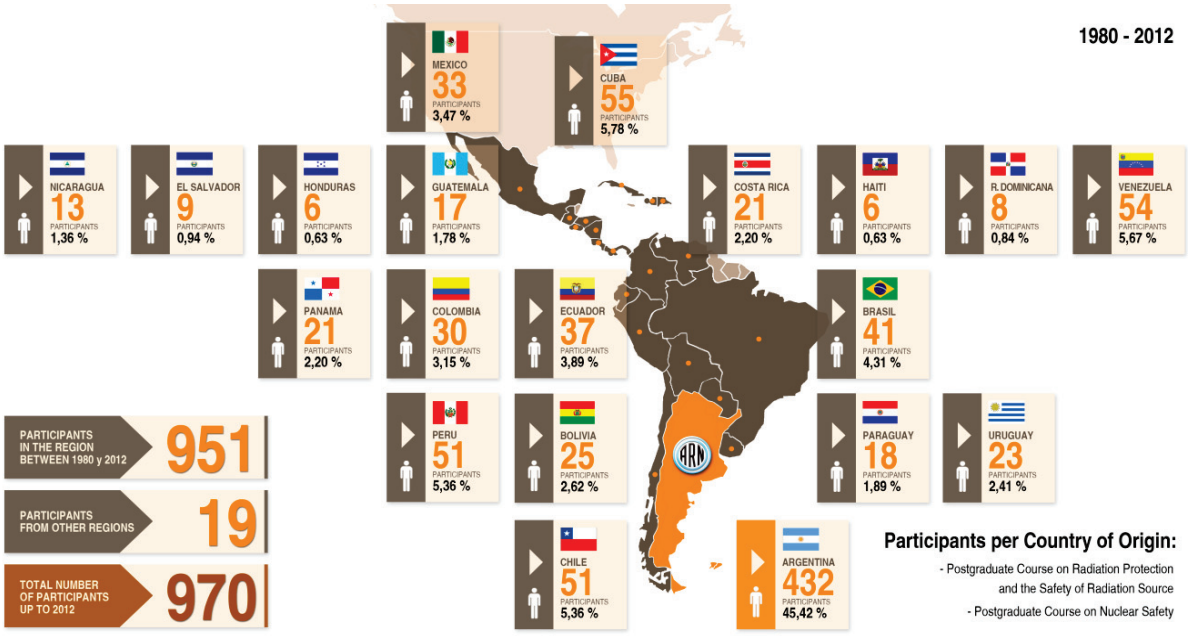

Fig.8: Origin of the participants in the Postgraduate Educational Courses on Radiation Protection and the Safety of Radiation Sources (PGEC), and the Postgraduate training course on Nuclear Safety.

In addition to the postgraduate courses, ARN organizes:

- Radiation Protection Course at Technical level. Frequency: once or twice a year. Duration: 2 months. Target audience: personnel with a secondary school diploma (many participants from the region are supported by the IAEA).
- Train-the-Trainers course in several fields. Frequency: once a year. Duration: two weeks.
- Transport safety and security and topics on emergency management. Frequency: twice or three times per year. Duration: 1 week. Target audience: army and security forces.
- Emergency Preparedness and Response (specific courses tailored for different audiences). Frequency: upon request.

Physical infrastructures

The training facilities of ARN are located at its premises in the Ezeiza Atomic Centre (CAE), about 35 km away from downtown Buenos Aires.

The teaching facilities includes: two classrooms for 30 and 25 students; a Practical Work Centre (PWC) with a capacity for 10 working groups of three or four students each; offices for the personnel that coordinate and support the training activities. Some classroom activities take place at the Engineering School of the University of Buenos Aires, at the beginning of the postgraduate courses. Occasionally, classroom activities and conferences are held at the ARN Headquarters located in Buenos Aires City.

Practical exercises with the use of dedicated equipment are carried out in ARN laboratories and are currently conducted by ARN staff, directly involved in their operation.

Fig.9: Demonstration during a training course at the alfa sprectrometry laboratory.

The CAE Laboratories includes:

- Measuring laboratory (for practical exercises);
- Detectors calibration laboratory (ISO 17025 Accreditation);
- Thermoluminescence detectors (TLD) laboratory;
- Neutron dosimetry laboratory;
- In-vivo Dosimetry laboratory (particularly for in-vivo measurement of I-131)
- Environmental Dosimetry laboratory;
- Air sampling laboratory.
- Water sampling and pre-treatment laboratory (ISO 17025 Accreditation)
- Laboratory for the detection of Uranium in water by Laser Induced Kinetic Phosphorimetry Detection (ISO 17025 Accreditation);
- Laboratory for the detection of environmental tritium (ISO 17025 Accreditation);
- Laboratory for the gamma spectrometry in water (ISO 17025 Accreditation);
- Ra-226 laboratory;
- Sr-90 laboratory;
- Rn-222 laboratory;
- Biological Dosimetry (Citogenetic) (ISO 17025 Accreditation).

