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2010/Note 44

Note by the Secretariat

Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020 (Continuation of the Strategic Approach 2001–2010)

A ten-year strategy for education and training in radiation and waste safety was developed[1] by an Advisory Group of experts from Member States, and subsequently noted by the 2001 General Conference in GC(45)RES/10 which urged the Secretariat to implement the aforementioned strategy. A steering committee, comprising experts from regional and collaborating centres in Member States, international organizations and the Secretariat, was established to advise the Agency on the implementation of the strategy and to make recommendations as appropriate.

Subsequent General Conference Resolutions GC(46)/RES/9, GC(47)/RES/7, GC(48)/RES/10, GC(49)/RES/9, GC(50)/RES/10, GC(51)/RES/11, GC(52)/RES/9 and GC(53)/RES/10 have underlined or emphasized the importance of sustainable programmes for education and training in nuclear, radiation, transport and waste safety, and have also welcomed the ongoing commitment of the Secretariat and Member States to the implementation of the strategy.

Towards the end of the ten-year period, the steering committee made an analysis of the overall achievements based on the effectiveness of the various components of the 2001–2010 strategy. The steering committee, noting the achievements of the 2001–2010 strategy, revised and updated it and recommended that it be continued for the period 2011–2020.

[1] Note by the Secretariat 2001/Note 20

The ‘Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011-2020’, including a summary of the key achievements made under the 2001–2010 strategy, is attached for Member States’ information.

13 September 2010

Attachment

To all IAEA Member States

Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020

(Continuation of the Strategic Approach 2001–2010)

September 2010

A. Introduction

The Agency has a statutory function to establish standards of safety for the protection of health, life and property against ionizing radiation and to provide for the application of these standards to peaceful nuclear activities, through, inter alia, education and training. The Agency's General Conference specifically emphasized the importance of education and training in resolutions GC(35)/RES/552 (1991), GC(36)/RES/584 (1992), and GC(43)/RES/13 (1999).

In 2000, the 44th General Conference mandated the Secretariat (in resolution GC(44)/RES/13) to intensify postgraduate educational course activities and to develop, in a systematic way, syllabuses and training material for specific target groups and specific uses of radiation sources and radioactive materials. The Secretariat was also urged to strengthen, within existing resources, the role of regional training centres and to develop national training centres and to facilitate cooperation between such centres, on the one hand, and national and regional authorities and professional bodies on the other, with a view to encouraging the harmonization of training in radiation protection, safety of radiation sources and the application of the International Basic Safety Standards for the Protection against Ionizing Radiation and for the Safety of Radiation Sources[1].

By the end of 2000, the Agency had carried out many activities in this area and an internal evaluation of the overall education and training programme was undertaken. On the basis of this evaluation, a strategic approach to education and training in radiation and waste safety was developed[2] that outlined the objectives and outcomes to be achieved over the ten-year period. This strategy was noted by the IAEA General Conference in GC(45)/RES/10, and the Secretariat was urged to implement the aforementioned strategy. A Steering Committee for Education and Training in Radiation Protection and Waste Safety, comprising representatives from regional and collaborating centres, international organizations and Secretariat staff with responsibilities for education and training in radiation, transport and waste safety, was established in 2002, with the mission of advising the Agency on the implementation of the strategy and making recommendations as appropriate.

Every year since 2002, the General Conference has mentioned the importance of IAEA education and training activities[3], including in GC(53)/RES/10, which: underlined the fundamental importance of sustainable programmes for education and training in nuclear, radiation, transport and waste safety; welcomed the ongoing commitment of the Secretariat and Member States to the implementation of the Strategy for Education and Training in Nuclear[4], Radiation, Transport and Waste Safety; and supported the Secretariat's continued focus on developing sustainable educational training programmes in nuclear, radiation, transport and waste safety.

