

BILATERAL COMPARISON OF LOW LEVEL RP TRAINING AND EDUCATION COURSES – A TOOL FOR FACILITATING THE MOBILITY OF RPOs AND RADIATION WORKERS

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Abstract

In this contribution we report on a bilateral pilot project to compare the content of low level Radiation Protection (RP) Education and Training (E&T) courses in The Netherlands and Germany. This project has been carried out as part of an apprenticeship of the Dutch course for RP Experts. Attention will be paid to differences in national systems of RP E&T. We suggest a possible roadmap to mutual recognition of low level RP E&T courses between Germany and The Netherlands and, more in general, throughout Europe.

Key words: mutual recognition, education systems

1. Introduction

Within Europe there are many differences in criteria for radiation workers (RWs), radiation protection officers (RPOs) and experts (RPEs). These differences, which are reflected in the various systems of radiation protection courses and legal recognition of RPOs and RPEs, hampers the free traveling of RWs, RPOs and RPEs within Europe. It is one of the goals of the European Foundation on Training and Education in Radiation Protection (EUTERP) to remove these obstacles within the Member States of the EU. From the workshops held by this platform in 2007 to 2009 it has been concluded that an essential element in achieving this goal is the availability of a good comparison of the content of the RP courses in the Member States.

We point out that, without denying the importance of mutual recognition of RPEs and eventually RPOs, the vast majority of relevant employees crossing EU borders, e.g. in the medical field, are Radiation Workers (RWs). Here, it is important to realize that in general there are no nationally recognized E&T programs in RP for RWs. However, in the Netherlands many employers use the lowest level RP courses as obligatory instruction for their RWs. Therefore, there exists a great need for comparison of low level RP courses in other European countries with their Dutch equivalent. As a consequence we initiated a bilateral pilot project to make a start with this comparison, paying special attention to low-level RP training, suitable for RWs as well as for RPOs responsible for low risk applications. EUTERP-members from Germany and The Netherlands agreed to participate in this pilot.

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2. Objectives

The pilot aimed to reach the following objectives

1. An inventory of the system of RP courses in both countries
2. A comparison concerning the content of various low-level courses based on the IAEA Syllabus[1] or its European equivalent
3. Conclude about equivalence and/or gaps between the various courses offered in both countries
4. Give advice to the competent authorities about mutual recognition of these courses
5. Report on these results via the EUTERP website in order to make the results available to the whole EUTERP-community.

3. Method

The main part of the project was carried out as an apprenticeship by students participating in the Dutch Radiation Protection Course Level 2 that was given in the period 2010/2011. This course is intended for RPEs responsible for high risk and/or complex licences in the Netherlands. Due to the limited amount of available time and the fact that the nuclear field is relatively small in The Netherlands, the pilot was restricted to the medical and technical field.

The students visited the Leibniz University in Hannover and the Landesanstalt für Personendosimetrie und Strahlenschutz Ausbildung (LPS) in Berlin to get inside information about the German RP E&T system in the technical and medical fields respectively. Subsequently the course material used in both countries was compared. The results of this comparison are reported separately during the IRPA-13 congress.

The apprenticeship was concluded with a draft report, paying attention to the first three objectives of the project. The draft was extended with recommendations and additional information. The final version of the report by Haagen et al is available through the EUTERP-website (www.euterp.eu)[2].

4. E&T System in Germany and the Netherlands

In this chapter we restrict ourselves to the RP Course system in both countries refraining from most of the legal framework of these systems. For the legal framework we refer to the report of Haagen et al.

Roughly speaking the German system is divided into three branches: technical (including research), medical and nuclear. Each branch has a modular structure. In practice there are many different kinds of “Strahlenschutzbeauftragter (SSBs)” – in most cases comparable to RPOs – depending on the kind of source of radiation (sealed or open radioactive sources, an accelerator-system or X-ray devices) and on the potential risk of the respective application. Therefore, different practical experience (depending on the professional education) and different radiation protection courses are required for different applications.

This leads altogether to 37 different kinds of Expert Knowledge Groups for technical applications – resulting in 37 different kinds of SSBs for the technical branch only. In Figure 1 we give the modular system for E&T in RP according to the German Technical Expert Knowledge Directive concerning the handling of sealed and open radioactive sources and accelerator systems[3]. This German directive is based on the German Radiation Protection Ordinance. Table 1 summarizes the modules for obtaining and updating RP knowledge after the Directive concerning the handling of X-ray tubes which is based on the German Röntgen Ordinance. For each of the 37 Expert Knowledge Groups one or more specific modules are needed to gain the necessary knowledge in RP.

