RADIATION PROTECTION TRAINING FOR USERS OF IONIZING RADIATION IN HUNGARY

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Abstract

According to the current and previous regulation related to the safety use of ionizing radiation, the personnel involved must obtain special qualification in radiation protection. In Hungary the radiation protection trainings are performed by appropriately certified training centers on basic, advanced and comprehensive levels. Certification of the training centers is given by the competent radiological health/radiation protection authority. The Office of the Chief Medical Officer is the certifying authority for advanced and comprehensive levels' trainings, as well as competent Regional Radiological Health Authority is responsible for basic level courses.

The content and length of courses are specified in the regulation for all three levels of industrial, laboratory and medical users, in general.

Some of the universities, technical and medical oriented are certified for advanced training for students as gradual course.

Recently in Hungary there are 47 certified training centers for advanced and comprehensive courses, where the trainers should have a five years job experience in radiation protection and successful completion of comprehensive level course in radiation protection.

Introduction

It is generally accepted that the radiation protection training for the users of ionizing radiation and radioactive isotopes is necessary for several reasons. On all of the areas of the use of the ionizing radiation and the radioactive isotopes the knowledge in radiation protection is necessary to keep the exposure of radiation workers on a justified level. Especially on the area of the medical application the qualification is one of the tools of the patients' dose

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optimization and to the decision of the justification related to the given intervention. The employer's radiation protection qualification together with excellent expertise meant to ensure that the activity entails more benefit than harm.

The International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS) [1] established general requirements for training, experience and recognition, gave safety orientation to national regulators in this topic. Publication of Radiation Protection No. 116. also giving useful guidelines to establish the curriculum for different levels of training and retraining courses.

In Hungary, radiation protection training for radiation workers has been introduced in very early, just following the publication of the ICRP recommendation No. 26 [2]. Since 1988, radiation protection training regulated by the Ministry of Health and required for all of the workers in radiation workplaces licensed by the authority the State Public Health and Medical Officers Service. The Order No. 7/1988 of Ministry of Health and Social Affairs [3] required the necessity, demanded level, fitted to responsibility and risk, as well as the frequency of radiation protection training.Recently, theDecree No. 16/2000. (VI. 8.) EüM [4] of the Minister of Health on the enforcement of Clauses of the Nuclear Law CXVI/1996 regulates the radiation protection training of radiation workers on a comprehensive way. Annex 4 of Decree sees about radiation protection training and in-service training: „Persons performing conducted work in the field of the use of the nuclear energy and any other work within legal relationship shall be educated in training and in-service training at an interval of 5 years."

Materials and Methods

According to the regulations, three levels of courses required for radiation workers; basic, advanced and finally the comprehensive level. Basic level radiation protection training shall be provided for those employees do not work with radiation sources. Comprehensive RP training shall be provided to workers involved in medical, industrial, research application of open and sealed radiation sources, handling the source independently or supervising such practices. Comprehensive training required for radiation protection experts (RPE) who are designing the radiation protection of workplaces, also to whom are designing and performing or supervising radiation therapy. The requirement is the same for members of regulatory control, decision makers in nuclear emergency management, as well as trainers and supervisors of advanced and comprehensive training. Several institutions are involved in performing radiation protection training, such as universities, scientific institutions, Regional Radiological Health Centers, private enterprises etc. All training course material is subject to

accreditation by Office of the Chief Medical Officer (OCMO). At the end of RP training a written or oral examination shall be performed by the trainer, together with the invited representative of the OCMO and finally the successfully trained donated a certificate.

In this publication, the data related to the training period 2005-2011 were collected with a questionnaire method directly from the accredited training providers and processed.

Results

Between 2005 and 2011, first or refresher radiation protection courses were completed by 20069 persons (workers or graduated students) altogether. Most of them (70%) worked in the field of medicine or industry and acquired advanced radiation protection qualification.

