



Building competence through education and training on radiation protection in medicine

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Introduction

According to International and European Basic Safety Standards, occupationally exposed workers must have adequate Education and Training (E&T) on Radiation Protection (RP). The establishment of a national strategy for building RP competence through E&T is of crucial importance.

Consequently, international organizations (IAEA, ICRP, EC) issue guidelines for the implementation of RP E&T programmes, specifically in the medical field, where the use of high dose techniques, is continuously increasing (e.g. interventional radiology).

Introduction

The E&T RP programmes include staff initial training and frequent retraining, while the level of knowledge and training provided is highly depending on staff's specialty, experience, tasks and responsibilities.

The involvement of Medical Physics Experts (MPEs) in E&T programmes, is a key element for the implementation of the E&T national strategy in the medical field.

This presentation deals with the national strategy established in Greece, in order to provide safety culture through E&T in the medical field of ionising radiation applications.

Education and training programme

Statutory role of the Greek Atomic Energy Commission (GAEC) in RP E&T

- Provision of training to all occupationally exposed workers through specialised courses
- Evaluation and certification of their competency on RP issues

In Greece, the medical sector covers roughly the 90% of all ionizing radiation applications. Therefore the E&T level on radiation protection of the staff involved in these applications is decisive in achieving safety culture in the country.

In this context, E&T courses on RP, are organised regularly by GAEC and implemented in collaboration with academic institutions and locally by the medical physics departments of Universities and big General Hospitals.

Education and training programme

At national level the GAEC:

- ✓ Operates since 1960 the Hospital Physicists' post graduate School. From 1994 is a participant and a major contributor to the Inter-University Post-Graduate Course on Medical Radiation Physics, aiming at specialised training of Physicists in Medical - Radiation Physics. The GAEC invests on production of MPEs, as they will also act as trainers in the field of RP in medicine
- ✓ Provides RP courses addressed to medical doctors, physicists and technologists.
- ✓ Curricula have been developed, for various categories of exposed medical workers (e.g. technologists, interventional cardiologists)



Inter - University Postgraduate Course on Medical Physics and Radiation Physics



Participating institutes :

- University of Athens,
- University of Ioannina,
- University of Thessaloniki,
- University of Crete and
- University of Thrace and also
- GAEC and
- NCSR "Demokritos"



The Course is attended by about 10 to 15 physicists.

The acceptance procedure includes written examinations and personal interviews.
The Course duration is five semesters.

The theoretical and practical training of students takes place in the premises of GAEC and the Medical Faculty of Athens University. Part of practical training is also performed at NCSR "Demokritos" and hospitals located in Athens region.

Quality Assurance System in force

The principal goal

Provision of highly qualified Medical Physicists according to the national needs.

Medical Physicists should be capable of acting as

Medical Physics Experts in the field of medical exposures according to MED 97/43 Euratom Directive.

Qualified Experts according to the BSS 96/29 Euratom Directive, in fields of medical and in other than medical applications after specialized training or experience

Inter - University Postgraduate Course on Medical and Radiation Physics



| Semester | Topic |
|-----------------------------------|---|
| 1 st | Fundamental topics in Medicine, Mathematics, Medical and Nuclear/Radiation Physics |
| 2 nd | Specialised topics on Medical Radiation Physics (<i>Radiobiology, Radiation Dosimetry, Nuclear Medicine, Radiodiagnosis, Radiotherapy, Radiation Protection, Non – Ionising Radiation applications in Medicine, Environmental Radioactivity and Nuclear Reactors</i>) |
| 3 rd & 4 th | On the job training at University Hospitals in issues concerning physics of radiotherapy, radiology, nuclear medicine and radiation protection |
| 5 th | Research work and preparation of diploma thesis |

MSc in Medical Radiation Physics

Professional license of Medical Radiation Physicist

Education and training programme

An intensive series of 3-days RP refreshing courses for radiological technologists has already been started since February 2010 organized by GAEC and its collaborating institutions. So far, 25 courses were held in 7 big cities of Greece attended by 1285 technologists .

The main elements of the curriculum are:

- Basic concepts of nuclear physics
- Principles of radiation detection and measurement
- Dosimetric quantities and units
- Biological effects of ionizing radiation
- Principles of radiation protection
- Radiation protection of workers, patients and public in radiology, nuclear medicine & radiotherapy

The broadening of continuing training to other exposed workers involved in medical applications is included in the GAEC's action plan.

Education and training programme

Regional/International level:

GAEC is the European Regional Centre of the International Atomic Energy Agency (IAEA) in the English language in the field of radiation protection and safety of radiation sources since 2003, as well as in nuclear/radiological security since 2005.

- ✓ Hosts the Postgraduate Educational Course on Radiation Protection and the Safety of Radiation Sources, which includes an extensive module on radiation protection in medicine. The purpose of the course is to meet the educational and initial training requirements of graduate level staff who intent to act as Qualified Experts (QE).
- ✓ Organizes international seminars in specialised fields of radiation protection
- ✓ Offers on the job training to scientists proposed by the IAEA, in issues of radiation protection, such as regulatory control, dosimetry, calibration of ionizing radiation equipment and environmental radioactivity



Conclusion

- The establishment of the national E&T programme in Greece, is one of the mechanisms for building competence on RP in medicine.
- The provision of regular training courses and knowledge dissemination on the new techniques, methodologies and RP issues addressed to the medical staff is a key element to ensure expertise in the field of RP and achieving safety culture in the country.
- The GAEC, participating in the Inter-University Post-Graduate Course on Medical Radiation Physics, invests on building competence on RP, as MPEs will also act as trainers in the field of RP in medicine