Some considerations for an interlab study…

Marc Salit, NIST

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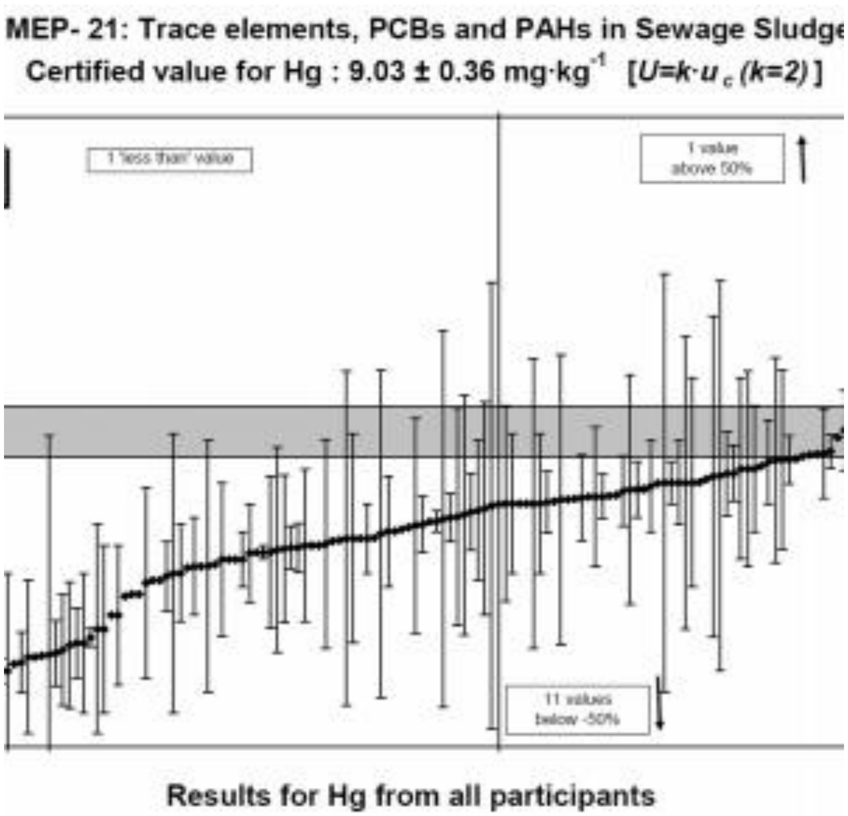
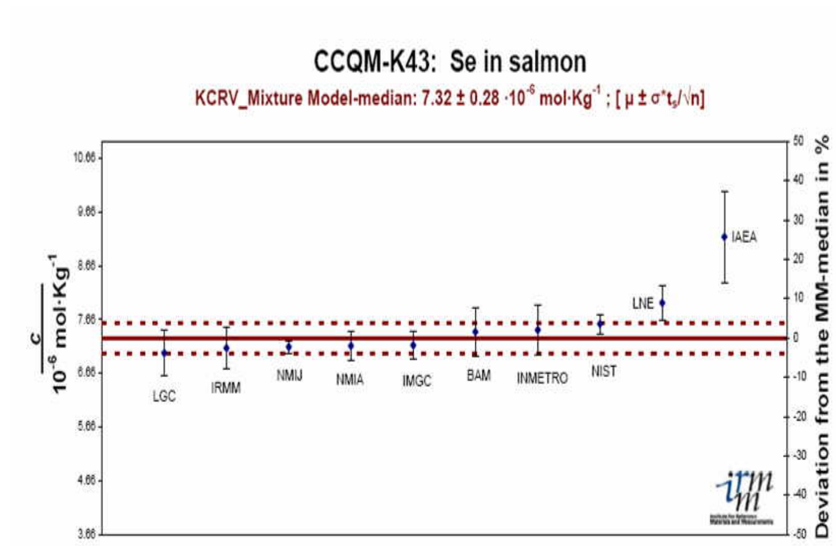
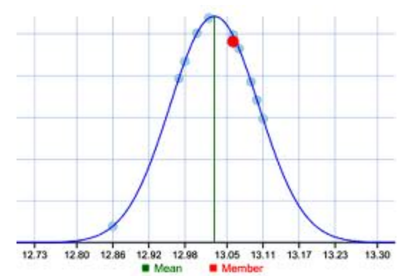
Harmonization

