

Job Aid 2: Traceability 1506v2

Measurement Uncertainty : (MU) (uncertainty of measurement, μ) - every measurement has a margin of doubt that comes from the calibration event and the analytical measuring event of the sample, the doubt that exists for the result

- Two values are needed in order to quantify uncertainty
- How big is the margin? - width of the margin, or interval in units or %
 - How significant is the doubt?. The confidence level which states how sure the true value is within that margin. Common examples are 95% and 99%.

Traceability – result of the measurement can be traced back to a reference method or material through an unbroken chain of comparisons / calibrations, all having a stated measurement of uncertainty. This way, trueness can be verified through calibration in which results are traceable to SI units. When there is **no** internationally agreed upon reference method or material, the principles of traceability still apply; however, the traceability chain may end with the manufacturer and not a metrological institute.

Systeme Internationale (SI) units: The system of metric units which has been adopted by agreement in all major countries for use in science, medicine, industry and commerce. SI is a coherent system based on the seven basic quantities of length (meter, m), mass (kilogram, kg), time interval (second, s), electric current (ampere, A), thermodynamic temperature (degree Kelvin, K), luminous intensity (candela, cd) and amount of substance (mole, mol).

- CRM** – Certified Reference Material
- GUM** - Guide to the Expression of Uncertainty in Measurement
- NIST** – National Institute of Standards Technology
- NMI** – National Metrology Institute assigns values back to SI units
- VIM** - International Vocabulary of Metrology (VIM)
- WHO** – World Health Organization assigns arbitrary units called International Units (IU)

