

KCDB REPORT TO THE JCRB

September 2020 to March 2021

Executive Summary

The KCDB 2.0 was implemented in October 2019, providing search facilities of CMCs and comparisons, a user platform supporting intra- and intra-RMO reviews, a frame for comparison registration and publication, and a tool for user-generated statistics.

The CMCs published since the achievement of KCDB 2.0 are still provided via two different paths:

- i) CMCs approved on the former JCRB support and imported by the KCDB Office;
- ii) CMCs drafted, reviewed, approved and published on the KCDB web platform.

Access to the KCDB 2.0 has been accompanied by making available a variety of guidance material and demonstrations to users within the frame of the CBKT.

An Application Programming Interface for CMCs registered in the KCDB has been developed and is presently under beta-testing.

Introduction

This report summarizes the major progress and evolution of the BIPM Key Comparison Database (KCDB) over the last six months.

The KCDB 2.0 was made available on 29 October 2019. The platform is now being used for CMC submissions, review and publication, as well as for comparison registration and updates, on a daily basis.

Nevertheless, the Chemistry and Biology community did not use the tool for CMCs at start. The first CMCs in Chemistry and Biology were drafted on the platform in November 2020 for their review Cycle XXII. They have been subject to intra-RMO review and were recently submitted for JCRB review which will take place at two sessions of the CCQM Key Comparison Working Group meetings in April 2021.

The status of the database concerning **Calibration and Measurement Capabilities** are given in Section 1. In Section 2, recent information concerning **comparisons** carried out within the frame of the CIPM MRA is summarized. Section 3 highlights the status of **Associates** of the BIPM, a short view on the status of **the KCDB 2.0** is presented in Section 4, and the recent development of an **Application Programming Interface** is presented in Section 5.

This report reflects the status as of 1 March 2021.

1. CIPM MRA Appendix C : Calibration and Measurement Capabilities

1.1. CMC status

The new database became accessible in October 2019. The CMCs that presently get published on the KCDB have two sources:

- i) CMCs approved on the former JCRB support and imported by the KCDB Office;
- ii) CMCs drafted, reviewed, approved and published on the KCDB web platform.

The delay in publishing CMC data posted on the previous JCRB site has been absorbed, and only a small number of batches not yet approved remain to publish.

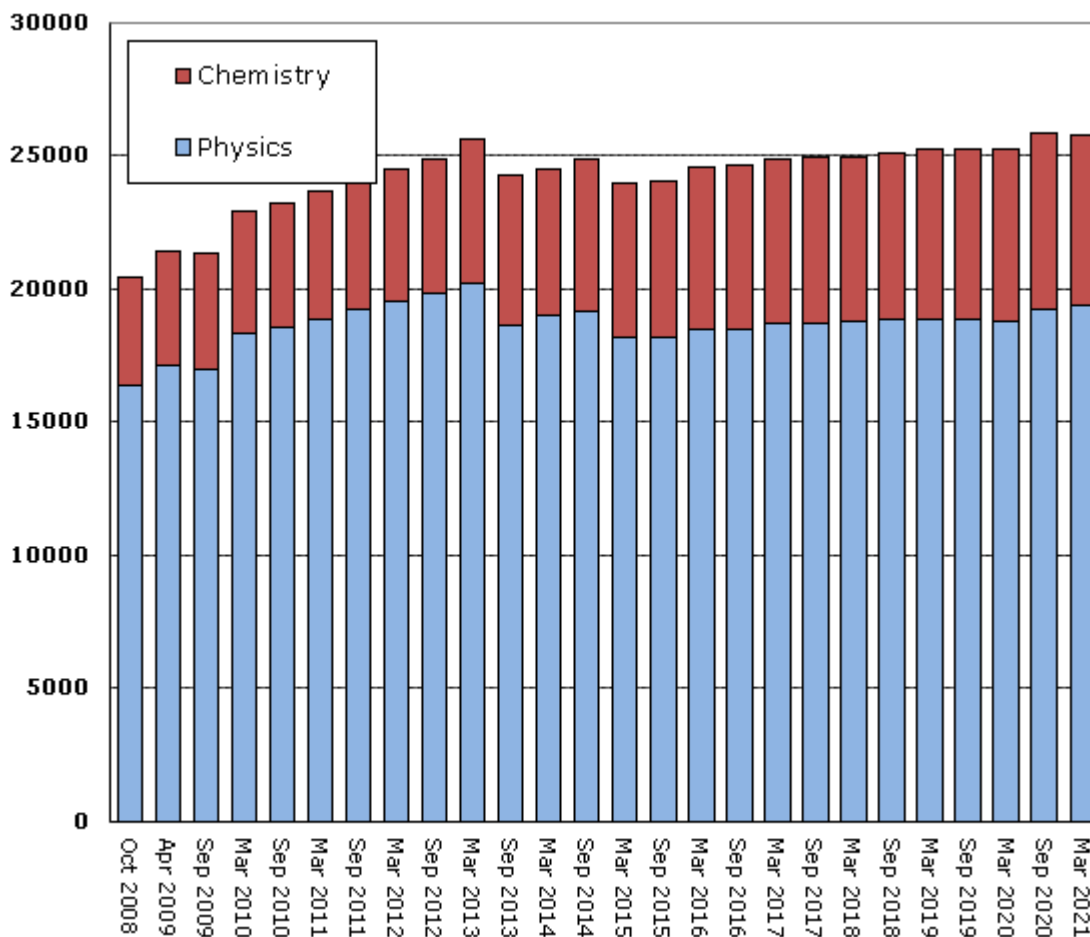


Figure 1. Number of CMCs registered in the KCDB since October 2008.

S. Picard and S. Maniguet

There are presently¹ 25 733 (25 801) CMCs published in the KCDB on 1 March 2021 of which 19 387 (19 238) are in Physics and 6 346 (6 563) in Chemistry and Biology. The total number of published CMCs have increased by 2.1 % over a one-year period. Estonia, previously Associate, became Member State in 2021, explaining a part of this increase. The decrease by 3 % of CMCs in Chemistry and Biology is linked to the successive implementation of broad-scope CMCs.

The repartition of CMCs is available in real-time from the KCDB home page in “CMC statistics” <https://www.bipm.org/kcdb/cmc/statistics/public> . The Excel files previously used as a basis for the CMC statistics are available on the [access-restricted JCRB CMC website](#) until 30 June 2021 (cf. JCRB Report of the 43rd JCRB Meeting).

