

---

---

**Nuclear energy, nuclear technologies,  
and radiological protection —  
Vocabulary —**

Part 2:  
**Radiological protection**

*Énergie nucléaire, technologies nucléaires et protection  
radiologique — Vocabulaire —*

*Partie 2: Protection radiologique*



This document is a preview generated by EMS



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested 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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
Foreword .....	iv
0. Introduction .....	v
Scope 1	
1 General terms related to radiological protection .....	1
2 Terms related to biological effect .....	4
3 Terms related to radiological exposure .....	5
4 Terms related to radiological monitoring .....	9
5 Terms related to measurement .....	12
6 Terms related to technical aspects .....	14
7 Terms related to regulation .....	16
Annex A (informative) Methodology used in the development of the vocabulary .....	20
Annex B (informative) Alphabetical index .....	30
Bibliography .....	33

## 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. [www.iso.org/directives](http://www.iso.org/directives)

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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

ISO 12749 consists of the following parts, under the general title *Nuclear energy, nuclear technologies, and radiological protection — Vocabulary*.

— *Part 2: Radiological protection*

The following parts are under preparation:

— *Part 3: Nuclear fuel cycle*

## 0. Introduction

### 0.1 General

This part of ISO 12749 provides terms and definitions for general nuclear energy concepts dealing with radiological protection and other related concepts, such as means of protection for human health and environment, measurement methods and instruments, and the prevision or direct determination of the effect of ionizing radiations on the body. Terminological data are taken from International Standards developed by the SC 2 and other technically validated documents such as the IAEA Glossary, IAEA BSS, ICRP, ICRU 60, ICRU 51, VIM, and BIPM.

Unambiguous communication of radiological protection concepts is crucial, taking into account the relevant implications that may arise from misunderstandings with regard to equipment and materials involved in the standards dealing with this subject. The market of radiological protection is a heterogeneous one because it comprises equipment designed, built, and operated along the safe practices defined by radiological protection specialists. This market also includes nuclear reactors, nuclear fuel cycle, and instruments to monitor both personnel and facilities and sites. In view of the foregoing, a large number of people having different levels of scientific and technical knowledge are involved; thus, there can be widely divergent understandings and assumptions about concepts. The results are poor communication, high risk of accidents, and duplication of effort as different groups are going to define concepts according to their perspectives.

Conceptual arrangement of terms and definitions is based on concepts systems that show corresponding relationships among radiological protection concepts. Such arrangement provides users with a structured view of this special subdomain within the nuclear energy sector and will facilitate common understanding of radiological protection concepts. Besides, concepts systems and conceptual arrangement of terminological data will be helpful to any kind of user because it will promote clear, accurate, and useful communication. At the end of this part of ISO 12749, an alphabetical index shows the terms followed by their corresponding notation.

### 0.2 Structure of the vocabulary

The terminology entries are presented in the conceptual order of the English preferred terms. Both a systematic index and an alphabetical index are included. The structure of each entry is in accordance with ISO 10241-1:2011.

All the terms included in this part of ISO 12749 deal exclusively with radiation protection. When selecting terms and definitions, special care has been taken to include the terms that need to be defined, that is to say, either because the definitions are essential to the correct understanding of the corresponding concepts or because some specific ambiguities need to be addressed.

The notes appended to certain definitions offer clarification or examples to facilitate understanding of the concepts described. In certain cases, miscellaneous information is also included, for example, the units in which a quantity is normally measured, recommended parameter values, references, etc.

According to the title, the vocabulary deals with concepts belonging to the general **nuclear energy** subject field within which concepts in the **radiological protection** sub-subject field are taken into account.



# Nuclear energy, nuclear technologies, and radiological protection — Vocabulary —

## Part 2: Radiological protection

### Scope

This part of ISO 12749 lists unambiguous terms and definitions related to radiological protection concepts in the subject field of nuclear energy. It is intended to facilitate communication and promote common understanding.

## 1 General terms related to radiological protection

### 1.1 radiological protection radiation protection

protection of people and the environment from the harmful effects of exposure to ionizing radiation and the means for achieving such protection

[SOURCE: IAEA Safety Glossary Terminology Used in Nuclear Safety and Radiation Protection – 2007 Edition, modified — By adding “and the environment”.]

#### 1.1.1 radiation source

anything (apparatus, substance, installation) that may cause radiation exposure, such as by emitting ionization radiation or releasing radioactive substances or materials

[SOURCE: ISO 14152:2001]

#### 1.1.1.1 radioactivity

stochastic process whereby nuclei undergo spontaneous disintegration, usually accompanied by the emission of subatomic particles, or photons

[SOURCE: IAEA Safety Glossary Terminology Used in Nuclear Safety and Radiation Protection – 2007 Edition, modified — By deleting “random” between “spontaneous” and “disintegration”.]

#### 1.1.1.1.1 radioactive material

material of which one or more constituents exhibit *radioactivity* ([1.1.1.1](#))

Note 1 to entry: For special purposes such as regulation, this term may be restricted to *radioactive material* ([1.1.1.1.1](#)) with an activity or a specific activity greater than a specified value.

[SOURCE: ISO 921:1997]

#### 1.1.1.1.1.1 radioactive contamination

radioactive substances on surfaces, or within solids, liquids, or gases (including the human body), where their presence is unintended or undesirable, or the process giving rise to their presence in such places

[SOURCE: IAEA Safety Glossary Terminology Used in Nuclear Safety and Radiation Protection – 2007 Edition]