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Radiation protection courses in Germany and the Netherlands

A bilateral comparison

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Content

- Motivation / introduction
- Project description
- First results
- Conclusion (perspective)

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Introduction

- Objective of EUTERP foundation: simplify free travelling of RPEs and RPOs between MS by means of
  - Harmonization
  - Mutual recognition
    - Comparison of (content of) RP Courses

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Motivation

- Too little attention for RWs (≡ Exposed Worker)
- Understandable:
  - No ‘special’ category in EU BSS
  - Large differences between MS
- Incomprehensable:
  - Focussing on RPEs (and RPOs) rather academic
  - Huge amount of RWs with certain level of RP E&T cross borders

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Motivation

- Waiting for ‘general’ method for comparing RP E&T takes too much time
- Need for guidelines for mutual recognition lower level RP Courses
- Start at the same time from the bottom:
  - Bilateral pilot project on comparison of RP E&T courses
  - Collaboration between Germany (D) and the Netherlands (NL)

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Project - Participants

- Leibniz University Hannover – Jan-Willem Vahlbruch
- University of Groningen – Hielke Freerk Boersma
- Technical University of Delft – Marcel Schouwenburg
- Leiden University Medical Center – Bert Gerritsen

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Project - objectives

- Inventory of system of RP courses in D & NL
- Comparison of content with standard IAEA syllabus
- Conclude about equivalence and/or gaps between various courses
- Formulate advice to competent authorities about mutual recognition
- Publish results on EUTERP-website

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Project – Work programme

- Stage 1:
  - Inventory of courses in D & NL
  - Comparison of a few courses with standard IAEA syllabus
- Stage 2:
  - Complete comparison of courses
  - Advice on mutual recognition of the courses
  - Realization depending on results of stage 1 & funding

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Project – Stage 1

- Performed as apprenticeship within Dutch RP Course for RPEs (“Level 2” – course)
- Framework:
  - Restriction to medical and technical/research branches
  - Focus on lower level RP Courses

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Project – Assignment apprenticeship

- Visit German (Leibniz University & LPS – Berlin) and Dutch institutes
- Produce report (English written) with
  - A complete (however global) overview of the RP Course system in D & NL
  - Which German courses cover the Dutch ‘level 5’ – courses.

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Results – E&T system in D & NL

- D: differentation in three branches
  - Nuclear
  - Technical (including research)
  - Medical
- NL: no differentation except for the lower level courses
  - A-variant: X-ray equipment & sealed sources
  - B-variant: open & sealed sources

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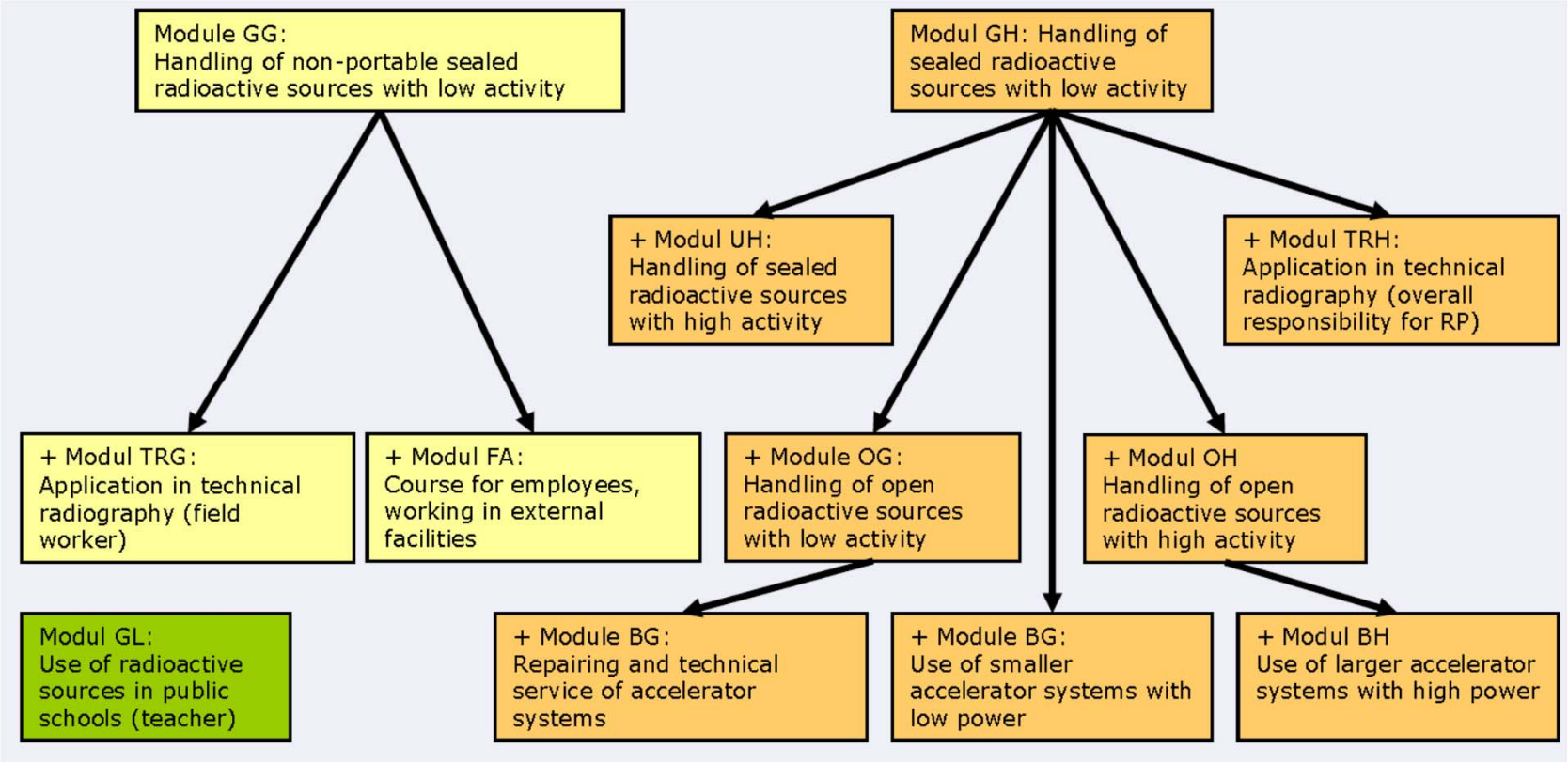
Results – E&T system D (Technical)



