Evaluation of the present RP E&T programs in general in Europe in view of the new EU-BSS and the development of the Erasmus+ Blended Learning platform

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Blended learning in radiation protection and radioecology

(e-learning modules)

Erasmus+ project

- Aims and objectives of the project
- Task Uhasselt : analysis of present situation of E&T RPE-RPO
  - Short action plan
- Conclusions

Project vision

What are we trying to achieve?

- PHASE 1 : **To increase student's employability** by offering a program which respond to the market needs:
  - E-learning platform
  - Real mobilities
  - Internships
  - Certification (Europass Certificate Supplement and ECTS for students)
- PHASE 2 : **To increase the qualifications of the people already involved in the work market** by:
  - Extending the e-learning modules to this specific audience

Duration: 01-09-2015 until 31-08-2017

Partnership

- 8 Academic Partners (from the CHERNE network) representing **7 countries**:
  - HAUTE ECOLE PAUL-HENRI SPAAK – **BELGIUM**
  - UNIVERSITEIT HASSELT (UHasselt)- **BELGIUM**
  - FACHHOCHSCHULE AACHEN (FH Aachen) - **GERMANY**
  - UNIVERSITA DI BOLOGNA(UNIBO) - **ITALY**
  - UNIVERSIDADE DE COIMBRA - **PORTUGAL**
  - CZECH TECHNICAL UNIVERSITY IN PRAGUE(CUT) – **CZECH REPUBLIC**
  - NATIONAL TECHNICAL UNIVERSITY OF ATHENS(NTUA) - **GREECE**
  - UNIVERSITAT POLITECNICA DE VALENCIA (UPV)- **SPAIN**
- 2 Non-academic partners to add value to the partnership:
  - a research institute: THE NATIONAL RADIATION PROTECTION INSTITUTE (SURO) – **CZECH REPUBLIC**
  - a regulatory body: GREEK ATOMIC ENERGY COMMISSION **- GREECE**

3 target groups

1. Students of the participating institutions
2. Persons already involved in the work market
3. Teaching staff

Objectives

- **Development of a blended learning program** in radiation protection and radioecology
- **Life long learning education program** for people already *involved* in radiation protection
- **Acquisition of specific competences** in the nuclear field for those who were *not involved* in nuclear and radiological techniques during their studies
- **Contribution towards standardization of the knowledge across Europe** in radiation protection and safe use of radioactive materials

Intellectual outputs: deliverable proposed

- O1: Analysis of the present situation in radiation protection and radioecology within the European countries
- O2: Implementation of course modules on an e-learning platform
- O3: Trainings in Radiation Protection and Radioecology

O1: analysis of the present situation in radiation protection and radioecology within the European countries

- Leader: U Hasselt
- Participants: all
- Aim:
  - Evaluation of the present situation
  - Evaluation of the need of the labour market in terms of skills and competences
- Deliverable:
  - Report to be published on the project website
- NO MONEY FOR THAT so need to find cheap solutions
- **DEADLINE IS: May 2016**

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O1: short action plan proposal

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Analysis of the existing data

How to start our search on E&T needs in RP

Direct needs defined :

- Implementation of new EU-BSS by member states
- Harmonization among member states
- Mutual recognition between member states

Stakeholders involved :

- Regulatory bodies
- RPE-RPO employees and employers
- E&T providers: academic and non-academic, private
- Students

Data of existing surveys :

- ENETRAP2 (10y old?)
- HERCA !!!

