Standard for a Quality Control Program in Forensic Toxicology Laboratories

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?

This document establishes minimum requirements for quality control practices in forensic toxicology. It provides direction to the forensic toxicology community regarding quality control materials, required calibrators and controls, and performance expectations.

The standard applies to forensic science service providers (FSSPs) performing forensic toxicological analysis in the following sub-disciplines: postmortem forensic toxicology, human performance toxicology (e.g., drug-facilitated crimes and driving-under-the-influence of alcohol or drugs), non-regulated employment drug testing, court-ordered toxicology (e.g., probation and parole, drug courts, child services), and general forensic toxicology (non-lethal poisonings or intoxications). It is not intended for the area of breath alcohol toxicology.

WHY IS THIS STANDARD IMPORTANT? WHAT ARE ITS BENEFITS?

Adherence to the standard ensures that the analytical methods used in toxicological testing are continuously fit for purpose.

Quality control measures provide concurrent objective evidence to support the reliability of an individual test result.

Routine quality control also provides an evaluation of an analytical method's performance over time.

FSSPs providing forensic toxicology services are encouraged to meet this standard.

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

This standard defines the minimum components to be included in a forensic toxicology quality control program. The document explains the importance of a quality control program, how to select and care for materials used to prepare quality control samples, proper preparation and use of calibrator and control samples, and requirements for their use in different types of assays.

The sources, verification, and expiration of quality control materials, including matrix sources and reference materials, are specified in this standard. The required minimum number of control samples and their associated acceptance criteria are defined based on the type of analytical method: non-targeted screening, targeted screening, qualitative confirmation, and quantitative analysis.

The preparation, storage, expiration, and documentation requirements are outlined for calibrators and controls. For quantitative analyses, requirements are provided for the calibration model and the calibration acceptance criteria. Analytical batch performance criteria expectations are outlined for instrument performance, internal standard recovery, carryover evaluation, and dilutions. Specific requirements for the method of standard addition are provided. Quality control review and monitoring expectations are defined.

The quality control requirements described in this standard do not supplant the need for analytical methods to be properly validated in accordance with ANSI/ASB 036, 1st Ed., 2019.

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