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Results – E&T system NL

Level of Expertise	Purpose	Variants
5	Low risk & few sources	A / B
4	Moderate risk	A / B
3	Significant risk	-
2	High risk / complex licenses	-

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Results - Comparison

- RWs: (potential) exposure > 1 mSv/y
- D & NL: RWs have to be instructed
- Implementation by many NL employers: certificate of level 5 RP Course + instruction

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Results – comparison

- D system: detailed description of time spent to various topics
- NL system: only specification of level of knowledge
  - In practice agreement in duration of Dutch level 5 courses (within 20%).

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Results – comparison medical branch

- Based on
  - D: Grundkurs im Strahlenschutz für Ärzte und Medizinphysiker
  - NL: Practical radiation protection – ‘standard’ course book
- Comparison with IAEA standard syllabus remains to be done
- Presentation in matrix form

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		Grundkurs im Strahlenschutz fur Arzte und Medizinphysiker													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Physikalische Grundlagen des Strahlenschutzes	Dosisgrosen und -einheiten, Messtechnik	Bestimmungen der Rontgenverordnung	Strahlenbiologische Grundlagen und Strahlenrisiko	Naturliche und zivilisatorische Strahlenexposition	Arbeitsmedizinische Vorsorge, Unfalle, Storfalle	Nuklearmedizin	Gezetzliche Grundlagen der Strahlenschutzverordnung	Praktischer Strahlenschutz, Berechnungsgrundlagen und Dosismessungen	Dosismessungen II	Messung von Kernstrahlung	Grundlagen des baulichen und apparativen Strahlenschutzes	Strahlenunfalle in der Medizin	Einfuhrung in die Strahlentherapie
	Practical Radiation Protection - Brouwer & Van den Eijnde														
1	**Structure of the atom and decay**	1				1									
2	**Sources, X-ray equipment and neutron radiation**	1						1							1
3	**Interaction of radiation with matter and shielding of radiation**	1								1		1			
4	**Radiation detection**		1												
5	**Quantities and units in radiation protection**		1												
6	**Biological effects of radiation**				1										
7	**The system of dose limitation and the international guidelines**			1			1		1						
8	**Safety precautions for sealed sources and X-ray machines**								1				1		
9	**Dosimetry in practice**									1					
10	**Safety precautions for open sources**														
11	**Radioactive waste**														
A	**Mathematics**														
B	**Measurements and measurement errors**														

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- Oskar van Dongen (Dutch Oil Company – NAM)
- Marcel Greuter (University Medical Center Groningen)
- Jack Haagen (Medical Center Alkmaar)
- Jan-Willem Vahlbruch (Leibniz Univ. Hannover)

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Perspective

- Final report of stage 1 by mid-2011
- Possibilities for performing stage 2
  - Joining in work packages of ENETRAP (2?)
  - Continuing the project within EUTERP
  - Extending project to include other MS, e.g. Belgium

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Thank you for your attention