New EU-BSS

- RPE - RPO
  - Article 4 definition 73 and 74 of RPE and RPO
  - (73) "radiation protection expert" RPE means an individual or, if provided for in the national legislation, a group of individuals having the 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 recognized by the competent authority;
  - (74) "radiation protection officer" RPO means an individual who is technically competent in radiation protection matters relevant for a given type of practice to supervise or perform the implementation of the radiation protection arrangements;
  - Article 82 and 84 summing the tasks of RPE and RPO

New EU-BSS

CHAPTER IV : REQUIREMENTS FOR RADIATION PROTECTION EDUCATION, TRAINING AND INFORMATION

Article 14

- **General responsibilities for the education, training and provision of information**
  - 1. Member States shall establish an adequate legislative and administrative framework ensuring the provision of appropriate radiation protection education, training and information to all individuals whose tasks require specific competences in radiation protection. The provision of training and information shall be repeated at appropriate intervals and documented.
  - 2. Member States shall ensure that arrangements are made for the establishment of education, training and retraining to allow the recognition of radiation protection experts and medical physics experts, as well as occupational health services and dosimetry services, in relation to the type of practice.
  - 3. Member States may make arrangements for the establishment of education, training and retraining to allow the recognition of radiation protection officers, if such recognition is provided for in national legislation.
- **But no guidance in terms of what is required for education, training and experience is given**

Erasmus+

New EU-BSS

Article 79

Recognition of services and experts

Member States shall ensure that arrangements are in place for the recognition of:

- (a) occupational health services;
- (b) dosimetry services;
- (c) radiation protection experts;
- (d) medical physics experts.

Member States shall ensure that the necessary arrangements are in place to ensure the continuity of expertise of these services and experts.

If appropriate, Member States may establish the arrangements for the recognition of radiation protection officers.

NEW EU-BSS : in summary

Implementation of new EU-BSS by member states

- Lot of flexibility for implementation
- RPE / RPO different approach
- Guidance lacking

- Hamper harmonisation and mutual recognition
- Unless…

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HERCA : Heads of the European Radiological protection Competent Authorities

- http://www.herca.org/index.asp
- 51 Authorities from 31 European countries (incl. the 28 EU MS)

Milestones

- Set up a Task Force : Education and training in RP : November 2012
- Recommendations formulated in November 2013
- Workshop : Implementation of RPE/RPO : July 2015, Paris

Task Force E&T RP of HERCA

- Mandate on E&T in RP
  - Present the general picture of the situation of E&T in RP
  - Identify current needs for harmonization among HERCA MS
  - Mandate for future working group (summer 2016?)
- Mandate on RPE
  - Analysis of the applicability between HERCA members of the procedure developed by ENETRAP for the benchmarking of national E&T on RP
    - WP7 ENETRAP 3 : draft
- Mandate on RPO
  - make a survey on the current RPO requirements in the different HERCA MS
  - Survey had high response! 26 of 31 countries participated

HERCA

Heads of the European Radiological protection Competent Authorities

Conclusions & Recommendations by the HERCA Task force on Education &Training in Radiation Protection (TF E&T-RP)"

Ton Vermeulen

Presented at Euterp workshop Rovinj, 2014

Results Questionnaire RPO (2)

Question 2

Primary tasks and responsibilities associated with the role of the RPO

Primary tasks described in BSS	Harmonization >50%
Ensuring accordance with the requirements of any specified procedures or local rules	**100%**
Supervise implementation of the program for workplace monitoring	55%
Carrying out periodic assessments of the condition of the relevant safety and warning systems	60%
Supervise implementation of personal monitoring program	60%
Participating in arrangements for prevention, preparedness and response for emergency exposure situations	60%
Information and training of exposed workers	60%

Results Questionnaire RPO (2)

Question 2

Primary tasks and responsibilities associated with the role of the RPO

Primary tasks described in BSS	Harmonization <50%
Supervise implementation of the program for health surveillance program	**25%**
Providing new exposed workers with an introduction to local rules and procedures	10%
Maintaining adequate records of all radiation sources	40%
Establishing work plans	30%
Providing reports to the local management	40%
contact with the RPE	25%

Results Questionnaire RPO (2)

Question 2

Primary tasks and responsibilities associated with the role of the RPO

Primary tasks NOT described in BSS	Harmonization
contact with the regulatory authority	**50%**
Storage of waste	30%
QA management systems	30%

