Irish Standard
I.S. EN ISO 15382:2017

Radiological protection - Procedures for monitoring the dose to the lens of the eye, the skin and the extremities (ISO 15382:2015)

I.S. EN ISO 15382:2017

Incorporating amendments/corrigenda/National Annexes issued since publication:

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National Foreword

I.S. EN ISO 15382:2017 is the adopted Irish version of the European Document EN ISO 15382:2017, Radiological protection - Procedures for monitoring the dose to the lens of the eye, the skin and the extremities (ISO 15382:2015)

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 15382

October 2017

ICS 13.280

English Version

Radiological protection - Procedures for monitoring the dose to the lens of the eye, the skin and the extremities (ISO 15382:2015)

Radioprotection - Procédures pour la surveillance des doses au cristallin, à la peau et aux extrémités (ISO 15382:2015)

Strahlenschutz - Verfahren für die Überwachung der Dosis von Augenlinse, Haut und Extremitäten (ISO 15382:2015)

This European Standard was approved by CEN on 13 September 2017.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

The text of ISO 15382:2015 has been prepared by Technical Committee ISO/TC 85 “Nuclear energy, nuclear technologies, and radiological protection” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 15382:2017 by Technical Committee CEN/TC 430 “Nuclear energy, nuclear technologies, and radiological protection” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2018, and conflicting national standards shall be withdrawn at the latest by April 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 15382:2015 has been approved by CEN as EN ISO 15382:2017 without any modification.

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I.S. EN ISO 15382:2017

INTERNATIONAL STANDARD

ISO 15382

Second edition
2015-12-01

Radiological protection — Procedures for monitoring the dose to the lens of the eye, the skin and the extremities

Radioprotection — Procédures pour la surveillance des doses au cristallin, à la peau et aux extrémités

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 85, *Nuclear energy, nuclear technologies and radiological protection*, Subcommittee SC 2, *Radiological protection*.

This second edition cancels and replaces the first edition (ISO 15382:2002), which has been technically revised. The main changes are the addition of procedures for monitoring the dose to the lens of the eye.

Introduction

The human body has to be protected from effects of ionizing radiation. The stochastic effects are covered by the limit on the effective dose while tissue reactions (deterministic effects) are covered by the dose limits for specific organs. The human skin has to be protected from tissue reactions, like erythema and ulceration. For the lens of the eye, there is the risk of radiation induced opacities and cataract at elevated exposures. To protect the skin of the whole body, the extremities, and the lens of the eye, separate dose limits are recommended by the International Commission on Radiological Protection (ICRP). These separate dose limits are needed because, in case of localized exposures, the organ doses to the skin and the lens of the eye could exceed these limits even if the effective doses were lower than the limit.

Specific dosimetry is needed to monitor these doses and to assess compliance with applicable limits. There are some situations where the correct assessment of the exposure of the skin, extremities, and lens of the eye can be important. In the nuclear sector, there can be exposure due to weakly penetrating radiation caused by unshielded open radioactive sources, or by work in glove boxes. These types of exposure can occur, in particular, in connection with contamination. Exposure to weakly penetrating radiation from radioactive noble gases in room air also has to be considered. In the medical field, doses to extremities and doses to the lens of the eye can be important during interventional procedures and in nuclear medicine.

Monitoring the extremities and the lens of the eye is not always straightforward, and many practical problems arise for the application of monitoring in the workplace. As a result, monitoring is often not done as it should be, or not done at all. This International Standard provides guidance on how and when this monitoring should be done, for all the different types of workplace fields.

This International Standard is directed to all who are involved in the dosimetry of the skin, extremities, and the lens of the eye, like for example, radiation protection officers, regulators, workers, dosimetry services, etc.

Radiological protection — Procedures for monitoring the dose to the lens of the eye, the skin and the extremities

1 Scope

This International Standard provides procedures for monitoring the dose to the skin, the extremities, and the lens of the eye. It gives guidance on how to decide if such dosemeters are needed and to ensure that individual monitoring is appropriate to the nature of the exposure, taking practical considerations into account. National regulations, if they exist, provide requirements that need to be followed.

This International Standard specifies procedures for individual monitoring of radiation exposure of the skin, extremities (hands, fingers, wrists, forearms, feet and ankles), and lens of the eye in planned exposure situations. It covers practices which involve a risk of exposure to photons in the range of 8 keV to 10 MeV and electrons and positrons in the range of 60 keV to 10 MeV.

This International Standard gives guidance for the design of a monitoring program to ensure compliance with legal individual dose limits. It refers to the appropriate operational dose quantities, and it gives guidance on the type and frequency of individual monitoring and the type and positioning of the dosemeter. Finally, different approaches to assess and analyse skin, extremity, and lens of the eye doses are given.

It is not in the scope of this International Standard to consider exposure due to alpha or neutron radiation fields.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 18090-1, *Radiological protection — Characteristics of reference pulsed radiation — Part 1: Photon radiation*.

IEC 62387, *Radiation protection instrumentation — Passive integrating dosimetry systems for personal and environmental monitoring of photon and beta radiation*

IEC 60846-1, *Radiation protection instrumentation — Ambient and/or directional dose equivalent (rate) meters and/or monitors for beta, X and gamma radiation — Part 1: Portable workplace and environmental meters and monitors*

IEC 61526, *Radiation protection instrumentation — Measurement of personal dose equivalents Hp(10) and Hp(0,07) for X, gamma, neutron and beta radiations — Direct reading personal dose equivalent meters*

ICRP, 2007. The 2007 Recommendations of the International Commission on Radiological Protection, ICRP Publication 103. Ann. ICRP 37 (2-4)

ICRP, 2010. Conversion Coefficients for Radiological Protection Quantities for External Radiation Exposures, ICRP Publication 116, Ann. ICRP 40(2–5), 2010

ICRP, 2012. ICRP Statement on Tissue Reactions / Early and Late Effects of Radiation in Normal Tissues and Organs – Threshold Doses for Tissue Reactions in a Radiation Protection Context, ICRP Publication 118. Ann. ICRP 41(1/2)

ICRU, 2011. Fundamental Quantities and Units for Ionizing Radiation, ICRU Publication 85. J. ICRU 11(1)