

Standards and Guidelines for the statistical treatment of PT data

There are several standards and guidelines for providing PT / EQA schemes.... (in chronological order)

- **ISO 13528:2015**
Statistical Methods for use in Proficiency Testing by Interlaboratory comparisons
- **IUPAC Technical Report 1/2006**
The International Harmonized Protocol for the Proficiency Testing of Analytical Chemistry Laboratories
- **ILAC-G13:2007**
ILAC Guidelines for the Competence of Providers of Proficiency Testing Schemes
- **ISO/TS 20612:2007**
Water Quality – Interlaboratory comparisons for proficiency testing of analytical chemistry laboratories
- **ISO/IEC 17043:2010**
Conformity Assessment – General Requirements for Proficiency Testing

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....and some more documents...

- **[ISO 17034:2016](#)**
General requirements for the competence of reference material producers
- **ISO-Guide 35: 2017**
Reference materials – General and statistical principle for certification
- **ISO 5725-1 to -6**
Accuracy (trueness and precision) of measurement methods and results

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ISO 13528:2015
Statistical Methods for use in Proficiency Testing by Interlaboratory comparisons

- 5 ways to determine the assigned value with more emphasis on its uncertainty
 - Formulation, certified reference material, results from one laboratory, consensus from expert laboratories, consensus from participants
- 5 ways to determine the standard deviation for proficiency assessment
 - perception of experts, by experience from previous PT rounds, from a general model, from results of a precision experiment, from data in a round of a PT scheme
- Performance statistics
 - Deviation, percent deviation, z-scores, En-numbers, z'-scores, Zeta-scores, P_A score

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ISO 13528:2015
Statistical Methods for use in Proficiency Testing by Interlaboratory comparisons

- Preferred statistical method for the calculation of consensus mean and standard deviation: Algorithm A
 - described in Annex C (normative) and also in ISO 5725-5:1998
- but also allowed: *Other calculation methods, provided that they have a sound statistical basis*

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IUPAC Technical Report 1/2006
The International Harmonized Protocol for the Proficiency Testing of Analytical Chemistry Laboratories

- again several ways to determine Assigned Value, but: *the provider must report an uncertainty to the participants*
- for calculation of consensus mean Alg. A (called H15 here) is recommended, but with a check, if the distribution is unimodal
- Performance statistics
 - only the use of z-scores is recommended
- Determination of the standard deviation for proficiency assessment
 - Only value determined by fitness-for-purpose is recommended

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ILAC-G13:2007
ILAC Guidelines for the Competence of Providers of Proficiency Testing Schemes

- Appendix A
 - Reference to ISO 13528 and the Intern. Harmonized Protocol

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ISO/IEC 17043: 2010
Conformity Assessment – General Requirements for Proficiency Testing

- Annex B (informative)
- Determination of assigned value and its uncertainty
 - reference to ISO 13528 and to “International Harmonized Protocol”
- Performance statistics
 - as described in ISO 13528

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