

Reading List for Analytical Scientists

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Introduction and scope

This reading list has been prepared by members of the Eurachem Education and Training Working Group. It is based on bibliographies originally produced by TrainMiC® and LGC (in its role as the UK's National Measurement Laboratory and Designated Institute for chemical and bio-measurement, www.lgcgroup.com/nml) – but has been substantially updated. The main focus of the references contained in the list is metrology in chemistry, with a particular focus on quality assurance. However, it is anticipated that the references will also be of interest to those working in other disciplines. It is not intended to be a comprehensive list of all publications relating to quality in analytical measurement. The aim is to provide references to a selection of websites, standards, guides and books which will hopefully be of use to all those involved with chemical analysis (and related disciplines), including laboratory staff, students, lecturers and trainers.

Many of the references provided in this list are available to download free of charge, in particular documents published by Eurachem, JCGM, Euramet, Eurolab, ILAC, EA and accreditation bodies.

The aim is to update the bibliography annually. The Working Group welcomes suggestions for additions to the bibliography. Please send any additional references to the Working Group Chair (www.eurachem.org/index.php/component/contact/contact/60-ct-exec/10-execvjb).

Updates or additions are identified by a side bar.

Eurachem provides this list for information and is not responsible for the content or advice given in the resources listed.

References are current as of 17 February 2022.

Introduction to metrology and terminology

Websites and web resources

- CIPM Mutual recognition arrangement (MRA) of national measurement standards and of calibration and measurement certificates issued by national metrology institutes (www.bipm.org/en/cipm-mra/)
- ISO online browsing platform – access ISO standards, terms and definitions (www.iso.org/obp/ui/)
- VIM Definitions with Informative Annotations, JCGM-WG2 (<https://jcgm.bipm.org/vim/en/index.html>)

Standards

- BIPM, IEC, IFCC, ILAC, ISO, IUPAC, IUPAP, OIML. JCGM 200:2012 (JCGM 200:2008 with minor corrections), International vocabulary of metrology – Basic and general concepts and associated terms (VIM3) (www.bipm.org) (Earlier version printed as ISO Guide 99:2007 (www.iso.org))
- ISO 80000-1:2009. Quantities and units – Part 1: General (and Corrigendum 1:2011) (www.iso.org)

Guides

- V. Barwick, E. Prichard (Eds), Terminology in analytical measurement – Introduction to VIM3, Eurachem, 2011, ISBN 978 0 948926 29 7 (www.eurachem.org/index.php/publications/guides)
- A beginner's guide to measurement, v3, Good practice guide no. 118, NPL, 2010, ISSN: 1368-6550 (www.npl.co.uk)
- Metrology – In short, 3rd Edition, EURAMET, 2008 (www.euramet.org)
- The International System of Units (SI), 9th Edition, 2006 (updated in 2019) (www.bipm.org)

Books

- Compendium of Chemical Terminology, 2nd ed. (the 'Gold Book'). Compiled by A. D. McNaught and A. Wilkinson. Blackwell Scientific Publications, Oxford (1997). Online version (2019-) created by S. J. Chalk. ISBN 0-9678550-9-8. (<https://doi.org/10.1351/goldbook>)
- IUPAC Quantities, units and symbols in physical chemistry ('Green Book'), 3rd Edition, 2007, ISBN 978-0-85404-433-7 (<https://iupac.org/wp-content/uploads/2019/05/IUPAC-GB3-2012-2ndPrinting-PDFsearchable.pdf>)
- IUPAC Compendium of analytical nomenclature, ('Orange Book'), 3rd Edition, 1997, ISBN 0-86542-615-5 (http://old.iupac.org/publications/analytical_compendium/)

Leaflets

- Eurachem information leaflet
 - You talk, we understand – The way out of the tower of Babel [An introduction to measurement terminology] (2015) (www.eurachem.org/index.php/publications/leaflets)
- AMC Technical Briefs, RSC, (www.rsc.org/Membership/Networking/InterestGroups/Analytical/AMC/TechnicalBriefs.asp):
 - AMC TB 86-2019 Revision of the International System of Units (Background paper)
 - AMC TB 76-2016, Chemical metrology
 - AMC TB 19-2005, Terminology – the key to understanding analytical science. Part 2: Sampling and sample preparation
 - AMC TB 13-2003, Terminology – the key to understanding analytical science. Part 1: Accuracy, precision and uncertainty

