Guidelines on Radiation Protection Education and Training of Medical Professionals in the European Union

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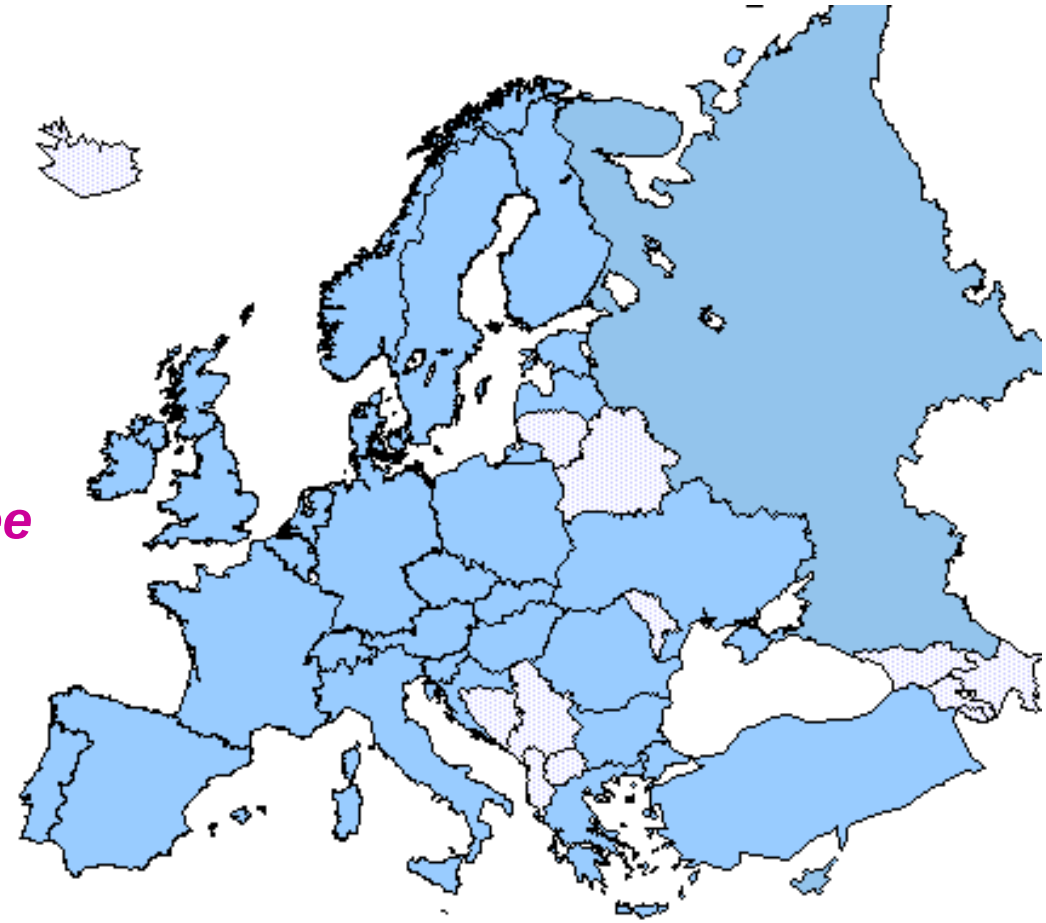

Guidelines on Radiation Protection Education and Training of Medical Professionals in the European Union

OUTLOOK

- Legislative Framework
- EC Radiation Protection Report No. 175
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- Conclusions

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Legislative Framework

Radiation protection education and training starts at the entry level to medical, dental and other healthcare professional schools

The new Euratom Basic Safety Standards Directive (2013/59/Euratom – EU BSS), states in chapter IV, article 18, that:

1. **Member States shall ensure that practitioners and the individuals involved in the practical aspects of medical radiological procedures have adequate education, information and theoretical and practical training for the purpose of medical radiological practices, as well as relevant competence in radiation protection**

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- **Legislative Framework**

2. **Individuals undergoing relevant training programmes may participate in practical aspects of medical radiological procedures as set out in Article 57(2)**

3. **Member States shall ensure that continuing education and training after qualification is provided and, in the special case of the clinical use of new techniques, training is provided on these techniques and the relevant radiation protection requirements**

4. **Member States shall encourage the introduction of a course on radiation protection in the basic curriculum of medical and dental schools**

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- **EC Radiation Protection Report No. 175**

In January 2014, the European Commission published Radiation Protection Report 175 "Guidelines on Radiation Protection Education and Training of Medical Professionals in the European Union" (RP 175)

https://ec.europa.eu/energy/sites/ener/files/documents/175.pdf

These guidelines are an update of Radiation Protection Report 116, and takes into account the recent technological advances, the education and training requirements of the EU BSS, the European Qualifications Framework and includes requirements for new specialists using ionising radiation

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These guidelines have been divided into sections according to the roles of the healthcare professionals in question, and each section includes, in table format, Learning Outcomes (LOs) in terms of Knowledge, Skills and Competence (KSC)

Recommendations are also made as to the European Qualifications Framework (EQF) level in radiation protection needed on entry to the particular profession and the type of Continuous Professional Development (CPD) in radiation protection required for the particular profession

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The guidelines include a section on the basic learning outcomes that all healthcare professionals should have

