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Methodology and quality assurance protocol for comparison and evaluation of training providers

Author(s):   **I.H. van Elsäcker-Degenaar, M. Sutmuller, P.G.R. Ruiter**

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Methodology and quality assurance protocol for comparison and evaluation of training provider

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Author(s):	I.H. van Elsäcker-Degenaar	reviewed:	P.G.R. Ruiter
name:	112824hve WD 5 3.docx	approved:	J.W. van der Haar
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Contents

Summary

To maintain a high level of competence in Europe regarding radiation protection and to facilitate harmonisation and (mutual) recognition of Radiation Protection Experts (RPEs) and Officers (RPOs) quality assurance and quality control procedures play an important role. The ENETRAPII project (FP7-EURATOM) aims at developing European high-quality 'reference standards' and good practices for education and training in radiation protection. In Work Package 5 (WP5) the quality issue is addressed. Therefore, WP5 deals with the development and application of mechanisms for the evaluation of training material, training events and training providers by means of a transparent and objective methodology. The results can be used by regulatory authorities to benchmark their national radiation protection training programme and will be communicated to other networks, e.g. EUTERP[1]. Deliverable WD5.3 addresses the methodology and quality assurance protocol for comparison and evaluation of training providers.

With the proposed comparison methodology we encourage to have a "good practice" standard amongst training providers. Apart from that it is encouraged to adept the reference standards and provide an indication to customers, employers etc. where appropriate training can be obtained.

The comparison methodology exists of 16 requirements on which training providers can score. The sixteen subjects are the most important subjects in the quality assurance of training providers. If one training provider does not score on one or more of the subjects, the comparator (e.g. the regulator) can decide whether this subject is of major importance for him/her or not.

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[1] EUTERP is acronym for the EUropean Training and Education in Radiation Protection Foundation.

1   Introduction

Today's challenge in the field of radiation protection involves measures to make the work in radiation protection more attractive for young people and to provide attractive career opportunities. In addition, young students and professionals should be supported in their need to gain and maintain high level knowledge in radiation protection. These objectives can be reached by the development and implementation of a high-quality European standard for initial education and continuous professional development for Radiation Protection Experts (RPEs) and Radiation Protection Officers (RPOs).

The FP7 European Network for Education and Training in Radiation Protection II (ENETRAPII) project is a specific tool for EURATOM policy for E&T implementation in the radiation protection field. For the purposes of this project the Radiation Protection Expert can be defined as:

"An individual having the knowledge, training and experience needed to give radiation protection advice in order to ensure effective protection of individuals, whose capacity to act is recognized by the competent authorities."

and the Radiation Protection Officer as:

"An individual technically competent in radiation protection matters relevant for a given type of practice who is designated by the registrant or licensee to oversee the application of the requirement of the Standards".

These are the definitions as proposed during the second EUTERP workshop in Lithuania in 2008.

Within Europe there is free transportation of good, material and persons. Therefore one can choose to follow their education and training across Europe instead of in their own country. When one wants to follow a course or training one wants to know which training provider is the best to go to. One of the criteria to choose amongst the available providers is to look at the quality assurance.

In the third deliverable of WP5[2] (WD 5.3) the methodology and quality assurance protocol for comparison and evaluation of training provider is presented. The protocol can be used for training providers that give vocational education and training in radiation protection on different levels, given as independent courses or as a component of professional education. When this tool is used shortcomings in the quality of training providers become clear.

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[2] Work package 5 (WP5) is entitled: Develop and apply mechanisms for the evaluation of training material, events and providers, pays attention to the development of a mechanism to compare training providers

2 Material

The comparison methodology has as main goal to try and encourage training providers to settle to a "good practice" standard. Apart from that it is encouraged to adept these standards and provide an indication to customers, employers etc. where appropriate training can be obtained. To know which standards are already available a survey has been done amongst a few known quality standards and systems.

Within Europe there are different quality assurance systems for vocational education and training. There are international standards like ISO 9001, ISO/IEC 17024 [1], a system recommended by the European Commission (EQAVET [2]) and some national, regional or field quality assurance systems. The mentioned quality systems are reviewed below.

