European Guidance

Implementation of the Requirements of the Euratom BSS

with respect to the

Radiation Protection Expert & Radiation Protection Officer

J E Stewart, on behalf of ENETRAP III, WP6

Background

*ENETRAP [FP6]

- WP 2 – Assessment of training needs and capabilities with respect to Qualified Expert
- WP 3 – Analysis of approach to recognition of competence and diplomas etc
- Outcome – significant variation [QE, RPO]
- EUTERP workshops
  - Evolution of definition of RPE in BSS & inclusion of RPO

ENETRAP II [FP7 : 232620]

- WP 2 – Define Requirements & Methodology for Recognition of RPEs
  - Objective to propose a "useable" outline model
  - Stakeholder consultation
- WP3 – Requirements for RPO Competencies

ENETRAP III [FP7 : 605159]

- WP 7 – Produce guidance (RPE , RPO) HERCA
- WP6 – Test-case for mutual recognition of RPE.

* *European Network on Education and Training in Radiation Protection*

ENETRAP III

ENETRAP III – WP 7 – Considerations

- DG ENERGY
  - Euratom BSS (2013)
  - SET-Plan Roadmap E&T (Strategic Energy Technology, 2014)
- DG Education & Culture
  - ET 2020 (Strategic framework for European cooperation in education and training, 2009)
  - EQF/ECVET (European Qualification System; European Credit System for Vocational Education and Training, 2008/2009)
- DG Research and Innovation
  - Euratom FP7 and H2020 projects
- HERCA TG E&T (2013)

EUROPEAN COMMISSION

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SEVENTH FRAMEWORK PROGRAMME

European Guidance on the Implementation of the Requirements of the Euratom BSS with respect to the Radiation Protection Expert and the Radiation Protection Officer

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ENETRAP III PROJECT
(Contract Number: FP7 - 605159)
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Development

- **WP 7 Meeting on 24 September 2014 in Brussels** :
  Documents (BSS requirements, RP 174 + 175, results of the activities of the HERCA Task Force on E&T) were reviewed

- **WP 7 Meeting on 12/13 February 2015 in Munich** :
  Discussion of the first draft of the guidance document; document was sent to HERCA in May 2015

- **HERCA Workshop RPE-RPO on 6-8 July 2015 in Paris**

- **Meeting of HERCA Task Group on E&T, 29th Sept. 2015, Athens**

- **EUTERP Workshop, 30 Sep – 2 Oct 2015 in Athens**

..... *Comments included, text consolidated, document finalised and submitted*

Scope of Guidance

- provides guidance to regulatory authorities and professional bodies on the roles of the RPE and RPO, as defined in the BSS.

- On the basis of this common understanding of the role :

  - specifies the knowledge, competencies and practical skills required by RPEs and RPOs for the effective implementation of their roles

  - specifies the core training requirements for RPEs and RPOs

  - describes a process for the national recognition of RPEs

  - provides guidance on the development of mutual recognition processes between Member States.

Context & Intent

- Guidance is intended to provide a best practice approach to the implementation of the RPE and RPO requirements.
- MS will need to develop training/development and recognition processes that take account of existing legislative and educational frameworks.
- Inevitable that methods of implementation will vary
- Adoption of the models should contribute to the development of a common approach

ENETRAP III

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Section 2 : Overview of BSS Requirements

2.1 Role, functions and duties of the RPE

- 2.1.1 Competence
- 2.1.2 Suitability

2.2 Role, functions and duties of RPO

- 2.2.1 RPO Competence and suitability
- 2.2.2 RPO Recognition and appointment

2.3 Interactions between the RPE and other professionals

- 2.3.1 Interactions between the RPE & the RPO
- 2.3.2 Interactions between the RPE & Occupational Health Service

2.4 Requirements for E&T for RPE and RPO

- 2.4.1 General requirements
- 2.4.2 Requirements for national E&T infrastructure and assessment Bodies

Section 3 : The RPE

"*…an individual or, if provided for in national legislation, a group of individuals having knowledge, training and experience needed to give radiation protection advice in order to ensure the effective protection of individuals, and whose competence in this respect is recognised by the Competent Authority*"

- Advisory role : RPE expected to provide high level specialist advice on radiation protection to undertakings.
- That advice influences radiation protection arrangements; as such, the RPE needs –
  - A very good understanding of RP principles and how they are applied and implemented
  - A comprehensive understanding of relevant national legislation
- Competence to execute the role must be recognised by Competent Authority
  - The ability to provide good and effective advice
  - Assessment of competence requires each of the individual components that lead to competence to be assessed.

