KIIRGUSKAITSE. RADIOAKTIIVSE MATERJALIGA SISEMISE SAASTUMISE OHUGA TÖÖALASELT KOKKU PUUTUVATE TÖÖTAJATE SEIRE

Radiation protection - Monitoring of workers occupationally exposed to a risk of internal contamination with radioactive material (ISO 20553:2006)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 20553:2017 sisaldab Euroopa standardi EN ISO 20553:2017 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 20553:2017 consists of the English text of the European standard EN ISO 20553:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 11.10.2017.	Date of Availability of the European standard is 11.10.2017.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 13.280

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 20553

October 2017

ICS 13.280

English Version

Radiation protection - Monitoring of workers occupationally exposed to a risk of internal contamination with radioactive material (ISO 20553:2006)

Radioprotection - Surveillance professionnelle des travailleurs exposés à un risque de contamination interne par des matériaux radioactifs (ISO 20553:2006)

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

Ref. No. EN ISO 20553:2017 E

European foreword

The text of ISO 20553:2006 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 20553:2017 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.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 20553:2006 has been approved by CEN as EN ISO 20553:2017 without any modification.

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 20553 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Subcommittee SC 2, *Radiation protection*.

Introduction

In the course of employment, individuals might work with radioactive materials that, under certain circumstances, could be taken into the body. Protecting workers against risks of incorporated radionuclides requires the monitoring of potential intakes and/or the quantification of actual intakes and exposures. The selection of measures and programmes for this purpose requires decisions concerning methods, techniques, frequencies etc. for measurements and dose assessment. The criteria permitting the evaluation of the necessity of such a monitoring programme or for the selection of methods and frequencies of monitoring usually depend upon the legislation, the purpose of the radiation protection programme, the probabilities of potential radionuclide intakes, and the characteristics of the materials handled.

This International Standard offers guidance for the decision whether a monitoring programme is required and how it should be designed. Its intention is to optimise the efforts for such a monitoring programme consistent with legal requirements and with the purpose of the radiation protection programme. Recommendations of international expert bodies and international experience with the practical application of these recommendations in radiation protection programmes have been considered in the development of this International Standard. Its application facilitates the exchanges of information between authorities, supervisory institutions and employers. The International Standard is not a substitute for legal requirements.

In the International Standard, the word “shall” is used to denote a requirement and no deviation is allowed. The word “should” is used to denote a recommendation from which justified deviations are allowed. The word “may” is used to denote permission.

Radiation protection — Monitoring of workers occupationally exposed to a risk of internal contamination with radioactive material

1 Scope

This International Standard specifies the minimum requirements for the design of professional programmes to monitor workers exposed to the risk of internal contamination by radioactive substances and establishes principles for the development of compatible goals and requirements for monitoring programmes.

This International Standard addresses the

a) purposes of monitoring and of monitoring programmes;

b) description of the different categories of monitoring programmes;

c) quantitative criteria for conducting monitoring programmes;

d) suitable methods for monitoring and criteria for their selection;

e) information that has to be collected for the design of a monitoring programme;

f) general requirements for monitoring programmes (e.g. detection limits, tolerated uncertainties);

g) frequencies of measurements;

h) special cases;

i) quality assurance; and

j) documentation, reporting, record-keeping.

This International Standard does not address

— the monitoring of exposure to radon and its radioactive decay products;

— detailed descriptions of measuring methods and techniques;

— detailed procedures for *in vivo* measurements and *in vitro* analyses;

— interpretation of monitoring results in terms of doses;

— biokinetic data and mathematical models for converting measured activities into absorbed dose, equivalent dose and effective dose; or

— the investigation of the causes or implications of an exposure or intake.

2 Normative references

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

ISO 5725-1:1994, *Accuracy (trueness and precision) of measurement methods and results — Part 1: General principles and definitions*

ISO 12790-1:2001, *Radiation protection — Performance criteria for radiobioassay — Part 1: General principles*

BIPM/IEC/IFCC/ISO/IUPAC/IUPAP/OIML, *International vocabulary of basic and general terms in metrology (VIM), 1993*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5725-1, ISO 12790-1 and *International vocabulary of basic and general terms in metrology (VIM)* and the following apply.

3.1 Absorption types

3.1.1
type F
F
deposited materials that have high (fast) rates of absorption into body fluids from the respiratory tract

3.1.2
type M
M
deposited materials that have intermediate (moderate) rates of absorption into body fluids from the respiratory tract

3.1.1
type S
S
deposited materials that have low (slow) rates of absorption into body fluids from the respiratory tract

3.2
accuracy of measurement
characteristics of an analysis or determination that ensure that both the bias and precision of the resulting quantity remains within specified limits

3.3
activity
transition rate

NOTE The activity is stated in becquerels (Bq).

3.4
activity median aerodynamic diameter
AMAD
value of aerodynamic diameter such that 50 % of the airborne activity in a specified aerosol is associated with particles smaller than the AMAD, and 50 % of the activity is associated with particles larger than the AMAD

NOTE The aerodynamic diameter of an airborne particle is the diameter that a sphere of unit density would need to have in order to have the same terminal velocity when settling in air as the particle of interest.