Articles and reports

- W. Horwitz, Nomenclature for sampling in analytical chemistry, Pure Appl. Chem., 1990, 62, 1193-1208, <http://dx.doi.org/10.1351/pac199062061193>

Traceability of measurement results

Standards

- ISO 8466-1:2021 Water quality – Calibration and evaluation of analytical methods – Part 1: Linear calibration function (www.iso.org)
- ISO 8466-2:2001 Water quality – Calibration and evaluation of analytical methods and estimation of performance characteristics – Part 2: Calibration strategy for non-linear second-order calibration functions (www.iso.org)
- ISO 11095:1996 Linear calibration using reference materials (www.iso.org)
- ISO 17511:2020 In vitro diagnostic medical devices — Requirements for establishing metrological traceability of values assigned to calibrators, trueness control materials and human samples (www.iso.org)
- ISO 18153:2003. In vitro diagnostic medical devices – Measurement of quantities in biological samples – Metrological traceability of values for catalytic concentration of enzymes assigned calibrators and control materials (www.iso.org)
- ISO/TS 28037:2010. Determination and use of straight-line calibration functions (www.iso.org)

Guides

- S.L.R. Ellison and A. Williams (Eds) Eurachem/CITAC Guide: Metrological Traceability in Analytical measurement (2nd ed. 2019). ISBN: 978-0-948926-34-1 (<http://www.eurachem.org/index.php/publications/guides>)
- Guidance on the calibration of weighing machines used in testing and calibration laboratories, Lab 14, Edition 6, UKAS, 2019 (www.ukas.com)
- Traceability: Volumetric apparatus, LAB 15 Edition 3, UKAS, 2019 (www.ukas.com)
- Guidelines on the calibration of non-automatic weighing instruments, cg-18 Version 4.0, EURAMET, 11/2015, (www.euramet.org)
- N. Majcen, P. Taylor, T. Martišius, A. Menditto, M. Patriarca, Practical examples on traceability, measurement uncertainty and validation in chemistry Vol 2, 2011, European Commission, Joint Research Centre (<https://bookshop.europa.eu/en/home/>)
- N. Majcen, P. Taylor, Practical examples on traceability, measurement uncertainty and validation in chemistry Vol 1, 2010, European Commission, Joint Research Centre (<https://bookshop.europa.eu/en/home/>)
- V. Barwick, S. Wood (Eds), Meeting the traceability requirements of ISO 17025: An analyst's guide, 3rd Edition, 2005 (<https://www.lgcgroup.com/measurement-services/training-and-consultancy/best-practice-guides/>)
- V. Barwick, Preparation of calibration curves: A guide to best practice, LGC/VAM/2003/032, LGC, 2003 (<https://www.lgcgroup.com/measurement-services/training-and-consultancy/best-practice-guides/>)

Books

- A. Moutzoglou, A. Kastania and S. Archonakis, Laboratory Management Information Systems – Current Requirements and Future Perspectives, IGI Global, 2014, ISBN 978-1-4666-6320-6
- P. De Bièvre, H. Günzler (Eds), Traceability of chemical measurement, Springer-Verlag, Heidelberg Berlin, 2005, ISBN 3642078834

Leaflets

- Eurachem information leaflet

- Metrological traceability of analytical results (2005, updated 2019) (www.eurachem.org/index.php/publications/leaflets)