2.1 Standard from the International Organization for Standardization

The International Organization for Standardization (ISO) was established in 1947 and is (currently) an association of 162 members, where each represents its own country. ISO employs a system of Technical Committees, Sub-committees and Working Groups to develop International Standards. Besides the National Standards Bodies, ISO permits other international organizations that develop standards to participate in its work, by accepting them as Liaison members. ISO works in accordance with an agreed set of rules of procedure, the *ISO/IEC Directives*, which also include requirements on the presentation of standards.

Standards for the same subjects were developed in different countries around the world. Since doing business becomes more international, it is decided to have an international institute. On different subjects and fields the ISO provides publications ('standards') to make mutual comparison easier. Another objective is that when companies use an ISO standard, customers know which minimum requirements the company has to meet.

When a company or training provider fulfils all requirements of a standard, company or training provider can ask to be audited on the standard. When the audit is positive, the company or training provider gets a certificate. Each few years the training provider has to be re-audited to keep the certificate.

2.1.1 ISO 9001:2008

ISO 9001 specifies the basic requirements for a quality management system (QMS) that an organization must demonstrate its ability to consistently provide products (which include services) that enhance customer satisfaction and meet applicable statutory and regulatory requirements.

The ISO 9001 standard is a member of the ISO 9000 family. The ISO 9000 standards are a collection of formal International Standards, Technical Specifications, Technical Reports, Handbooks and web based documents on Quality Management. There are approximately 25 documents in the collection altogether, with new or revised documents being developed on an on-going basis.

The standard can be used for certification/registration and contractual purposes by organizations seeking recognition of their quality management system.

2.1.2 ISO/IEC 17024:2003

ISO/IEC 17024:2003 specifies requirements for a body certifying persons against specific requirements, including the development and maintenance of a certification scheme for personnel.

Since training providers are certification bodies for the RPE, RPO and the Radiation Worker (RW), the publication can be seen as a guide. The issues that ISO 17024 tackles can be summarized as:

- Defining what you are examining (the competencies[3])
- Knowledge, skills and personal attributes
- Examination must be independent
- Examination must be a valid test of competence

The publications give 25 requirements on certification bodies, 6 requirements for the employees of the certification bodies and 16 requirements on the certification process. Some of these requirements are split into sub requirements.

2.2 EQAVET

EQAVET is an acronym for the European Quality Assurance in Vocational Education and Training. European Quality Assurance in Vocational Education and Training (EQAVET) brings together the EU Member States, the Social Partners and the European Commission to develop and improve quality assurance in European VET systems within the context of the implementation of the European Quality Assurance Reference Framework. The European Quality Assurance Reference Framework (Reference Framework) is designed to promote better vocational education and training by providing authorities with common tools for the management of quality. The Reference Framework forms part of a series of European initiatives which aim is to recognize qualifications and competencies received by learners across different countries or learning environments, thereby promoting modernization, mutual trust and

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[3] Where competency is typically described as: "The demonstrated ability to apply knowledge, skills and attitudes"

Confidential NRG-22523.35/12.112824

mobility in vocational education and training (VET). Developed by Member States in cooperation with the European Commission, the Reference Framework has now been adopted by the European Parliament and the Council. It is a key element in the follow-up of the Copenhagen Declaration and the on-going work in renewing Europe's education and training systems. The adoption and implementation of the Framework in the participating countries is voluntary.

Working group 1 has been working on the development of guidelines for the introduction and monitoring of a quality system. Phase 1 (2010-2011) focuses on developing guidelines at the system level that support National Reference Points in implementing the EQAVET Reference Framework and its quality cycle of indicative descriptors and indicators. It offers a wide range of case studies illustrating national practices in relation to implementing aspects of the EQAVET Reference Framework. An interactive on-line resource was produced as a result of Phase 1.

This online tool uses indicative descriptors for each part of the cycle and informs how to build a quality system, but does not treat the subjects that have to be described in the quality system. A lot of examples are given for a lot of Member States of the European Union in the different stages of the cycle, mostly about the VET of pupils between 5 and 18 years.

The dictionary of EQAVET terms being most important for this project can be found in Appendix A.

