

# APMP Member Report 2021

For the 37<sup>th</sup> APMP General Assembly (online)  
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*National Measurement Institute, Australia (NMIA)*

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## Section 1: General Management

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The National Measurement Institute, Australia (NMIA) is Australia's peak metrology body with responsibility for physical, chemical, biological, and legal metrology. This includes administering Australia's regulatory framework for measurement, particularly for trade. As of November 2021, the organisation comprises approximately 400 staff and over 20 sites located in all Australian states and territories. NMIA's headquarters are located in Sydney.

NMIA is a division of the Australian Government's Department of Industry, Science, Energy and Resources (DISER). It is an industry-focused body, with emphasis on ensuring international competitiveness through best measurement practices and promoting confidence in technical capability through the delivery of high level measurement services traceable to the International System of Units (SI). NMIA is committed to maintaining and enhancing the integrity and quality of Australia's measurement capabilities and leads Australia's contribution to the international metrology community, working with the Australian Nuclear Science and Technology Organisation (ANSTO), and the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) as Designated Institutes for ionizing radiation.

### **Updates to organizational structure and contact persons**

Dr Bruce Warrington is NMIA CEO and Chief Metrologist. NMIA's activities are undertaken through five Branches:

- Analytical Services – General Manager: Mr Tim Stobaus;
- Chemical and Biological Metrology – General Manager: Dr Lindsey Mackay;
- Legal Metrology – General Manager: Mr Bill Loizides;
- Physical Metrology – General Manager: Dr Jan Herrmann;
- Strategy & Operations – General Manager: Ms Lisa Hind (since January 2021).

Contact with NMIA can be made initially through NMIA's international office ([international@measurement.gov.au](mailto:international@measurement.gov.au)) or directly to NMIA staff. Note that e-mail addresses for NMIA staff have the form: [firstname.lastname@measurement.gov.au](mailto:firstname.lastname@measurement.gov.au).

## Cooperation

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Strategic research partnerships and cooperation with overseas national metrology institutes and legal metrology authorities, and with local and international research agencies, are important to NMIA's delivery of its strategic objectives and legislative responsibilities. However, as reported in the 2020 Member report, scientific exchanges under these partnerships have continued to be postponed due the COVID-19 pandemic.

- In October 2021, NMIA and the National Metrology Institute of Japan (NMIJ) renewed their bilateral Memorandum of Understanding (MoU), which was extended to also cover cooperation in legal metrology.

### **International committee participation**

NMIA continues its participation in activities and expert committees under the two intergovernmental treaties in which it represents Australia, the Metre Treaty and OIML Convention, with participation since the pandemic continuing to be undertaken virtually.

#### ***BIPM and Metre Treaty activities***

Dr Warrington, NMIA's CEO, provided Australia's official representation in the meeting of NMI Directors and Member State Representatives held in October 2021 and coordinated by APMP. NMIA experts represent Australia in 8 of the 10 CIPM Consultative Committees (CCs) and participated in all CC meetings in which it is a member that were convened since the 2020 APMP meetings, as well as a range of CC Working Group meetings.

- Dr Lindsey Mackay continues as Chair of the Organic Analysis Working Group of the Consultative Committee for Metrology in Chemistry and Biology (CCQM).
- NMIA's Dr Daniel Burke was on the Steering Committee for the October CCQM workshop to develop a roadmap for the measurement science community to support infectious disease management and future pandemic readiness.
- As APMP's Lead TC Chair, Dr Victoria Coleman co-chaired sessions of the BIPM's "International System of Units in FAIR digital data" Workshop in February 2021, in which a number of NMIA staff also participated.
- Dr Coleman also joined the APMP delegation as Lead TC Chair in the March and September meetings of the Joint Committee of Regional Metrology Organizations and the BIPM (JCRB).

#### ***International Committee for Legal Metrology (CIML)***

NMIA's Bill Loizides is Australia's official representative to the CIML, a member of the CIML Presidential Council and Deputy Chair of the Management Committee of the OIML-Certification System. NMIA participates in a range of OIML Technical Committees (TCs) and SubCommittees (SCs) and continues to hold the Secretariat for OIML TC5 (dimensional measuring instruments) and TC12 (Electricity Meters).