Articles and reports

- F. Raposo, Evaluation of analytical calibration based on least-squares linear regression for instrumental techniques: A tutorial review, TRAC-Trend. Anal. Chem., 2016, 77, 167-185, <https://doi.org/10.1016/j.trac.2015.12.006>
- P. De Bièvre, R. Dybkaer, A. Fajgelj, D. Brynn Hibbert, Metrological traceability of measurement results in chemistry: Concepts and implementation (IUPAC Technical Report), Pure Appl. Chem., 2011, 83 (10), 1873-1935, <https://doi.org/10.1351/PAC-REP-07-09-39>
- Clinical and Laboratory Standards Institute, Metrological traceability and its implementation: a report, Joint IFCC-CLSI project, CLSI document, EP32-R (Formerly X05-R). CLSI, Wayne, Pennsylvania, USA, 2006 (Sample available from www.ifcc.org or www.clsi.org)
- K. Danzer, M. Otto, L. A. Currie, Guidelines for calibration in analytical chemistry, Part 2: Multispecies calibration, IUPAC Technical Report, Pure Appl. Chem., 2004, 76 (6), 1215-1225, <https://doi.org/10.1351/pac200476061215>
- L. Cuadros-Rodriguez, L. Gamiz-Gracia, E. Almansa-Loèpez, J. Laso-Sanchez, Calibration in chemical measurement processes: 1. A metrological approach, TRAC-Trend. Anal. Chem., 2001, 20 (4), 195-206, [https://doi.org/10.1016/S0165-9936\(00\)00093-5](https://doi.org/10.1016/S0165-9936(00)00093-5)
- C. D. Ehrlich, S. D. Rasberry, Metrological timelines in traceability, J. Res. Natl. Inst. Stand. Technol., 1998, 103, 93-105 (www.nist.gov)
- K. Danzer, L. A. Currie, Guidelines for calibration in analytical chemistry part 1: Fundamentals and single component calibration, IUPAC Recommendation 1998, Pure Appl. Chem., 1998, 70 (4), 993-1014, <https://doi.org/10.1351/pac199870040993>

Uncertainty of measurement

Standards

- BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML JCGM 100:2008, Evaluation of measurement data – Guide to the expression of uncertainty in measurement (GUM 1995 with minor corrections) (www.bipm.org) (Printed as ISO/IEC Guide 98-3:2008 (www.iso.org))
- JCGM has produced a number of supplements to accompany the GUM, available at www.bipm.org:
 - Evaluation of measurement data – The role of measurement uncertainty in conformity assessment, JCGM 106:2012
 - Evaluation of measurement data – Supplement 2 to the "Guide to the expression of uncertainty in measurement" – Extension to any number of output quantities, JCGM 102:2011
 - Evaluation of measurement data – An introduction to the "Guide to the expression of uncertainty in measurement" and related documents, JCGM 104:2009
 - Evaluation of measurement data – Supplement 1 to the "Guide to the expression of uncertainty in measurement" – Propagation of distributions using a Monte Carlo method, JCGM 101:2008
- ISO 11352:2012 Water quality – Estimation of measurement uncertainty based on validation and quality control data (www.iso.org)
- ISO 21748:2017. Guidance for the use of repeatability, reproducibility and trueness estimates in measurement uncertainty estimation (www.iso.org)
- ISO/TS 21749:2005. Measurement uncertainty for metrological applications – Repeated measurements and nested experiments (www.iso.org)
- ISO/TS 28037:2010 Determination and use of straight line calibration functions (www.iso.org)

Guides

- R. Bettencourt da Silva and S. L. R. Ellison (eds.) Eurachem/CITAC Guide: Assessment of performance and uncertainty in qualitative chemical analysis. First Edition, Eurachem (2021). ISBN 978-0-948926-39-6 (www.eurachem.org/index.php/publications/guides)
- M. H. Ramsey, S. L. R. Ellison and P. Rostron (eds.) Eurachem/EUROLAB/CITAC/Nordtest/AMC Guide: Measurement uncertainty arising from sampling: a guide to methods and approaches. Second Edition, Eurachem (2019). ISBN 978-0-948926-35-8 (www.eurachem.org/index.php/publications/guides)
- A. Williams and B. Magnusson (eds.) Eurachem/CITAC Guide: Use of uncertainty information in compliance assessment (2nd ed. 2021). ISBN 978-0-948926-38-9 (www.eurachem.org/index.php/publications/guides)
- R. Bettencourt da Silva, A. Williams (Eds), Setting and using target uncertainty in chemical measurement, Eurachem/CITAC, 2015, ISBN 978-989-98723-7-0 (www.eurachem.org/index.php/publications/guides)
- S. L. R. Ellison, A. Williams (Eds), Quantifying uncertainty in analytical measurement, 3rd Edition, Eurachem/CITAC, 2012, ISBN 978-0-948926-30-3 (www.eurachem.org/index.php/publications/guides)
- ILAC G8:09/2019, Guidelines on decision rules and statements of conformity (www.ilac.org)
- ILAC P10:07/2020, ILAC Policy on metrological traceability of measurement results (www.ilac.org)
- ILAC P14:09/2020, ILAC Policy for measurement uncertainty in calibration (www.ilac.org)
- Decision rules applied to conformity assessment, Technical report No. 01/2017, EUROLAB, 2017 (www.eurolab.org)