The status of not yet published CMCs that are placed on the platform is listed in Table 1-a. 2029 (872) CMCs are presently in an “intermediate” state. The numbers show a neat increase of the activity on the KCDB web platform over the last 6 months.

GULFMET published their first CMCs, 4 CMCs in Time and Frequency (TF) in October 2020. GULFMET may hence now participate in future JCRB reviews in TF. The distribution of published CMCs along the RMOs is listed in Table 1-b.

Table 1-a Status of not yet published CMCs in KCDB on 1 March 2021.

| Status | number of CMCs | |
|--------------------------|----------------|-------------|
| | 2020-08-26 | 2021-03-01 |
| Draft | 74 | 276 |
| RMO: Submitted | 118 | 208 |
| RMO: Under Review | 21 | 23 |
| RMO: Review Completed | 22 | 31 |
| RMO: Accepted | 0 | 120 |
| RMO: Revision Requested | 8 | 148 |
| Submitted to the JCRB | 0 | 29 |
| JCRB: Under Review | 104 | 606 |
| JCRB: Revision Requested | 34 | 71 |
| JCRB: Revision Completed | 9 | 5 |
| JCRB: Approved | 0 | 0 |
| JCRB: Waiting for VOTE | 2 | 0 |
| Greyed out | 475 | 513 |
| Submitted to the KCDB | 5 | 0 |
| TOTAL | 872 | 2029 |

¹ The numbers given within parenthesis represents the number of CMC reported in end of August 2020.

Table 1-b Number of published CMCs in KCDB per RMO on 1 March 2021
(follow-up of Action 17/1 of JCRB 2006).

| RMO | Number of CMCs | |
|----------|----------------|------------|
| | 2020-08-26 | 2021-03-01 |
| AFRIMETS | 620 | 624 |
| APMP | 6409 | 6477 |
| COOMET | 2654 | 2668 |
| EURAMET | 11383 | 11331 |
| GULFMET | 0 | 4 |
| SIM | 4735 | 4629 |
| TOTAL | 25801 | 25733 |

1.2. CMC evolution

The total number of published CMCs during the last 6 months for each metrology area is listed in Table 1-c. These numbers include revised CMCs and upload of greyed out CMCs, not necessarily needing a JCRB review. The total number gives the impression that the number of submitted CMCs have suddenly decreased. However, a larger number of CMCs were published during the previous 6-month period while still compensating for the previous delay (linked to the implementation of the new software).

The first CMCs for United Arab Emirates were published on 8 October 2020 in Time and Frequency. Those CMCs were reviewed informally by GULFMET (as GULFMET have Provisional RMO status) with APMP carrying out the formal intra-regional review on behalf of GULFMET.

The first CMC for CARICOM, involving the Designated Institute of Trinidad and Tobago, was published in Mass on 12 January 2021, submitted via SIM.

Table 1-c Number of published CMCs per metrology area on 1 March 2021 since 26 August 2020.

| Metrology area | Published CMCs | Published CMCs |
|----------------|----------------|----------------|
| | 2020-08-26 | 2021-03-01 |
| AUV | 179 | 149 |
| EM | 134 | 469 |
| L | 751 | 112 |
| M | 148 | 179 |
| PR | 168 | 0 |
| T | 497 | 26 |
| TF | 26 | 66 |
| QM | 750 | 1280 |
| RI | 371 | 0 |
| TOTAL | 3024 | 2281 |

1.3. Greyed out CMCs and reinstatements

There are presently 513 (475) greyed out CMCs. Table 1-f displays all greyed out CMCs where the most recent events are highlighted in yellow and green for increased and decreased number of greyed-out CMCs, respectively.

Table 1-e Status of greyed out CMCs on 1 March 2021.

| RMO | Country | AUV | M | PR | EM | T | RI | L | QM | TF | Total |
|----------|---------|-----|----|----|----|---|-----|----|-----|----|-------|
| AFRIMETS | ZA | | 4 | | | | 11 | | | | 15 |
| APMP | CN | | | | | | | 1 | | | 1 |
| APMP | IN | | | | | | | 3 | | | 3 |
| APMP | JP | | | | | | | 3 | | | 3 |
| APMP | KR | | | | | | | | 6 | | 6 |
| APMP | NZ | | | | 1 | | | | | 2 | 3 |
| APMP | TH | | | | | | 3 | 1 | | | 4 |
| EURAMET | BG | | | | | | | | 5 | | 5 |
| EURAMET | DE | | | | | 1 | 3 | | 12 | | 16 |
| EURAMET | ES | | | | | | 2 | | | | 2 |
| EURAMET | FI | | | | | | | 1 | | | 1 |
| EURAMET | FR | | | | | | | | 1 | | 1 |
| EURAMET | IT | | 31 | | 19 | | 98 | 1 | 3 | | 152 |
| EURAMET | JRC | | | | | | 110 | | 82 | | 192 |
| EURAMET | LT | | 5 | | | | | | | | 5 |
| EURAMET | LV | | | | 30 | | | | | | 30 |
| EURAMET | NO | | 4 | | | | | 1 | | | 5 |
| EURAMET | PT | | | | | | 1 | 1 | | | 2 |
| EURAMET | SE | | | | 2 | | | | | | 2 |
| EURAMET | SK | 6 | | | | | | 2 | | | 8 |
| SIM | MX | | | | | | | 1 | 35 | | 36 |
| SIM | US | | 3 | | 5 | | | | | | 8 |
| SIM | BR | | 3 | | | | | | 10 | | 13 |
| TOTAL: | | 6 | 50 | 0 | 57 | 1 | 228 | 15 | 154 | 2 | 513 |

| | |
|--|---------------------|
| | Increased in number |
| | Decreased in number |

1.4. Format of uncertainty equations

A request from CCL, supported by CCM, to replace the numerical equation format (presently applied in the KCDB) by quantity based equations, was approved by CIPM members at the Consultative Committee President's meeting in June 2018.

The transition to this new format requests a revision of the uncertainty equations. The JCRB Executive Secretary and the KCDB Office developed instructions how to carry out such revision.

The TC-L of EURAMET made the revision May/July 2020 and the revised CMCs were successfully uploaded by the KCDB Office in July. No other revision has been initiated not completed.

