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**Reference radiation fields for  
radiation protection — Definitions  
and fundamental concepts**

**AMENDMENT 1: Reference point of  
personal dosimeters**

*Champs de rayonnement de référence pour la radioprotection —  
Définitions et concepts fondamentaux*

*AMENDEMENT 1: Point de référence des dosimètres personnels*



Reference number  
ISO 29661:2012/Amd.1:2015(E)

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The committee responsible for this document is ISO/TC 85, *Nuclear energy, nuclear technologies, and radiological protection*, Subcommittee SC 2, *Radiological protection*.

## **Introduction**

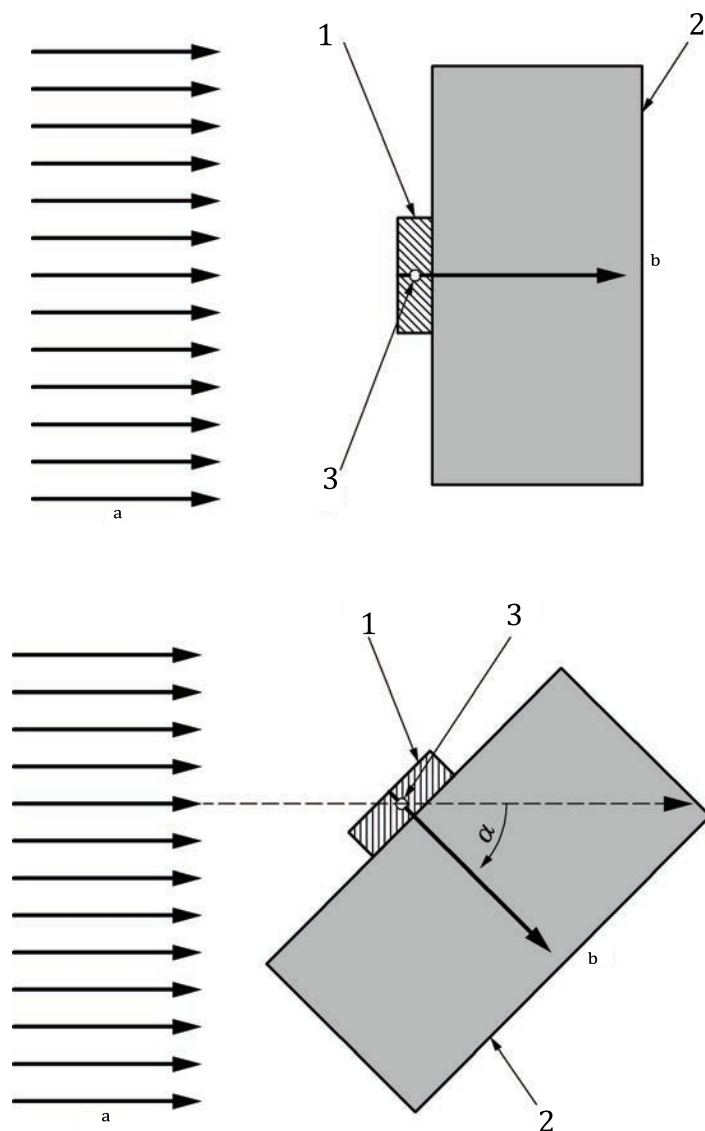
The Amendment of this International Standard harmonizes the different definitions valid since 2012 of the reference point for personal dosimeters as given by relevant ISO Standards on reference radiation fields, e.g. ISO 29661:2012, ISO 4037, ISO 6980 and ISO 8529. It mainly reflects the definitions given before 2012 by the Standards ISO 4037, ISO 6980 and ISO 8529 and includes the harmonized version into ISO 29661:2012.

## Reference radiation fields for radiation protection — Definitions and fundamental concepts

### AMENDMENT 1: Reference point of personal dosemeters

Page 8, Figure 1 — Reference direction and direction of radiation incidence of personal dosemeter mounted on water slab phantom [see 6.6.2 a)]

Replace Figure 1 with the following figure and leave the key and the figure caption unchanged.



