ISO standard on radon personal exposure

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CONTENT

- Background: why do we need the standard?
- How the standard will cover the needs
- Status of the project

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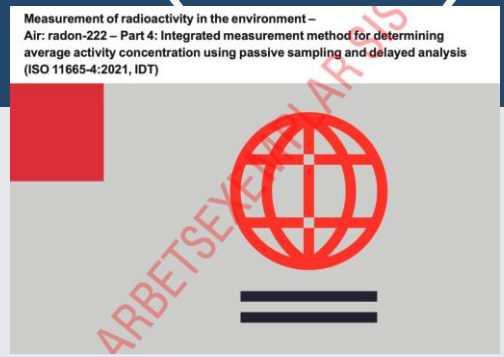
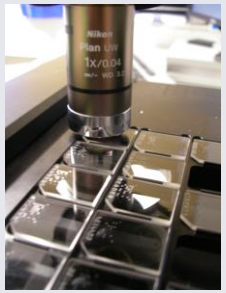
How do we measure radon (^{222}Rn)

Passive detectors



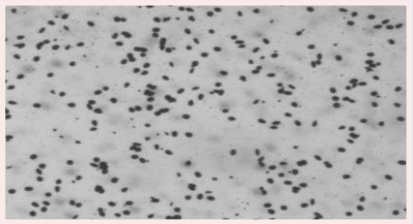
Bq m^{-3} h

Radon exposure



Bq m^{-3}

Radon concentration



Radon doses

mSv y^{-1}

DCFs (Dose Conversion Factors)

Why do we need doses?

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Official Journal **L 13**

of the European Union

English edition — Legislation — **Volume 57**, **17 January 2014**

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DIRECTIVES

* **Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom** 1

EN

Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.

The titles of all other Acts are printed in bold type and preceded by an asterisk.

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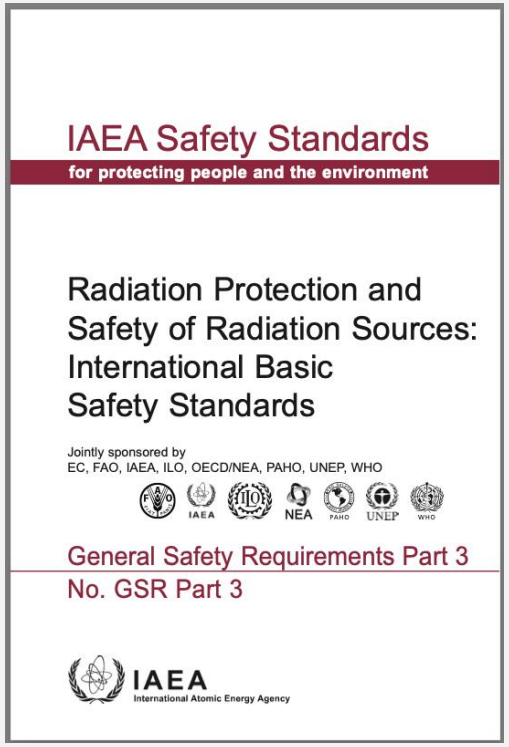