Poor harmonization



Good harmonization





Validation to Support Confident Decisions

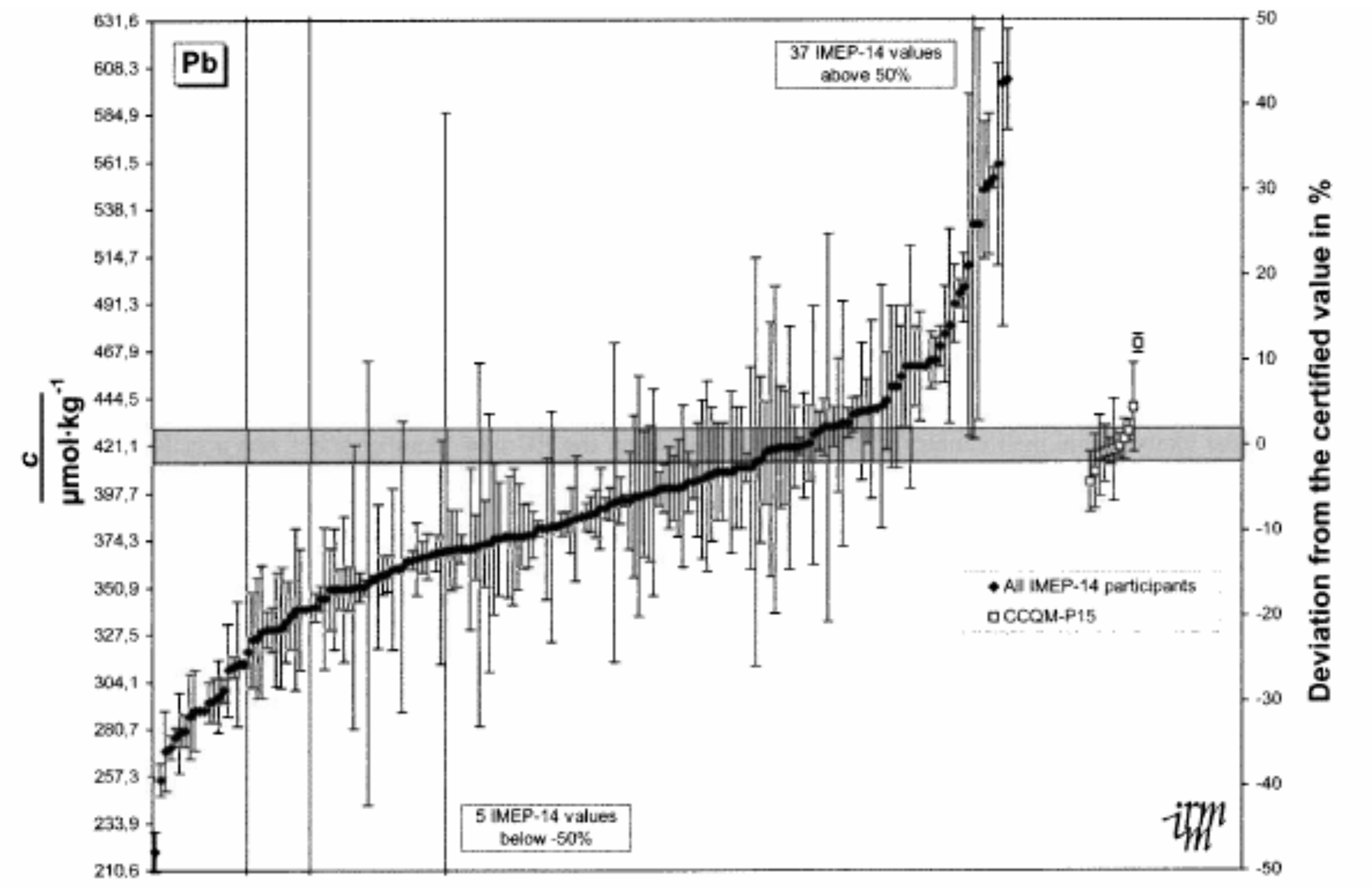
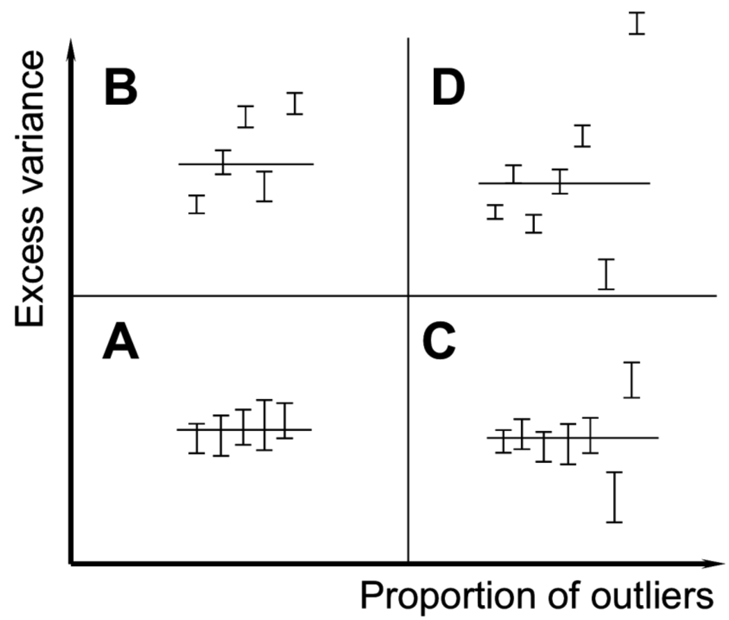