Section 3 : The RPE

3.1 The activities of the RPE

Table 1: Advice expected from the RPE (topics for advice and associated activities

3.2 RPE development: core competence

Table 2: Basic requirements for core competence

3.2.1 Education

3.2.2 Training and development

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3.3 Arrangements for RPE Recognition

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3.3.2 Routine Operation

3.4 Transferability/acceptance of RPE status between Member States

Table 6: Aspects to be addressed in accepting RPE Status in other MS

3.4.1 Criteria for mutual recognition

3.5 Mechanism for mutual recognition

3.6 European Qualification arrangements

Table 7: Descriptors defining EQF levels)

Table 1: Advice expected from the RPE (extract)

Topics for advice	Associated Activity
• optimisation and establishment of appropriate dose constraints;	Review, with the employer, the detail of the work in question to determine the potential for exposure (and to whom), the route of, and likely magnitude of, exposure under all prevailing or possible scenarios. Analyze this data in context and formulate an expert view on what constitutes ALARA, whether or not the use of dose constraints is applicable and, if so the level of dose at which they should be set. The period of usefulness/validity of any constraints should also be determined.
• plans for new installations and the acceptance into service of new or modified radiation sources in relation to any engineering controls, design features, safety features and warning devices relevant to radiation protection; • preparation of appropriate documentation such as prior risk assessments and written procedures;	Review, with the employer, the proposals for any new installations with specific reference to siting, occupancy, supplier information with respect to inherent radiation hazard, conditions of use etc. Review against specified radiation protection standards, any relevant requirements set in national legislation and accepted good practice. It need not necessarily fall to the RPE to draw up final plans for installation(s) etc but it would be expected that he would have make a significant contribution to this.

Table 2: Basic Requirement for Core Competence

An individual may be deemed as having the core competence necessary to act in the capacity of a Radiation Protection Expert, and be formally recognized as such by the national competent authority if he/she is able to satisfy the following criteria:

(i) An education to:

Bachelor degree level either specifically in radiation protection, or in a physical/engineering/mathematical discipline

OR

An academic equivalent

(ii) Knowledge and understanding of fundamental principles of radiation protection

(iii) Knowledge of operational radiation protection methods

(iv) The ability to develop and provide appropriate advice with those topics on which the RPE is expected to provide advice

(v) A minimum of 3 years' experience working in radiation protection environment

Table 3: Required skills & competences (extract)

Topics for Advice	Required Skills	Specific Competence

Optimisation and establishment of dose constraints	• The ability to identify (circumstance) appropriate control procedures to restrict exposures commensurate with ALARA
	• The ability to interpret and apply data. For example, workplace monitoring results, manufacturers' data, dose histories, shielding calculations.
	• To recognise what constitutes ALARA for a given set of circumstances
	• The ability to judge on whether or not the use of dose constraints is appropriate , and if so
	  ○ The value at which they should be set, and
	  ○ The period of usefulness/validity
		❖ The estimation of doses that could be received during both routine and accident situations
		❖ The formulation of advice concerning the provision of engineering controls and/or working procedures – commensurate with the presented radiological hazard/risk
		❖ The formulation of appropriate advice with respect to the content of written procedures/local rules all consistent with the principles of ALARA.
		❖ The formulation of advice with respect to the appropriateness of local rules.

