EUTERP Workshop
Radiation protection training in Europe – the next steps

The new BSS definitions of the Radiation Protection Professions and their effect on the Greek Legislation

I. Kantemiris[1], C. Pafilis[1], V. Kamenopoulou[1] and P. Dimitriou[1,2]

1. Greek Atomic Energy Commission
2. Medical Physics Dep. Medical School, University of Athens

Ayia Napa, Cyprus
March 28-30, 2011

http://www.gaec.gr

Contents

- Provisions for the radiation protection professionals in National Radiation Protection Regulations (NRPR)
- New RPE & RPO definitions
- Comparison with the proposed EC BSS definitions for RPEs
- Future implementation of RPE & RPO in Greece
- ECVET system

National Radiation Protection Regulations (NRPR)

"All scientific, technical and ancillary staff participating in any activity which involves danger from ionising radiation must be suitably trained and contribute to the implementation of the Radiation Protection Regulations"

National Radiation Protection Regulations (NRPR)

Statutory role of GAEC in E&T

- Provision of training to all occupationally exposed workers through specialized courses
- Evaluation and certification of their competency on radiation protection issues

Recognition of their competency, according to the relative European and International Standards.

Evaluation of the suitability of the syllabi on radiation protection provided by educational institutions

National Radiation Protection Regulations (NRPR)

Greece has based its legislative radiation protection framework on the BSS 96/29 and MED 97/43 EC Directives.

Therefore has adopted the definitions of the Qualified Expert (QE) and Medical Physics Expert (MPE) as provided in these Directives.

National Radiation Protection Regulations (NRPR)

A graded approach to defining the radiation protection functions is used in the NRPR

Different staffing requirements for the different types of operation licences.

The functions and qualifications of the QEs, MPEs and the Safe Source Officers (SSOs) are clearly defined in the NRPR. Different levels of the QEs and SSOs are provided depending on the type of operation license issued.

National Radiation Protection Regulations (NRPR)

- Medical Physics Experts
- Qualified Experts
- Safe Source Officers
- Specialized Radiation Protection Adviser
- Radiation Protection Program Adviser

National Radiation Protection Regulations (NRPR)

Medical Physics Experts

- Responsible for supervising the radiation protection programs and carrying out the required corresponding tasks in medical applications.

- Professionals who hold the relevant certificate granted by the Ministry of Health and Welfare after succeeding in the required examinations (MSc +1y On the Job Training (OJT))
- All MPs are considered as MPEs until now
- MPEs are recognized and are trained to act as QEs in the medical field
- MPEs can act as QEs in non-medical field, after specialized training, if their qualifications satisfy the relative criteria imposed by GAEC

National Radiation Protection Regulations (NRPR)

Responsibilities of MPE (Directive 97/43)

"Acts or gives advice on patient dosimetry, on the development and use of complex techniques and equipment, on optimization, on quality assurance, including quality control, and on other matters relating to radiation protection"

National Radiation Protection Regulations (NRPR)

Qualified Expert

- Responsible for supervising the radiation protection program and carrying out the required corresponding tasks in industrial & research applications.

- Graduates of applied sciences with postgraduate theoretical and practical training or many years experience in radiation protection.
- Responsible for radiological protection in nuclear reactors, particle accelerators, radiation generation equipment, the safe use of radioactive substances and the operation of equipment producing ionising radiation.

Safe Source Officer

In non-medical applications performs the same functions as the RPO (defined in the new proposals).

Graduate in applied sciences or a radiographer (holding a Level II degree + experience) or a suitably trained person as defined by the GAEC following submission of an application and a personal interview which may include a written and / or oral examination. Approval shall be given for a specific objective, a specific course, laboratory and activity.

Specialised Radiation Protection Adviser

is a person that holds a degree in applied or biological sciences with specialisation in radiation protection and relative postgraduate studies. Postgraduate experience of at least ten years shall be required in one of the various fields of radiation protection, as well as a high scientific standard and a general overview of the subject.

National Radiation Protection Regulations (NRPR)

Radiation protection programme adviser.

Physicist licenced to exercise the profession of medical physics expert or radiation protection officer for non-medical applications, with many years' successful practice, scientific experience and broader experience in matters related to radiation protection.

The radiation protection programme adviser may coordinate the radiation protection measures taken by many medical physics experts or radiation protection officers employed in the same or neighbouring institutes; he shall be responsible to the GAEC for radiation protection in connection with these centres.

New RPE & RPO definitions

- Radiation Protection Expert (RPE):

  An individual having the knowledge, training and experience needed to give radiation protection advice in order to ensure effective protection of individuals, whose capacity to act is recognized by the competent authorities.

- Radiation Protection Officer (RPO):

  An individual technically competent in radiation protection matters relevant for a given type of practice who is designated by the undertaking to oversee the implementation of the radiation protection arrangements of the undertaking.