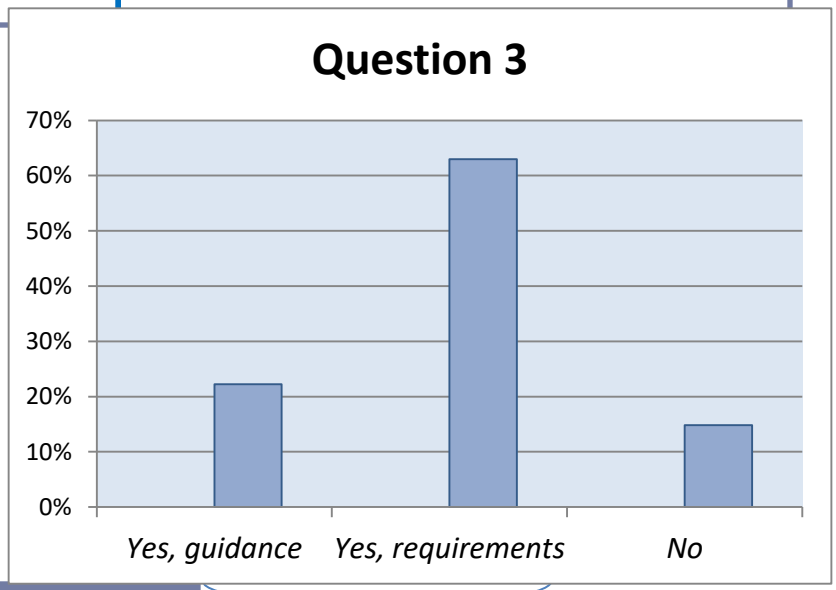
Conclusion :

- Partly similar to RPO in BSS
- RPOs role in most cases includes tasks of the RPEs role, e.g.
  - QA program
  - contact with regulatory authority
- **Needs**
  - Harmonization of tasks for RPOs
  - Definition of specific tasks/responsibilities for RPO and RPE

Results Questionnaire RPO (3)

Question 3

Are regulatory guidance/requirements available that specifies the minimum educational level, training, work experience and personal attributes that are required for RPOs?



Guidance/Requirements	% of yes
Education	60%
Training	70%
Personal attributes (qualification, competence)	48%
Renew personal attributes	30%
Work experience	30%

Yes: 85%
No: 15%

Results Questionnaire RPO (3)

Question 4

Within your country are there any radiation protection training courses provided especially for RPOs (or their equivalent)

No : Belgium, Bulgaria, Estonia, Iceland, Luxembourg (Cyprus and France skipped)
Yes : 19 countries

14 countries have different E&T and work experiences of RPO recognized with regards to the complexity of the applications in different areas.

No different E&T: Hungary, Ireland, Norway, Portugal, (Sweden skipped)

Conclusion :

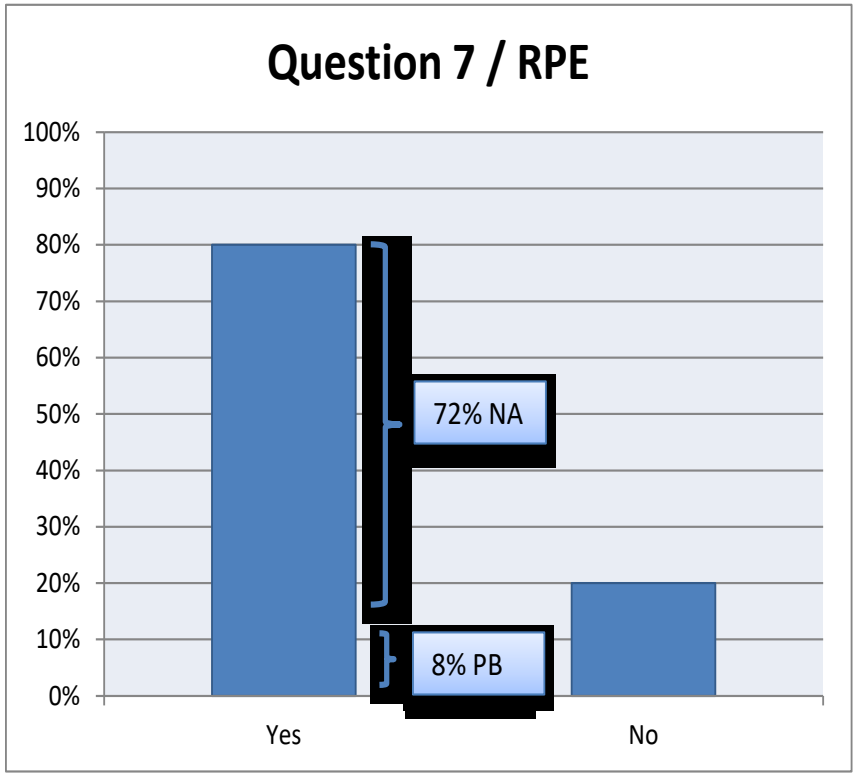
- most countries have a training scheme for RPOs, but a lot of differences
- Lack of comparison of existing E&T training programs for specific RPOs
- A majority differentiate the training schemes according to the application field but still10 countries have no or no differential E&T program especially for RPOs