- B. Magnusson, T. Näykki, H. Hovind, M. Krysell, Handbook for calculation of measurement uncertainty in environmental laboratories, Nordtest Report TR 537 ed 4:2017 (www.nordtest.info)
- B. Magnusson, M. Krysell, E. Sahlin and T. Näykki, Uncertainty from sampling – A Nordtest Handbook, Nordtest Report TR 604 ed 2:2020 (www.nordtest.info)
- EA-4/02 M, Evaluation of the uncertainty of measurement in calibration, 2021 (www.european-accreditation.org)
- N. Majcen and V Gegevičius (Ed.), Analytical measurement: measurement uncertainty and statistics, 2012, European Commission, Joint Research Centre, ISBN 978-92-79-23071-4 (<https://bookshop.europa.eu/en/home/>)
- N. Majcen, P. Taylor, T. Martišius, A. Menditto, M. Patriarca, Practical examples on traceability, measurement uncertainty and validation in chemistry Vol 2, 2011, European Commission, Joint Research Centre (<https://bookshop.europa.eu/en/home/>)
- N. Majcen, P. Taylor, L. Benedik, Practical examples on traceability, measurement uncertainty and validation in chemistry Vol 1, 2010, European Commission, Joint Research Centre (<https://bookshop.europa.eu/en/home/>)
- Measurement uncertainty revisited: Alternative approaches to uncertainty evaluation, Technical report No. 1/2007, EUROLAB, 2007 (www.eurolab.org)
- Guide to the evaluation of measurement uncertainty for quantitative tests results, Technical report No. 1/2006, EUROLAB, 2006 (www.eurolab.org)
- Measurement uncertainty in testing, Technical report No. 1/2002, EUROLAB, 2002 (www.eurolab.org)

Leaflets

- Eurachem information leaflets (www.eurachem.org/index.php/publications/leaflets)
 - What is the uncertainty factor? (2021)
 - Use of uncertainty information in compliance assessment (updated 2021)
 - Setting target measurement uncertainty (2018)
 - Treatment of an observed bias (2017)
 - Using repeated measurements to improve the standard uncertainty (2nd edition, 2016)
 - Important information to our customers concerning the quality of measurements (2000)
- Eurolab cookbooks (<https://www.eurolab.org/copy-of-publications>)
 - Doc No. 8, Determination of conformance with specifications using measurement uncertainties – possible strategies, 2018
- AMC Technical Briefs, RSC, (www.rsc.org/Membership/Networking/InterestGroups/Analytical/AMC/TechnicalBriefs.asp):
 - AMC TB 88-2019, Why do we need the uncertainty factor?
 - AMC TB 71-2015, Sampling theory and sampling uncertainty
 - AMC TB 64-2014, Unbalanced robust ANOVA for the estimation of measurement uncertainty at reduced cost
 - AMC TB 58-2014, Estimating sampling uncertainty – how many duplicate samples are needed?
 - AMC TB 53-2012, Dark uncertainty
 - AMC TB 42-2009, The importance, for regulation, of uncertainty from sampling
 - AMC TB 40-2009, The duplicate method for the estimation of measurement uncertainty arising from sampling
 - AMC TB 32-2008, Optimising your uncertainty – a case study

- AMC TB 26A-2008, Measurement uncertainty and confidence intervals near natural limits
- AMC TB 22-2006, Uncertainties in concentrations estimated from calibration experiments
- AMC TB 21A-2008, The estimation and use of recovery factors
- AMC TB 20-2005, Analytical and sampling strategy, fitness for purpose, and computer games
- AMC TB 16A-2004, What is uncertainty from sampling, and why is it important?
- AMC TB 15-2003, Is my uncertainty estimate realistic?

