

## Standard Practices for Measurement Traceability in Forensic Toxicology, First Edition, 2018



### WHAT IS AN AAFS STANDARD FACTSHEET?

The AAFS produces clear, concise, and easy to understand factsheets to summarize the contents of technical and professional forensic science standards on the OSAC Registry. They are **not** intended to provide an interpretation for any portion of a published standard.

### WHAT IS THE PURPOSE OF THIS STANDARD?

A measurement is the process of experimentally obtaining one or more quantity values that can reasonably be attributed to a quantity.

Examples of measurements in forensic toxicology may include reported test results, reported calibration results, or quantitative decision points.

Establishing measurement traceability means that the result can be related to a reference through a documented unbroken chain of calibrations. This helps ensure confidence in measurement results.

This standard defines the minimum requirements for establishing measurement traceability in forensic toxicology laboratories.

### WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

Adherence to the standard ensures that forensic toxicology laboratories establish measurement traceability in accordance with essential elements, as defined by the National Institute of Standards and Technology (NIST).

These essential elements include an unbroken chain of comparisons back to a stated national or international standard; documented measurement uncertainty; documented measurement procedures; technical competence; realization of the International System (SI) of Units; documented calibration intervals; and measurement assurance.

### HOW IS THIS STANDARD USED AND WHAT ARE THE KEY ELEMENTS?

This standard provides direction on acceptable ways of establishing traceability of measurements. Options are provided for the selection of providers to calibrate equipment and suppliers of reference materials that are used in taking impacted measurements.

Emphasis is placed on the importance of establishing a calibration program that identifies all equipment that requires calibration and to establish a) intervals for such calibration, b) the need for intermediate checks of the calibration status, and c) requirement to calibrate new equipment prior to use.

Requirements specific to forensic toxicology include the use of metrologically-prepared calibrators and controls.

The standard defines the types of procedures that require establishment of measurement traceability:

- Qualitative screening, confirmatory, or identification methods with an established decision point concentration,
- Quantitative methods.

Maximum intervals are established for calibration of analytical equipment typically used in forensic toxicology.

Documentation used to verify measurement traceability is required to be maintained no less than five years after expiration.