Results Questionnaire RPO (5)

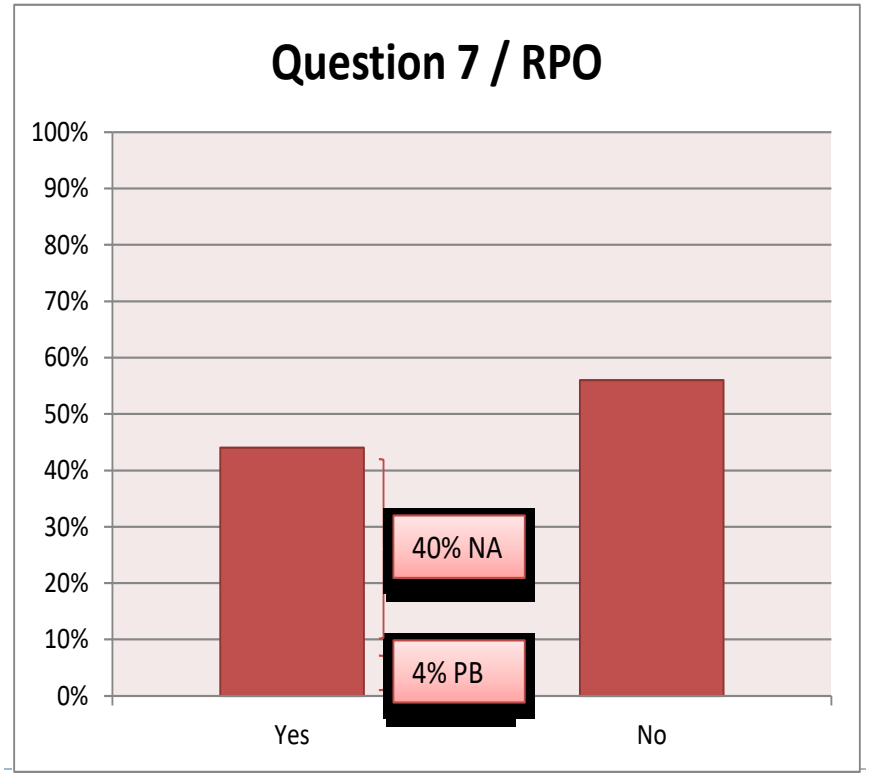
Question 7: Are there formal systems in place for the recognition of RPEs or RPOs in your country by national authorities (NA) or professional bodies (PB)?