Articles and reports

- A. C. Olivieri, N. M. Faber, J. Ferré, R. Boqué, J. H. Kalivas, H. Mark, Uncertainty estimation and figures of merit for multivariate calibration, IUPAC Technical Report, Pure Appl. Chem., 2006, 78(3), 633-661, <https://doi.org/10.1351/pac200678030633>
- J. Kragten, Calculating standard deviations and confidence intervals with a universally applicable spreadsheet technique, Analyst, 1994, 119, 2161-2166, <https://doi.org/10.1039/AN9941902161>

Statistics

Web resources

- NIST/SEMATECH e-Handbook of Statistical Methods (www.itl.nist.gov/div898/handbook/)
- Data Science Textbook (<https://docs.tibco.com/data-science/textbook>)

Standards

- ISO 3534-1:2006. Statistics – Vocabulary and symbols – Part 1: General statistical terms and terms used in probability (www.iso.org)
- ISO 3534-2:2006. Statistics – Vocabulary and symbols – Part 2: Applied statistics (www.iso.org)
- ISO 3534-3:2013. Statistics – Vocabulary and symbols – Part 3: Design of experiments (www.iso.org)
- ISO 3534-4:2014. Statistics – Vocabulary and symbols – Part 4: Survey sampling (www.iso.org)

Books

- J. N. Miller, J. C. Miller, R. D. Miller, Statistics and chemometrics for analytical chemistry, 7th Pearson Education, 2018, ISBN 1292186712
- J. V. Stone, Bayes' Rule: A Tutorial Introduction to Bayesian Analysis, Sebtel Press, 2013, ISBN 0956372848
- D. P. Kroese, T. Taimre, Z. I. Botev, Handbook of Monte Carlo methods, Wiley, 2011, ISBN 978-0-470-17793-8
- M. Thompson and P. J. Lowthian, Notes on statistics and data quality for analytical chemists, Imperial College Press, 2011, ISBN 978-1848166172
- S. L. R. Ellison, V. J. Barwick, T. J. Duguid Farrant, Practical statistics for the analytical scientist: A bench guide, 2nd Edition, RSC, 2009, ISBN 978 0 85404 131 2
- E. Mullins, Statistics for the quality control chemistry laboratory, RSC, 2003, ISBN 978 0 85404 671 3

Leaflets

- AMC Technical Briefs, RSC, (www.rsc.org/Membership/Networking/InterestGroups/Analytical/AMC/TechnicalBriefs.asp):
 - AMC TB 94-2020, Experimental design and optimisation (5): an introduction to optimisation
 - AMC TB 93-2020, To p or not to p: the use of p-values in analytical science
 - AMC TB 87-2019, The correlation between regression coefficients: combined significance testing for calibration and quantitation of bias
 - AMC TB 82-2017, Are my data normal?
 - AMC TB 72-2016, AMC Datasets – a resource for analytical scientists
 - AMC TB 69-2015, Using the Grubbs and Cochran tests to identify outliers
 - AMC TB 57-2013, An introduction to non-parametric statistics
 - AMC TB 55-2013, Experimental design and optimisation (4): Plackett-Burman designs
 - AMC TB 52-2013, Bayesian statistics in action
 - AMC TB 50-2012, Robust regression: An introduction
 - AMC TB 39-2009, Rogues and suspects: How to tackle outliers
 - AMC TB 38-2009, Significance, importance and power

- AMC TB 37-2009, Standard additions: myth and reality
- AMC TB 36-2009, experimental design and optimisation (3): some fractional factorial designs
- AMC TB 30-2008, The standard deviation of the sum of several variables
- AMC TB 27-2007, Why are we weighting?
- AMC TB 26-2006, Experimental design and optimisation (2): Handling uncontrolled factors
- AMC TB 24-2006, Experimental design and optimisation (1): An introduction to some basic concepts
- AMC TB 23-2006, Mixture models for describing multimodal data
- AMC TB 14-2003, A glimpse into Bayesian statistics
- AMC TB 10-2002, Fitting a linear functional relationship to data with error on both variables
- AMC TB 08-2001, The Bootstrap: A Simple Approach to Estimating Standard Errors and Confidence – Intervals when Theory Fails
- AMC TB 06-2001, Robust statistics: a method of coping with outliers
- AMC TB 04-2001 (revised March 2006), Representing data distributions with kernel density estimates

Articles and reports

- J. Kragten, Calculating standard deviations and confidence intervals with a universally applicable spreadsheet technique, *Analyst*, 1994, 119, 2161-2165, <https://doi.org/10.1039/AN9941902161>