- Mr Loizides with staff from NMIA's Legal Metrology Branch participated in the 56<sup>th</sup> CIML Meeting and 16<sup>th</sup> CIML Conference in October 2021.

#### ***APMP***

**June 2021, APMP mid-year meetings:** Dr Jan Herrmann participated as a member of APMP's Executive Committee (EC). Dr Victoria Coleman, Lead TC Chair, conducted the TC Chairs' meetings, and Dr Angela Samuel, Chair of APMP's Developing Economies' Committee (DEC), organized and ran

the 42<sup>nd</sup> DEC meeting. Dr Ilya Budovsky, Chair of APMP's Energy Efficiency Focus Group (EEFG) also participated in the mid-year meetings.

**November 2021, annual APMP meetings:** NMIA's official representatives to APMP's TCs and Focus Groups participated in the annual meetings, Dr Budovsky again chairing the EEFG meeting. Dr Herrmann, Dr Coleman and Dr Samuel again participated in and/or ran the corresponding meetings of the APMP EC, TC Chairs and DEC.

- NMIA's Ben Macklin, Bakir Babic and Jeffrey Merrick (nominated as Australia's official representatives) participated in meetings of the APMP Digital Transformation Focus Group.

Dr Samuel continues to work closely with the DEC Task Force Leads in developing and implementing action plans, including through training, Workshops and Seminars. As DEC Chair, she co-organised activities associated with the MEDEA 3.0 project (MEDEA – Metrology: Enabling Developing Economies in Asia), with Dr Coleman also supporting several of these, both being members of the MEDEA Coordination Committee. These covered:

- Planning Workshops on Health (SDG3; May), Water (SDG6; June) and Economic Growth, Industry, Innovation and Infrastructure (SDGs 8 & 9; August)
- 15 May & 15 June : Webinar series on science communication and how to write case studies
- 29 June : PTB-World Bank Quality Infrastructure Toolkit Workshops

Dr Samuel also took on the role of Convenor of the MEDEA APMP-APLMF Web Portal Working Group in early 2021, with the Portal expected to be launched in November 2021.

### ***Asia Pacific Legal Metrology Forum (APLMF)***

In April 2021, Mr Loizides was elected to the Executive Committee of APLMF.

Mr Darryl Hines provided Australia's official representation at the 28th APLMF Annual Meeting in early November 2021. At this meeting:

- NMIA's former Manager of Training and Technology Transfer, Marian Haire, was presented with a Distinguished Service Award in recognition of over 20 years' service as APLMF Training WG Chair and Training Coordinator.
- NMIA's Will Hartmann receiving an APLMF Service Award for the delivery of the first instructor-led online training course of its kind within the region.

In 2021, NMIA's Training and Technology Transfer section completed development of verification of fuel dispensers e-learning that will be available to APLMF members

### ***Asia Pacific Economic Cooperation (APEC)***

As EC member with responsibility for liaison with APEC, NMIA's Dr Jan Herrmann attended the meetings of the APEC Sub-Committee on Standards and Conformance in February and August 2021. Dr Herrmann is currently convenor of the APEC Specialist Regional Bodies and conducted SRB Forum meetings associated with these APEC SCSC events.

- Dr Samuel is Project Overseer for an APEC Project proposal on Building laboratory capabilities to measure water quality, working closely with APMP members from Hong Kong, China; China; Singapore as well as NRC, Canada.
- NMIA's Dr Åsa Jämting (Nanometrology) is on the organizing committee for an APEC Project on nanoplastics in marine debris, led by the United States.

NMIA is also an implementation partner in the [Pacific Quality Infrastructure \(PQI\) Initiative](#), together with Standards Australia, coordinated by the Pacific Islands Forum Secretariat.