NA : national authority,
PB : professional bodies

80 % RPE



45% RPO



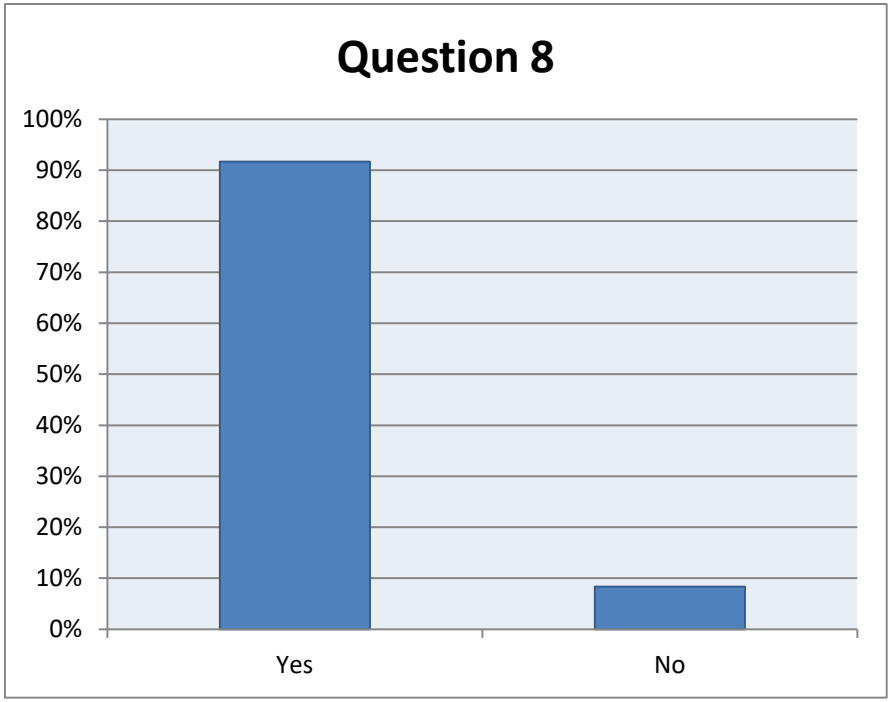
Results Questionnaire RPO (6)

Questions 8 and 9 (If a formal recognition system for the RPO is in place (12))

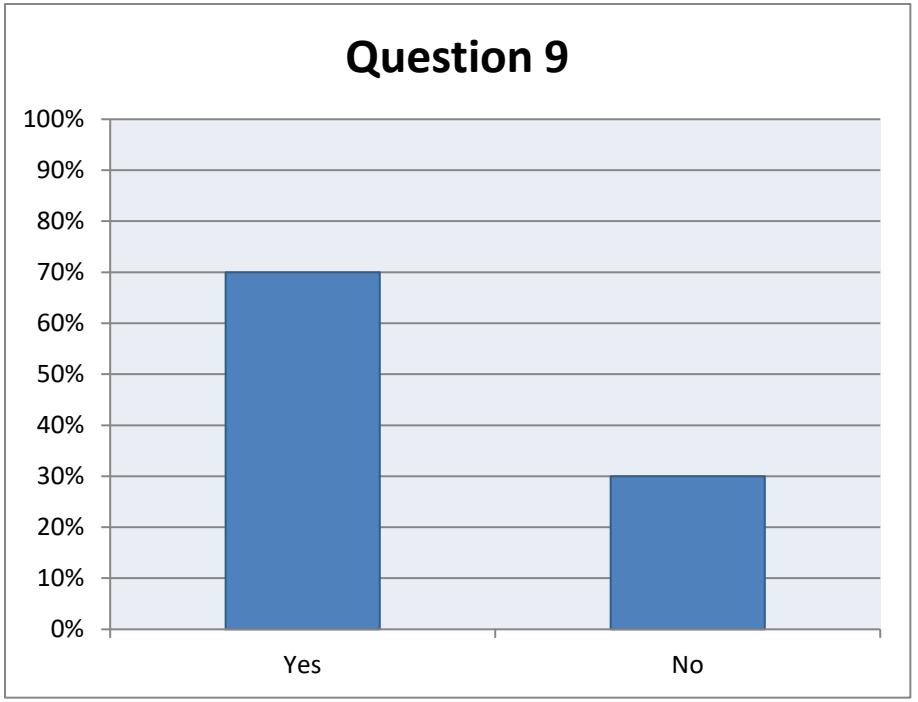
8. Is there a minimum level of basic education, training and experience required for the recognition of RPO?