Validation of analytical methods

Standards

- ASTM E1169 – 21. Standard practice for conducting ruggedness tests. ASTM International (www.astm.org)
- ISO 5725-1:1994. Accuracy (trueness and precision) of measurement methods and results – Part 1: General principles and definitions (and Corrigendum 1:1998) (www.iso.org)
- ISO 5725-2:2019. Accuracy (trueness and precision) of measurement methods and results – Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method (www.iso.org)
- ISO 5725-3:1994. Accuracy (trueness and precision) of measurement methods and results – Part 3: Intermediate measures of the precision of a standard measurement method (and Corrigendum 1:2001) (www.iso.org)
- ISO 5725-4:2020. Accuracy (trueness and precision) of measurement methods and results – Part 4: Basic methods for the determination of the trueness of a standard measurement method (www.iso.org)
- ISO 5725-5:1998. Accuracy (trueness and precision) of measurement methods and results – Part 5: Alternative methods for the determination of the precision of a standard measurement method (and Corrigendum 1: 2005) (www.iso.org)
- ISO 5725-6:1994. Accuracy (trueness and precision) of measurement methods and results – Part 6: Use in practice of accuracy values (and Corrigendum 1: 2001) (www.iso.org)
- ISO 8466-1:2021. Water quality — Calibration and evaluation of analytical methods and estimation of performance characteristics — Part 1: Statistical evaluation of the linear calibration function
- ISO 11843-1:1997. Capability of detection – Part 1: Terms and definitions (and Technical Corrigendum 1: 2003) (www.iso.org)
- ISO 11843-2: 2000. Capability of detection – Part 2: Methodology in the linear calibration case (and Technical Corrigendum 1:2007) (www.iso.org)
- ISO 11843-5:2008. Capability of detection – Part 5: Methodology in the linear and non-linear calibration cases (and Amendment 1:2017) (www.iso.org)
- ISO 13843:2017. Water quality – Requirements for establishing performance characteristics of quantitative microbiological methods (www.iso.org)
- ISO 15796:2005. Gas analysis – Investigation and treatment of analytical bias (www.iso.org)
- ISO 16140-1:2016. Microbiology of the food chain – Method validation – Part 1: Vocabulary (www.iso.org)
- ISO 16140-2:2016. Microbiology of the food chain – Method validation – Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method (www.iso.org)
- ISO 16140-3:2021. Microbiology of the food chain – Method validation – Part 3: Protocol for the verification of reference methods and validated alternative methods in a single laboratory (www.iso.org)
- ISO 16140-4:2020. Microbiology of the food chain – Method validation – Part 4: Protocol for method validation in a single laboratory (www.iso.org)
- ISO 16140-5:2020 Microbiology of the food chain – Method validation – Part 5: Protocol for factorial interlaboratory validation for non-proprietary methods (www.iso.org)
- ISO 16140-6:2019. Microbiology of the food chain – Method validation – Part 6: Protocol for the validation of alternative (proprietary) methods for microbiological confirmation and typing procedures

Guides

- B. Magnusson, U. Örnemark (Eds), The fitness for purpose of analytical methods. A laboratory guide to method validation and related topics, 2nd Edition, Eurachem, 2014, (ISBN 978-91-87461-59-0) (www.eurachem.org/index.php/publications/guides)
- V. Barwick (ed.), Planning and Reporting Method Validation Studies – Supplement to Eurachem Guide on the Fitness for Purpose of Analytical Methods (2019) (www.eurachem.org/index.php/publications/guides)
- H. Cantwell (ed.) Blanks in Method Validation – Supplement to Eurachem Guide The Fitness for Purpose of Analytical Methods, (1st ed. 2019) (www.eurachem.org/index.php/publications/guides)
- NordVal International Protocol for the validation of microbiological alternative (proprietary) methods against a reference method – Protocol No. 1 (January 2021) (www.nmkl.org)
- Guidelines for validation of qualitative binary chemistry methods, AOAC International Stakeholder Panel on Alternative Methods, Approved 2014 (www.aoac.org)
- AOAC International Methods Committee Guidelines for Validation of Microbiological Methods for Food and Environmental Surfaces, 24 February 2012 (www.aoac.org)
- Protocols for Determination of Limits of Detection and Limits of Quantitation; Approved Guideline Second Edition (EP17-A2), CLSI, 2012 (www.clsi.org)
- N. Majcen, P. Taylor, T. Martišius, A. Menditto, M. Patriarca, Practical examples on traceability, measurement uncertainty and validation in chemistry Vol 2, 2011, European Commission, Joint Research Centre (<https://bookshop.europa.eu/en/home/>)
- N. Majcen, P. Taylor, L. Benedik, Practical examples on traceability, measurement uncertainty and validation in chemistry Vol 1, 2010, European Commission, Joint Research Centre (<https://bookshop.europa.eu/en/home/>)
- ICH Validation of Analytical Procedures :Text and Methodology Q2(R1) 2005 (www.ich.org)