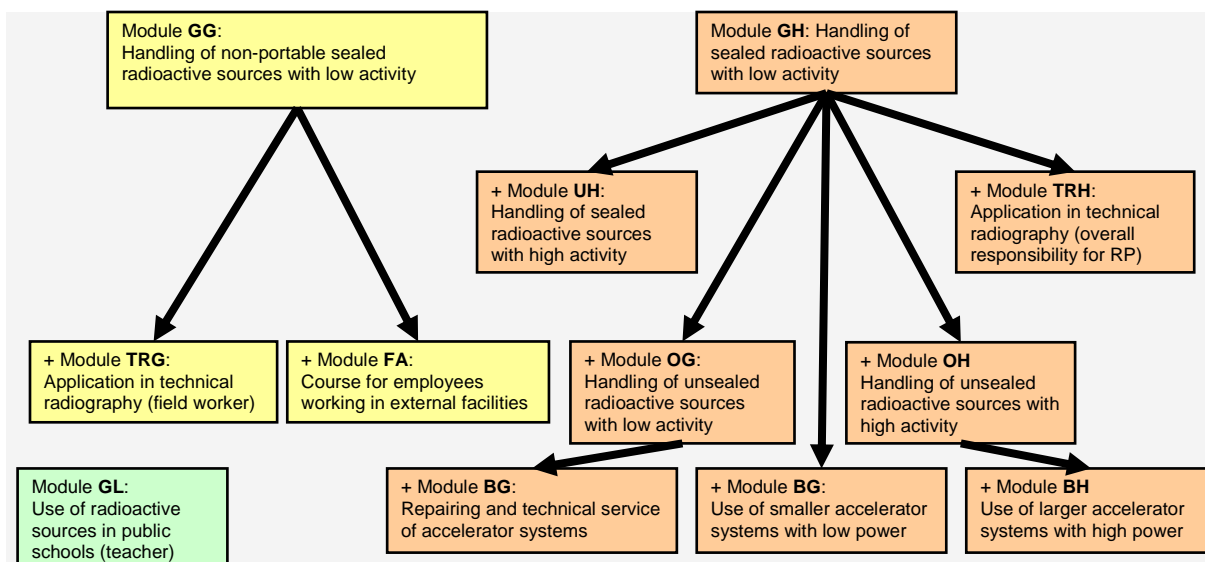


Figure 1. Modular structure of the German system of RP E&T (technical branch, concerning the handling of sealed and open radioactive sources and accelerator systems)

Module	Content	In addition to
RM	Basic Module for applications with very low risk	-
RG	Basic Module for applications with lower risk	-
RH	Basic Module for applications with higher risk	-
Z1	Special module for the handling of handheld x-ray fluorescent spectrometers	RG
Z2	Special module for inspection, testing, maintenance and repair of Roentgen devices and scanning electron microscopes or scanning tunnelling microscopes in the Non medical field.	RG
Z3	Special module for X-ray scattering,-diffraction and analysis	RH
QS	Special module for inspection, testing, maintenance and repair of Roentgen devices, that are part of the quality assurance according §§ 16 and 17 of the Roentgen Ordinance	RH or RG+Z2
L	Module for the operation of Roentgen devices on schools	-
FA	Module for employees working in external facilities	RG

Table 1. Modules to obtain and update the knowledge after the Roentgen Ordinance

For medical applications there exist two similar directives. Each medical professional, whether RPO or not has, according to these directives, to complete one or more of the modules given in Figure 2. Omitted in this figure is a basic course of 8 hours for doctors who don't have/need expert knowledge.

In the Netherlands only the lower level RP courses are divided into X-ray applications (A-variant) and the use of open sources (B-variant). Sealed sources are covered similarly by all RP Courses. Apart from that there are courses meant for specific medical applications, to be completed by medical professionals who generally do not act as RPOs (with dentists as an exception). The Dutch system, primarily based on the Directive for recognition of RP Training Providers, is summarized in Table 2.

