



Consultative Committee for Ionizing Radiation

Martyn Sené, CCRI President

November 2022

A large, colorful graphic on the right side of the slide, consisting of multiple concentric, overlapping circular bands in a rainbow spectrum (red, orange, yellow, green, blue, purple, red). The bands are slightly offset from each other, creating a sense of depth and movement.

Working together to
promote and advance
the global comparability
of measurements



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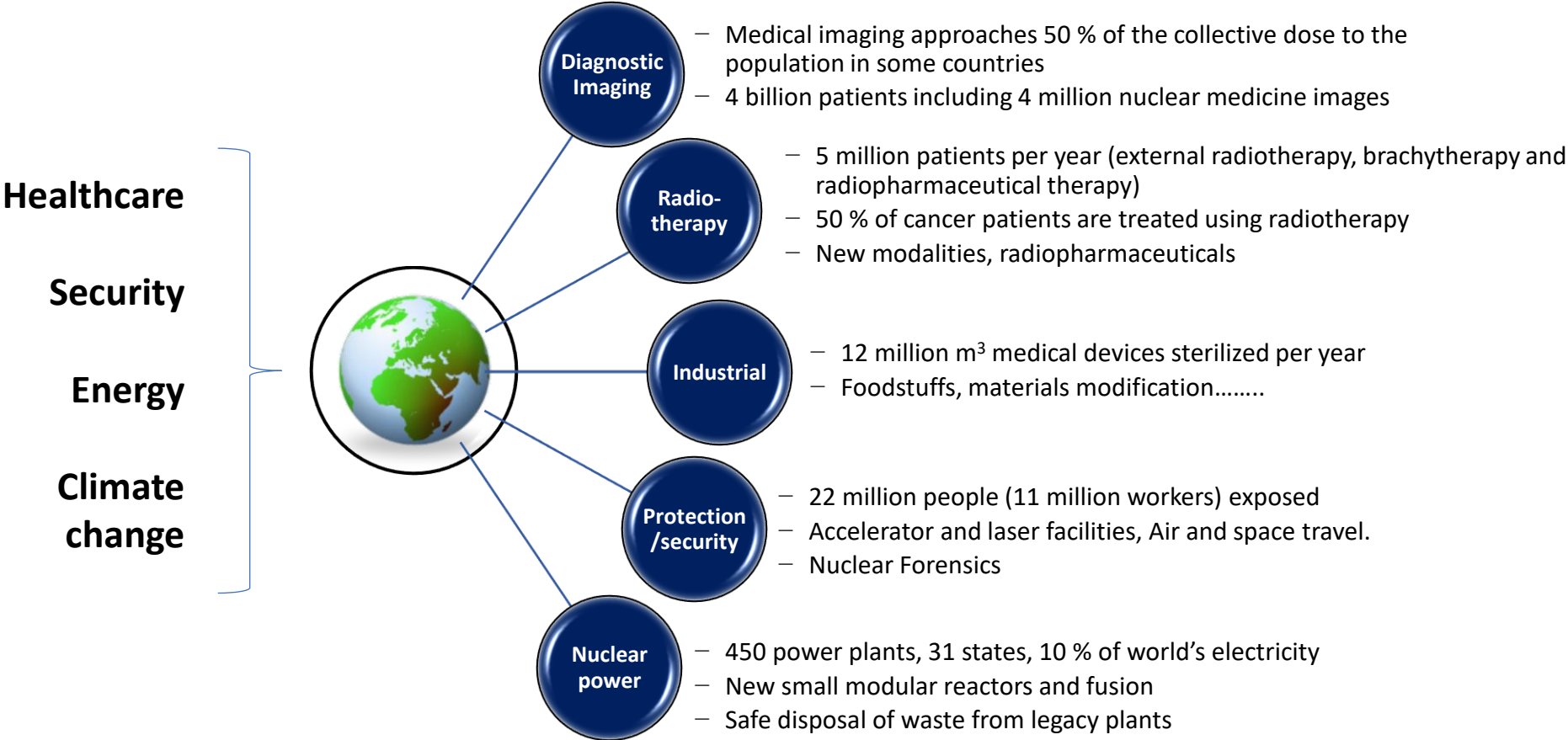
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27^e réunion de la
Conférence générale
des poids et mesures

Overview



Overview

CCRI Vision

A world in which the many benefits of ionizing radiation for healthcare, industry and technology can be realized by accurate and scientifically-rigorous measurement, confident that the associated risks are minimized.

CCRI Mission

to discuss, foster, enable and coordinate the development, comparison and promulgation of national measurement standards for ionizing radiation. We aim to enable all users of ionizing radiation to make measurements with confidence and at an accuracy that is fit-for-purpose.