9. Once the prerequisites are fulfilled, is successful completion of any of the courses identified in Question 5 sufficient for recognition as RPO?

100% = 12 answers



100% = 10 answers



Conclusions and Recommendations HERCA

- Great flexibility of RPE/RPO and E&T requirements
  - Harmonization not realistic
- Existing regulations needs to be updated
  - BSS directive allows a multitude of options for implementation
- Development of guidance :
  - On duties and required practical competences of RPE
  - On role of RPO and required training and competences

  - With imput of HERCA members,
  - and recognition as a reference for HERCA members and national authorities should follow it
- After implementation of new BSS and development of guidance (Future task force HERCA)
  - New survey on how BSS is transposed in national systems
  - Possible development of mutual recognition system for RPE

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ENETRAP 3 (2014-2018) http://enetrap3.sckcen.be/en

WP1	Project coordination	
WP2	Organisation of "think-tank" activities and establishment of partnerships ensuring feedback from stakeholders	
WP3	Establishment of three specialized training modules for RPE and implementation of pilot sessions	Geological disposal (07/2016) NPP and RR (06/2016) Medical applications (09/2015)
WP4	Development of a train-the-trainer (TTT) strategy and organisation of a TTT training event	**June 6 - 10, 2016** (Sarclay, France)
WP5	Dissemination of project results and contribution to a website for capacity building and transfer of know-how in radiation protection	
WP6	Testing of methodologies for RPE recognition and mutual recognition in practice	
WP7	Writing of guidance to support the implementation of E&T requirements for RPE and RPO as defined in the Euratom BSS	Draft version in evaluation

ENETRAP 3

- Focusses on development of RPE training modules and TTT module
- E-learning using Moodle : … cooperation in O2?
- Level EQF (European qualification framework) : defining level of knowledge, skills and competences.
  - RPE : level 6-7(Ba-Ma)
  - RPO : level 3 (2nd year of professional secondary school) -6 (Ba): large variety depending on tasks and responsibilities

CONCLUSION

- different levels between RPE/RPO and within RPO
  - => different training schemes: basic, advanced, expert
  - => theoretical and practical
- Guidance necessary for harmonization :
  - first draft in evaluation

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Belgium : BVS recommendations

Belgian Association for Radiological Protection

Member of IRPA, active since 51 years
~ 400 members

Since 2012 : Implementation of RPE – RPO in Belgium ?

→ Working group created in 12/12

→ Validation of the guidance document in 03/14

→ Will be presented to regulatory body (FANC) in 05/14

Selection of recommendations regarding RPE/RPO E&T

Presentation Rovinj 2014

Challenge of implementing RPE RPO in Belgium Guidance document

P. Froment, T Clarijs, H. Janssens …
BVS-ABR working group

Belgium : BVS recommendations

RPE : level EQF 7 : academic

Entry requirements

- Master in exact or applied sciences or equivalent diploma (Scientific Council or FANC validation)

RPO : level EQF 6

Entry requirements:

- Bachelor level or equivalent

Requirements for recognition RPE

Basic education in RP

- Theoretic + practical exercises : 12 ECTS

+ practical experience on the field

Cl I (NPP …) : 3 years (6 m RPE tasks),

Cl IIA (Cyclotron, …) : 2 years (6 m RPE tasks),

Cl II (Univ., Research center, Ind.) : 1 year (3 m RPE tasks),

Cl III (Radiology …) : 6 months (3 m RPE tasks),

Transport : 1 year (6 m RPE tasks)

Requirements for recognition RPO

Basic education in RP

- Theoretic and practical exercises :

50 h (Cl I and II), 8 h (Cl III)

+ practical experience on the field

Defined and 'supervised' by the RPE

20 h (Cl I and II)

8 h (Cl III).