### ***Other international organisations***

NMIA represents Australia in a number of other international organisations, for example:

- NMIA leads Australia's delegation to the Committee on Methods of Analysis and Sampling of the world's peak organisation for food standards, the Codex Alimentarius Commission.
- NMIA experts participate in several international documentary standards committees of ISO and IEC, on behalf of Standards Australia.
- NMIA's Dr Coleman is on the Steering Committee for the Versailles Project on Advanced Materials and Standards (VAMAS).
- NMIA works with the World Anti-Doping Agency (WADA) and the US Anti-Doping Agency (USADA) to develop reference materials and methods for detection of drugs in sport.
- NMIA's expertise is sought in international illicit drug assessments and NMIA is an invited member of the UN's International Narcotics Control Board (INCB) Expert Panel.
- NMIA's Dr Chahine is President of the Metrology Society of Australasia.

## Section 2: Technical Highlights

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COVID-19 has delayed the delivery of some measurement services, but also led to the development of new capabilities to support the Australian response to the pandemic, both within Australia and internationally. Modifications to working arrangements strengthened safety at NMIA sites, enabled remote working, and supported other areas of government through workforce mobility.

### A Few Achievements of Note

Over 2020-21, NMIA delivered:

- More than 80,000 chemical and biological sample analyses for industry and government clients.
- Over 1,500 instrument test and calibration reports, promoting accuracy across Australian industry.
- Regulatory outcomes including visiting 4,755 businesses; testing more than 12,500 measuring instruments; inspecting almost 26,000 lines of packaged goods; and monitoring fuel quality at 346 businesses nationwide.

A particular high point of the year was the appointment in January 2021 of NMIA's inaugural CEO Dr Barry Inglis as an Officer of the Order of Australia. The Order of Australia recognises Australians who have demonstrated outstanding service or exceptional achievement. Dr Inglis played a leadership role across Australia's standards and conformance infrastructure during his period as CEO. At the international level, he was elected President of the International Committee for Weights and Measures (CIPM) in 2010, the peak governance body established under the Metre Convention, stepping down in March 2019. As CIPM President, Dr Inglis oversaw the efforts of the international metrology community that led to the re-definition of the International System of Units, one of the most significant achievements in the history of measurement.

Other highlights over the year include the following:

- In March, NMIA's trade measurement inspectors conducted a concentrated national audit program across the retail fruit and vegetable sector. The 2021 Fruit and Vegetable retail program involved around 550 trader audits, the testing of up to 1000 measuring instruments (scales), the inspection of as many as 2500 lines of packaged goods, and the processing of as many as 500 trial purchases.
- NMIA celebrated World Metrology Day 2021 in May with a webinar featuring presentations by NMIA experts on how measurement can support healthcare to provide optimal health outcomes. Topics included: innovations in response to COVID-19; calibration of medical devices; analysis of medicinal cannabis; DNA reference materials; measurement of PFAS (per- and polyfluoroalkyl substances) in the health of bees; and a presentation on the ColoSSoS (Collaboration on Sewage Surveillance of SARS-CoV-2) project. The project supports reliable results from sewage testing for SARS-CoV-2 that can be integrated into national health data and help governments in their responses to COVID-19.
  - The winner of the Barry Inglis Medal for 2021 was also announced, Dr Joseph Berry from the University of Melbourne, for his work on measurements of surface tension by image analysis.
- In July, the International Olympic Committee announced that Brisbane, Australia, will be the host city for the 2032 Summer Olympic and Paralympic Games. NMIA's Australian Sports Drug Testing Laboratory (ASDTL) will be the anti-doping laboratory supporting these games.

- In September, with support from the Australian Government Department of Foreign Affairs and Trade, Water Research Australia and the Australian Water Association partnered to transfer leading Australian innovation in wastewater surveillance (the ColoSSoS project) to support governments in Indochina in their recovery from the pandemic. NMIA provided the SARS-CoV-2 calibrant and inactivated virus materials used in the Australian inter-laboratory study.
- NMIA activities in the fight against COVID-19 also included bringing together government and industry stakeholders in regular “Mask Testing Forums” to improve mask testing capabilities in Australia.
- NMIA has continued work on a review of Australia’s measurement law, which aims to simplify, streamline and modernise legislation to ensure it meets Australia’s measurement needs now and into the future. In April 2021, reform options were released for public consultation. The Australian Government is reviewing submissions to the public consultation.