2. CIPM MRA Appendix B : Key and supplementary comparisons

2.1. Comparison status and evolvement

On the 1 March 2021 the KCDB covered 1706 (1672) comparisons online distributed as listed in Table 2; 1080 of these are key comparisons and 626 supplementary comparisons. This represents a total increase of 34 comparisons, all registered by the pilots using the KCDB web platform.

Table 2 Key and Supplementary Comparisons on 1 March 2021.

| Entity | KC | SC |
|----------------------|------|-----|
| BIPM | 97 | 1 |
| CC | 529 | 34 |
| AFRIMETS | 8 | 27 |
| APMP | 144 | 119 |
| COOMET | 49 | 117 |
| EURAMET | 176 | 200 |
| GULFMET ² | 4 | 20 |
| SIM | 73 | 108 |
| TOTAL | 1080 | 626 |

Figure 2 shows the evolution of the total number of key (dark blue) and of supplementary (peach) comparisons registered in the KCDB since September 2003. The annual increase of key comparisons seems to have stabilized to around some +30. The annual increase of key- and supplementary comparisons is around 6%. The ratio of supplementary comparisons, 20% in 2006, keeps progressing and constitutes 37% of all comparisons. The graph include repeats of key comparisons.

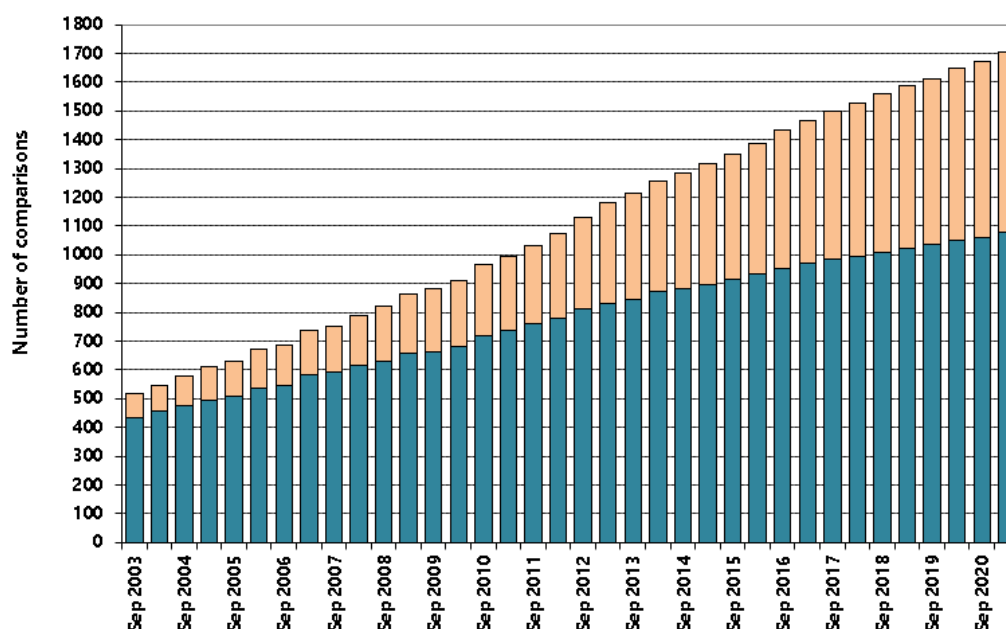


Figure 2. Total number of key comparisons (dark blue) and supplementary comparisons (peach) registered in the KCDB: evolution since September 2003

² The GULFMET was approved as an RMO on a provisional basis by the CIPM in October 2015.

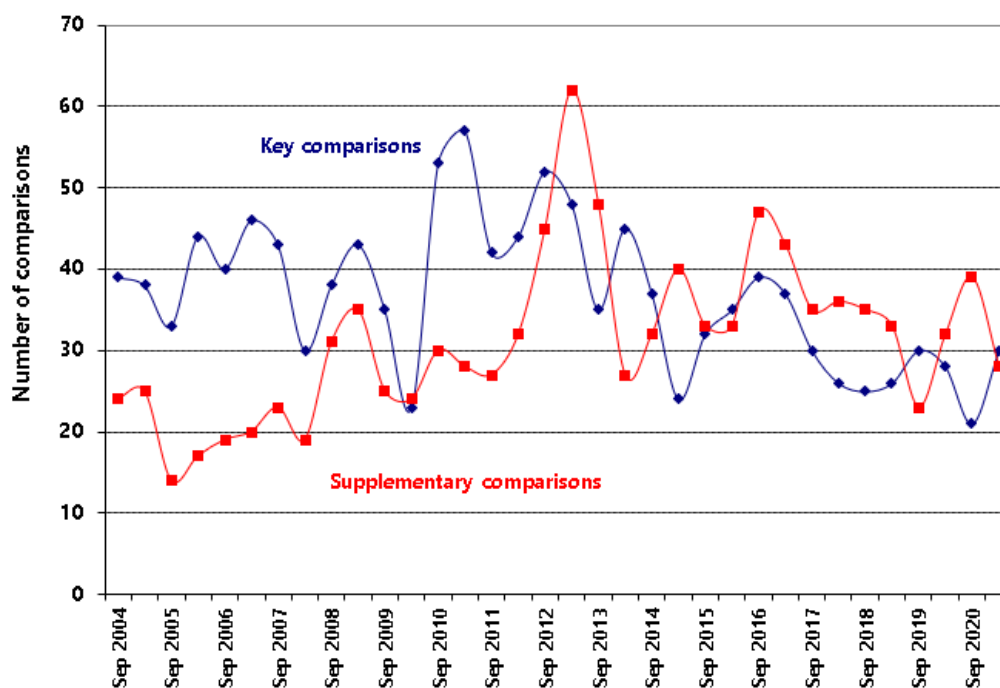


Figure 3. Number of new comparisons registered in the KCDB over the one-year period ending at the date indicated on the abscissa.

The number of new key and supplementary comparisons registered in the KCDB over the one-year period ending at the date indicated on the the abscissa is illustrated in Figure 3.

Graphs generated in real-time illustrating the participation in key and supplementary comparisons are available under the Statistics menu on the KCDB home page:

<https://www.bipm.org/kcdb/comparison/statistics/key>

<https://www.bipm.org/kcdb/comparison/statistics/supplementary>.