Recognition procedure

RPE

- Given by FANC (Federal Authority)
- For one type of installation (ex. Cl II sealed and non sealed source)
- Validity : 2 years (first recognition)

  5 years (following)

RPO

- Official designation by the exploitant (contract …)
- After advice of RPE
- Validity : 5 years

life long learning RPE/RPO

RPE

- Min 200 pts / 5 y (Cl I - IIA)
- Min 100 pts / 5 y (Cl II - III)

→ Cf. table

RPO

- Min 20 h / 5 y

Min 1 d of external activities (course, conf. …)

Activity	Remarque / proof	Value	Remarque
Formation	Certificate	10 pts / d	Minimum 100 pts for cl I and IIA Minimum 75 pts for other classes
Formation with exam	Certificate with test result	15 pts / d	
Conference ….	Certificate of attendance	5 pts / d	
Oral presentation at a conference …	Conference program	10 pts	-
Poster presentation at a conference …	Conference program	5 pts	-
Publication in a journal (with jury)	Paper	10 pts	-
Publication in a journal	Paper	5 pts	-
Teaching task (university, college …)	Course program	2 pts / h	Maximum 20 pts
Active member in an (inter)nationale commission	List of participants	10 pts / commission	-

Remarks

- Uniformity-harmonization with other MS using ECTS?
  - BUT, topics are described but no relative importance in terms of ECTS per topic
  - no evaluation criteria for knowledge, skills and competences
  - No level (Basic, advanced , expert)
- Relation topics & Blended learning modules :
  - +++ Large overlap!

TOPICS	MODULE
Nuclear physics and radiation physics	1
Radiochemistry	5
Measurement techniques	2
Radiobiology	
Dosimetry	2
fundamental aspects of radiation protection	3
legislation (Belgian and international),	(3)
Practical aspects of radiation protection (NORM, transport, medical ,industrial, research)	training
Intervention by accidents and incidents	4
Decommissioning	
Waste management	(5)
ethical aspects of radiation protection	3
General safety	4

1 Basics nuclear and radiation physics	2 Basics of measurement and dosimetry	3 Radiation protection
4 General safety principles	5 Basics radiochemistry and environmental measurements	6 Medical applications

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Presentation the Erasmus+ project Blended learning

- Definitely needed for professionals
- Flexible for different users and different RP practices

Discussion of HERCA and BVS data for BELGIUM

RPE and RPO : different tasks => different E&T => both can be in one person

- RPE :
  - Belgium : high level for RPE (level 7 : academic)
  - Specific E&T and requirements per class (at least 3)
  - Not only advice also responsibilities
- RPO :
  - Level equal to bachelor diploma
  - basic education + special practical training per practise
  - Graded approach
  - No recognition but notification
  - Quality is responsibility of exploitant

Mutual recognition : problem : local language will be obliged

Organisation of stakeholders meetings: future invitation

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Creation of a questionnaire

- What do we want to survey?
  - Minimum of specific questions (max 10)
- Target?
  - Partners
    - Added value next to existing e-learning modules/training materials
    - Training support in development of e-learning?
  - Students/teachers
    - Implementation of e-learning modules in academic courses
  - Employers/employees/private trainers
    - Implementation of e-learning modules in on the job training
  - Regulatory body's
    - Relevance of defined learning outcomes
- How to proceed?
- No money : help!

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Conclusions

- Implementation of EU-BSS
  - Flexibility too high
  - Guidance in development but not available yet (enetrap3)
  - Harmonization : a dream?
- HERCA
  - Survey RPO : most recent
  - Future task force will be necessary
- ENETRAP 3
  - Possible cooperation?
  - Guidance will be relevant for our e-modules
- Belgium
  - BVS E&T recommendations : large overlap with our e-modules
  - FANC : stakeholders meeting, positive respons to our project

Thank you for your attention!!!

Others :

radiochemistry :

https://wiki.uio.no/mn/safe/nukwik/index.php/NukWik

http://www.euchems.eu/divisions/nuclear-and-radiochemistry-2/useful-links/

https://nucwik.wikispaces.com/

Erasmus+