This is followed by a section with additional learning outcomes for each of the following healthcare professionals:

a) **Referrers**

b) **Physicians directly involved with the use of radiation:**

I. **Diagnostic radiologists**
II. **Interventional Radiologists**
III. **Non-radiological specialists employing ionising radiation in interventional techniques**
IV. **Nuclear Medicine specialists**
V. **Radiation oncologists**

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c) Dentists/dental surgeons

d) Radiographers

e) Medical physicists/Medical Physics Experts

f) Nurses and other healthcare workers not directly involved in the use of ionising radiation

g. Maintenance engineers and maintenance technicians

Following the above sections, the guidelines include a section on accreditation, certification and recognition of medical education and training in radiation protection, and a section on education and training resources

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Table 2.2: Core learning outcomes in radiation protection for the healthcare professions

	Knowledge (facts, principles, theories, practices)	Skills (cognitive and practical)	Competence (responsibility and autonomy)
Core radiation protection	K1. Describe and explain atomic structure K2. Describe the nuclear structure and explain the laws of radioactive decay K3. List and explain the fundamental radiological quantities and units K4. Describe the physical characteristics of X-ray systems K5. Explain the fundamentals of radiation detection K6. Explain the fundamentals of radiobiology and the biological effects of radiation K7. Explain the relation between effective dose and the risk of cancer and hereditary diseases K8. Explain the differences between deterministic and stochastic effects and their respective dose ranges K9. Describe the general principles of radiation protection K10. Explain the 'linear no-threshold' (LNT) hypothesis K11. List and explain radiation protection aspects with respect to patients K12. List and explain radiation protection aspects with respect to staff K13. List typical doses from diagnostic procedures K14. Explain the risks to the foetus from exposure to ionising radiation K15. Understand the principles of QC and QA with respect to radiation protection K16. List the regulations and international standards relevant to radiation protection in the healthcare setting K17. Understand the concepts of justification and optimisation K18. Explain accidental/unintended exposures	S1. Apply radiation protection measures in daily practice S2. Communicate the most important factors that influence staff doses S3. Compare reported doses from medical procedures to doses from natural sources S4. Interpret radiation risks in the context of other risks in daily life S5. Identify the legal radiation protection obligations in daily practice	C1. Implement the national radiation protection regulatory requirements in daily practice

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Table 9.1: Additional learning outcomes in radiation protection for maintenance engineers and maintenance technicians

	Knowledge (facts, principles, theories, practices)	Skills (cognitive and practical)	Competence (responsibility and autonomy)
Radiation protection	K1. Explain the basic physical principles of radiation generation, interaction with matter and modification K2. Explain occupational risks, health and safety that may be encountered and associated protection measures K3. Explain basic principles of shielding and its relation to minimising occupational risks K4. Describe the equipment handover procedure	S1. Apply the basic principles of preventing unnecessary exposure (time, distance, shielding) in their practice S2. Apply the equipment handover procedure	C1. Take responsibility for recognition of the radiation hazards associated with one's work and take measures to minimise them C2. Recognise the limits of one's own knowledge on radiation protection and seek advice from the RPE C3. Coordinate the equipment hand over procedure

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RP 175 was prepared by a consortium led by the European Society of Radiology (ESR) (under the name MEDRAPET) and consisted of:

- **European Federation of Radiographer Societies (EFRS)**
- **European Federation of Organisations for Medical Physics (EFOMP)**
- **European Society for Therapeutic Radiology and Oncology (ESTRO)**
- **European Association of Nuclear Medicine (EANM)**
- **Cardiovascular and Interventional Radiological Society of Europe (CIRSE)**

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The above organisations as well as the European Training and Education in Radiation Protection (EUTERP) Foundation and the European Society of Vascular Surgeons (ESVS) have officially endorsed RP 175

It is also acknowledged that during the MEDRAPET workshop that was held in Athens, Greece between the 21st and 23rd of April 2012, a great deal of constructive feedback was received from a wide range of participants, including regulators, representatives of professional societies, equipment manufacturers' associations and individuals

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Next Steps

At the multi-stakeholder meeting on justification of individual exposures, organised by HERCA (Heads of the European Radiological protection Competent Authorities), in Brussels, Belgium on the 26th of September 2014, EFOMP has made a number of commitments, one of which is:

"*To develop and deliver courses, based on the European Commission Radiation Protection Report 175, using modern methods of course delivery such as e-learning and learning by hands-on experience, for the education and training in radiation protection of the involved healthcare professionals*".

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Next Steps

Currently, EFOMP, through its Projects Committee, is seeking partners and appropriate European Union funding opportunities to initiate a project to develop and deliver such courses

A possible funding opportunity could be under the ERASMUS + programme, Key action 2: Cooperation for innovation and the exchange of good practices, Sector Skills Alliances

If you are interested in collaborating in this project then please express your interest to the Chairperson of the EFOMP Project Committee (projectscommittee@efomp.org), copy to the Chairperson of the EFOMP Professional Matters Committee (professionalmatterscommittee@efomp.org)

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Conclusions

RP 175 recommends LOs on Radiation Protection for Healthcare Professionals working directly or indirectly with ionising radiation

EFOMP is committed to develop and deliver courses based on the recommendations of RP 175, through the utilisation of European Union funding opportunities

Interested organisations that want to collaborate in this project, please express your interest to the Chairperson of the EFOMP Project Committee (projectscommittee@efomp.org), copy to the Chairperson of the EFOMP Professional Matters Committee (professionalmatterscommittee@efomp.org)