

The Encyclopaedia of Medical Physics II Edition: The update of Radiation Protection Terms field

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Abstract: The paper describes briefly the update of the Medical Physics Thesaurus of terms and the related update of Radiation Protection Terms field of the Encyclopaedia of Medical Physics II Edition (published 2021).

Keywords – Medical Physics Encyclopaedia, Medical Physics Education, Medical Physics resources, Radiation Protection, Ionizing Radiation, Non-Ionizing Radiation.

I. INTRODUCTION

The Encyclopaedia of Medical Physics development and its update took over 20 years. The articles of the Encyclopaedia I Edition (published by CRC Press in 2013 [1]) were based on the Medical Physics Thesaurus of terms, developed in 2003 and updated in 2008. An additional minor update of the full Thesaurus was made in 2011. The Encyclopaedia Edition I included over 2800 articles explaining the foundation terms in medical physics. Some of those terms were General terms, supporting medical physics knowledge. Edition I was published by CRC Press (in paper) as a two-volume set and uploaded (together with the Scientific Dictionary of Medical Physics Terms in 32 languages) on the dedicated website www.emitel2.eu as a free reference and educational resource.

During the following 10 years materials for the Thesaurus update were collected and a major update was made in the period 2019-2020. This update included about 650 new terms plus additional diagrams, tables and other information. The Encyclopaedia II Edition is listed alphabetically, but it has specific parts (fields), managed by different teams, as per the narrow specialty of the contributors. These fields are on Physics of: Diagnostic Radiology; Radiotherapy; Nuclear Medicine; Ultrasound Imaging; Magnetic Resonance Imaging; Radiation Protection; Non-ionising radiation protection; General terms (including Management). This new II Edition of the Encyclopaedia of Medical Physics was printed and published by CRC Press in 2021 [2]. The materials from the update were uploaded at the same website: www.emitel2.eu

II. RADIATION PROTECTION TERMS UPDATE

This paper describes briefly the nature of the update and the new Radiation Protection terms of the Encyclopaedia. The initial Thesaurus of Diagnostic Radiology terms (from

2003) included Radiation Protection terms related to various aspects of healthcare and medical physics, both in the field of ionizing and non-ionizing radiation.

Most of the Radiation Protection terms from ionizing radiation were covered in Edition I. Some additional terms with focus on non-ionizing radiation and organizations aspects related to radiation protection were added in Edition II.

A key aspect related to the Radiation Protection group of terms is that quite often they are shared between two or more groups which proves their importance for medical physics and healthcare.

Fig. 1 presents the standard style of such term. In most of the cases they include primarily text information, certain numbers and formulas, and of external references.

The Ionizing Radiation terms included topics covering the various aspects of application of ionizing radiation in healthcare – diagnostics and treatment, as well as medical physicists responsibility. Special attention is paid to the protection of patients and staff. References to international guidance are also included in the form of links and further reading.

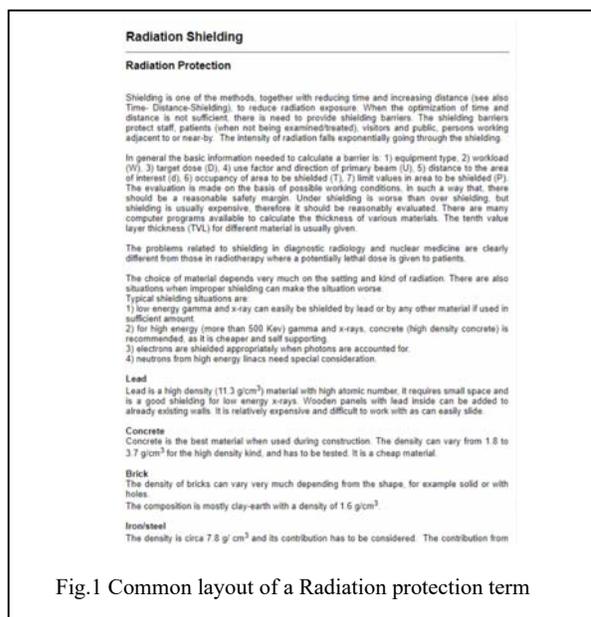


Fig.1 Common layout of a Radiation protection term

The Non-Ionizing Radiation terms section was expanded in the second edition of the encyclopedia to cover some of the most recent aspects related to the application of non-ionizing radiation in medical diagnostics and treatment. Many images, tables and diagrams are included with educational purpose (Fig.2). And again medical physicists responsibility, protection of patients and staff are on focus. References to international guidance are also included in the form of links and further reading.

The terms related to the organizational aspects of radiation protection primarily refer to organizations working in the field, guidance and legislation, events.

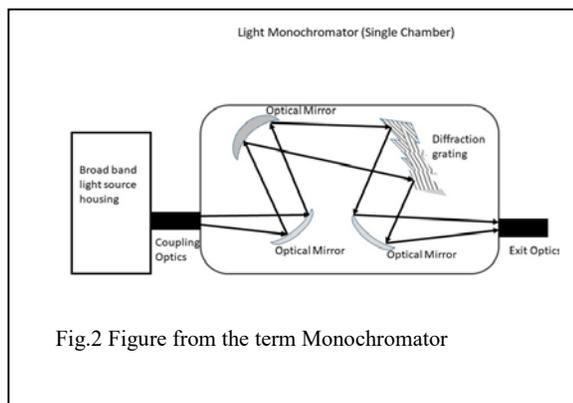


Fig.2 Figure from the term Monochromator

III. CONCLUSION

The update of the field with Radiation Protection terms (some related to other fields) included about 130 new articles. These were managed by the Coordinators of the Working Group on Radiation Protection Terms: Magdalena Stoeva and Jim Thurston. Non-ionising Radiation Safety Working Group Coordinators were: Fiammetta Fedele and Elizabeth Chaloner.

The update covered the contemporary aspects of radiation protection and included a lot of updates of existing articles. The Editorial Board shall be grateful to information from our colleagues about new methods and equipment to be included in the III Edition of the Encyclopaedia (expected around 2031).

ACKNOWLEDGEMENTS

We gratefully acknowledge the contribution of so many colleagues from various countries to the update of the Encyclopaedia of Medical Physics – these are listed with Index 2 in the previous paper about the Encyclopaedia update [3]. Most active in II edition (Radiation Protection) were: J Thurston, A Amin, F Milano, P Bregant, S Mehta, S Tabakov, K Matsubara.

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