

# Statement of Collaboration between IOMP and IRPA on the Use of Ionizing Radiation in Health Care

## 1. INTRODUCTION

In 2010 the International Organization for Medical Physics (IOMP) and the International Radiation Protection Association (IRPA) signed a Memorandum of Understanding as a platform for further joint actions. IOMP and IRPA believe that, whilst each has its specific contributions to the use of radiation in healthcare, collaboration between the two organizations will contribute to the overall joint goal of the safe use of radiation in healthcare without compromising on quality of care.

## 2. OBJECTIVES

This document refers to the following areas of collaboration:

- a) Develop Guidance for Fostering and Enhancing Radiation Protection Culture in Health Care
- b) Fostering Medical Physics in Developing Countries

## 3. GENERAL REMARK: RADIATION PROTECTION IN HEALTH FACILITIES

In September 2011, the IAEA Board of Governors approved a new document, Safety Requirements: "Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards", (widely referred to as the BSS). The new BSS has been published as 'General Safety Requirements Part 3 (Interim)' in the IAEA Safety Standards Series. This Interim Edition has been submitted to the other potential sponsoring organizations for their approval. Following their decisions on its approval, it will be issued as a jointly sponsored standard. It will replace the 1996 version of the *International Basic Safety Standards for the Protection against Ionizing Radiation and for the Safety of Radiation Sources* (BSS) [IAEA Safety series 115].

The objectives of the collaboration between IOMP and IRPA are based on the terminology and the responsibilities of health professionals as described in the new BSS.

With regard to the above objectives the BSS defines the following persons having functions or responsibilities in radiation protection in a clinical environment:

### Medical Physicist (MP):

*'A health professional, with education and specialist training in the concepts and techniques of applying physics in medicine, competent to practice independently in one or more of the subfields (specialties) of medical physics'*  
This definition is the equivalent to the IOMP definition of a medical physicist working in a clinical environment (IOMP Policy Statement 1)<sup>1</sup>

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<sup>1</sup> IOMP Policy Statement 1 "The Medical Physicist: Role and Responsibilities"

**Radiation Protection Officer (RPO):**

*'A person technically competent in radiation protection matters relevant for a given type of practice who is designated by the registrant, licensee or employer to oversee the application of relevant requirements'.*

The range and complexity of tasks requiring the involvement of an RPO varies and so a wide range of persons come under the generic classification 'RPO'. Where the duty involved is limited in scope then professionals other than medical physicists or health physicists<sup>2</sup> may undertake the duties of the RPO (the term Radiation Protection Supervisor is sometimes used for this category).

**Qualified Expert (QE):**

*'An individual who, by virtue of certification by appropriate boards or societies, professional licences or academic qualifications and experience, is duly recognized as having expertise in a relevant field of specialization, e.g. medical physics, radiation protection, occupational health, fire safety, quality management or any relevant engineering or safety specialty.'*

- a) The **Qualified Expert in Medical Physics** corresponds to the Certified Medical Physicist (CMP) as described in the Policy Statement 2 of the IOMP<sup>3</sup>. This document addresses the education and professional training requirements, and the professional certification. In particular, the need for appropriate education and training for every subfield of medical physics, including Medical Health Physics (Radiation Protection in Medicine), is emphasized.  
Another term equivalent to the Qualified Expert in Medical Physics, is the *Medical Physics Expert* (MPE) as it is used in the draft EU-BSS<sup>4</sup>.
- b) For the **Qualified Expert in Radiation Protection** the term "Radiation Protection Expert (RPE)" is widely used<sup>5</sup> (another term used is Radiation Protection Adviser). Compared to the RPO the RPE covers a much broader range of responsibilities, including giving advice. The IRPA has defined an RPE as:

*'1. An RPE is a person having education and/or experience equivalent to a graduate or masters degree from an accredited college or university in radiation protection, radiation safety, biology, chemistry, engineering, physics or a closely related physical or biological science; and  
2. who has acquired competence in radiation protection, by virtue of special studies, training and practical experience. Such special studies and training must have been sufficient in the above sciences to provide the understanding,*

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<sup>2</sup> Health physicist by definition is a professional in charge of the radiation protection aspects of an activity that involves the use of radiation sources of any kind. Medical Health Physicists (MHP) are health physicists working in a medical institution. MP and MHP have overlapping responsibilities except patient care which is the sole responsibility of MP. Medical health physics is a subfield of medical physics.