2.3   National, regional or field quality assurance systems

2.3.1   Dutch system

At the moment there is no mandatory quality assurance system for the Dutch training providers. The Dutch training providers in radiation protection must be acknowledged by the Regulatory Authority for each level of training they give in radiation protection. When asking to be acknowledged they have to submit their training programme, training material, learning objectives and exam regulations.

In 1974 the Regulatory Authority wrote down the learning subjects, which have to be taught in the different courses, but the quality criteria are never written down. Since the Regulatory Authority will change the law in which the education and training of RPEs and RPOs is addressed, probably in 2012, last year (2010) quality criteria are drawn up by the training providers themselves and have been approved by the Regulatory Authority. A translation of these quality criteria can be found in Appendix B.

The 14 requirements are organized in three categories:

- General criteria and criteria concerning the content of a course
- Organizational criteria
- Criteria for courses and refresher courses with examination

2.3.2 French quality system

The French quality system for the training of the RPEs is quite strict. First of all, a ministerial order [3] specifies the requirements on the training of the RPE, as well as its contents, defining three sectors of work and two options to fit the practices:

- the medical sector;
- the nuclear sector related to nuclear power plants;
- the industry and research sector related to the other establishments.

The trainer in the education and training program of the RPE has to be certified by an accredited organism (CEFRI), described in [4].

2.3.3 Qualitätsverbund Strahlenschutzkursstätten in Germany

In Germany several ministerial guidelines specify the necessary competence in radiation protection in terms of knowledge and skills in the different working areas. Included are the learning objectives, minimum time duration, minimum practical part, assessment and requirements for training providers, see [7] and others. The training events have to be acknowledged by the regulatory authority by submitting a detailed programme, training materials and qualification of lecturers.

About 12 radiation protection training providers have joined the Qualitätsverbund Strahlenschutzkursstätten, which is in English: Quality Association for Training Course providers in Radiation Protection. This association surveys the correct implementation of the guidelines and promotes a quality assurance system through mutual audits. All their members are either accredited or follow ISO standards.

Each institute has its own quality handbook, but the minimum requirement for the training providers is to have a registration of ISO 9001.

3   Discussion

The ISO standard 9001:2008 is useful for the description of general management systems and can also be used for the traceability of documents, like training material, exam results, etc. It is not a suitable tool to use for the comparison and quality assurance of training providers, since it has too many requirements and is also not detailed enough in the description of specific requirements for the quality training providers.

The ISO/IEC standard 17024:2003 describes a lot of specific requirements for training providers. All together it consists of 47 main requirements, almost all subdivided. These requirements can be used to compare the quality of training providers, but it takes a lot of time to fill out the form.

The EQAVET project has no real requirements for vocational education and training in an occupational field, but is concentrated at primary education up to university.

The Dutch system has no quality requirements at the moment, but there is a document with quality criteria that will be formalized in 2012. This document consists of a few (14) requirements, that has to be met by a training provider. For the three categories the requirements represent the most important matters in the field of the quality of a training provider.

The French system is very strict and gives a lot of information about the learning objectives to be taught in the training of an RPE. The requirements for the trainer are described, but the requirements of a training institute are not described.

The German system provides requirements for training providers and training courses to be acknowledged. Most recognized training providers are associated as Qualitätsverbund Strahlenschutzkursstätten which surveys the implementation of the guidelines and oblige its members to follow a fixed quality system.

4   First proposal of quality criteria

As discussed above there are two described 'systems' that can be used. The first one is a list of all the ISO/IEC 17024:2003 requirements, or a shortlist of these requirements. The second one is the list of quality criteria that is going to be used in the Netherlands.

It is chosen to use the 14 requirements of the Dutch quality criteria (Appendix B), since this list already summarizes the main topics in the field of quality assurance of a training provider.

This list was sent to all WP5 partners to ask for their comments. Also for each of the quality requirements the training providers within work package 5 were asked to fill in whether they met the requirement or not. If one training provider does not score on one or more of the subjects, the comparator (e.g. the regulator) can decide whether this subject is of major importance for him/her or not and which training provider suits his/her needs better than the other one(s).