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[1] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANISATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, WORLD HEALTH ORGANIZATION, International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources, Safety Series No. 115, IAEA, Vienna (1996)

[2] Note from the Secretariat '2001/Note 20'

[3] GC(46)/RES/9, GC(47)/RES/7, GC(48)/RES/10, GC(49)/RES/9, GC(50)/RES/10, GC(51)/RES/11, GC(52)/RES/9

[4] Note from the Secretariat '2001/Note 19'

A key role for the Steering Committee was to annually review ongoing progress made in the implementation of the strategy, and towards the end of the ten-year period an analysis was made of the overall achievements based on the effectiveness of the various components of the strategy. The resulting report, which was endorsed by the Steering Committee, summarized the notable achievements over the course of the ten-year period and also recommended ongoing tasks that should be continued beyond the 2010.

In the light of the review, the Steering Committee refined the vision of the original strategy and redefined the related objectives. Technological developments were also taken into consideration as well as the increasing number of radiation applications (for example in medicine and industry). Furthermore, it was noted that some States have recently expressed their interest in developing a nuclear power programme, and that a comprehensive radiation, transport and waste safety culture provides a foundation for the development of a nuclear safety culture.

The strategy for the period 2011–2020 described in this document is an updated continuation of the activities covered within the 2001–2010 strategy, and is proposed as a means of further strengthening Agency education and training activities in radiation, transport and waste safety for the next ten-year period. The Steering Committee on Education and Training in Radiation Protection and Waste Safety has recommended that it be provided to IAEA Member States for their information.

B. Strategic Approach 2011–2020

The implementation of the 2001–2010 strategy for education and training in radiation and waste safety was considered to be a success in as much as the objectives were achieved at the regional level. While there has been significant progress with respect to the development of specific activities (see Annex), the process needs to be continued to facilitate further development of the education and training infrastructure at the national level.

The updated strategy for 2011–2020 recognizes the importance of Member States taking ownership of the tasks through developing and implementing national strategies to strengthen education and training in radiation, transport and waste safety to achieve the desired level of competence. It will require a high level of national commitment to put in place the mechanisms for building national competence in radiation, transport and waste safety.

B.1. Vision

Essential to the development of any strategy is a clear vision or end-point. It is proposed that the ultimate vision is for Member States to have established a sustainable education and training infrastructure that addresses national needs for building and maintaining competence in radiation, transport and waste safety, and is consistent with the Agency’s safety standards.

B.2. Objectives

- To strengthen radiation, transport and waste safety infrastructures through building competence in Member States.
- To facilitate the development and implementation of a national strategy for education and training for radiation, transport and waste safety in Members States.

- To ensure that education and training programmes in Member States address the requirements of the International Basic Safety Standards (BSS) and associated Agency safety standards.

B.3. Output

- Guidance on the establishment and implementation of a national strategy for building competence in radiation, transport and waste safety in Member States in accordance with the BSS.
- Training material, consistent with the Agency's safety standards, to support a postgraduate educational course (PGEC), radiation protection officer (RPO) training, specialized training courses (STCs), e-learning and distance learning.
- Training activities, especially PGECs and train-the-trainers (TTT) courses.
- Long-term agreements with all regional training centres (RTCs).

B.4. Outcomes

- Strengthened radiation, transport and waste safety in Member States.
- Improved national infrastructure for education and training based on a national strategy.
- Increased application of Agency safety standards within Member States.
- Increased number of trained and educated personnel with appropriate level of competence in radiation, transport and waste safety.
- Enhanced networking within and among Member States.

C. Implementation of the strategy 2011–2020

C.1. Key roles

The successful implementation of the proposed strategy will require effective interaction between the Agency, the regional training centres and Member States. In particular, increased ownership on the part of Member States would be expected over the course of the strategy since this is where the primary responsibility for building competence lies.

Clearly, within its statutory function of promoting the application of Agency safety standards, the Secretariat has the responsibility for overseeing the implementation of its training and educational activities. To this end, significant assistance can be made available from regional training centres and centres within Member States. Advantage should also be taken of existing training resources in Member States. Consideration should also be given to utilizing the expertise available in bodies such as regulatory bodies, professional bodies, scientific societies and regional or international organizations.

As with the 2001–2010 strategy, it will be important to monitor, through the existing Steering Committee, the implementation of the strategy and progress made.

C.2. Components of the strategy

The proposed strategy for 2011–2020 is based on three key components:

- Development and implementation of national strategies.
- Effective use of competence-building tools.
- Effective use of RTCs.