<sup>3</sup> IOMP Policy Statement 2 "Basic Requirements for Education and Training of Medical Physicists"

<sup>4</sup> Draft Euratom Basic Safety Standards Directive, 2010

<sup>5</sup> See ILO's International Standard Classification of Occupations (ISCO) which includes a Unit Group in which the RPE is given as an example of registered occupations  
<http://www.ilo.org/public/english/bureau/stat/isco/isco08/index.htm>

*ability and competency to*

- anticipate and recognize the interactions of radiation with matter and to understand the effects of radiation on people, animals and the environment;*
- evaluate, on the basis of training and experience and with the aid of quantitative measurement techniques, the magnitude of radiological factors in terms of their ability to impair human health and well-being and damage to the environment;*
- develop and implement, on the basis of training and experience, methods to prevent, eliminate, control, or reduce radiation exposure to workers, patients, the public and the environment.*

*3. In most countries the competence of radiation protection experts needs to be recognized by the competent authority in order for these professionals to be eligible to undertake certain defined radiation protection responsibilities. The process of recognition may involve formal certification, accreditation, registration, etc.'*

All MPs working in radiation medicine have training in radiation protection and many act as RPOs in health facilities as part of their duties as MPs. One of the subfields of MPs is 'Medical Health Physics (Radiation Protection in Medicine)' and MPs trained in this specialty are RPEs and undertake the responsibilities of the Qualified Expert in Radiation Protection and those RPO duties requiring a higher level of training and greater experience in radiation protection.

Practices differ within and between countries, however in most health facilities all radiation protection services and advice are provided by MPs, whilst in some situations both RPEs, who are health physicists but not MPs, and MPs are involved.

The competence required to carry out a particular RPO or QE role in health care facilities is exactly the same whether undertaken by a MP or a health physicist.

## **4. FOSTERING AND ENHANCING RADIATION PROTECTION CULTURE IN HEALTH CARE**

### **4.1 Background**

IRPA is currently engaged in an initiative to develop guidance for radiation protection professionals to foster and enhance a culture of radiation protection in their workplace among their management and co-workers. This initiative has particular importance in health care for the protection of patients as well as staff in health care facilities. It is crucial to the success of this effort to engage the participation of MPs in developing guidance specifically applicable to health care.<sup>6</sup>

Technology development in diagnostic radiology, interventional fluoroscopy, nuclear medicine and radiation therapy has introduced new challenges for radiation protection of patients and staff. The need for radiation protection services is especially critical in developing countries. A particular issue is the scarcity of MPs, RPOs and RPEs in the

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<sup>6</sup>As part of the management system in a health care organization the BSS demands a *safety culture* which may be considered equivalent to the term *radiation protection culture*. The definition reads: *The assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance.*

health care field. There is a need for health care management to recognize and understand the need for radiation protection for patients, staff and the public in connection with the use of radiation devices and radioactive materials in the context of excellent health care. Health care providers, physicians, nurses, medical physicists and radiological technologists must all be appropriately educated and informed in the principles of radiation protection.

This requires a commitment for funding and support for adequate Medical Physics and Radiation Protection staff. This commitment and support can be enhanced by fostering a Radiation Protection Culture in the health care institution.

The health care practitioners themselves, doctors, nurses and other medical staff must realize the importance of good radiation protection practice in their daily work activities. Thus, it is important to foster and enhance a culture of radiation protection among all those involved in providing medical radiological services.