In collaboration with the National Atomic Energy Commission (CNEA), some practicals, technical visits, demonstrations and exercises are carried out at several facilities of CNEA, such as: sealed sources production, semi-industrial irradiation plant, radiopharmaceutical production facility, waste disposal and storage area, radioisotope production cyclotron. Visits are also organized to nuclear power plants (Atucha I and II, Embalse), research reactor, Bariloche Atomic Centre, Nuclear Medicine School in Mendoza, other public and private facilities of technical interest.

Human resources

The teaching staff of the RTC consists of about 50 professionals specialized in different fields. 70% of them are senior staff of ARN and 10% are members of the University of Buenos Aires - School of Engineering, who are in charge of the introductory subjects for the postgraduate courses. Additionally, in order to cover some specific subjects, the RTC benefits from collaboration with external professionals from research and production activities in the fields of nuclear technology, providing students with their direct experience as users of ionizing radiations. Collaborating staff come from the Atomic Energy Commission, Health Authority, Nucleoeléctrica Argentina S.A. that operates nuclear power plants, Balseiro Institute and of other medical and technological centers of the country. The competence built up over many years in Argentina has created a large pool of lecturers available to the RTC to organize and run host courses in practically all the fields of radiation, transport and waste safety. Nevertheless, every year, the RTC benefits from international experts, supported by IAEA, providing lectures on topics of particular relevance in the field of radiation, transport and waste safety (e.g. new IAEA safety standards, recent evolutions and trends in radiation safety, new

reccomendations from international bodies and organizations, such as the International Commission on Radiological Protection).

Highlights

The PGECs run by the RTC have been an important instrument to adequately meet the training needs in the region at postgraduate level in the field of radiation protection and safety. Nevertheless, the Education and Training Unit of ARN is strongly committed to continuously improve its education and training offer. In this framework, many efforts have been made in regard to the quality management of the education and training activities. The postgraduate courses on radiation protection and nuclear safety are implemented under a quality management system based on the standard IRAM-ISO 9001/2000. In 2007 the accreditation IRAM/IONet was obtained with the scope of curriculum, planning and implementation of postgraduate courses for Radiation Protection and Safety of Radiation Sources, and Nuclear Safety. In 2010, certification under standard IRAM/ISO 9001/2008 was maintained and modifications were made to broaden the scope of the accreditation to curriculum, planning and implementation of courses and training activities on radiation protection, nuclear safety, safeguards, and physical protection.

Another achievement towards improving the postgraduate courses was its inclusion into the national academic system. The theoretical and practical contents of the PGEC were presented first to the Steering Council of the School of Engineering of the University of Buenos Aires for its approval as Postgraduate Specialization Degree (one of the three postgraduate options available in Argentina, together with the Master's degree and the Doctorate). The proposal was approved by the School and submitted to the Academic Council of the University of Buenos Aires which recognized the course as Postgraduate Specialization Degree in accordance with a Resolution of July 11, 2012. In the future, the same process will be followed for the Postgraduate Course on Nuclear Safety.

The progress achieved so far and the recognized academic excellence of the University of Buenos Aires will significantly benefit the quality of the training offered and will contribute to the national and international dissemination of the specialization in radiation protection.

BRAZIL
Instituto de Radioproteção e Dosimetria/Comissão Nacional de Energia Nuclear do Brasil (IRD/CNEN)

Introduction

The Institute of Radiation Protection and Dosimetry (IRD) is a Brazilian nuclear research institute established in 1972, with the aim of carrying out environmental monitoring, calibration of area monitors and training of professionals in the medical area, radiation protection and clinical dosimetry.

Fig. 10: View of the entrance gate of the Institute of Radiation Protection and Dosimetry (IRD).

Nowadays the IRD, as part of CNEN (Brazilian National Nuclear Energy Commission), participates in normative and technical committees in Brazil and abroad, provides regular education and training courses and is collaborating with IAEA in education and training activities for Latin American countries. IRD already provides a Postgraduate Program (Master and PhD) in radiation protection and dosimetry and started providing the Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources (PGEC), based on the IAEA syllabus, in Portuguese since 2011.

Since 2011, IRD has hosted the IAEA Regional Training Centre, after having received an EduTA mission in 2010.

Physical infrastructures

IRD is provided with an excellent education and training infrastructure, including training facilities, equipments and qualified staff to support any training programme in radiation protection. Training events are normally organized in Portuguese, but English and Spanish are also used for training foreign students or for international training events.

For the organization of local training events, IRD can benefit from the technical support of 14 CNEN units located all over Brazil.