IAEA Safety Standards

for protecting people and the environment

Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards

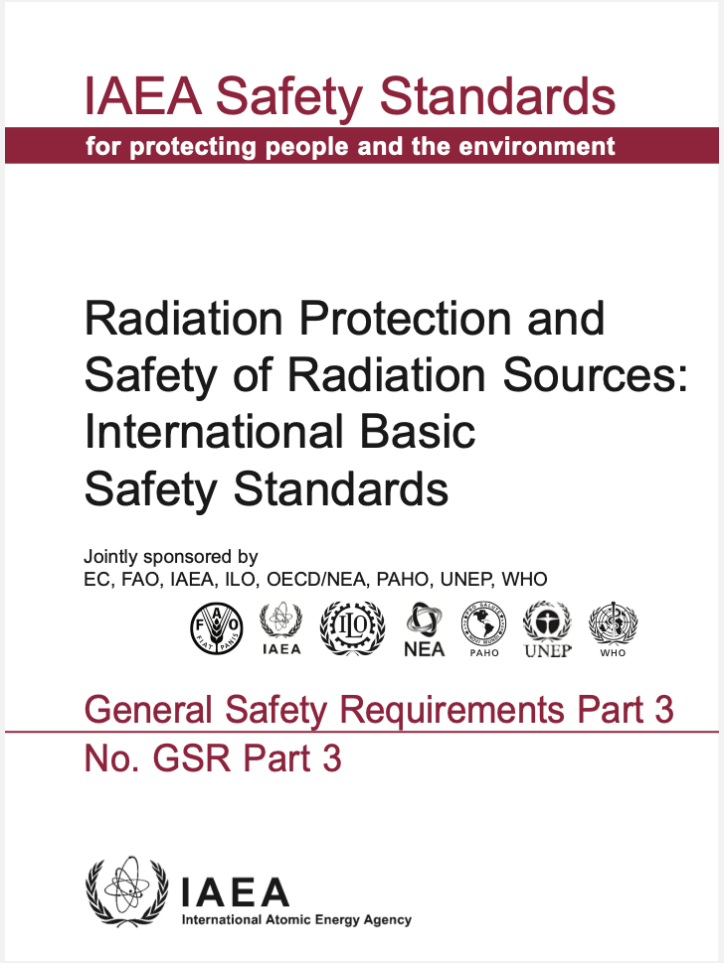
Jointly sponsored by
EC, FAO, IAEA, ILO, OECD/NEA, PAHO, UNEP, WHO

General Safety Requirements Part 3

No. GSR Part 3

IAEA
International Atomic Energy Agency

IAEA - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards



Schedule III

DOSE LIMITS FOR PLANNED EXPOSURE SITUATIONS

OCCUPATIONAL EXPOSURE

III.1. For occupational exposure of workers over the age of 18 years, the dose limits are:

(a) An effective dose of 20 mSv per year averaged over five consecutive years[66] (100 mSv in 5 years) and of 50 mSv in any single year;
(b) An equivalent dose to the lens of the eye of 20 mSv per year averaged over five consecutive years (100 mSv in 5 years) and of 50 mSv in any single year;
(c) An equivalent dose to the extremities (hands and feet) or to the skin[67] of 500 mSv in a year.