Overview



(new since 26th CGPM)

- **13 Members**
BEV, LNE, CMI, Rosstandart, METAS, KRISS, NIM, NIST, NMIIJ, NMISA, NPL, NRC, PTB
- **10 Observers**
GUM, CEM, ENEA, BFKH, INMETRO, INM, NMIA, NSC IM, SMU, VSL
- **5 Liaison organizations**
CTBTO, IAEA, ICRU, ISO TC85/SC2, JRC-GEEL

Section I
X- and γ -rays
Charged Particles

33 NMI/DIs
3 Liaison organizations

Section II
Measurement of
Radionuclides

23 NMI/DIs
3 Liaison organizations

Section III
Measurement of
Neutrons

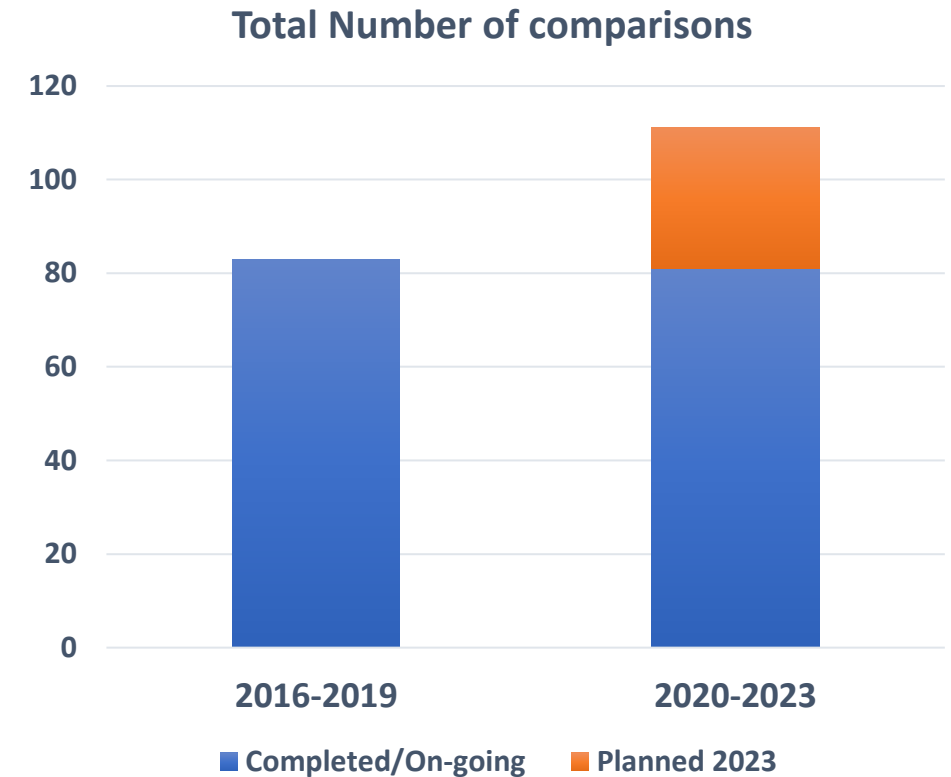
19 NMI/DIs
3 Liaison organizations

Total of 34 states and economies and 7 liaison organizations across all RMOs



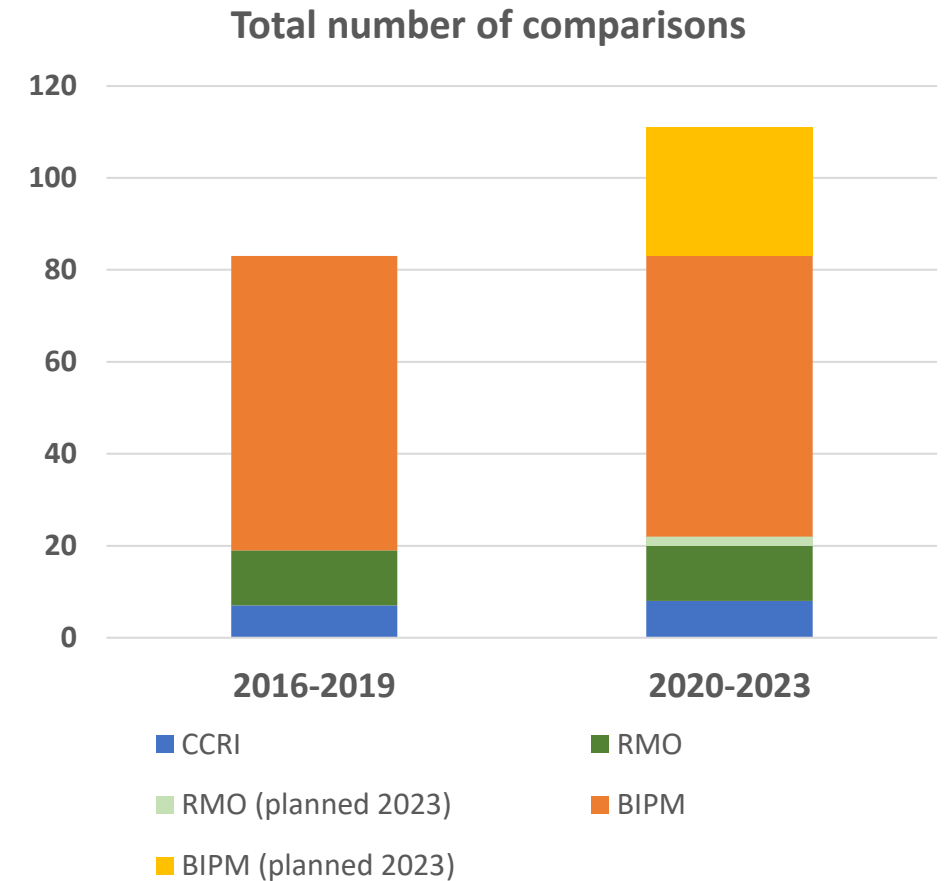
Global comparability of measurements

- **Significant increase in number of comparisons**
(compared to previous dotation period)



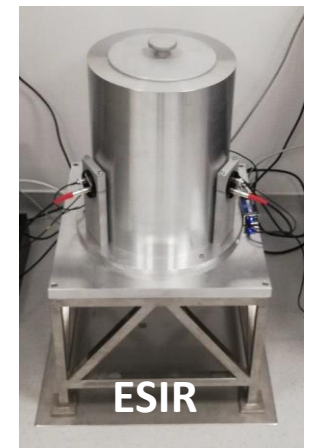
Global comparability of measurements

- **Significant increase in number of comparisons**
(compared to previous dotation period)
- **Particularly BIPM bilateral comparisons**
(~80 % of total. Highly valued by IR metrology community)
- **3 779 IR CMCs in KCDB**
(~5 % reduction from 2019 mainly due to the application of new CMC policy)