C.2.1. Design, development and implementation of national strategies for building competence

The Agency's Safety Guide RS-G-1.4 *Building Competence in Radiation Protection and the Safe Use of Radiation Sources* provides guidance on educational and training issues and outlines the elements of a national strategy for building competence in radiation, transport and waste safety. This provides the basis for Figure 1:

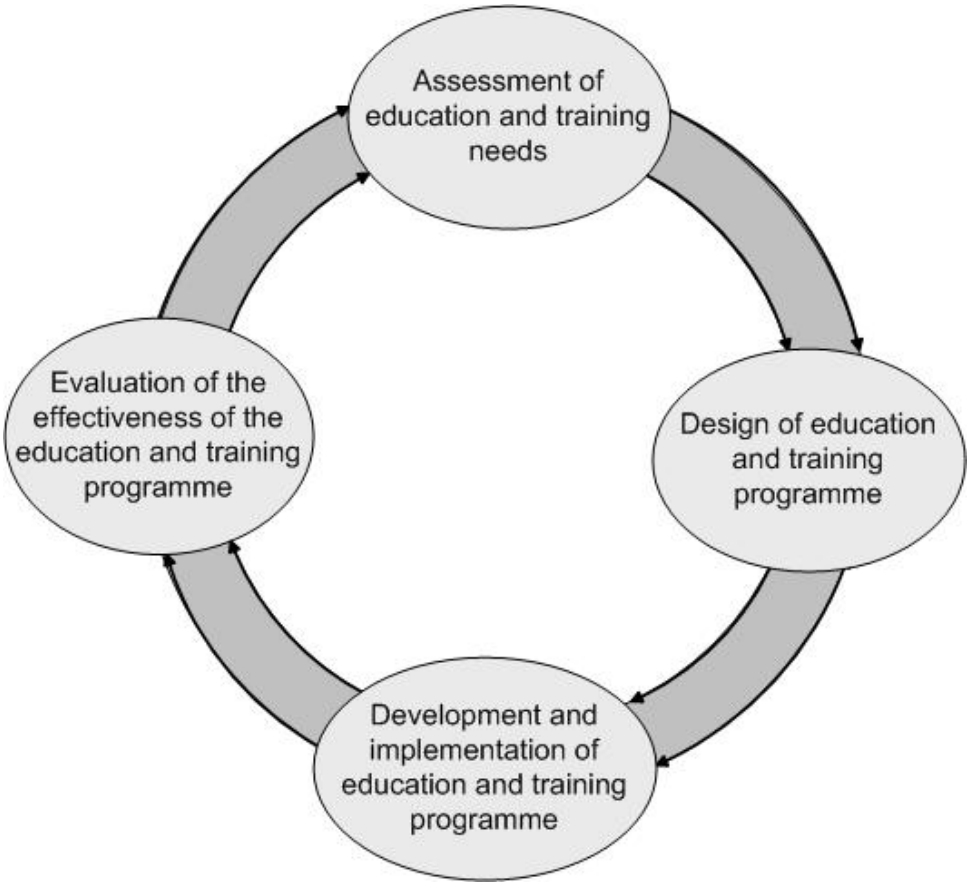

FIG 1: Process for building national competence in radiation, transport and waste safety through education and training

1. The first task in the development of the national strategy for building competence is to assess the education and training needs. This should be based on current and foreseeable facilities and activities within the country, identify the current levels of competence and the available training resources, and prioritize the education and training needs.

2. Design of the national education training programme should be based on the assessment of national needs, and should consider the availability of national resources and the possibility of using regional or international resources.

3. The development and implementation of the national education and training programme should be undertaken as far as practicable, with national resources. It may be supplemented by external assistance where needed (e.g.: from the Agency and/or an RTC).

4. The effectiveness of the overall national strategy needs to be evaluated and monitored to ensure that it is continually improved and kept up to date. Account should be taken of the introduction of new facilities or activities and new developments in regulations or safety standards.

The Secretariat will use existing tools and develop new ones to assist Member States in designing, developing and implementing national strategies for building competence in radiation, transport and waste safety through education and training.

Regional projects on education and training, under the umbrella of the technical cooperation programme, are an essential component of the process for developing a sustainable education and training infrastructure in radiation, transport and waste safety.