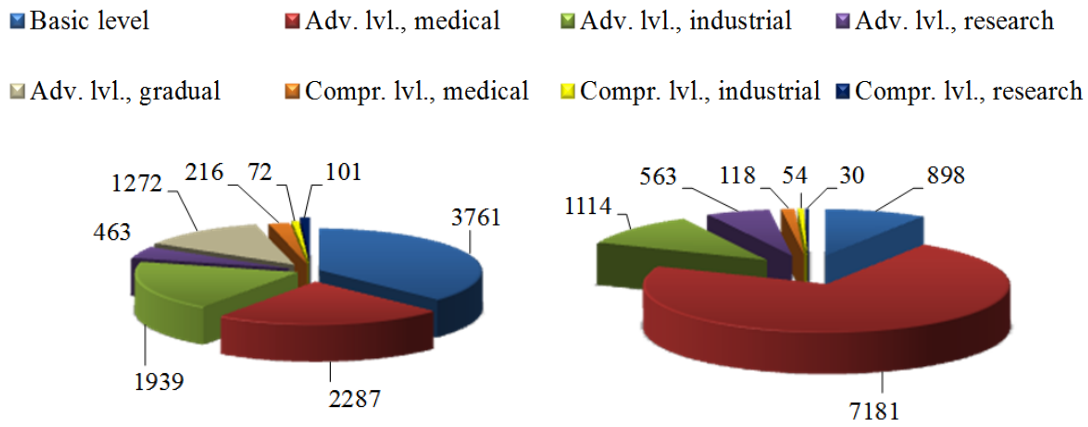

Figure 1. Number of individuals successfully passed the first (left) and refresher (right) coursesbetween 2005 and 2011

The number of people performed first and refresher courses are 9958 (53%) and 8839 (47%), respectively. Considering the education levels, there are significant differences between the first and refresher courses (Figure 1.). Most of the people trained on first courses work in the field of medicine (72%) and completed an advanced level course. Regarding refresher courses, this ratio is much lower.

Distribution of the number of trained persons working in the field of medicine can be seen in Figure 2. It is important to recognize, that on the vertical axis of the graph there is logarithmic scale because of the great differences of the presented values. During the period examined, altogether 12273 medical workers completed first courses (4773) and refresher courses (7936). Most of workers were from the human radiology and completed an advanced radiation protection course (52%). The number of trained persons from the field of veterinary

radiology, radiotherapy, nuclear medicine and on comprehensive level is much lower, implicitly.

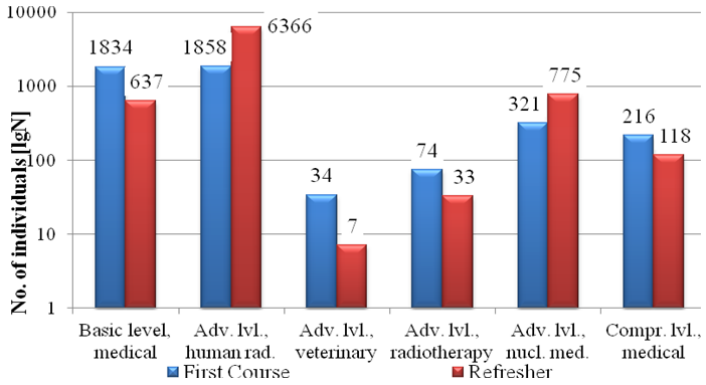

Figure 2. Number of individuals successfully passed the medical profession courses between 2005 and 2011

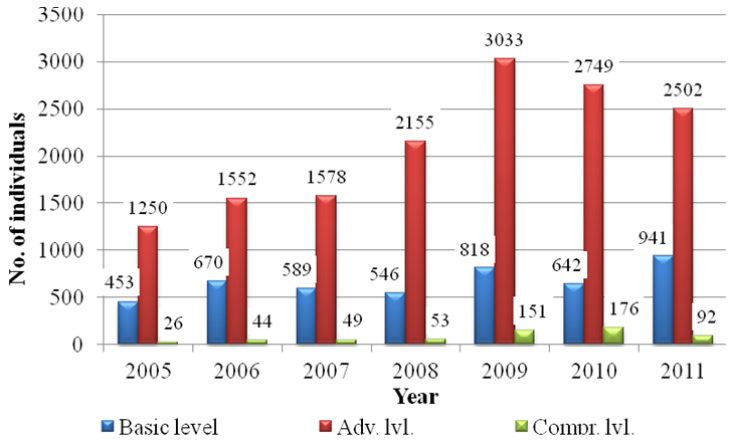

Figure 3. Number of individuals successfully passed the first and refresher courses between 2005 and 2011