The following 34 comparisons were registered as new during the last 6 months:

| | | |
|-------------------|-------------------|--------------------|
| AFRIMETS.AUV.V-K5 | CCQM-K169 | COOMET.L-S31 |
| AFRIMETS.M.FF-S1 | CCQM-K170 | COOMET.L-S32 |
| APMP.L-K5.2021 | CCQM-K171 | COOMET.M.FF-S10 |
| APMP.L-K8.2021 | CCQM-K172 | COOMET.PR-S12 |
| APMP.L-S10 | CCQM-K173 | COOMET.RI(II)-S3 |
| CCM.P-K16 | CCQM-K174 | EURAMET.AUV.V-S1 |
| CCM.P-K17 | CCRI(III)-K8.2024 | EURAMET.L-S31 |
| CCM.P-K18 | CCT-K7.2021 | EURAMET.PR-K3.2020 |
| CCQM-K152 | COOMET.EM-S25 | SIM.QM-S10 |
| CCQM-K154.b | COOMET.EM-S26 | SIM.T-K6.8 |
| CCQM-K154.c | COOMET.L-K4.2021 | SIM.T-S11 |
| CCQM-K154.d | | |

The following 50 reports were published during the last 6 months:

| | | |
|----------------------------------|------------------------|----------------------|
| AFRIMETS.T-S2 | CCQM-K146 | EURAMET.M.FF-S10 |
| APMP.QM-K18.2016 | CCQM-K151 | EURAMET.M.G-K3 |
| APMP.QM-S12 | CCQM-K152 | EURAMET.M.H-S1.a.b.c |
| APMP.QM-S7.1 | CCQM-K154.a.1 | EURAMET.M.M-K4.2015 |
| BIPM.EM-K14.a and b (SASO) | CCQM-K18.2016 | EURAMET.M.P-K1.c |
| BIPM.RI(I)-K1 (BEV) | CCQM-K34.2016.1 | EURAMET.M.P-K15.1 |
| BIPM.RI(I)-K3 (VNIIM) | CCQM-K73.2018 | EURAMET.PR-K2.a.2011 |
| BIPM.RI(II)-K1.Ag-110m | CCT-K6.2 | EURAMET.PR-S5 |
| BIPM.RI(II)-K1.Co-60 (PTB, TAEK) | COOMET.M.FF-S9 | EURAMET.QM-S12 |
| BIPM.RI(II)-K1.Ge-68 | COOMET.M.H-S5 | EURAMET.RI(I)-K1.1 |
| BIPM.RI(II)-K1.Na-22 | COOMET.M.P-S4 | EURAMET.RI(I)-K4.1 |
| BIPM.RI(II)-K1.Ra-223 | EURAMET.EM-S41 | GULFMET.EM-S5.1 |
| BIPM.RI(II)-K1.Sr-85 | EURAMET.EM-S42 | GULFMET.M.F-S1 |
| BIPM/RI(I)-K6 (LNE-LNHB) | EURAMET.L-K4.2005.1 | GULFMET.M.F-S2 |
| CCM.FF-K3.2011.1 | EURAMET.M.D-K1.1 | GULFMET.M.M-K4 |
| CCM.M-K8.2019 | EURAMET.M.FF-K4.1.2016 | SIM.QM-S10 |
| CCQM-K143 | EURAMET.M.FF-K4.2.2015 | |

On 1 March 2021, 85 abandoned or superseded key and supplementary comparisons were stored in the KCDB archives (included in the presented statistics).

2.2. Comparisons older than 5 years (Follow-up Action 33/3 of JCRB 2015)

Action 33/3: *The BIPM KCDB office, as part of the KCDB report to the JCRB, to identify Key and Supplementary Comparisons which were started 5 or more years ago and have not reached a conclusion.*

Although the number of unfinished comparison older than 5 years shows a slight decrease from previous years, the total number seems to have stabilized to roughly half the number compared before taking any action. The total number is illustrated in Figure 4. A list of the comparisons concerned may be found in Appendix I.

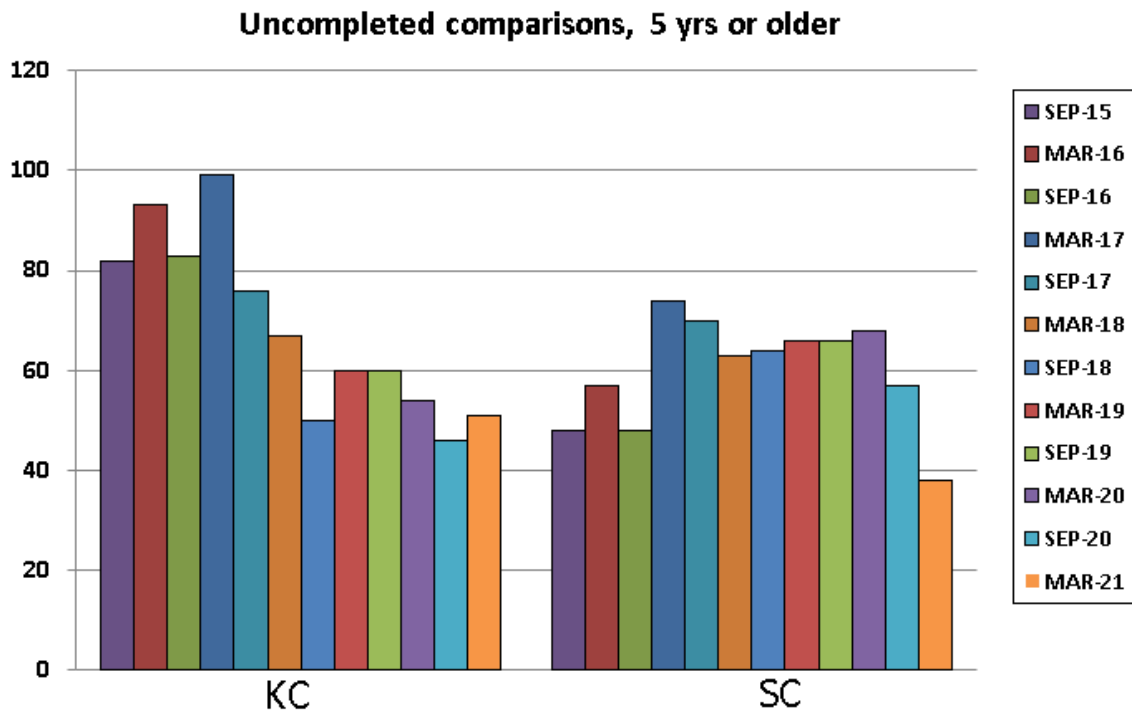


Figure 4. Histogram showing the number of incomplete comparisons that started more than 5 years ago.