The conclusion of this consultation round was that some of the quality criteria were not clear and that others were not appropriate. All quality criteria were rephrased according to the comments received during the WP5 meeting at 16 September 2011 in Amsterdam, the Netherlands. This has led to the final list of 16 quality criteria (Appendix C). The quality criteria are explained in the next chapter.

5 Final quality criteria

After the consultation round one of the conclusions was the unclearness of some of the quality criteria.

Therefore all criteria are discussed below per item.

5.1 Discussion of the final quality criteria

5.1.1 General criteria and criteria concerning the content of a course

1. *Each course or refresher course formulates its learning outcomes on the level of knowledge, skills and attitude. The learning outcomes are level or target group focused.*
   The definition of learning outcomes is: "Learning outcomes are statements of what a learner knows, understands and is able to do on completion of a learning process". These Learning Outcomes are defined in terms of knowledge, skills and attitudes or competence (as within ECVET [5]).
   Learning outcomes are the basis of all education. Before one starts with designing a course or training the learning outcomes should be clear. Learning outcomes can be defined as proposed in WD 4.1 [6].
   A course can be targeted for a special public, e.g. reactor operators. Learning outcomes have to be focused on this public. This implies that for each public one can have different learning outcomes.

2. *The courses should reflect the requirements of national legislation.*
   Everybody should obey the law in a country. If there are requirements stated in European or national legislation, a training institution should meet them.

3. *For each course a program with table of lessons, subjects, teachers and methods is available.*
   For all stakeholders in the education and training process it should be clear which lessons and subjects are trained in which course. Some future candidates prefer one trainer over the other, as well as one method (theoretical course, practical course, workgroup, discussion sessions) over the other. So for the stakeholder the information described is important in the process of choosing the right training.

4. *The responsibility with regard to the course is in the hands of a person whose competence level on radiation protection is at least equivalent to the level that has to be achieved by the course.*
   The content of the course should be well defined and well-tuned. To oversee the content of the course and fine tune the subjects, the responsible person should have enough competence to oversee the content of the course.

5. *The content of the course program is kept under review, so that learning outcomes are always appropriate. This review includes consideration of didactic methods, new scientific insights, adapted legislation.*
   Before the preparation of each course or training one should reflect whether the content of the course should be updated. Are there new recommendations? Is there new legislation? Is another educational method more suitable than the one earlier used? Etc.

6. *The content of a course should match reference syllabi drawn up for Europe, at least for RPO/RPE courses. Where appropriate the requirements of the memorandum of understanding (MoU), as meant in ECVET, must be considered.*
   Within the ENETRAP 2 project training schedules are developed for RPO (WP 3) and RPE (WP 4). The content of the training for an RPO/RPE should match these training schedules, otherwise the course and the provider cannot meet this criterion.

Agreement about the content of a course and the learning outcomes is laid down in a MoU between the training provider and the employer of the participant or between the training provider and the learning center where the participant originates from.

7. *Teachers and practical tutors have demonstrable competences with regard to the topic of their lessons.*
When teaching or tutoring a subject, one should have enough knowledge and skills to pass on their knowledge/skills to the participants.

5.1.2 Organizational criteria

8. *The management of the training provider is involved in the quality assurance and provides the necessary interest, support and resources.*
Quality cannot be an issue of the course director or training provider alone, but should be embedded in its organisation and at least be supported by its management. When problems arise the management should support the training provider and give resources to solve the problem.

9. *Each event is subject of a written evaluation by the participants. Items for evaluations are organisation, teachers, content, materials and facilities.*
One of the important subjects in quality is the reviewing. In this criterion the review is carried out by the participants. To show what should be subject of a good evaluation some items are mandatory.

10. *The system of evaluation should be stable to achieve continual improvements.*
For quality one needs more than reviewing alone. There has to be a cycle of reviewing, deciding for an improvement proposal, implementation of the proposal, testing the implemented objects and reviewing.

11. *Complaint procedures are present.*
A participant or its employer has the right to complain about a training / course. In a complaint procedure is written down how to deal with a complaint.

