First edition 2006-08-01

# Nuclear energy — Reference beta-particle radiation —

Part 1: Methods of production

Énergie nucléaire — Rayonnement bêta de référence — Partie 1: Méthodes de production



Reference number ISO 6980-1:2006(E)

#### **PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office Case postale 56 • CH-1211 Geneva 20 Tel. + 41 22 749 01 11 Fax + 41 22 749 09 47 E-mail copyright@iso.org Web www.iso.org Published in Switzerland

## Contents

Forewordiv		
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4 4.1 4.2 4.3 4.4 4.5	Requirements for reference beta-particle radiation fields at the calibration distance Energy of the reference radiation fields Shape of the beta-particle spectrum Uniformity of the dose rate Photon contamination Variation of the beta-particle emission with time	4 4 4 4
5	Radionuclides suitable for reference beta-particle radiation fields	4
6 6.1 6.2	Source characteristics and their measurement Fundamental characteristics of reference sources Characteristics of the two series of reference beta-particle radiation fields	5
7	Source calibration	10
Annex	A (informative) Tissue equivalent materials	11
Annex	B (informative) Characteristics of the recommended sources — Examples of source construction	12
Bibliog	Jraphy	13

## 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 6980-1 was prepared by Technical Committee ISO/TC 85, *Nuclear energy*, Subcommittee SC 2, *Radiation protection*.

This first edition of ISO 6980-1, together with the first edition of ISO 6980-2 and the first edition of ISO 6980-3 cancels and replaces ISO 6980:1996, which has been technically revised

ISO 6980 consists of the following parts, under the general title *Nuclear energy* — *Reference beta-particle radiations*:

- Part 1: Methods of production
- Part 2: Calibration fundamentals related to basic quantities characterizing the radiation field
- Part 3: Calibration of area and personal dosemeters and the determination of their response as a function of beta radiation energy and angle of incidence