3. Participation of Associates of the CGPM in CIPM MRA activities

Table 3 summarizes the participation of the 40 Associates of the CGPM in CIPM MRA activities as at 1 March 2021. In particular, CARICOM, via Trinidad and Tobago Bureau of Standards, submitted their first CMC. Cambodia signed the CIPM MRA and became Associate, while Estonia, former Associate became member

Table 3. CIPM MRA activity of the NMIs of Associates of the CGPM: number of published CMCs and participation in key and supplementary comparisons. ³

| Country | Published CMCs | Greyed out CMCs | Key Comparisons | Supplementary Comparisons |
|-------------------------------|----------------|-----------------|-----------------|---------------------------|
| Albania | 9 | 0 | 8 | 4 |
| Azerbaijan | 31 | 0 | 1 | 8 |
| Bangladesh | 0 | 0 | 2 | 2 |
| Bolivia | 21 | 0 | 9 | 24 |
| Bosnia and Herzegovina | 74 | 0 | 13 | 14 |
| Botswana | 3 | 0 | 1 | 5 |
| Cambodia | 0 | 0 | 0 | 0 |
| CARICOM (Caribbean Community) | 1 | 0 | 0 | 10 |
| Chinese Taipei | 390 | 0 | 101 | 49 |
| Costa Rica | 68 | 0 | 19 | 32 |
| Cuba | 113 | 0 | 6 | 22 |
| Ethiopia | 0 | 0 | 0 | 3 |
| Georgia | 61 | 0 | 6 | 18 |
| Ghana | 0 | 0 | 2 | 7 |
| Hong Kong, China | 288 | 0 | 96 | 28 |
| Jamaica | 22 | 0 | 6 | 11 |
| Kuwait | 0 | 0 | 2 | 2 |
| Latvia | 29 | 30 | 13 | 9 |
| Luxembourg | 0 | 0 | 4 | 1 |
| Malta | 0 | 0 | 4 | 3 |
| Mauritius | 0 | 0 | 2 | 3 |
| Moldova, Republic of | 76 | 0 | 4 | 17 |
| Mongolia | 16 | 0 | 4 | 4 |
| Namibia | 7 | 0 | 0 | 3 |
| North Macedonia | 21 | 0 | 9 | 11 |
| Oman | 0 | 0 | 0 | 2 |
| Panama | 37 | 0 | 8 | 22 |
| Paraguay | 8 | 0 | 2 | 19 |
| Peru | 106 | 0 | 31 | 35 |
| Philippines | 32 | 0 | 13 | 9 |
| Qatar | 0 | 0 | 2 | 1 |
| Seychelles | 0 | 0 | 0 | 3 |
| Sri Lanka | 0 | 0 | 8 | 2 |
| Sudan | 0 | 0 | 0 | 1 |
| Syrian Arab Republic | 0 | 0 | 12 | 3 |
| Tanzania | 0 | 0 | 0 | 1 |
| Uzbekistan | 0 | 0 | 0 | 2 |
| Viet Nam | 31 | 0 | 35 | 9 |
| Zambia | 11 | 0 | 2 | 8 |
| Zimbabwe | 19 | 0 | 1 | 8 |
| TOTAL | 1455 | 30 | 0 | 0 |

³ These numbers take into account all comparisons registered in the KCDB, disregarding status, for which at least one laboratory of the Associate is listed in the participants list.

The repartition of CMCs and comparisons among Associates is illustrated in Figures 5 and 6.

