concerned about accuracy?

Accuracy of laboratory results and patient care depend on accuracy, traceability, and uncertainty of calibration materials.

“The whole idea is that you can then come close to scientific truth rather than a test result that is a relative truth.”


Trueness or Accuracy of measurement of a value assigned to a calibrator or trueness control depends on the stated metrological traceability chain and the combined uncertainties of its links.

— ISO 17511:2003

Results are only as accurate as the reference!
Calibrators and controls are frequently prepared from reference materials. The processes used to assign property values are critical to traceability, uncertainty, and accuracy of the reference and thus, the laboratory’s result.

Cerilliant Primary Standards are traceable to SI units and higher order standards and reference methods through an unbroken chain of comparisons as shown in Figure 1.

Figure 1: Traceability Detail Cerilliant Primary Standard

Traceability of the Cerilliant Primary Standard is by mass measurement via balance calibration and gravimetric preparation. The certified concentration incorporates adjustment for the Mass Balance Purity Factor of the analyte.

Laboratories should consider not only the manufacturer’s accreditations but also their approach to: material certification (robustness and orthogonality); equipment/instrument qualification and calibration; training and proficiency programs; process controls; cleaning procedures; validations; etc.

Traceability of the Cerilliant Mass Balance Purity Factor is to SI through gravimetry, higher order reference methods, and higher order reference standards as shown in detail in Figure 2.

Purity value assignment is highly critical to the overall accuracy and should not be overlooked. Laboratories should consider the appropriateness of the purity method as well as residual impurities. Ignoring residual impurities such as water, solvent, and inorganic content can introduce significant error. In order to ensure appropriate traceability, values must be assigned by an accredited calibration laboratory.