Page 27, 6.6.3 Reference direction and reference point

Replace the first paragraph with the following:

The reference point and the reference direction of the personal dosemeter are stated by the manufacturer.

Replace the second paragraph with the following:

The personal dosimeter is put on the phantom, such that the reference direction of the dosimeter through the reference point hits the centre of the phantom surface, see Figure 3. This is valid for any type of dosimeter and any phantom. In addition, any clip, if used when wearing the dosimeter, shall not be removed for calibrating and type testing.

After the third paragraph, add the following paragraph and notes:

The definition of the reference point for personal dosimeters should consider both the practical application of the dosimeter and the conditions when calibrating. The definition of the radiation protection quantities requires a parallel beam where no reference point of the dosimeter is required. Practical applications, calibrations and type tests are all performed in divergent beams where a reference point is required. For photon radiation, almost all distances to the radiation source are quite large, consequently, the divergence is small and the exact definition of the reference point is of minor influence on the results of measurements, calibrations and type tests. For beta radiation, the distance for calibration can be as small as 11 cm whereas in practical measurement the distance to the beta radiation source can vary considerably, from less than 1 cm to a few meters. Here, the definition of the reference point is of great importance. For neutron radiation, the divergence in practical applications is small as the distance to the source is quite large but for calibrations and type testing the divergence can be larger due to the fact that the required dose rate can only be produced close to the radiation source. The manufacturer and the calibration and type testing laboratory shall take care of all these considerations when setting up the reference point and the true quantity value at the point of test.

NOTE 1 For personal dosimeters that are substantially sensitive to radiation backscattered from the phantom (particularly the neutron albedo dosimeter), it may be advisable to locate the reference point on the rear side of the dosimeter so that it coincides with a point on the front surface of the phantom.

NOTE 2 In general, the reference point of a dosimeter is located inside the dosimeter. For type test and/or calibration, it can be convenient to decide in agreement with the customer to set the reference point to another location, for example in the case of personal dosimeters at the centre of the front face of the phantom. Such a calibration and/or type test procedure is also in line with this International Standard.

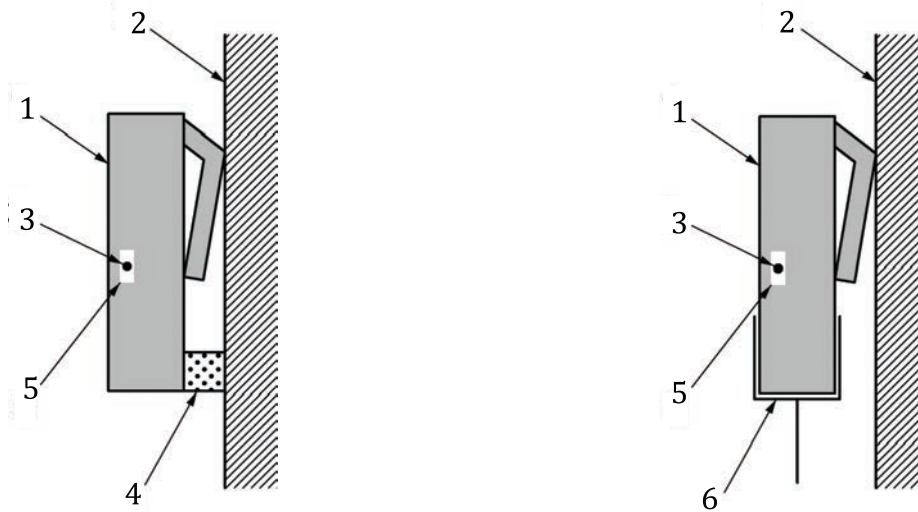
#### *Page 28, 6.6.4 Irradiation conditions*

Replace the third sentence of the first paragraph on page 28 with the following:

The reference direction of the dosimeter through its reference point shall hit the centre of the slab phantom surface.

Page 28, Figure 3 — Positioning of whole-body dosimeter at slab phantom surface (reference direction normal to phantom surface)

Replace Figure 3 with the following one and leave the key unchanged:



Replace the title of Figure 3 with the following:

**Figure 3—Positioning of personal dosimeter at the phantom surface  
(reference direction normal to phantom surface)**