#### **4.2 Proposed Collaboration to foster and enhance radiation protection in healthcare**

IRPA and IOMP, working with other relevant organizations, should take the following actions directed at producing guidance for radiation protection and medical physics professionals:

**4.2.1 Workshops:** Conduct workshops as needed involving IRPA and IOMP members and appropriate stakeholders to determine the elements for a definition of RP culture, elements or traits of such a culture, the criteria for assessing the success of the effort, the assessment tools to be used, methods for engaging stakeholders, and the role of radiation protection and medical physics professionals.

**4.2.2 Develop and conduct a plan of work:** Engage a working group of radiation protection and medical physics practitioners in drafting a discussion document covering the topic as detailed in 4.2.1 above and the implementation of the new BSS in health care facilities. Make the document available to the IRPA and IOMP membership for comment and discussion and feed back the results of the discussions to the working group.

**4.2.3 Immediate Goals:** Produce a draft document for discussion at the IRPA13 Congress in Glasgow, May 2012. Follow this with another workshop on Radiation Protection Culture before the end of 2012, the objective of which will be to present and discuss the first draft of the IRPA Guiding Principles on Radiation Protection Culture.

**4.2.4 Outcome:** Refine the document to produce guidance for radiation protection and medical physics professionals in fostering and enhancing a culture of radiation protection in the health care setting in which they work.

### **5. FOSTERING MEDICAL PHYSICS IN DEVELOPING COUNTRIES**

#### **5.1 Background**

In low and medium income countries there is a general lack of medical physics and radiation protection services in support of health care services. There should be increased awareness of medical physics by governments and health authorities due to the increasing significance of cancer in developing countries and the development of imaging.

MPs by virtue of their education and professional training are key players in radiation medicine, particularly in radiation treatment of cancer patients (e.g. imaging, dosimetry, treatment equipment, QA, treatment planning, treatment delivery methods, uncertainty analysis, radiation protection, and related activities).

The highest relevance of radiation protection in developing countries relates to the medical application of ionizing radiation in cancer management<sup>7</sup>. All health facilities using ionizing radiation require the services of MPs and these MPs can, with appropriate training and experience, undertake all the required RPO's roles. Hence, all organizations involved in the radiation protection in developing countries should form an alliance to promote the profession of medical physics.

## **5.2 Proposed Collaboration to Foster Medical Physics in Developing Countries**

IRPA and IOMP, working with other relevant organizations, should take the following actions:

**5.2.1 Guidance.** Issue joint guidance and recommendations, on the implementation of the revised BSS with respect to health care and health facilities, including the respective roles, as defined in the revised BSS, of the MP and RPO in health facilities.

**5.2.2 Professional Standards.** Pursue with all relevant authorities the implementation of schemes for the education, professional training, certification and State approved registration of medical physicists to undertake the roles of MP and RPO in healthcare as required in the BSS.

**5.2.3 Training.** Develop a plan to co-ordinate and undertake joint training courses and programmes in radiation protection in healthcare which ensure that all MPs when being involved in radiation protection against public or occupational exposures have appropriate radiation protection training and expertise

**5.2.4. Role of Medical Physicists and Radiation Protection Officers.** In agreement with the international standards promote the role of the MPs and RPOs in radiation protection to governments, health authorities and hospitals. Ensure that all relevant health care facilities have proper access to competent MPs and RPOs.

**5.2.5 Co-operative International Network.** IRPA to support the IOMP in the creation and development of a cooperative network (Hospital, University, Manufacturers, international organizations such as IAEA, WHO,...) at major radiotherapy reference sites in each developing country:

- To establish training programs for professional training of MPs.
- To establish a system of professional certification of MPs. IOMP is taking a leading role in establishing an international medical physics

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<sup>7</sup> Even in the developing regions of the world combating cancer is gaining increasing attention and challenges the health care systems:

- More than 10 million new cancer patients annually are observed
- More than 50% of cancer patients benefit from radiotherapy (Cure & Palliation)
- In 50% of cured cancer patients radiotherapy is involved.
- 70% of all cancer deaths are from LMI countries.

certification board to develop a certification system that can be implemented globally. IRPA will collaborate in relation to competence in radiation protection.

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