Comparison with the Proposed EU BSS Definitions for RPEs

RPE role

Radiation protection advice in order to ensure effective protection of individuals, to the employer and the users of radiation

QE role

Twin role (advisory & acting)

- Carry out physical, technical or radiochemical tests enabling doses to be assessed
- Advice in order to ensure effective protection of individuals

According to the present RPR, the RPE definition is applicable only in the non-medical applications of ionizing radiation

RPE… in practice

Medical applications

MPE could be appointed as RPE

Industrial applications

- Graded approach (RPE mandatory or RPO sufficient)
- MPE could be appointed as RPE (additional specialized training or experience)
- RPE with (e.g.) a degree in applied science + Postgraduate Education Course (PGEC) (IAEA + GAEC) + OJT/experience

RPO… in practice

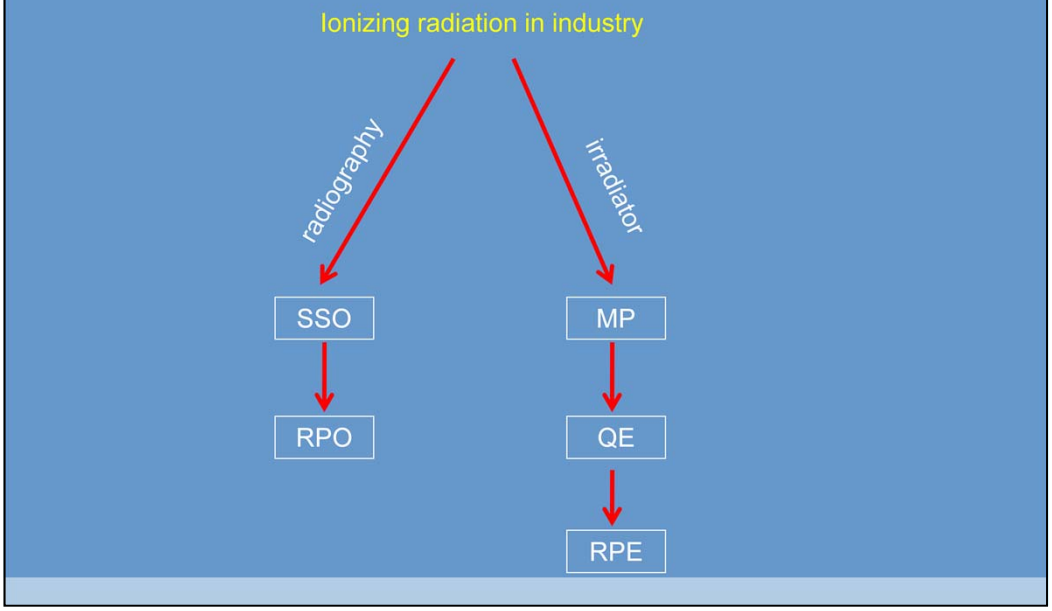
Medical applications

No provisions in the NRPR for RPO until now.

Industrial applications

There are provisions for RPO in the NRPR for the industrial section only, defined as SSO.

Changes to be introduced in the national legislation



Changes to be introduced in the national legislation

Ionizing radiation in medical field

MP → (experience+specialization) → MPE + RPE

MP → RPO

Others ??? → RPO

ECVET system

European Credit (Transfer) System for Vocational Education and Training (ECVET).

The objective of ECVET is to facilitate the ***transfer, recognition and accumulation of assessed learning outcomes*** *of individuals who are aiming to achieve a qualification.*

RP professions in EU

Different needs in radiation protection issues within EU countries leads to the definition of different standards in RP professions.

e.g. based on Wikipedia, France has 20 nuclear power plants in use (+7 power plants which are in the decommissioning process) & 3 installations for research, while Greece has only 1 nuclear installation for research → France & Greece have different needs in RP professions.

ECVET & RP professions in EU

ECVET system could be a useful tool for harmonization, through the definition and establishment of common standards among EU countries, in accordance with individual needs.

e.g. RPE:

- bachelor in physics or in engineering
- MSc in relative field to radiation protection
- ?y On the Job Training in general applications
- ?y On the Job Training in nuclear power plants or in medical field, depending on the RPE's field

ECVET & Greece

Start at 2012 voluntary

- Applied only in a few MSc courses e.g.
  - Medical Physics course (90 credit units)
  - PGEC (efforts in collaboration with universities to recognize PGEC's units as MSc based on IAEA Training Course Series 18)

ECVET & Greece

Medical Physics Syllabi (Total 90 Credit Units)

A semester

- Atomic Physics
- Sources
- Interaction of ionizing radiation with matter
- Detection & Measurement
- Statistics, Computing & Imaging process
- Parts of Biology, Anatomy, Physiology & Physics of the body
- Dosimetry
- Biology effects of irradiation

B semester

- Diagnosis & Radiology
- Nuclear Medicine (Diagnosis & Treatment)
- Radiotherapy & Brachytherapy
- Physical Principals & Applications of non-ionizing radiation (MRI, Lasers, Ultrasound)
- Radiation Protection
- Nuclear Technology & Nuclear Protection
- Protection of non-ionizing radiation

C Semester

- MSc thessis

ECVET & Greece

PGEC on Radiation Protection & Safety of Radiation Sources

- ✓review of fundamentals
- ✓quantities and measurements
- ✓biological effects of ionizing radiation
- ✓principles of radiation protection and the international framework
- ✓ regulatory control
- ✓assessment of external and internal exposures
- ✓protection against occupational exposure
- ✓medical exposures in diagnostic radiology, radiotherapy and nuclear medicine
- ✓exposure of the public due to practices
- ✓intervention in situations of chronic and emergency exposure
- ✓training the trainers

Project (similar to MSc thessis) assignment relevant to the above subjects

Shortcomings in RP professions in Greece

- In Greece the medical sector covers the ~90% of the applications of ionizing radiation. The provided number of highly qualified MPEs covers the national needs of RPEs and supports significantly the sustainability of the educational system.

Thank you for your attention

Greek Atomic Energy Commission
P.O Box 60092
Agia Paraskevi 15310

T: +30 210 650 6700
F: +30 210 650 6748
E: info@gaec.gr

www.gaec.gr