- **Increase in *Metrologia* publications**
(last 3 years 25 % higher than previous 4 years)



Global comparability of measurements

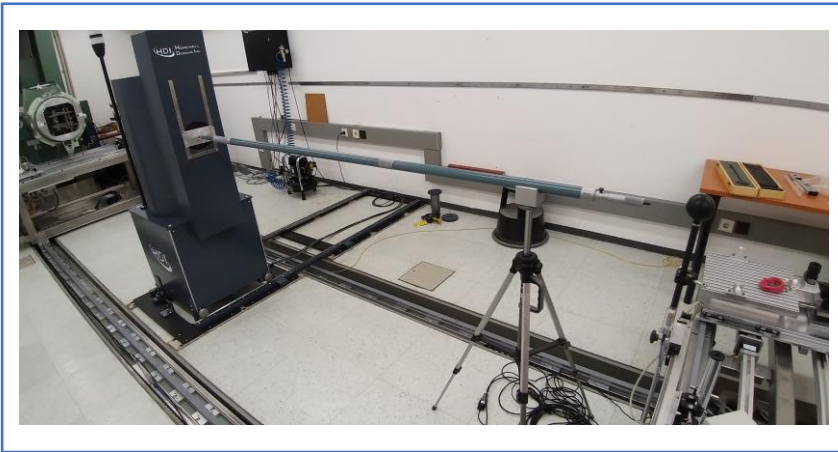
- **Launch of new key comparison to support cancer therapy**
Absorbed dose to water in medium-energy X-rays
Progress towards Key comparisons for electron, proton and light ion beams
- **Extension of support capabilities at the BIPM**
Greater number radionuclides measured by SIRTI
Plans to create a network of Regional SIRTI instruments
Extended SIR (ESIR) under development for β - and α -emitters
- **Continued optimization of service categories**
Reducing burden of maintaining CMCs, without impacting their integrity
- **Training course for entering CMC claims for IR**
Available on BIPM e-learning platform



Global forum for progressing the state-of-the-art

Radionuclide Therapy and Quantitative Imaging Working Group

- Brings together Metrologists, Nuclear Medicine specialists
- Address measurement issues in image-guided radionuclide-based therapies
- Aim to develop and share best practice (including guidance documents)