12. *There is a participant registration associated with a document control system (list of participants, score lists, archive of distributed diplomas and certificates).*
Participants sometimes lose their certificate for a lot of reasons. They ask a copy of their certificates at the training institute. The training institute has to assure that a copy of the certificate is given to a person who has passed all requirements.

13. *The identity of the participant is determined before the distribution of diplomas or certificates of participation. The course provider is responsible for distribution of the diploma or certificate to the right person.*
To be sure that the requirements are passed by the person the certificate is given to. To be sure one has to determine the identity of the participant.

5.1.3 Criteria for courses and refresher courses with examination

14. *There is an examination regulation, describing at least the exam procedure, marking scheme, the marking procedure.*
The way of examination has to be written down in a procedure, describing whether the examination is practical or written. Another consideration is which learning outcomes to test in an examination. In advance of the exam (course or training) the number of supervisors during the exam, the number of correctors (e.g. 2 correctors, blind correction), as well as minimum grade to pass the exam should be known.

15. *There is a procedure to maintain the quality of the examination.*
    The questions in a written or practical examination are periodically reviewed, whether they are clear for participants. This can for instance be done with a statistical review of a multiple choice examination.

16. *The examination methodology should take into account the learning outcomes and the national regulations properly.*
    The goal of the course or training is laid down in written learning outcomes. To examination should be about if the participant has obtained the learning outcomes. If the examination methodology is prescribed in European or national legislation, this should be followed (e.g. number of questions, written exam, etc.)

6 Conclusions and further work

The final list of quality criteria is clear for all participants of WP5.

The final list can be used easily by all training institutes throughout Europe and it does not take much time to fill in whether the criteria are met by the institute or not. It is estimated that it will cost 10 minutes.

The first list was already sent to all WP5 partners and was filled in by them. Since the list and the method to be used to fill the list is the same for the first proposal and the final list, the final list will not be sent out again. For the testing of the methodology for the evaluation of the training providers as part of WD 5.4 the results of the filled in questionnaires for the first proposal shall be used.

References

[1] NEN-EN-ISO/IEC 17024:2003, IDT; Conformity assessment-General requirements for bodies operating certification of persons, June 2003.

[2] EQAVET; http://www.eqavet.eu/gns/about-eqavet/welcome.aspx

[3] Arrêté du 26 octobre 2005 relatif aux modalités de formation de la personne compétente en radioprotection et de certification du formateur; Journal official de la République Française; Paris; 23-11-2005.

[4] Procédure générale de vérification de formateurs de la personne compétente en radioprotection; CEFRI/PRO-C-0318 indice 2; CEFRI; Paris; 2006.

[5] ECVET; http://www.ecvet-team.eu/

[6] WP4: Final report, 2013, Define requirements and methodology for recognition of RPEs; P. Livolsi; CEA / INSTN France; 2013.

[7] Richtlinie über die im Strahlenschutz erforderliche Fachkunde vom 18.06.2004, GMBl. 2004, Nr. 40/41, S. 799 und GMBl. 2006, Nr. 38, S.735.

Confidential NRG-22523.35/12.112824

Appendix A   Glossary[4]

accreditation (of programmes, institutions)
Process of accrediting an institution of education or training, a programme of study, or a service, showing it has been approved by the relevant legislative and professional authorities by having met predetermined standards. [EQF]

assessment
The sum of methods and processes used to evaluate the attainments (knowledge, know-how, skills and competences) of an individual, and typically leading to certification. [EQF]

certificate/diploma
An official document, issued by an awarding body, which records the achievements of an individual following a standard assessment procedure. [EQF]

certification (of knowledge, skills and competences)
The process of formally validating knowledge, know-how and/or skills and competences acquired by an individual, following a standard assessment procedure. Certificates or diplomas are issued by accredited awarding bodies. [EQF]

comparability of qualifications
The extent to which it is possible to establish equivalence between the level and content of formal qualifications (certificates or diplomas) at sectoral, regional, national or international levels. [EQF]

competence
Competence includes: i) cognitive competence involving the use of theory and concepts, as well as informal tacit knowledge gained experientially; ii) functional competence (skills or knowhow), those things that a person should be able to do when they are functioning in a given area of work, learning or social activity; iii) personal competence involving knowing how to conduct oneself in a specific situation; and iv) ethical competence involving the possession of certain personal and professional values. [TWG ECVET]

