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Interested committees:

Title: BS EN IEC 60761-1 Radiation protection instrumentation - Equipment for continuous monitoring of radioactivity in gaseous effluents

Part 1: General requirements

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

- i) has any issues related to 3rd party IPR, patent or copyright
- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



45B/1078/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

IEC 60761-1 ED3

DATE OF CIRCULATION:

2024-12-20

CLOSING DATE FOR COMMENTS:

2025-02-14

SUPERSEDES DOCUMENTS:

45B/1039/CD, 45B/1052A/CC

IEC SC 45B : RADIATION PROTECTION INSTRUMENTATION	
SECRETARIAT: France	SECRETARY: Mr Miroslav Voytchev
OF INTEREST TO THE FOLLOWING COMMITTEES:	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED:	

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Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Radiation protection instrumentation - Equipment for continuous monitoring of radioactivity in gaseous effluents - Part 1: General requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Radiation protection instrumentation – Equipment for continuous monitoring of radioactivity in gaseous effluents**Part 1: General requirements****FOREWORD**

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International Standard IEC XXXXX has been prepared by subcommittee 45B: Radiation protection instrumentation, of IEC technical committee 45: Nuclear instrumentation.

This edition cancels and replaces the first edition of IEC 60761-1 issued in 2002."

This edition includes significant technical changes with respect to the previous edition.

The text of this standard is based on the following documents:

FDIS	Report on voting
45B/XX/FDIS	45B/XX/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

152 The committee has decided that the contents of this publication will remain unchanged until the
153 maintenance result date¹⁾ indicated on the IEC web site under "http://webstore.iec.ch" in the
154 data related to the specific publication. At this date, the publication will be

- 155 • reconfirmed,
- 156 • withdrawn,
- 157 • replaced by a revised edition, or
- 158 • amended.

159

160 IEC 60761 consists of the following parts, under the general title: *Equipment for continuous*
161 *monitoring of radioactivity in gaseous effluents.*

162 Part 1: General requirements

163 Part 2: Specific requirements for radioactive aerosol monitors including transuranic aerosols

164 Part 3: Specific requirements for radioactive noble gas monitors

165 Part 4: Specific requirements for radioactive iodine monitors

166 Part 5: Specific requirements for tritium monitors

167

168

169

1) The National Committees are requested to note that for this publication the maintenance result date is

Radiation protection instrumentation – Equipment for continuous monitoring of radioactivity in gaseous effluents – Part 1: General requirements

1 Scope

This part of IEC 60761 defines acceptable forms of such monitoring, provides some general guidance as to the possible range of measurement and capability of such equipment as may be envisaged, and indicates when and where its uses may be practicable.

This standard is applicable to equipment for continuous monitoring of radioactivity in gaseous effluents during normal operations and during anticipated operational occurrences. This standard does not apply to equipment specifically for use in accident conditions. Such equipment may require additional capabilities.

This standard is restricted to equipment for continuously monitoring radioactivity in gaseous effluent. It does not deal with sample extraction and laboratory analysis.

The object of this standard is to lay down mandatory general requirements and give examples of acceptable methods for equipment for continuous monitoring of radioactivity in gaseous effluents.

It specifies, for the equipment described above, the general characteristics, general test procedures, radiation, electrical, safety and environmental characteristics and the identification and certification of the equipment. If this equipment is part of a centralized system for continuous radiation monitoring in a nuclear facility, there may be additional requirements from other standards related to those systems.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60050-395, International Electrotechnical Vocabulary – Part 395: Nuclear instrumentation: Physical phenomena, basic concepts, instruments, systems, equipment and detectors

IEC 62706, *Radiation protection instrumentation – Recommended climatic, electromagnetic and mechanical performance requirements and methods of tests*

ISO 11929 *Determination of the characteristic limits (decision threshold, detection limit and limits of the coverage interval) for measurements of ionizing radiation*

ISO 10012 *Measurement management systems — Requirements for measurement processes and measuring equipment*

3 Terms and definitions, abbreviations and symbols, quantities and units

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in IEC 60050-395, apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

212 **3.1.1**213 **alarm**

214 an audible, visual, or other signal activated when the instrument reading exceeds a preset
 215 value, falls outside of a preset range, or when the instrument detects the presence of the source
 216 of radiation according to a preset condition

217 **3.1.2**218 **background level**

219 radiation field in which the instrument is intended to operate which includes background
 220 produced by naturally occurring radioactive material

221 **3.1.3**222 **gaseous effluent monitor**

223 equipment intended for continuous monitoring of radioactivity in gaseous effluents. The different
 224 parts of the monitor may conveniently be grouped into two assemblies which may be associated
 225 or separated according to the monitoring and operating requirements

226 **3.1.4**227 **detection assembly**

228 includes one or more radiation detectors and associated function units

229 **3.1.5**230 **control and measurement assembly**

231 includes assemblies and function units designed to measure quantities connected with ionizing
 232 radiation (activity, volumic activity, etc.). The assembly is provided with function units to give a
 233 perceptible warning that the quantity being measured exceeds some predetermined value

234 **3.1.6**235 **conventionally true value (of a quantity)**

236 the best estimate of the value of a quantity

237 NOTE A conventionally true value is, in general, regarded as sufficiently close to the true value for the difference to
 238 be insignificant for the given purpose. For example, a value and its uncertainty determined from a primary or a
 239 secondary standard, or by a reference instrument which has been calibrated against a primary or secondary standard,
 240 may be taken as the conventionally true value.

241 **3.1.7**242 **coefficient of variation**

243 the ratio V of the standard deviation s to the arithmetic mean $\bar{x}$ of a set of n measurements x_i
 244 given by the following formula:

$$245 \quad V = \frac{s}{\bar{x}} = \frac{1}{\bar{x}} \sqrt{\frac{1}{1-n} \sum_{i=1}^n (x_i - \bar{x})^2}$$

246 **3.1.8**247 **measurement uncertainty**

248 parameter associated with the result of a measurement that characterizes the dispersion of the
 249 values that could reasonably be attributed to the measurand

250 **3.1.9**251 **coverage factor**

252 numerical factor (k) used as a multiplier of the combined standard uncertainty in order to obtain
 253 an expanded uncertainty (see ISO 11929)

254 **3.1.10**255 **decision quantity**

256 random variable for the decision whether the physical effect to be measured is present or not
 257 measurand