Council Directive 2013/59/Euratom

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Article 35

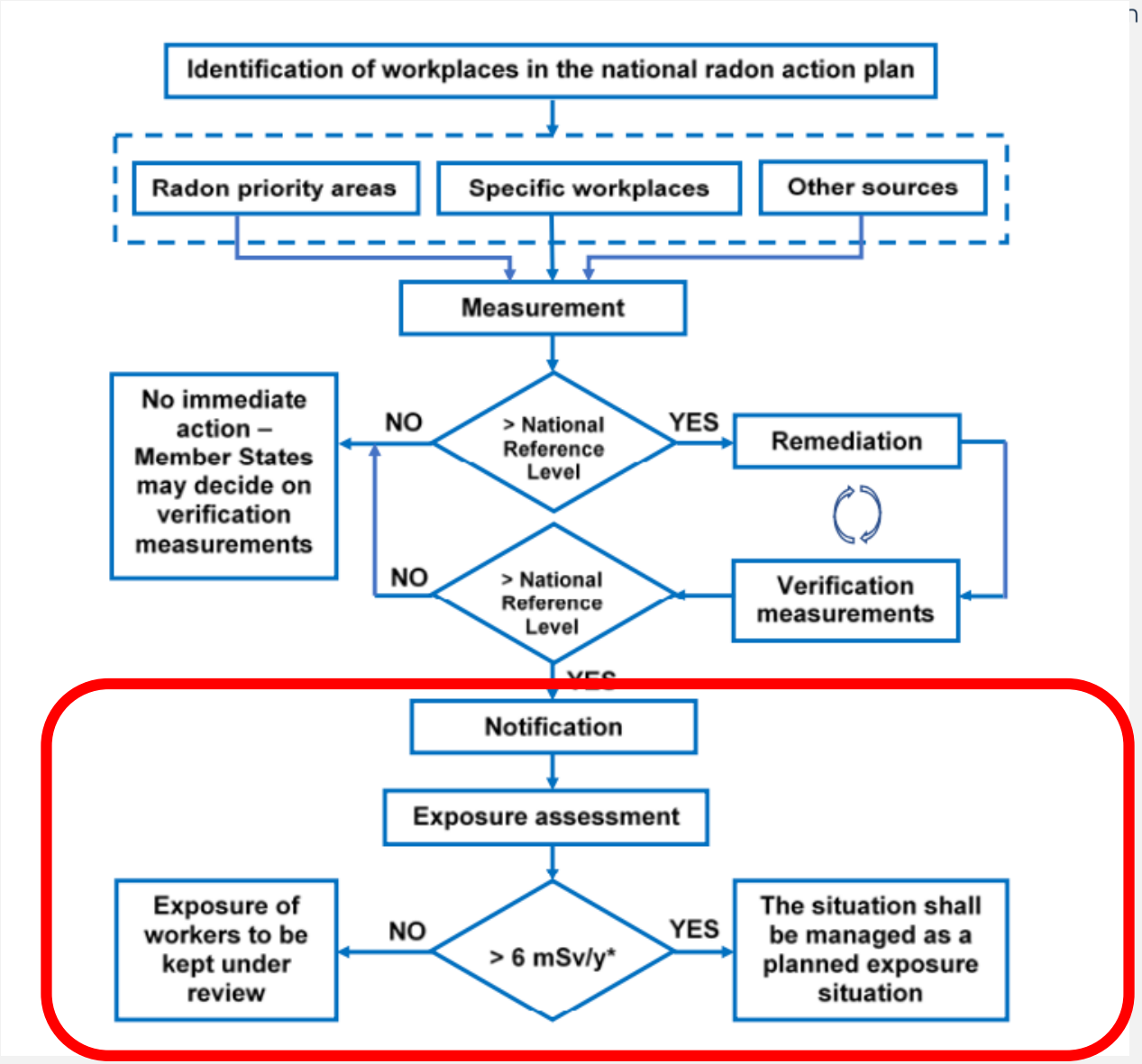
Arrangements in workplaces

1. Member States shall ensure that for the purposes of radiation protection, arrangements are made as regards all workplaces where workers are liable to receive an exposure greater than an effective dose of 1 mSv per year or an equivalent dose of 15 mSv per year for the lens of the eye or 50 mSv per year for the skin and extremities.

Such arrangements shall be appropriate to the nature of the installations and sources and to the magnitude and nature of the risks.

2. For workplaces specified in Article 54(3), and where the exposure of workers is liable to exceed an effective dose of 6 mSv per year or a corresponding time-integrated radon exposure value determined by the Member State, these shall be managed as a planned exposure situation and the Member States shall determine which requirements set out in this Chapter are appropriate. For workplaces specified in Article 54(3), and where the effective dose to workers is less than or equal to 6 mSv per year or the exposure less than the corresponding time-integrated radon exposure value, the competent authority shall require that exposures are kept under review.

Regulatory control of radon at workplaces



Radon at workplaces

Existing exposure situation

- EU Directive: exposure to indoor radon at WPs
- IAEA: Rn annual average activity concentration equal or above RL

Planned exposure situation

- EU Directive: graded approach
- Rn annual average activity concentration above RL after remediation
- Evaluate effective dose
- 6 mSv per year

ISO 11665

Radon standards

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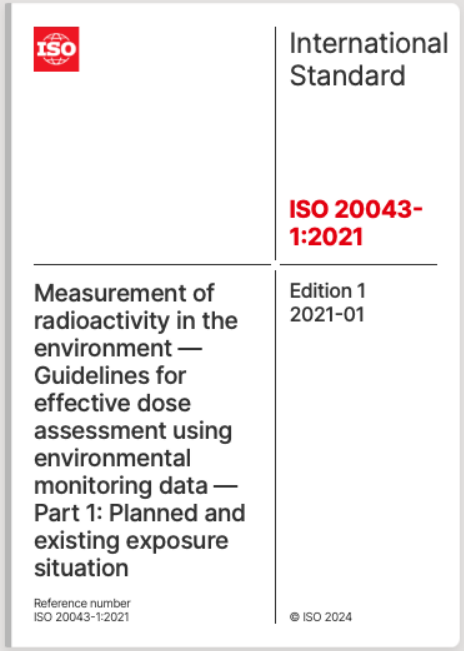
ISO 20043-1:2021