Fig. 4 IMEP-14 results for lead compared to the results for lead from the NMIs that participated in CCQM-P15, measured in the same sample material as in IMEP-14

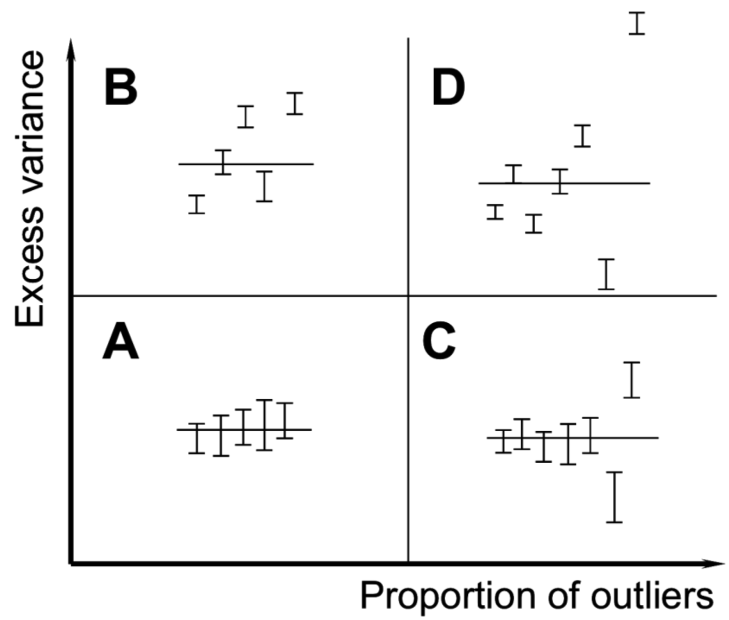
“Space” of Lab Comparisons

- Case A
  - mutually consistent results, harmonious
    - results in the same population; error-bars touch
- Case B
  - over-dispersion
    - poor overlap of error-bars
    - *evidence of under-estimation of measurement uncertainty*
      - may arise from experiment design that doesn’t include important factors
        - » e.g. “Day” effects
- Case C
  - consistency and harmony, with outliers
    - evidence that most labs in control
    - evidence that assay probably valid
    - possible blunders in outlier labs
- Case D
  - over-dispersion with outlying values
    - mix of Case B and C



Design for Comparison Data

- Required:
  - quantitative numeric measurand
    - "Y-axis" values
  - quantitative measurement uncertainty estimates
    - error bars
- Useful:
  - estimate of correct value…
    - either
      - "reference" value or range
      - Orthogonal measurement
    - or
      - estimate of reference from the population of data



"CCQM Guidance Note: Estimation of a consensus KCRV and associated Degrees of Equivalence"
Draft 2010-03-01, Stephen LR Ellison, LGC and Maurice Cox, NPL

“Target” Plots

- Another way of examining concordance amongst a population of labs
  - perhaps suitable for sorting performance into tranches