C.2.2. Competence-building tools

During the implementation of the 2001–2010 strategy, a comprehensive portfolio of training packages appropriate for TTT events, PGECs, STCs, RPO[5] courses, on-the-job-training (OJT) and e-learning was developed. These packages are available to Members States in the most of the official languages of the Agency.

The TTT concept was recognized as being an important means of optimizing resources and transferring the skills necessary for building competence in Member States and this is still the case. However, this tool could be applied to greater effect; in recent years only a few TTT events were conducted (apart from training using Part XI of the PGEC). It is recommended that TTT events be increased and actively promoted

The PGEC provides a comprehensive education necessary for graduate-level young professionals, and aims to provide a sound theoretical basis in radiation protection and the safe use of radiation sources. The course also aims to provide the necessary basic tools for those who will become trainers in radiation protection and in the safe use of radiation sources in their countries.

The STC is a short-duration event aimed at specific target audiences. The objective is to provide participants with training in specific topics, such as transport safety, individual monitoring, emergency response or regulatory aspects.

The RPO courses provide training to build competence in aspects of radiation protection relevant for a given type of practice. The objective is to provide the knowledge and skills needed to effectively carry out the RPO role as defined in the BSS.

Different OJT modalities, under the supervision of personnel with appropriate expertise, are available for gaining practical experience in specialized facilities. The Agency also provides support of OJT activities through its Fellowship Programme.

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[5] An individual technically competent in radiation protection matters relevant for a given type of practice who is designated by the registrant or a licensee to oversee the application of the requirements of the International Basic Safety Standards.

The Agency has done much in recent years to develop a comprehensive inventory of these competence-building tools. It should build upon this expertise by upgrading and revising the training materials as appropriate and improving and developing training events.

C.2.3. Effective use of the RTCs and CCs

Regional training centres have been established with the Agency's support. The RTCs offer training in Arabic, English, French, Russian and Spanish; and they represent strong regional resources with respect to the implementation of the strategy. In particular the RTCs:

- Provide comprehensive, well-equipped training facilities (including laboratories);
- Provide staffing by competent and suitable personnel;
- Proactively promote and use Agency safety standards and the reference training material available from the Agency; and
- Deliver education and training activities in radiation protection and waste safety (including specifically PGECs, TTT events, OJT, fellowships etc) in a sustainable way.

It is clear that the RTCs will continue to play an important role in helping to implement the 2011–2020 strategy and full advantage should be taken of this capability. In particular, RTCs can act as regional nodes for building competence in radiation, transport and waste safety within the regions with the assistance of the Agency. It would be beneficial for the implementation of the overall strategy for the RTCs to be involved specifically in the following areas of work:

- Continued delivery of education and training activities;
- Collaboration with the Agency in the promotion of Agency safety standards and the development of standardized training materials;
- Assistance to individual Member States, in collaboration with the Agency, in establishing and implementing national strategies for building competence through education and training.

To fulfil this role effectively, due consideration could be given to:

- Strengthening RTCs, in particular via long term agreements, promoting quality management systems within RTCs, and the ongoing evaluation of the effectiveness of RTCs;
- Expanding the inter-centre network to include other training centres in Member States;
- Making continued and further use of the added value of RTCs in developing and further advancing the competence in the region, in particular via fellowship programmes, regional workshops to assist States in the development of national strategies and the development/translation of materials etc.

Collaborating centres (CCs) will play an important supplementary role in assisting the Agency to implement the strategy and to collaborate with RTCs and national training centres (NTCs), for example, by providing expertise, equipment, lecturers, or fellowship opportunities.

D. Monitoring progress

D.1. Monitoring

To successfully implement the strategy, an adaptable and flexible response is required as training needs develop and change. Consequently, there is a need for ongoing observation and review to ensure that implementation of the strategy continues to be on course to meet the objectives.