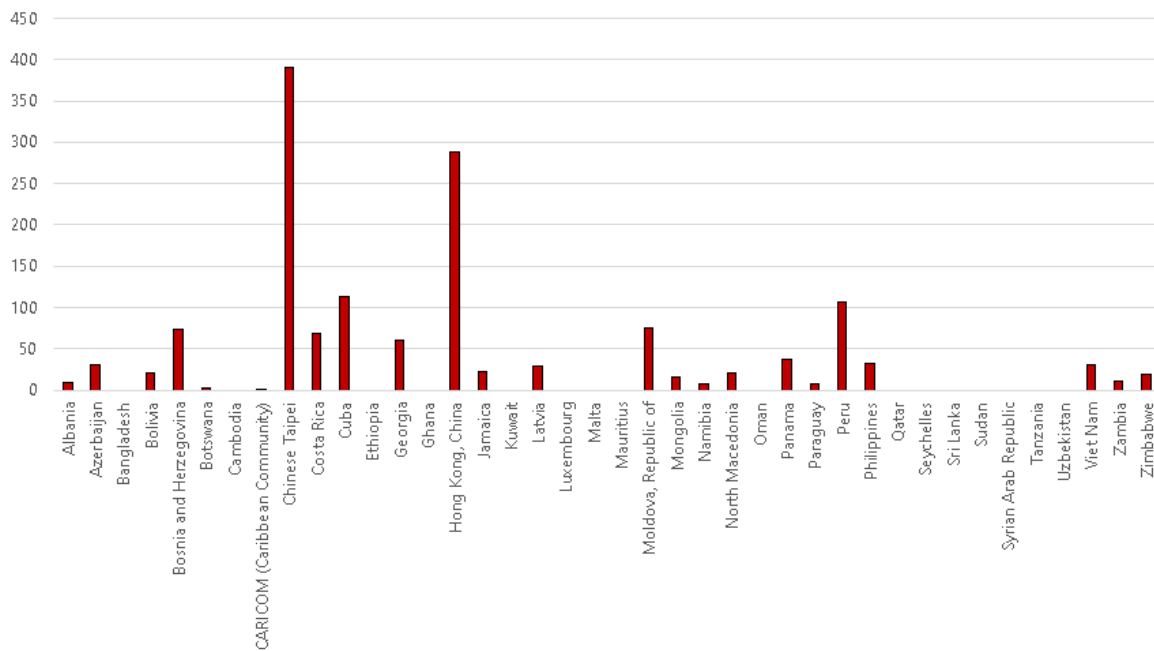


Figure 5. Graph on the number of CMCs declared by Associates of the CGPM

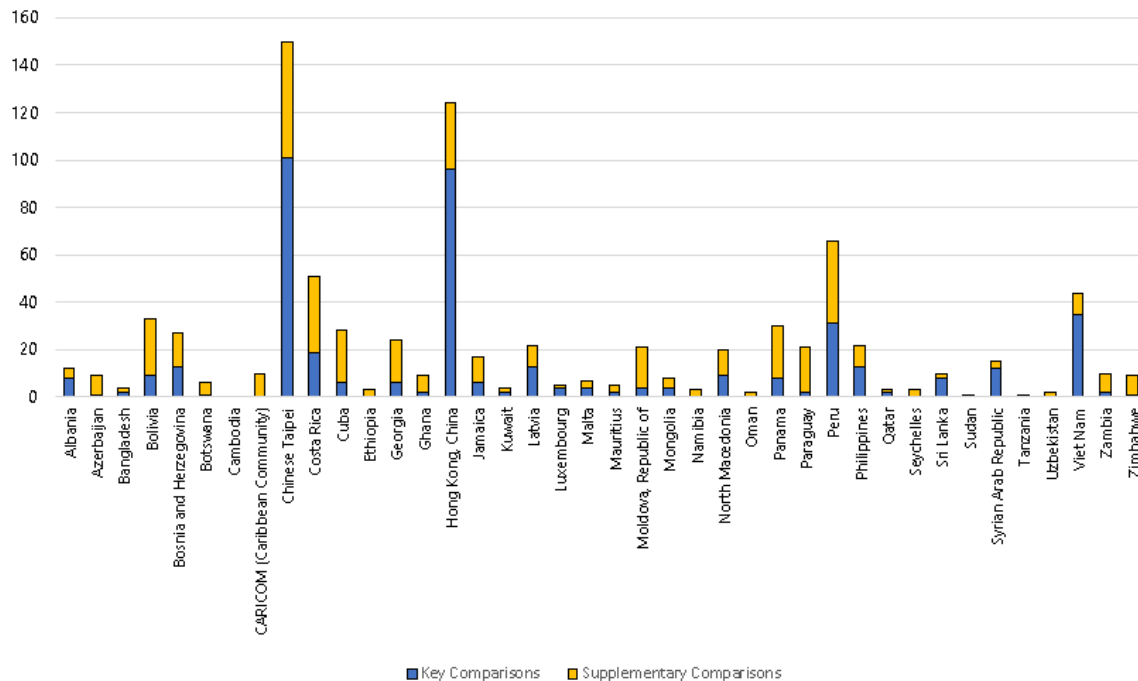


Figure 6. Graph on the participation of Associates of the CGPM in key and supplementary comparisons

4. Status of the BIPM KCDB 2.0

- The KCDB 2.0 was made available in October 2019, and the KCDB web platform was successively made available to the different metrology areas, where now all metrology areas use the KCDB platform.
- The implementation has been accompanied by providing a variety of guidance material, cf. <https://www.bipm.org/en/about-us/kcdb-help.html>, and demonstrations to users within the frame of the CBKT <https://www.bipm.org/en/cbkt/>, see also Appendix II and III. The guidance material is successively enlarged.
- The KCDB 2.0 software is supported by an Application Management contract. Revealed anomalies are corrected; the software has been updated at a number of occasions since start. Anomalies and suggestions for improvements may be communicated by the users by completing the form https://www.bipm.org/utis/common/pdf/KCDB_2.0/Form_for_declaring_an_anomaly_or_request.docx.
- The first CMC that has been drafted, reviewed and approved on the KCDB web platform was published on 2 April 2020 - there are now 326 such CMCs. The average duration of the JCRB review of 1 CMC is 93 days.

4.1. Quality System

The Quality System underpinning the previous version of the KCDB has been updated and an internal audit was held in September 2020. The set of procedures will be completed by a document describing the database. A new internal audit is foreseen 2021.

5. Application Programming Interface for the KCDB

The BIPM has recently developed an Application and Programming Interface for the KCDB (API KCDB). This interface allows external users to make CMC queries from a support other than the KCDB web and to collect machine readable data.

The API KCDB is presently being beta-tested by members from NMIs that have indicated their interest. Adjustments have been made based on their feedback.

The API KCDB will play an important role for Digital Calibration Certificates.

Acknowledgement

The support on testing and constructive feedback received from members of METAS, PTB, VNIIM, NRC and CENAM is greatly appreciated. We value the collaboration with Sten Bergstrand (JCRB Executive Secretary). Many thanks also to the BIPM IT team for their continued support.

APPENDIX I List of uncompleted comparisons older than 5 years**a) Key Comparisons**

