RADIOACTIVITY MEASUREMENT STANDARDS OF THE INTERNATIONAL STANDARDIZATION ORGANIZATION
DRAFTED BY TC85/SC2/WG17 AND TC147SC3

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on behalf of Dominique Calmet/CEA

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Main section with normative clauses

- **Scope**
- **Normative references**
- **Terms, definitions and symbols**
- **Principle**
- **Equipment**
- **Sampling (characteristics, duration, …)**
- **Test method procedure, influence quantities, calibration**
- **Expression of results : uncertainty, decision threshold, detection limit, …**
- **Test Report**

Annexe(s) usually informative

- Example of test methods applying the requirements of the standard
Participating Countries (40)

Australia (SA)
Austria (ASI)
Belgium (NBN)
Canada (SCC)
Chile (INN)
China (SAC)
Czech Republic (UNMZ)
Côte d'Ivoire (CODINORM)
Denmark (DS)
Egypt (EOS)
Finland (SFS)
France (AFNOR)
Georgia (GEOSTM)
Germany (DIN)
India (BIS)
Iran, Islamic Republic of (ISIRI)
Ireland (NSAI)
Israel (SII)
Italy (UNI)
Jamaica (BSJ)
Japan (JISC)
Jordan (JSMO)
Kenya (KEBS)
Korea, Republic of (KATS)
Mexico (DGN)
Myanmar (MSTRD)
Netherlands (NEN)
Norway (SN)
Philippines (BPS)
Portugal (IPQ)
Russian Federation (GOST R)
Slovakia (SOSMT)
South Africa (SABS)
Spain (AENOR)
Sri Lanka (SLSI)
Sweden (SIS)
Turkey (TSE)
Ukraine (DTR)
United Kingdom (BSI)
United States (ANSI)

Guidelines for Drinking-water Quality

FOURTH EDITION

July 2011
**Sampling methods**

- ISO5667 Water quality — Sampling (21 Parts) - Part 3 (2012) Preservation and handling of water samples

**Screening methods**


- ISO10703 (2007) Determination of the activity concentration of radionuclides — Method by high resolution gamma-ray spectrometry
Test methods for individual radionuclides

- ISO13164 Measurement of the activity concentration of radon-222
  - Part 1 (2013): General principles
  - Part 2 (2013): Test method using gamma-ray spectrometry
  - Part 3 (2013): Test method using emanometry
Test methods for individual radionuclides

- ISO13165 Measurement of radium 226 activity concentration and its short-lived decay products
  - Part 1 (2013) : Test method using liquid scintillation counting
  - Part 2 (2014) : Test method using emanometry
  - Part 3 (2016): Test method using coprecipitation and gamma-spectrometry


- ISO13167 (2015-12-15) Plutonium, americium, neptunium and curium — Test method using alpha spectrometry

Standards under preparation

- ISO/WD XXXXX : $^{63}$Ni and $^{55}$Fe — Test method using beta liquid scintillation counting

ISO 11929 (2010) Determination of the characteristic limits (decision threshold, detection limit and limits of the confidence interval) for measurements of ionizing radiation — Fundamentals and application

This standard is to be used by testing and calibration laboratories for detailed evaluations of uncertainty and calculations for compliance with specifications (reference levels). Currently under revision because of new developments in metrology.


- Part 1: General principles
- Part 2: Test method using wipe-test samples
- Part 3: Apparatus calibration

ISO 8690 (1988) Decontamination of radioactively contaminated surfaces — Method for testing and assessing the ease of decontamination

ISO18589 Measurement of radioactivity in the environment - Soil

- Part 1 (2005): General guidelines and definitions
- Part 2 (2015): Guidance for the selection of the sampling strategy, sampling and pre-treatment of samples
- Part 7 (2013): Portable in situ gamma spectrometry measurement
ISO 11665  Measurement of radioactivity in the environment — Air : radon-222

- Part 2 (2012): Integrated measurement method for determining average potential alpha energy concentration of its short-lived decay products;
- Part 3 (2012): Spot measurement method of the potential alpha energy concentration of its short-lived decay products;
- Part 4 (2012): Integrated measurement method for determining average activity concentration using passive sampling and delayed analysis;
- Part 5 (2012): Continuous measurement method of the activity concentration;
- Part 6 (2012): Spot measurement method of the activity concentration;
- Part 7 (2012): Accumulation method for estimating surface exhalation rate;
- Part 8 (2013): Methodologies for initial and additional investigations in buildings;
- **Part 9 (2016)**: Method for determining exhalation rate of dense building materials;
- **Part 11 (2016)**: Test method for soil gas with sampling at depth;
STRUCTURE OF ISO 11665 ENVIRONMENT - AIR: RADON-222

TEST METHODS

Part 1
Origins of radon + RnDP
Measurement methods

Decay products

Part 2
Integrated measurement
potential alpha energy

Part 3
Spot measurement
potential alpha energy

222Radon

Part 4
Integrated measurement
Delayed analysis

Part 5
Continuous measurement

Part 6
Spot measurement

APPLICATION

Part 7
Surface exhalation rate
Accumulation method

Part 8
Rn investigations
in buildings

Part 9
exhalation rate
building materials

Part 11
Soil gas with
sampling at depth

TR 12 & 13
Diffusion coefficient
in waterproof materials

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Standards under preparation

ISO19581 (DIS voting) Measurement of radioactivity — Gamma emitting radionuclides — Rapid screening method using NaI(Tl) gamma-ray spectrometry (TL Dr. Takahiro Yamada - Japan) under DIS voting and complementary of IEC 61563 (2001) Radiation protection instrumentation – Equipment for measuring specific activity of gamma-emitting radionuclides in foodstuffs that is under revision
ISO19361 (DIS Drafting Stage) Measurement of radioactivity — Determination of beta emitters activities — Test method using liquid scintillation counting

Scope: This document describes the conditions for measuring the activity of beta emitter radionuclides by liquid scintillation counting. The test sample can be liquid (aqueous or organic), or solid (particles or filter or planchet)…(PL Mr Marc Fournier)

ISO 20042 (CD Drafting Stage) Measurement of radioactivity — Test method using Gamma Spectrometry

Scope: This international standard describes methods to determine the activity (Bq) of gamma-emitting radionuclides by gamma spectrometry in test samples in a laboratory… (PL Steven Judge, Thomas Haug, Jean-Marie Duda, François Byrde)

ISO 20043 (WD Drafting Stage) Guidelines for environmental monitoring for effective dose assessment process

Scope: This Standard provides guidance on food and the environmental characterization needed for the prospective and/or retrospective dose assessment methods of public exposure…(PL Mr Shinji Tokonami and Mr Tetsuya Sanada)
THANK YOU FOR YOUR ATTENTION