Books

- M. L. J. Weitzel, W. M. Johnson, Application of ISO/IEC 17025 technical requirements in industrial laboratories: Method validation, FriesenPress, 2013, ISBN 978 1460210277
- M. E. Swartz, I. S. Krull, Handbook of analytical validation, CRC Press, 2012, ISBN 978 0824706890
- L. Huber, Validation and qualification in analytical laboratories, 2nd Edition, Informa Healthcare, 2007, ISBN 978 0849382673
- C. Burgess, Valid analytical methods and procedures, RSC, 2000, ISBN 978 0 85404 482 5

Leaflets

- Eurachem information leaflets (www.eurachem.org/index.php/publications/leaflets)
 - The importance of method validation (2021)
 - Treatment of an observed bias (2017)
- Eurolab cookbooks (<https://www.eurolab.org/copy-of-publications>)
 - Doc No. 1, Selection, verification and validation of methods, 2018
 - Doc No. 15, The assessment of the trueness of a measurement procedure by use of a reference material (RM), 2018
- AMC Technical Briefs, RSC, (www.rsc.org/Membership/Networking/InterestGroups/Analytical/AMC/TechnicalBriefs.asp):
 - AMC TB 70-2015, An analyst's guide to precision
 - AMC TB 17-2004, The amazing Horwitz function

- AMC TB 13-2003, Terminology – the key to understanding analytical science. Part 1: Accuracy, precision and uncertainty
- AMC TB 05-2001, What should be done with results below the detection limit? Mentioning the unmentionable
- AMC TB 03-2005 (revised December 2005), Is my calibration linear?
- AMC TB 92-2020, The edge of reason: reporting and inference near the detection limit

Articles and reports

- D. T. Burns, K. Danzer, A. Townshend. Use of the term "recovery" and "apparent recovery" in analytical procedures, IUPAC Recommendation 2002, Pure Appl. Chem., 2002, 74(11), 2201-2205, <https://doi.org/10.1351/pac200274112201>
- M. Thompson, S. L. R. Ellison, R. Wood, Harmonised guidelines for single-laboratory validation of methods of analysis, IUPAC Technical report, Pure Appl. Chem., 2002, 74 (5), 835-855, <https://doi.org/10.1351/pac200274050835>
- J. Vessman, R. I. Stefan, J. Van Staden, K. Anzer, W. Lindner, D. Thorburn Burns, A. Fajgelj, H. Müller. Selectivity in analytical chemistry, IUPAC Recommendation 2001, Pure Appl. Chem., 2001, 73(8), 1381-1386, <http://dx.doi.org/10.1351/pac200173081381>
- M. Thompson, S. L. R. Ellison, A. Fajgelj, P. Willetts, R. Wood, Harmonized guidelines for the use of recovery information in analytical measurement, ISO, IUPAC and AOAC International Technical report, Pure Appl. Chem., 1999, 71 (2), 337-348, <http://dx.doi.org/10.1351/pac199971020337>
- L. A. Currie, Nomenclature in evaluation of analytical methods including detection and quantification capabilities, IUPAC Recommendations 1995, Pure Appl. Chem., 1995, 67(10), 1699-1723, <https://doi.org/10.1351/pac199567101699> (also available in Anal. Chim. Acta, 1999, 391, 105-126, [https://doi.org/10.1016/S0003-2670\(99\)00104-X](https://doi.org/10.1016/S0003-2670(99)00104-X))

Reference materials

Websites and web resources

- COMAR international database for certified reference materials (www.comar.bam.de/en/)

Standards

- ISO Guide 30:2015. Reference materials – Selected terms and definitions (www.iso.org)
- ISO Guide 31:2015. Reference materials – Contents of certificates and labels (www.iso.org)
- ISO Guide 33:2015. Reference materials – Good practice in using reference materials (www.iso.org)
- ISO 17034:2016. General requirements for the competence of reference material producers (www.iso.org)
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- ISO 7870-2:2013. Control charts – Part 1: Shewhart control charts (www.iso.org)
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