A temporal analysis of radiation protection education can be performed by the Figures 3-5. It can be seen that from 2005 till 2009 there was a steady increase in the number of persons on the advanced level courses, but from 2009 a decrease can be observed. The reason can be a statistical fluctuation or some kind of periodicity. The same trend can be found for the comprehensive radiation protection education. The number of persons on the basic level educations can be considered constant in time.

The trend in the number of persons on the advanced level courses can be explained by the same trend in the medical field (Figure 4.)

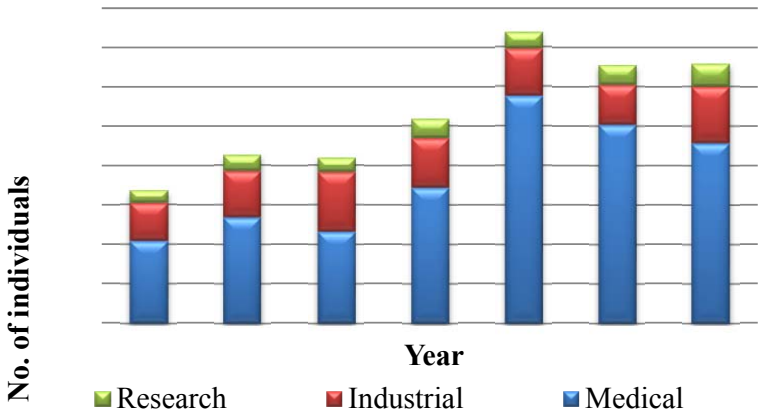

Figure 4. Number of individuals trained between 2005 and 2011 sorted by profession

In Figure 5. the distribution of the educated persons in the field of medicine can be seen.

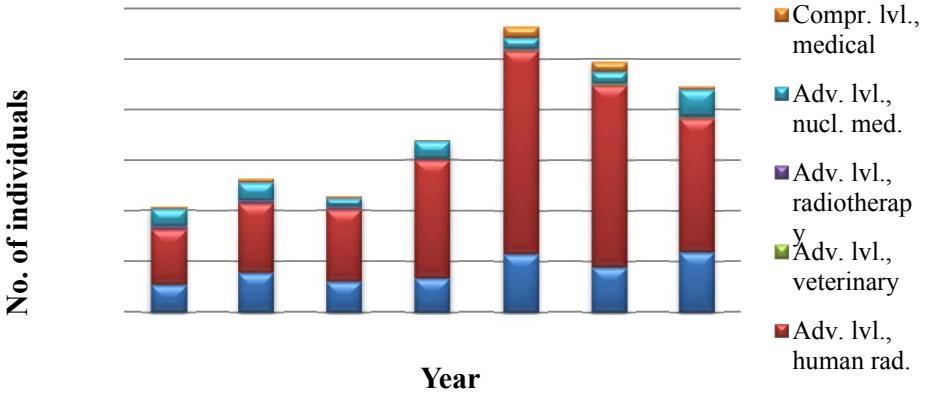

Figure 5. Number of individuals trained in the field of medicine between 2005 and 2011 sorted by specialisation

Conclusion

It can be concluded, that radiation protection education system in Hungary is harmonized with the international recommendations and regulations. The trainers are qualified experts of radiation protection. The radiation protection courses are licensed and controlled by competent radiation protection authority. More than 90% of workers obliged to regular radiation protection education have the adequate radiation protection knowledge. However, there is always need to improve the effectiveness of radiation protection education. We try it by specialization of the curriculum of radiation protection courses to the different type of workplaces.

References

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