Radon exposure is missing



Read sample

ISO 20043-1:2021

Measurement of radioactivity in the environment — Guidelines for effective dose assessment using environmental monitoring data

Part 1: Planned and existing exposure situation

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What are ISO standards?

What can standards **do for you**?

International standards ensure that the products and services you use daily are **safe**, **reliable**, and of **high quality**. They also guide businesses in adopting **sustainable** and **ethical practices**, helping to create a future where your purchases not only perform excellently but also safeguard our planet. In essence, standards seamlessly blend quality with conscience, enhancing your everyday experiences and choices.

ISO standards are internationally agreed by experts

Think of them as a formula that describes the best way of doing something.

It could be about making a product, managing a process, delivering a service or supplying materials – standards cover a huge range of activities.

Standards are the distilled wisdom of people with expertise in their subject matter and who know the needs of the organizations they represent – people such as manufacturers, sellers, buyers, customers, trade associations, users or regulators.

For instance,

Quality management standards to help work more efficiently and reduce product failures.

Environmental management standards to help reduce environmental impacts, reduce waste and be more sustainable.

Health and safety standards to help reduce accidents in the workplace.

Energy management standards to help cut energy consumption.

Food safety standards to help prevent food from being contaminated.

IT security standards to help keep sensitive information secure.

We need experts

ISO standards use the existing knowledge and methods to create common practices

Relevant affected stakeholders

- Large industry
- SMEs
- Government and regulatory bodies
- Consumers
- Labour sector: employers, trade unions
- Research and academic bodies
- Certification and accreditation bodies

Who is responsible to assess personal exposures?

1.The employer is ultimately always responsible for the safety of its workers and is also responsible to ensure that remedial action takes place when needed

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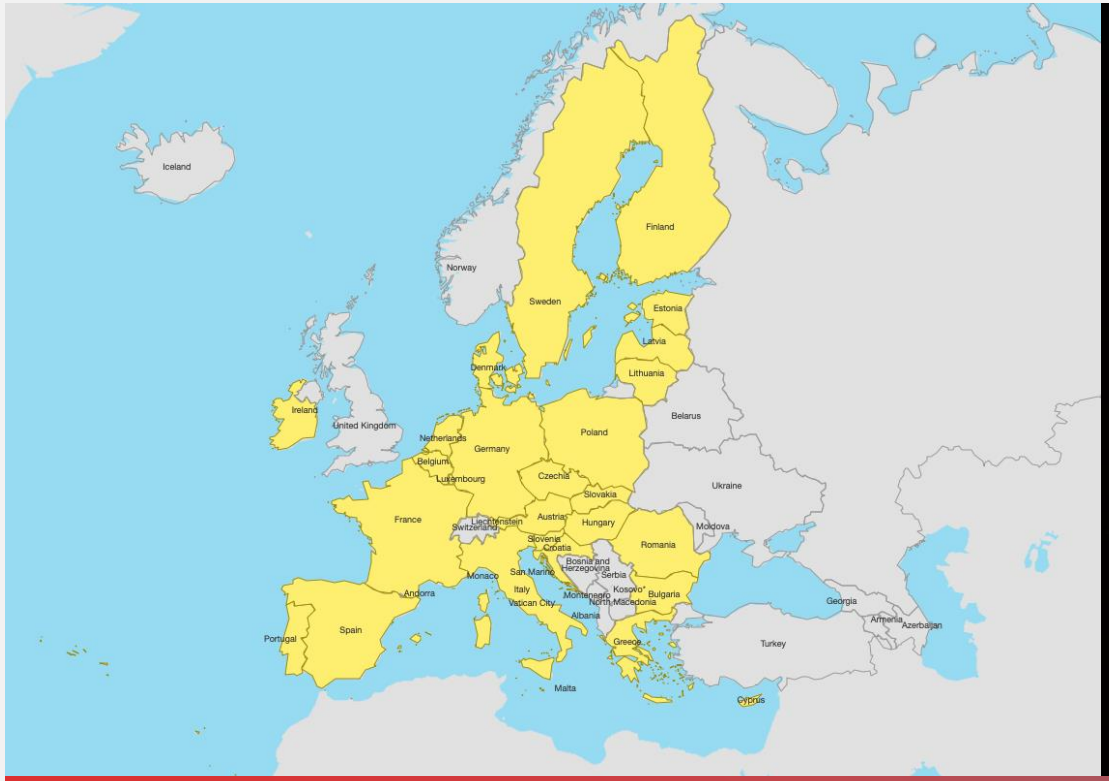
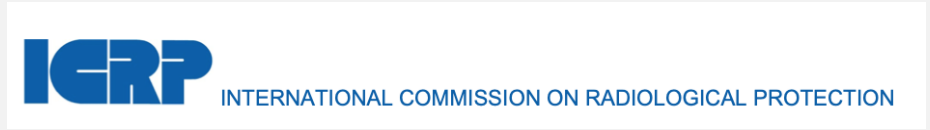