| KC identifier | Indicated year | Status Sep-2020 | Pilot |
|----------------------|-----------------------|-----------------------------|-----------------|
| AFRIMETS.M.P-K2 | 2012 - 2013 | Measurements in progress | NMISA |
| APMP.EM.BIPM-K11.2 | 2004 - | Report in progress, draft B | Puslit KIM-LIPI |
| APMP.EM.RF-K8.CL | 2012 - 2013 | Measurements completed | NMIJ AIST |
| APMP.EM-K12 | 2014 - 2015 | Waiting for approval | NMC, A*STAR |
| APMP.EM-K2 | 2010 - 2011 | Waiting for approval | KRISS |
| APMP.EM-K5.1 | 2010 - 2013 | Waiting for approval | NIM |
| APMP.M.D-K4 | 2007 - 2008 | Report in progress, draft A | KRISS |
| APMP.M.F-K3.a | 2011 - 2014 | Measurements in progress | NIM |
| APMP.M.F-K3.b | 2011 - 2014 | Measurements in progress | NIM |
| APMP.M.P-K1.c.2 | 2012 - | Submitted to the KCDB | KRISS |
| APMP.M.P-K15 | 2013 - 2014 | Measurements completed | NMIJ AIST |
| APMP.M.P-K4 | 2015 - 2016 | Measurements completed | KRISS |
| APMP.M.P-K7.2 | 2015 - 2016 | Report in progress, draft B | NIMT |
| APMP.M.T-K1 | 2015 - 2016 | Planned | KRISS |
| APMP.PR-K2.b | 2014 - | Report in progress, Draft A | KRISS |
| APMP.PR-K3.a | 2012 - 2014 | Measurements in progress | NMIJ AIST |
| APMP.PR-K3.a.1 | 2006 - | Measurements completed | NIM |
| APMP.RI(I)-K3.2013 | 2015 - 2016 | Planned | INER |
| APMP.RI(I)-K4 | 2009 - 2010 | Report in progress, draft A | INER |
| APMP.RI(I)-K5 | 2013 - 2014 | Report in progress, draft A | KRISS |
| APMP.T-K3.6 | 2013 - 2014 | Planned | NIM |
| APMP.T-K4.1 | 2013 - 2014 | Planned | NIM |
| APMP.T-K8 | 2012 - 2016 | Report in progress, Draft B | NMIJ AIST |
| CCEM.RF-K26 | 2014 - 2016 | Measurements in progress | NMIJ AIST |
| CCEM.RF-K5.c.CL | 2012 - 2015 | Measurements in progress | NMIJ AIST |
| CCL-K1.2011 | 2011 - 2014 | Report in progress, Draft A | CENAM |
| CCM.D-K3 | 2016 - | Planned | NMIJ AIST |
| CCM.FF-K2.2011 | 2013 - 2015 | Report in progress, Draft B | VSL |
| CCM.FF-K5.2016 | 2016 - | Planned | PTB |
| CCM.H-K3 | 2016 - | Protocol complete | INRIM |
| CCPR-K3.2014 | 2014 - | Report in progress, Draft B | NRC |
| CCQM-K110 | 2012 - | Postponed | GL |
| CCRI(II)-K2.Tc-99 | 2012 - 2013 | Measurements in progress | NPL |
| CCRI(III)-K9.AmBe.1 | 2012 - 2013 | Report in progress, draft A | NPL |
| CCT-K1.1 | 2006 - 2014 | Report in progress, draft A | NIST |
| CCT-K10 | 2014 - 2016 | Report in progress, Draft A | NPL |
| CCT-K4.1 | 2012 - 2014 | Report in progress, Draft A | NMIA |
| CCT-K6.1 | 2008 - 2010 | Report in progress, draft A | MSL |

(continued...)

| KC identifier | Indicated year | Status Sep-2020 | Pilot |
|----------------------|-----------------------|-----------------------------|-------------------|
| CCT-K9 | 2011 - 2012 | Measurements completed | NIST |
| COOMET.AUV.V-K1 | 2007 - 2008 | Report in progress, draft B | VNIIM |
| COOMET.L-K3 | 2011 - 2012 | Report in progress, draft A | VNIIM |
| COOMET.M.H-S5 | 2013 - 2016 | Submitted to the KCDB | NSC "Institute of |
| EURAMET.T-K8 | 2008 - 2012 | Report in progress, draft A | PTB |
| EURAMET.T-K9 | 2014 - 2016 | Protocol complete | LNE-LCM/Cnam |
| EUROMET.M.F-K1 | 2002 - 2004 | Report in progress, draft B | MIKES |
| EUROMET.M.F-K3 | 2005 - 2008 | Measurements in progress | PTB |
| SIM.M.P-K1 | 2008 - 2010 | Protocol complete | CENAM |
| SIM.M.P-K6 | 2008 - 2011 | Report in progress, draft A | CENAM |
| SIM.M.P-K6.1 | 2011 - 2013 | Report in progress, draft B | LACOMET |
| SIM.M.P-K7 | 2001 - | Report in progress, draft B | CENAM |
| SIM.QM-K1 | 2009 - | Report in progress, draft B | INMETRO |

b) Supplementary Comparisons

| SC identifier | Indicated year | Status Sep-2020 | Pilot |
|------------------|----------------|------------------------------|------------------------------|
| APMP.EM.RF-S5.CL | 2013 - 2015 | Protocol complete | NMIJ AIST |
| APMP.EM-S8 | 2011 - 2013 | Protocol complete | NPLI |
| APMP.L-S7 | 2014 - 2015 | Report in progress, Draft B | NPLI |
| APMP.M.MM-S1 | 2012 - 2013 | Measurements in progress | KRISS |
| APMP.M.P-S1 | 2003 - 2005 | Measurements completed | CMS/ITRI |
| APMP.PR-S5 | 2008 - 2009 | Measurements in progress | NMIJ AIST |
| APMP.PR-S7 | 2015 - 2016 | Protocol complete | NIM |
| APMP.RI(I)-S1 | 2010 - 2011 | Report in progress, draft B | OAP |
| APMP.T-S11 | 2013 - 2016 | Report in progress, Draft A | NMIJ AIST |
| APMP.T-S13 | 2014 - 2016 | Measurements in progress | NMC, A*STAR |
| APMP.T-S8 | 2011 - 2015 | Measurements in progress | NMLPHIL |
| CCRI(II)-S10 | 2011 - 2012 | Report in progress, Draft B | ENEA-INMRI |
| CCT-S3 | 2007 - 2008 | Report in progress, Draft B | NMIJ AIST |
| COOMET.EM-S10 | 2010 - 2012 | Report in progress, draft B | VNIIMS |
| COOMET.EM-S16 | 2013 - 2015 | Planned | VNIIOFI |
| COOMET.EM-S18 | 2013 - 2016 | Report in progress, draft A | VNIIMS |
| COOMET.EM-S6 | 2007 - 2010 | Report in progress, draft B | VNIIMS |
| COOMET.EM-S7 | 2009 - 2011 | Report in progress, draft B | VNIIMS |
| COOMET.M.D-S1 | 2012 - 2015 | Protocol complete | VNIIM |
| COOMET.M.FF-S4 | 2009 - 2010 | Report in progress, draft B | NSC "Institute of Metrology" |
| COOMET.M.F-S1 | 2008 - 2010 | Report in progress, Draft B | VNIIM |
| COOMET.M.H-S2 | 2014 - 2016 | Report in progress, Draft A | VNIIFTRI |
| COOMET.M.H-S3 | 2014 - 2016 | Measurements completed | NSC "Institute of Metrology" |
| COOMET.M.P-S1 | 2014 - 2015 | Measurements completed | NSC "Institute of Metrology" |
| COOMET.PR-S1 | 2012 - 2013 | Measurements completed | VNIIOFI |
| COOMET.PR-S5 | 2008 - 2011 | Measurements completed | INIMET |
| COOMET.PR-S7 | 2013 - 2014 | Report in progress, Draft B | VNIIOFI |
| EURAMET.M.F-S2 | 2012 - 2013 | Measurements in progress | BEV |
| EURAMET.PR-S4 | 2012 - 2013 | Measurements completed | LNE |
| EURAMET.T-S4 | 2007 - 2009 | Submitted to the KCDB Office | NPL |
| EURAMET.T-S6 | 2015 - 2016 | Measurements in progress | NPL |
| SIM.M.F-S3 | 2012 - 2013 | Report in progress, draft B | NIST |
| SIM.M.M-S12 | 2012 - 2015 | Report in progress, draft A | CESMEC |
| SIM.M.P-S2 | 2009 - 2011 | Measurements in progress | INMETRO |
| SIM.T-S3 | 2007 - 2008 | Report in progress, draft B | INEN |
| SIM.T-S6 | 2012 - 2014 | Report in progress, draft A | NIST |