Table 4:Evidence of competence

Development aspect	Appropriate evidence
Education	Proof of academic qualifications, eg certificates, diplomas
Training & development activities	Training Course attendance certificates Training Course content Proof of exam passes Evidence of on-the-job or mentored training
Experience	Evidence of the developed competence - Details of situations analysed - Evidence of advice given - Reports provided to employers - Risk assessments developed - Etc

Table 5: Examples of suitable evidence (extract)

Core topic for advice	Example of appropriate evidence	Interrogation of evidence
Appropriate radiation monitoring instrumentation	Detailed review of a workplace monitoring programme	Does the evidence illustrate : - Knowledge and understanding of appropriate instrumentation? - The appropriate use of reference levels and/or dose constraints - Knowledge and correct application of relevant regulatory requirements?
Classification of workers	Report detailing advice to an employer regarding classification of personnel	Does the evidence illustrate : - Knowledge and correct application of relevant regulatory requirements? - Competence in assessing exposure pathways and quantifying risk ? - Knowledge and understanding of appropriate methods of dosimetry ? - An understanding of the objective of classification ?

Table 6: Aspects for Mutual Recognition

Core competence required for RPE Recognition	Transferable ?	Further Evidence Required by Assessing Body?	Further Action Required by RPE?
(i) An education to : • Bachelor degree level either specifically in radiation protection, or in a physical science OR • An academic equivalent	Yes	No	No
(i) Knowledge and understanding of the fundamental principles of radiation protection	Yes	No	No
(i) A knowledge of operational radiation protection methods	Yes	Summary of the disciplines or sectors in which the experience was gained would be of value.	No
(i) Ability to develop and provide appropriate advice on those topics on which the RPE is expected to give advice.	Yes – with exception of knowledge of legislation in the new country. In addition, fluency in languages of the "new" country must be considered.	Yes	RPE to gain knowledge and understanding of national legislation, as directed by the Assessor(s). There may also be a need to improve language skills.
(i) A minimum of 3 years' experience in the radiation protection environment.	Yes	Summary of the disciplines or sectors in which experience was gained would be of value.	No

Section 4: The RPO

"*..an individual who is technically competent in radiation protection matters relevant for a given type of practice to supervise or perform the implementation of radiation protection arrangements*"

- Primarily concerned with oversight and supervision
- Appointment not mandatory – depend on circumstance
- Recognition of RPO is not required; but MS may do so
- Expected that RPO will be an employee
- RPO role is different from that of RPE

Section 4: The RPO

4.1 The duties of the RPO
Table 8: Primary duties of the RPO

4.2 Core competence requirements
Table 9 and 10: Core learning outcomes for RPO

4.3 Educational requirements

4.4 Training requirements

4.5 Work experience required

4.6 Further requirements

4.7 Assessment of competence

4.8 Maintenance of competence

4.9 Recognition and appointment *(if pursued)*
4.10 Mechanism for mutual recognition *(if required)*

Table 9: Core learning outcomes, RPO

Knowledge (facts, principles, theories, practices)	Skills (cognitive & practical)	Competence
K1. Understand basic atomic structure. K2. Be aware of the laws of radioactive decay K3. Understand radiation quantities and units K4. Be aware of the mechanisms for the production of x-rays K5. Understand the fundamentals of radiation detection K6. Have a basic understanding of the biological effects of radiation K7. Understand the differences between deterministic and stochastic effects K8. Understand the general principles of radiation protection K9. Understand the application of the inverse square law. K10. Understand the shielding properties of different materials (e.g. paper, aluminium, steel, lead) K11. Understand the concepts of justification and optimisation.	S1. Explain the relative risks of different types of radiation and the shielding requirements for each. S2. Correctly interpret dose, dose rate and surface contamination data. S3. Calculate dose rates at varying distances from a source. S4. Select appropriate shielding material for a range of sources.	C1. The application of the principles of radiation protection to workplace situations.

Completion

- Dec 2015
  - Guidance Document submitted to EC as ENETRAP III Deliverable
- May 2016
  - Art. 31 Group of Experts
  - Proposal for Guidance to be published in the Radiation Protection Series of the EC
- March 2017
  - With the EC

Thank You