credit points (or credits)
Credit points are allocated to qualifications and to the units that constitute them. By agreement, they represent, in numerical form the volume of learning outcomes, the relative importance of each of the units that make up a qualification, in relation to the expected results, i.e. the knowledge, skills and competences that must be acquired and assessed, regardless of the learning pathway. [TWG ECVET]

credit system
A system of credits makes it possible to break down a qualification or the objectives of a programme of vocational education and training into units. Each unit is defined in terms of knowledge, competences and skills. It may be characterised by its size and relative importance, expressed in general by credit points (or credits) or other factors. Each unit can be validated and awarded separately. [TWG ECVET]

formal learning
Learning that occurs in an organised and structured environment (in a school/training centre or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). Formal learning is intentional from the learner's point of view. It typically leads to certification. [EQF]

informal learning
Learning resulting from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. Informal learning is in most cases unintentional from the learner's perspective. It typically does not lead to certification. [EQF]

knowledge
The facts, feelings or experiences known by a person or a group of people [EQF]

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[4] (from [6])

[CEDEFOP] CEDEFOP (Philippe Tissot), Terminology of vocational training policy. A multilingual glossary for an enlarged Europe, Luxembourg 2004   [ECTS] Directorate-General for Education and Culture, ECTS users' guide. European Credit Transfer and Accumulation System and the Diploma Supplement, Brussels 2005

[EQF] Commission of the European Communities, Commission Staff Working Document. Towards a European Qualifications Framework for Lifelong Learning, 2005

[TWG ECVET] European Credit System for VET (ECVET). Technical Specifications (Report 2005 of the Credit Transfer Technical Working Group)

learning outcomes

Learning outcomes are statements of what a learner is expected to know, understand and/or be able to do, or is able to demonstrate, after completion of any learning process or at the end of a period of learning. [TWG ECVET]

mobility

The ability of an individual to move and adapt to a new occupational environment. [CEDEFOP]

module

A self-contained, formally structured learning experience. It should have a coherent and explicit set of learning outcomes, expressed in terms of competences to be obtained, and appropriate assessment criteria. [ECTS]

non formal learning

Learning which is embedded in planned activities not explicitly designated as learning (in terms of learning objectives, learning time or learning support), but which contain an important learning element. Non-formal learning is intentional from the learner's point of view. It normally does not lead to certification. [EQF]

qualifications

Qualifications are a formal expression of knowledge, skills and wider competences of the individuals. They are recognised at local, national or sectoral level and, in certain cases, at international level.
A qualification is achieved when a competent body determines that an individual's learning has reached a specified standard of knowledge, skills and wider competences. The standard of learning outcomes is confirmed by means of an assessment process or the successful completion of a course of study. Learning and assessment for a qualification can take place through a programme of study and/or work place experience and/or any type of formal, non formal or informal learning pathway. A qualification confers official recognition of value in the labour market and in further education and training. A qualification can be a legal entitlement to practice a trade. [TWG ECVET]

recognition

Formal recognition: the process of granting official status to skills and competences either -through the award of certificates or -through the grant of equivalence, credit units, validation of gained skills and/or competences and/or (b) social recognition: the acknowledgement of the value of skills and/or competences by economic and social stakeholders. [EQF]

skill

The knowledge and experience needed to perform a specific task or job. [EQF]

transparency of qualification

The degree to which the value of qualifications can be identified and compared on the (sectoral, regional, national or international) labour and training markets. [EQF]

unit

A unit is part of a qualification. It can be the smallest part of the qualification that can be evaluated, validated or certified. A unit can be specific to one particular qualification or common to several qualifications. The knowledge, skills and competences that make up the credit form the basis for the assessment and validation of people's outcomes. Units are validated at the end of the assessment of outcomes, the results of which must comply with the requirements of the qualification. [TWG ECVET]

validation (of non formal and informal learning)