## Section 3: CIPM MRA Related Matters

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### 3.1 CIPM MRA Signatory Status

NMIA is Australia's signatory to the global CIPM MRA and has elected to demonstrate that its calibration services are operated in accordance with the requirements of ISO 17025 by using third-party accreditation. NMIA has engaged the National Association of Testing Authorities, Australia (NATA) as the accreditation body and uses peers from other national metrology institutes as technical assessors.

### 3.2 Status of CMCs

NMIA currently has 311 CMCs in Appendix C of the BIPM Key Comparison Database, with 208 of these in General Physics and 103 in Chemistry and Biology.

### 3.3 Status of the Quality System

NMIA maintains an ISO/IEC 17025 compliant quality system covering all of its major technical services with most of these accredited by NATA. NMIA has two corporate accreditations with NATA, one covering 17 groups in physical metrology and trade measurement and the other covering 7 groups in chemical and biological fields and 3 analytical services laboratories. In addition there are three separate accreditations with NATA for chemical and biological testing plus one to support pattern approval activities under OIML. Some of the activities are also accredited/certified to other international standards:

- Quality Management System of the Analytical Services Branch is certified to ISO 9001 by BSI.
- Reference Material Production is accredited to ISO17034.
- Provision of Proficiency Testing Schemes is accredited to ISO17043.
- Testing for Drugs in Sport is accredited to the WADA World Anti-Doping Code.

NMIA complies with CIPM MRA requirements by using NATA accreditation to demonstrate that its calibration services and reference material production and certifying services are operated in accordance with the requirements of ISO/IEC 17025 and ISO 17034.

### 3.4 Peer review activities

COVID-19 has had an impact on NMIA's ability to undertake international assessments as well as host international assessors. However, NMIA has hosted remote assessments as follows:

- January: Mass and Density, KRISS Korea
- February: Pressure, MSL New Zealand
- April: Force, CMS/ITRI, Chinese Taipei

and has participated in the following remote assessments:

- March: Time and Frequency, NMIJ and NICT Japan
- June: Organic Analysis, NMIJ Japan

### 3.5 Interactions with other elements of the national quality infrastructure

NMIA interacts with the other agencies that make up Australia's quality infrastructure, with particularly strong engagements with Standards Australia (SA) and NATA. NMIA also continues its participation in the Technical Infrastructure Alliance (TIA) forum aimed at bringing together the four agencies – including JAS-ANZ (the Joint Accreditation System of Australia and New Zealand) – for mutual benefit.

NMIA provides technical assessors to NATA for laboratory accreditation activities, with experts also serving on NATA Accreditation Advisory Committees, including chairing some of these. NMIA staff serve on several SA technical committees and represent SA at international technical committee meetings of ISO and IEC.

## Section 4: Future plans

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NMIA considers regional and international engagement to be essential to achieving the goals of a national metrology institute, in particular in the context of shrinking national resources and challenges that are increasingly global and complex. Consequently, NMIA strongly supports APMP and urges APMP to proactively harness the expertise, mutual goodwill and resources available at regional and international levels in the interests of addressing national, regional and global needs.

NMIA thanks the APMP Chair and Executive Committee (EC) for driving the implementation of APMP's Strategic Plan 2021-2023 and for the ongoing support for members in dealing with the challenges of COVID-19. This Strategy, together with the corresponding DEC Strategic Plan provide APMP with a strong vision and forward direction that takes into account evolving international, regional and national environments. NMIA is also pleased to support the APMP Chair and EC's initiation of APMP's work on Digital Transformation with the planned establishment of this new Focus Group. This is an important initiative for all APMP members, and NMIA looks forward to contributing to its success.

NMIA continues to undertake its own strategic activities, including the launch in October of its Strategic Workforce Plan. As noted previously, the Plan focuses on the development of skills for NMIA's future workforce including a broader set of engagement, communication and leadership skills.

A new area of activity initiated this year is NMIA's own "Digital Transformation" project coordinated by the Strategy and Operations Branch. NMIA is currently examining how Australia's measurement framework can effectively and efficiently transform to support the digital systems and processes of the future, as well as opportunities to provide enhanced services and regulatory responses that result in significantly better economic and regulatory savings for Australian industry.

Please contact NMIA for additional detail on any of these activities.