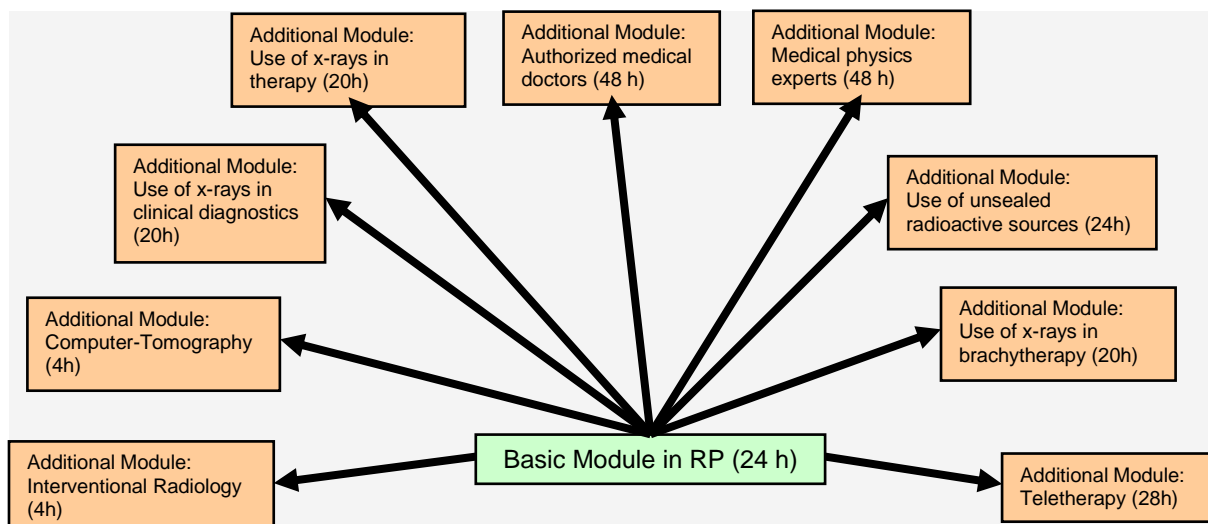


Figure 2. RP Modules for medical applications in German[4]

Level of Expertise	Characteristics	Purpose
5 (A or B)	Low risk and few sources	X-ray (5A), sealed sources (5A&5B), open sources (5B – only RWs)
5AM	Low risk	X-ray in dentistry
4 (A or B)	Moderate risk or low risk and more than ten sources	X-ray (4A), sealed sources (4A&4B) and open sources (4B – only RWs)
4AM	Moderate risk	X-ray in Cardiology, Pulmonology, Gastro-Intestinal Disease and Orthopedy
3	Significant risk	small accelerators, X-ray, sealed and open sources
3M	Significant risk	X-ray in radiology and radiotherapy
2	High risk / complex licenses	All licenses

Table 2. Summary of the Dutch system of RP E&T.

5. Recommendations

Based on the course material of the various courses on one hand, and the detailed requirements laid down in the German Directives on the other hand, a detailed comparison of the content of various low level courses/modules has been made in the report of Haagen et al. From this comparison we have drawn conclusions about the equivalence of the German and Dutch courses:

- There is a global equivalence between the Dutch level 5 courses and the low level modules in the German system.
- The main difference between the content of the courses in both countries is the difference in national legislation.

These conclusions have led to recommendations to the national authorities as well as Dutch employers. The recommendations can be summarized as proposals for mutual recognition of the knowledge level of various RP courses or modules, provided that additional legislative modules are

introduced (Table 3). In some cases this recognition is limited to certain applications or expert knowledge groups. We have also made recommendations concerning bridging the legislative gap between both countries. Note that for mutual recognition of RPOs other aspects (such as practical experience) should also be taken into account[2].

<i>RP courses or modules</i>	<i>Equivalent to</i>
5A	GG, GG+TRG, GG+FA, GH, L, RM, RG, RG+FA, RG+Z1, RG+Z2, RG+Z2+QS, Kenntniskurs (basic course for doctors without expert knowledge), Grundkurs im Strahlenschutz (Basic Module in RP)
5A	RH and RH+Z3 for specific Expert Knowledge Groups
5B	GG, GG+TRG, GG+FA, GH
GG, GG+TRG, GG+FA or GH	5A or 5B, but only for those applications matching with the corresponding German Knowledge Expert Groups
L, RM, RG, RG+FA, RG+Z1, RG+Z2, RG+Z2+QS, RH or RH+Z3	5A, but only for those applications matching with the corresponding German Knowledge Expert Groups
GG, GH or GG, GH plus additional modules	Instruction for RWs working with sealed sources for which the employer requires 5A
GH+OG or GH+OH	Instruction for RWs working with open sources for which the employer requires 5B
RG, RH or RG, RH plus additional modules	Instruction for RWs working with X-ray devices for which the employer requires 5A
RM and L	Instruction for RWs working with X-ray devices for which the employer requires 5A, but only for those applications that match with the corresponding German Knowledge Expert Groups
Basic Module in RP (Grundkurs im Strahlenschutz für Ärzte und Medizinphysikexperten)	Instruction for RWs working with medical applications for which level 5A or 5AM is required

Table 3. Suggestions for mutual recognition of RP Courses and modules in Germany and the Netherlands. Items in the left column are at least equivalent to the corresponding items in the right column.

6. Conclusions

We have shown that it is possible to develop, with relatively little means and time (in total approximately three working months), a bilateral comparison between low-level RP Education and Training Courses between two EU Member States. We have also been able to formulate recommendations to the national authorities to recognize RPOs mutually. It can therefore be concluded that such apprenticeships offer a good opportunity to extend the current project to similar comparisons between other EU Member States.

It is to be expected that a second bilateral comparison between either Germany or The Netherlands and a third EU-Member State could, with minimal effort, lead to a complete trilateral comparison of the RP E&T systems in these states. We therefore expect that a more or less complete comparison between the various national systems throughout the European Union will therefore not be an infinite task. In carrying out this task, it is recommended to focus on the lower level courses as this will concern the largest part of RP professionals crossing EU-borders.

Acknowledgement

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