APPENDIX II Available support on the KCDB web platform on 1 March 2021

The screenshot displays the KCDB web platform interface. On the left is a navigation menu with the following items: ABOUT THE KCDB, KCDB REPORTS, STATISTICS, **HELP ON THE KCDB** (highlighted in blue), FAQ, and API KCDB. The main content area is titled "Documents on the KCDB" and contains two boxes: "Getting started on the KCDB web platform" and "Help with searching". Below this is the "Presentations" section with four boxes: "Search", "User account", "Create a CMC", and "CMC review". The "Quick starts" section has one box: "Comparisons". The "Videos" section contains eight boxes: "The KCDB home page", "The KCDB user accounts", "How to write a CMC for General Physics", "How to write a CMC for Chemistry and Biology", "How to write a CMC for Ionizing radiation - Radionuclides", "Quick search for CMC data", "Advanced search for CMC data", and "Search for comparisons".

KCDB

ABOUT THE KCDB

KCDB REPORTS

STATISTICS

HELP ON THE KCDB

FAQ

API KCDB

Documents on the KCDB

- Getting started on the KCDB web platform
- Help with searching

Presentations

- Search
- User account
- Create a CMC
- CMC review

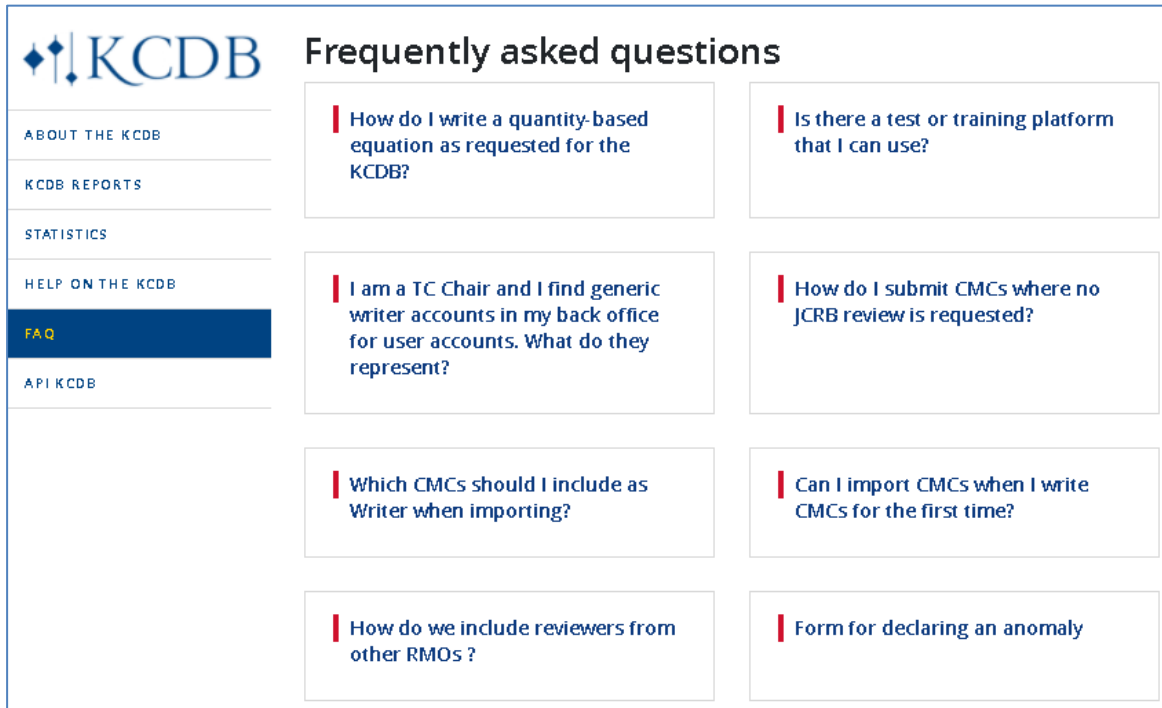
Quick starts

- Comparisons

Videos

- The KCDB home page
- The KCDB user accounts
- How to write a CMC for General Physics
- How to write a CMC for Chemistry and Biology
- How to write a CMC for Ionizing radiation - Radionuclides
- Quick search for CMC data
- Advanced search for CMC data
- Search for comparisons

(continued...)



KCDB Frequently asked questions

- ABOUT THE KCDB
- KCDB REPORTS
- STATISTICS
- HELP ON THE KCDB
- FAQ**
- API KCDB

- How do I write a quantity-based equation as requested for the KCDB?
- Is there a test or training platform that I can use?
- I am a TC Chair and I find generic writer accounts in my back office for user accounts. What do they represent?
- How do I submit CMCs where no JCRB review is requested?
- Which CMCs should I include as Writer when importing?
- Can I import CMCs when I write CMCs for the first time?
- How do we include reviewers from other RMOs ?
- Form for declaring an anomaly

APPENDIX III Demonstrations given on the KCDB web platform within the frame of Capacity Building and Knowledge Transfer from 27 August 2020 to 1 March 2021

- Demonstration of the KCDB CMC facilities and Q&A to TC Chairs in General Physics: 3 September 2020
- Demonstration of the KCDB CMC facilities and Q&A to TC Chairs in Ionizing Radiation: 10 September 2020
- Demonstration of the KCDB CMC facilities and Q&A to Writers Chem-Bio: 15 October
- Demonstration of the KCDB 2.0 to ILAC : 21 January 2021
- Demonstration of KCDB Comparison tools (All Metrology areas): 3 Feb 2021
- Demonstration and support at numerous CC WG and RMO TC meetings