The process of assessing and recognising a wide range of knowledge, know-how, skills and competences, which people develop throughout their lives within different environments, for example through education, work and leisure activities. [EQF]

valuing learning

The process of recognising participation in and outcomes of (formal or non-formal) learning, in order to raise awareness of its intrinsic worth and to reward learning. [EQF]

vocational education and training

Education and training which aims to equip people with skills and competences that can be used on the labour market. [CEDEFOP]

workload

The workload includes all learning activities required for the achievement of the learning outcomes (i.e., lectures, practical work, information retrieval, private study, etc.). [ECTS]

Appendix B   First proposal of quality criteria

Quality criteria for development, implementation, evaluation and reviewing education and training in radiation protection. A course may be an (vocal) education and or training.

General criteria and criteria concerning the content of a course

1. Each course or refresher course formulates its goals on the level of knowledge, application and insight. These goals are level or target group focused and suffice at least customary legislation.

2. For each course a program with table of lessons, subjects, teachers and methods is available.

3. The responsibility with regard to the content of the course is clearly described and is in the hands of a radiation protection expert (RPE) or radiation protection officer (RPO).

4. The content of the course program is updated regularly according to new scientific insights, adapted legislation, learning goals and didactic insights.

5. Teachers, practical tutors and program coordinators have demonstrable knowledge, skills and a correct attitude with regard to the field of radiation protection.

Organizational criteria

6. At each course a written evaluation (if necessary added by a verbal evaluation) is held about content and organization to improve the offered education.

7. There is a recurrent assessment of teachers and practical tutors. They function at a sufficient level, and if not they have to follow courses to improve their skills.

8. Complaint procedures are present.

9. There is a participant registration associated with a document control system (list of participants, score lists, archive of distributed diplomas and certificates).

10. The identity of the participant is determined before the distribution of acknowledged diplomas or certificates of participation. The course provider is responsible for distribution of the diploma or certificate to the right person.

Criteria for courses and refresher courses with examination

11. There is an examination regulation describing, amongst other things, the exam procedure, way of judging and responsibilities.

12. There is an exam committee which is responsible for the content of the exam.

13. Formulated goals are tested by final examination but can also be tested at other relevant judging moments (such as practical assignments, case discussions, speeches and internships). These moments are announced in advance within the course information.

14. Exams are (if appropriate statistically) analyzed and the results are processed in exam databases.

Appendix C   Final quality criteria

Quality criteria for development, implementation, evaluation and reviewing education and training in radiation protection. A course may be an (vocal) education and or training.

General criteria and criteria concerning the content of a course

1. Each course or refresher course formulates its learning outcomes on the level of knowledge, skills and attitude. The learning outcomes are level or target group focused.

2. The courses should reflect the requirements of national legislation.

3. For each course a program with table of lessons, subjects, teachers and methods is available.

4. The responsibility with regard to the course is in the hands of a person whose competence level on radiation protection is at least equivalent to the level that has to be achieved by the course.

5. The content of the course program is kept under review, so that learning outcomes are always appropriate. This review includes consideration of didactic methods, new scientific insights, adapted legislation.

6. The content of a course should match reference syllabi drawn up for Europe, at least for RPO/RPE courses. Where appropriate the requirements of the memorandum of understanding (MoU), as meant in ECVET, must be considered.

7. Teachers and practical tutors have demonstrable competences with regard to the topic of their lessons.

Organizational criteria

8. The management of the training provider is involved in the quality assurance and provides the necessary interest, support and resources.

9. Each event is subject of a written evaluation by the participants. Items for evaluations are organisation, teachers, content, materials and facilities.

10. The system of evaluation should be stable to achieve continual improvements.

11. Complaint procedures are present.

12. There is a participant registration associated with a document control system (list of participants, score lists, archive of distributed diplomas and certificates).

13. The identity of the participant is determined before the distribution of diplomas or certificates of participation. The course provider is responsible for distribution of the diploma or certificate to the right person.

Criteria for courses and refresher courses with examination

14. There is an examination regulation, describing at least the exam procedure, marking scheme, the marking procedure.

15. There is a procedure to maintain the quality of the examination.

16. The examination methodology should take into account the learning outcomes and the national regulations properly.