Which countries are affected?

Strong legislation in Europe and the EU – Other countries too

Other organizations

There are other organizations that can benefit from the standard



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What will the standard offer?

Benefits of developing the standard

- Common procedure to evaluate personal radon exposure
- Clarification on the steps to assess personal exposure
- A framework to compare personal exposures among different countries
- Inputs from those countries with more experience and established procedures

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Description of the project

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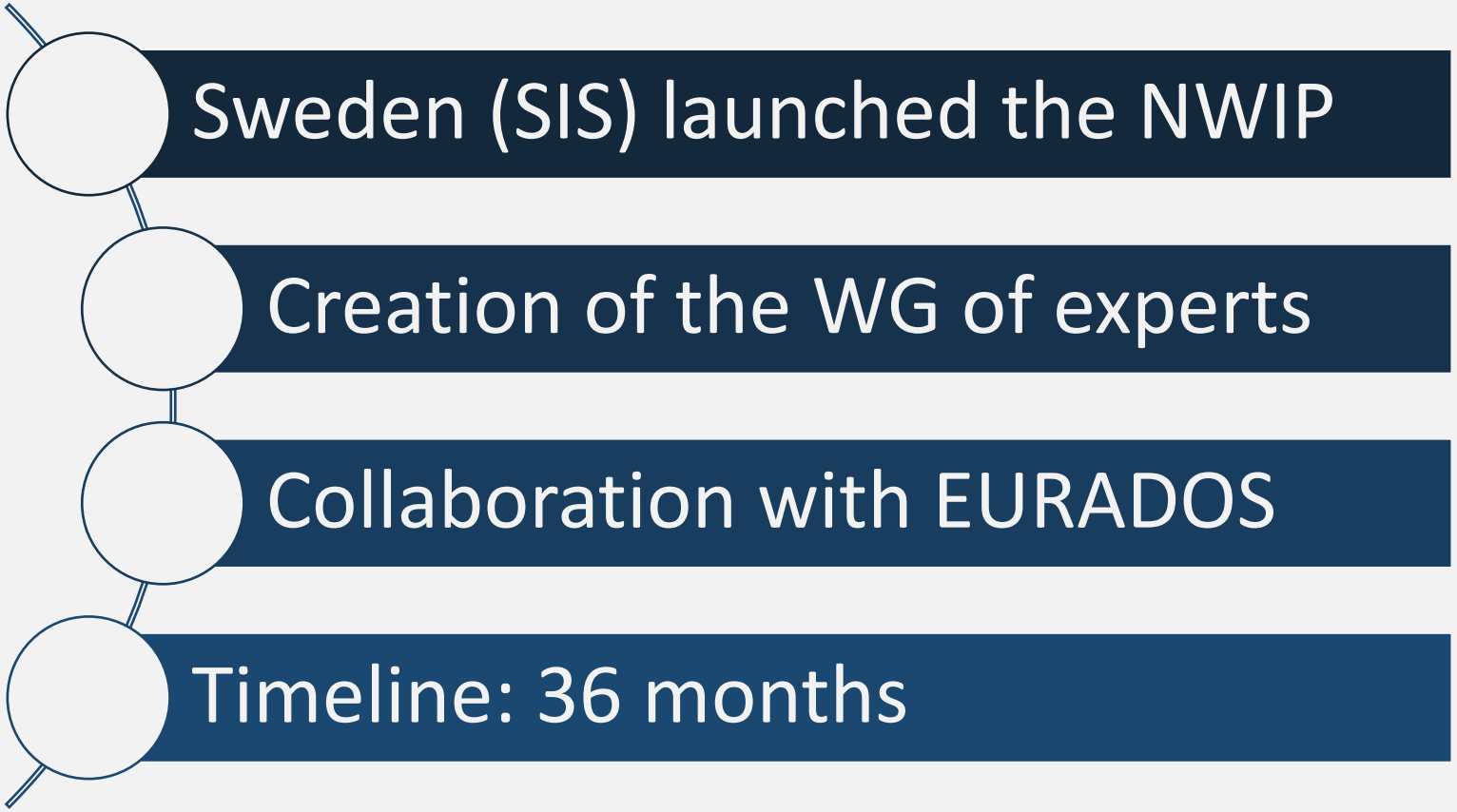