This will entail:

- Regular review and assessment of progress made in the development of national strategies. It is recommended that regional coordination meetings for Thematic Safety Area 6 on education and training in radiation protection and the safety of sources be held periodically to enable Member States and the Secretariat to share experiences and lessons learned. This will facilitate the evaluation of progress made in the development of the different components of a national strategy for building competence in Member States and their compliance with the requirements of the relevant international standards and guidance. The information gained will be used by the Agency to evaluate progress made in implementing the strategy.
- Delivery by the RTCs of training activities at an appropriate level of quality, since the RTCs play a key role in the implementation of the strategy within the region. All the components of the infrastructure will need to be in place in the RTC (including for example: staff, management, equipment, laboratories, quality management system, and quality assurance procedures).

The Steering Committee set up in 2002 should continue its work and review, provide advice, and report on the progress made in the implementation of the 2011–2020 strategy.

The tasks of the Steering Committee include:

- Advising the Secretariat on possible ways of meeting the objectives of the strategy;
- Establishing performance indicators to assess the level of implementation;
- Evaluating the effectiveness of the education and training activities;
- Reviewing and advising on the implementation of the strategy;
- Advising on the development of networking at the regional level and between the regions; and
- Advising on the priorities for the development of standardized training material and training activities.

D.2. Key milestones

The 2011–2020 strategy is a continuation of the ongoing activities initiated in the previous strategy, with additional activities included. Implementation of the strategy can be divided into three phases.

Table 1: Three-phase Approach

	Phase I : Preparation	**Phase II: Promotion**	**Phase III: Implementation**
Activities	Complete the development of tools and guidance for building competence in radiation, transport and waste safety	Dissemination of tools and guidance at regional level and among the Member States	Development and implementation of national strategies in Member States
Major role*	**Secretariat**	**RTCs**	**Member States**

***** The Secretariat, RTCs, CCs and training centres in Member States will each be involved in specific tasks as appropriate

The conclusion of each phase can be marked by key milestones:

- End Phase I — Guidance and competence building tools available for dissemination within the regions.
- End Phase II — Relevant tools and guidance made available to Member States within the regions.
- End Phase III — Member States actively implementing tools to achieve national strategies for building competence in radiation, transport and waste safety.

E. Conclusion

The achievements made under the 2001-2010 strategy for education and training in radiation and waste safety resulted in a refined vision for the updated strategy 2011-2020. Key targets have been realized and significant programmes of work are progressing. It is important now to build on this success and continue to move forward with respect to the establishment of sound infrastructures for education and training in radiation, transport and waste safety, not only at the regional level but within individual Member States.

Benefiting from the experience gained, the Steering Committee recommended that:

1. The strategy for education and training in radiation, transport and waste safety be continued for the period 2011–2020;
2. The implementation of the strategy 2011–2020 should continue to be overseen by the Steering Committee.
3. Priority should be given to the development of tools and guidance necessary to support the establishment and implementation of national strategies for building competence in radiation protection, transport and waste safety through education and training in Member States.
4. The 2011-2020 strategy (including the Annexed summary of achievements made under the 2001-2010 strategy) should be provided to Member States for their information.

Annex

Summary of the key achievements made under the 2001–2010 strategy

A systematic analysis of the achievements and outcomes of the implementation of the 2001–2010 strategy was carried out by the Steering Committee and lessons learned were outlined. The details of this analysis are provided in a closing report that was endorsed by the Steering Committee, as summarised below.

The following specific tasks were completed over the period 2001–2010:

- Establishment of a Steering Committee to oversee implementation of the strategy;
- Development of a network of regional and national training centres to become points of reference for education and training within that region or country;
- Establishment of a mechanism for the development and updating of training aids and materials;
- Establishment of a mechanism to facilitate the development of trainers in radiation protection and training; and
- Guidance for trainers supporting the Agency's training programme.

This resulted in the following:

- Development of performance indicators to enable progress monitoring by the Steering Committee
- Improved level of understanding of the education and training needs in the regions, and a specific mechanism for detailed appraisal of national education and training infrastructure was established;
- Establishment of an essential role for RTCs to act as regional and national points of reference for the provision of training in radiation protection;
- Consolidation of RTC activities through the signature of a long-term agreement with the Agency;
- An increase in the number of high-quality standardized and updated training material for both postgraduate and specialized training events to make regional centres self-sustainable (these materials are available in most of the official Agency languages);
- Establishment of a mechanism to increase the number of trainers in radiation protection and waste safety through a train-the-trainers plan.

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