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## 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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## Contents

Foreword .....	vi
Introduction .....	vii
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	3
4 Individual monitoring .....	3
4.1 Quantities .....	3
4.2 Dose limits and monitoring levels .....	3
4.3 Monitoring period .....	4
4.4 Extremity, skin and lens of the eye monitoring .....	4
4.5 Uncertainties .....	5
4.6 Characteristics of radiation fields .....	5
5 Assessment of dose levels prior to routine monitoring .....	6
5.1 General .....	6
5.2 Indications from workplace measurements .....	6
5.3 Indications from whole body dosimetry .....	7
5.4 Indications from literature data .....	7
5.5 Indications from simulations .....	7
5.6 Indications from confirmatory measurements .....	8
6 Personal dosimetry .....	8
6.1 Extremity and skin dosimetry .....	8
6.2 Monitoring of the lens of the eye .....	11
7 Interpretation and management of the results .....	13
7.1 Analyses of results .....	13
7.2 Optimization .....	14
7.3 Registration and documentation .....	14
8 Special cases .....	14
8.1 Contamination .....	14
8.2 Estimation of dose from exposure to radioactivity in the air .....	16
8.3 Need to correct estimated doses due to contamination of dosimeters .....	16
Annex A (informative) Technical specifications of dosimeters .....	18
Annex B (informative) Monitoring the dose to the lens of the eye .....	19
Annex C (informative) Special considerations in the medical sector .....	22
Annex D (informative) Special considerations in nuclear power plants and associated fuel cycle facilities .....	23
Bibliography .....	34

Foreword .....	v
Introduction .....	vi
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	2

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4	Individual monitoring	2
4.1	Quantities	2
4.2	Dose limits and monitoring levels	3
4.3	Monitoring period	3
4.4	Extremity, skin and lens of the eye monitoring	3
4.5	Uncertainties	4
4.6	Characteristics of radiation fields	4
5	Assessment of dose levels prior to routine monitoring	5
5.1	General	5
5.2	Indications from workplace measurements	5
5.3	Indications from whole body dosimetry	6
5.4	Indications from literature data	6
5.5	Indications from simulations	6
5.6	Indications from confirmatory measurements	6
6	Personal dosimetry	7
6.1	Extremity and skin dosimetry	7
6.1.1	Locations to monitor	7
6.1.2	Types of dosimeters	7
6.1.3	Technical specifications of dosimeters	8
6.1.4	Application of correction factors	8
6.2	Monitoring of the lens of the eye	9
6.2.1	Locations to monitor	9
6.2.2	Types of dosimeters	10
6.2.3	Technical specifications of dosimeters	10
6.2.4	Application of correction factors	11
7	Interpretation and management of the results	12
7.1	Analyses of results	12
7.2	Optimization (informative)	12
7.3	Registration and documentation	12
8	Special cases	12
8.1	Contamination	12
8.1.1	General	12
8.1.2	Estimation of dose to the skin or the lens of the eye from contamination	13
8.1.3	Estimation of dose to the skin or to the eye lens from discrete particles	13
8.1.4	Estimation of dose to the skin or to the lens of the eye from contamination on protective clothing	14
8.2	Estimation of dose from exposure to radioactivity in the air	14
8.3	Need to correct estimated doses due to contamination of dosimeters	14
Annex A (normative)	Technical specifications of dosimeters	16
Annex B (informative)	Monitoring the dose to the lens of the eye	17
Annex C (informative)	Special considerations in the medical sector	21
C.1	General	21
C.2	References for occupational exposures in interventional procedures	21
C.3	References for occupational exposures in nuclear medicine departments	21
Annex D (informative)	Special considerations in nuclear power plants and associated fuel cycle facilities	22
D.1	General	22
D.2	Effect of protective clothing	22

D.3 — Skin dose calculation .....	24
D.4 — Special considerations for assessment of the dose to the lens of the eye .....	25
D.5 — Monitoring of dose to the lens of the eye in CANDU NPPs .....	28
D.6 — Indirect method for the assessment of the dose to the lens of the eye .....	29
Bibliography .....	31

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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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 85, Nuclear energy, nuclear technologies, and radiological protection, Subcommittee SC 2, Radiological protection.

This third edition cancels and replaces the second edition (ISO 15382:2015), which has been technically revised.

The main changes are as follows:

- addition of neutron radiation;
- reference to up-to-date standards on reference radiation fields;
- clarification and extension of several procedures;
- extension of dosimetry procedures at nuclear power plants including indirect eye lens dosimetry.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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## Introduction

The human body shall be protected from harmful effects of exposure to ionizing radiation, internally and externally. Effective dose limits keep the occurrence of stochastic effects to an “acceptable” level, while protection from tissue reactions (i.e. deterministic effects) is provided by dose limits for specific organs. The human skin shall be protected from external tissue reactions, such as erythema and ulceration. For the lens of the eye, there is the risk of radiation induced 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 equivalent 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 challenging. In the nuclear sector, there can be exposure due to weakly penetrating radiation caused by unshielded unsealed radioactive sources, or by working 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 shall be considered. In the medical field, doses to extremities and doses to the lens of the eye could occur during interventional procedures and in nuclear medicine.

Monitoring the extremities and the lens of the eye is not always straightforward, and many practical problems can arise for the application of monitoring in the workplace, due to issues such as geometry, resulting in an unsuitable monitoring situation. This document provides guidance on how and when this monitoring should be done, for all the different types of workplace fields. This document is directed to all who are involved in the dosimetry of the skin, extremities, and the lens of the eye; for example: radiation protection officers, regulators, workers, dosimetry services, etc.

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