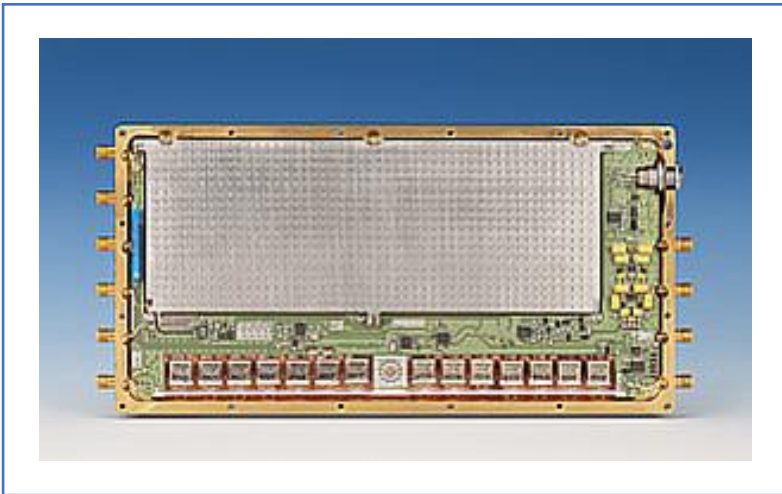
Task Group on radioactive sources and alternative technologies

- Responding to the increasing regulatory burden on large radionuclide sources; a critical component of IR metrology infrastructure.
- Will report to CCRI on options in 2023

Global forum for progressing the state-of-the-art

CCRI-CCQM collaboration on Mass Spectrometry in Radionuclide Metrology

- Understand role MS might play in IR metrology (for example decommissioning, nuclear safeguards and forensics, therapeutic nuclear medicine, environmental measurements.
- Workshop planned for February 2023



CCRI-CCEM Task Group – Low current measurement

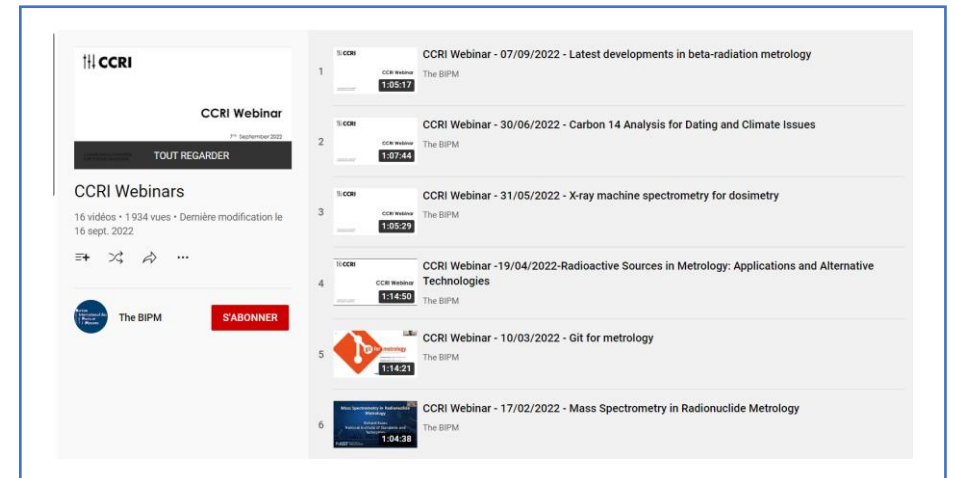
- Guide introduction of new technologies for low current measurement for ionization chambers, widely used in medical and radiation protection applications (for example BIPM SIR)
- Aim to produce a “Best Practice Guide”

Facilitating dialogue between NMIs and stakeholders

Pandemic catalyzed exploration and development of new mechanisms for communication and collaboration (e-learning, Webinars, Blogs, Vlogs).

Webinars enabled KT, meetings between metrologists and stakeholders.

Over 1 200 individuals from 89 states and economies participated in 17 webinars to date.



Communications WG will continue to explore and exploit these and other mechanisms

Representation from different fields and all RMOs

Outlook

Activities started in last 4 years will continue:

- Optimizing CMCs
- Work with other CCs (Mass Spec. and Low Current)
- Challenges in RT and Quantitative Imaging, Regulation of radionuclide sources
- Maximizing the benefit of communications technology

New challenges

- Responding to digital revolution and introduction of Digital SI (a new Digital TG)
- New technologies:
Nuclear power (for example SMR), Fusion transition to commercial application
- Wider CIPM vision as we approach 150th anniversary of Metre Convention



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