IRD has a comprehensive quality management system for laboratories and services that could be extended to the education and training activities.

The IRD laboratories available to to support the training courses are:

- Neutron metrology laboratory;
- Gamma and X-Ray metrology facility;
- Radionuclide metrology laboratory;
- Internal dosimetry laboratory;

- External dosimetry laboratory;
- Industrial radiography laboratory;
- Industrial radiochemistry and radiometry laboratory;
- Medical physics laboratory (radiodiagnosis and nuclear medicine laboratory);
- Environmental radiochemistry and radiometry laboratory;
- Radiobiology laboratory.

Fig. 11: The IRD´s Gamma Metrology Laboratory.

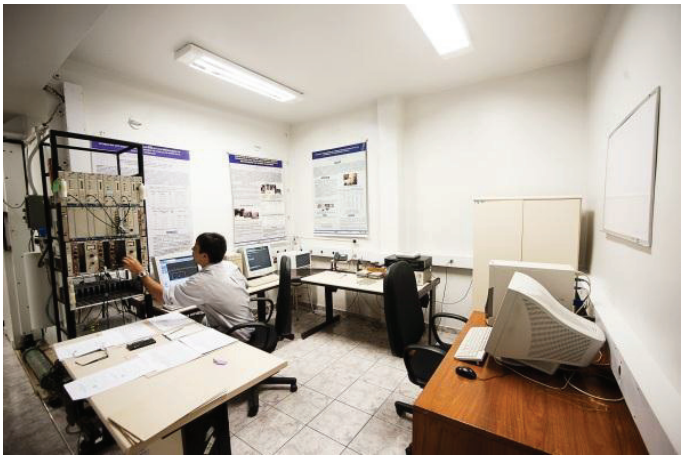

Fig. 12: The IRD´s Gamma Metrology Laboratory Control Room.

The IRD Training Centre is equipped with two classrooms (30 persons) for training, two conference rooms for 50 and 200 persons and 1 Computer Lab with 16 PCs. All these conference and classrooms are equipped with internet connection, computer desktop and media equipment. All IRD research laboratories are available for PGEC lectures and practical exercises.

A library at the IRD Headquarters is available to the participants providing a direct electronic access to more than 6000 journals and publications.

Human resources

The RTC staff is composed of five administrative professionals and 41 lecturers (most of them with a PhD degree). The secretarial support (2 persons) as well as the financial and administrative support is provided by IRD whenever needed.

Fig. 13: The IRD´s Training Center Classroom.

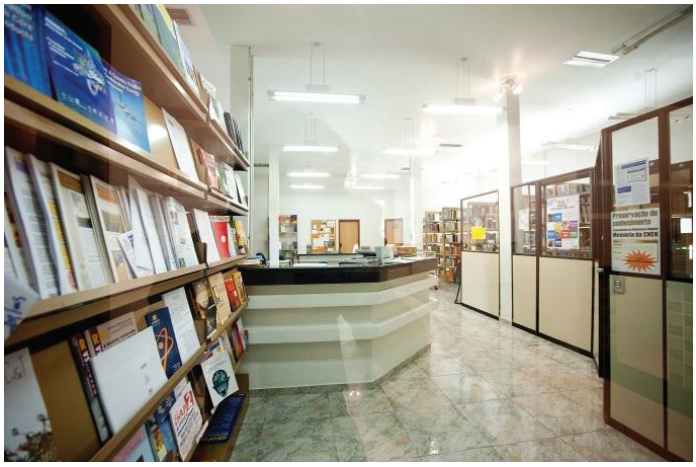

Fig. 14: The IRD´s Training Center Library.

Highlights

At the beginning of 2013, the RTC started its activities for building the national strategy for education and training in radiation, transport and waste safety using the draft guidance on the IAEA methodology for establishing a national strategy for education and training in radiation, transport and waste safety.

IRD regularly hosts IAEA training programmes (practice-specific short training courses) and also receives IAEA fellows for on-the-job training. IRD also develops training material for national courses. IRD has developed a pool of national lecturers able to lecture on almost all the areas of radiation protection.

The IRD's method of training is based on classroom and on-the-job training. E-learning and distance learning approaches are being developed in order to cope with the need of training people located far from the site where IRD currently provides the training. The train-the-trainers approach is included within the PGEC, the courses for emergency responders, and courses on the response to criminal or unauthorized acts involving nuclear and other radioactive materials.

The high quality of the structured training programme and the regular organization of training events available at IRD will enable the diffusion of the safety culture in the region. This will benefit the region and ensure the sustainability of the education and training infrastructures.

Impressum

Education and Training in Radiation, Transport and Waste Safety Newsletter No. 2d, June 2013
Focus on Latin America

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