Outline of the standard

Brief description of the proposal

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Principles

Monitoring

- Planning
- Sampling
- Analysis (ISO 17025)

The role of ICRP DCFs

Evaluation of the uncertainties

Quality assurance and quality control

Set of annexes with practical examples

RESULT OF VOTING

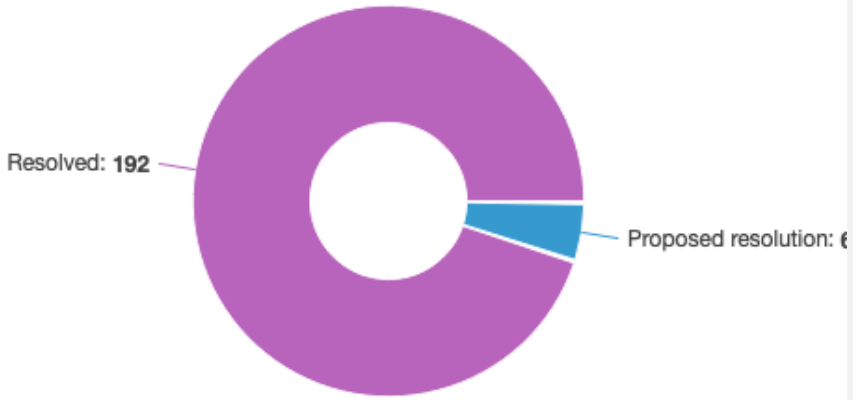
CLOSING DATE 2024-11-18

Answers to Q.1: Agree to add to work programme		
Yes (21)	**Registered as a Working Draft**	Argentina (IRAM) Austria (ASI) Bulgaria (BDS) Canada (SCC) China (SAC) Czech Republic (UNMZ) Finland (SFS) France (AFNOR) Germany (DIN) Hungary (MSZT) India (BIS) Iran, Islamic Republic of (INSO) Japan (JISC) Netherlands (NEN)
Abstention		Belgium (NBN) Greece (NQIS ELOT) Israel (SII) Italy (UNI) Kenya (KEBS) Pakistan (PSQCA) South Africa (SABS) Switzerland Turkey

rview Comments Tags

198

Comments & Change Proposals



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APRIL 2025

- Approvals with participation: 13 countries
- Approvals: 8 countries
- Nominated experts from 12 countries
- 198 comments
- Comments from: Austria , Finland , France, Iran , UK, US

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THANKS!

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