9th PT/EQA Workshop
- Portoroz 2017

Report from WG 6

Use and treatment of measurement uncertainty in PT/EQA schemes

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Contributions to 9th Workshop

- Uncertainty a topic in
  - At least 20 (57) posters
  - At least 7 oral contributions

WG composition?

- 66 participants
- 56 PT providers
  - Majority runs schemes for routine testing
- 6 PT participants only
- 1 Accreditation bodies
- 2 Regulatory authorities
- 1 Academia
- Others
WG members self-assessment...

- …concerning knowledge of uncertainty
  - 6 Very knowledgeable
  - 35 Knowledgeable
  - 13 Some or little

Question 1

What are the common practices in use in PT/EQA schemes…
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- 1a) Asking for the uncertainty of the participant result?
- 1b) How is the reported uncertainty evaluated?
- 1c) How is the uncertainty reported used for the assessment of the result?

1a) Asking for the uncertainty of the participant result?
- 27 YES
- 25 NO
- Some ask for uncertainty only in some schemes
- Some schemes are new and providers less experienced and do not yet ask for uncertainty
1b) How is the reported uncertainty evaluated?

- No evaluation
- $E_n$-scores
- zeta-scores
- Graphical presentation
- Calculates %relative uncertainty
- Visual inspection
- Comparison with uncertainty of the assigned value or with SDPA

1c) How is the uncertainty reported used for the assessment of the result?

- Not used
- In $E_n$ and zeta scores
- Those without u-statement are penalised (participant’s uncertainty set to zero)
- Used only as additional information for the participants
Question 2

How do participants respond to the requested uncertainty of their result?

Question 2-3

- 2) How do participants respond to the requested uncertainty of their result?

- 3) Should participants be encouraged to report the uncertainty of their result…
  - A) If so, how can this be achieved?
  - B) Who can/should drive this?
2) How do participants respond to the requested uncertainty of their result?

- Cases where participants ask PT provider if they can report uncertainty or insist to do so even if the provider does not ask for it
- Some try to avoid giving uncertainty
- Over the years discussions on uncertainty less “scary”
- Culture problem
- Not mandatory in some countries. Small labs have problems but large labs report
- Participants often report “some kind of uncertainty information”

2) How do participants respond to the requested uncertainty of their result?

- Suspects that many reported uncertainties are overestimated or taken from legislation (maximum allowed uncertainties)
- 15, 30, 50 % to near all participants report uncertainty
  - 0 reports in some scheme
    - “Alien concept” for test kit producers
  - Depends on type of scheme
  - Problem in small schemes if some do not report uncertainty
Question 3

Should participants be encouraged to report the uncertainty of their result…

YES

3a) If so, how can this be achieved?

- PT provider and experts should help and encourage
- Comes with accreditation
- Harmonised values are used so no meaning to make individual evaluations
- PT provider should use uncertainty statements if received
- Use more simple approaches like Nordtest approach and Fishbone diagram
3a) If so, how can this be achieved?

- Accreditation bodies ask for uncertainty info more and more
- Provider should tell in advance and penalise those who don’t report uncertainty
- MU statements have become more realistic
- Workshops and training courses organised by PT provider
- Laboratory managers must learn

3a) If so, how can this be achieved?

- Continuous education
- Customer or PT provider can request
  - Essential in some industrial sectors
- Collect information on how uncertainty is evaluated
- Problem is that many still do not have sufficient knowledge
- Use for education and training purposes and not for performance assessment initially
3b) Who can/should drive this?

- Metrology institute
- Eurachem
- Experts
- Accreditation bodies
- Lab managers
- Standardisation bodies

Question 4

Is the reporting of uncertainty on their results by the participant, and their evaluation by the PT/EQA provider, beneficial for the participant?
4) Is the reporting of uncertainty...?

- Good check for participants, tool for improving measurement quality
- Help in comparing statements with those of other labs
- Only useful if provider helps on best practice in uncertainty estimation
- “Pleasing and educating customer” at the same time
- Educational
- Tool for finding problems
- Need good guidance and training to obtain realistic uncertainty statements

Looking back...

WG discussions on measurement uncertainty at the 3rd workshop (2000)
About uncertainty at 3rd workshop WG discussions

- "Requirement in ISO/IEC 17025:1999 will lead to PT providers receiving uncertainty statements with the test results"
- “Some fields might already use allowances for uncertainty in the acceptance criteria, perhaps by having wider intervals than purely fitness for purpose. Z-score limits of ±3 are often quite wide relative to desired goal for accuracy"
- “Schemes in the testing area are likely to follow those in calibration, where coordinators are obliged to gather information about uncertainty”

About uncertainty at 3rd workshop WG discussions

- “Uncertainty is currently poorly understood by labs. Although many labs have evaluated uncertainty for years, most do not know how to report it, or report it differently from recommended procedures”
- “There would be a necessary learning period before participants’ uncertainty statements can be properly assessed and used by PT providers to evaluate laboratory performance. There was concern that requesting this information now would generate much confusion and compromise the utility of current programs”