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**Standard for the Minimum Content Requirements of
Forensic Toxicology Procedures**



Standard for the Minimum Content Requirements of Forensic Toxicology Procedures

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410 North 21st Street
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Foreword

This standard defines the requirements for analytical procedures ensuring sufficient detail for uniform performance within a laboratory or laboratory system.

This document was revised, prepared, and finalized as a standard by the Toxicology Consensus Body of the AAFS Standards Board. The draft of this standard was developed by the Toxicology Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science.

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Keywords: *Standard Operating Procedures (SOP), technical procedures, forensic toxicology*

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Standard for the Minimum Content Requirements of Forensic Toxicology Procedures

1 Scope

This document provides requirements for the minimum content of technical and analytical procedures in forensic toxicology. This standard applies to laboratories 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, breath alcohol), and general forensic toxicology (non-lethal poisonings or intoxications).

2 Normative References

There are no normative reference documents. See Annex A, Bibliography for informative references.

3 Terms and Definitions

For purposes of this document, the following definitions and acronyms apply.

3.1

Standard Operating Procedures SOP

Written procedure that describes how to perform certain organization activities.

4 Requirements for Standard Operating Procedure (SOP) Content

4.1 All SOPs shall include the following headings or their equivalent. The information within each heading may be included within the SOP or by reference to another document. The order of presentation is not mandated.

4.1.1 Title

4.1.2 Principle and Scope—An abstract that describes the intent of the procedure and, as applicable, the biological specimen, sample preparation, extraction technique(s), analytical methodology, and the qualitative and/or quantitative nature of the procedure.

4.1.3 Limitations—A description of known matrix interferences, drug interferences, cross reactivities, and any other factors identified during validation conducted following ANSI/ASB Standard 036, *Standard Practices for Method Validation in Forensic Toxicology*.

4.1.4 Specimen Criteria—A description of specimen type(s), volume, and any required preservation.

4.1.5 Safety—A list of applicable precautions for the mitigation of chemical, biological, physical, or radiological hazards.

4.1.6 Equipment—A list of instrumentation/equipment, supplies, chemicals (grade and/or minimum purity), reagents (preparation, storage, expiration, and precautions), and reference

materials (as defined in the ANSI/ASB Standard 017, *Standard Practices for Measurement Traceability in Forensic Toxicology*) necessary to perform the procedure.

4.1.7 Sample Preparation and Procedure—Step-by-step instructions for sample preparation and analysis. This may include the preparation of calibrators, controls, and samples (e.g., homogenization, dilution), extraction, derivatization, and reconstitution.

4.1.8 Performance Characteristics—Description of limit of detection (LOD), lower limit of quantitation (LLOQ), decision point, and working range, if applicable.

4.1.9 Analytical Parameters (as applicable)

4.1.9.1 Non-instrumental Method—The critical observation(s) and how results are recorded.

4.1.9.2 Instrumental Method—A description of the analytical parameters (chromatographic conditions and detector settings) to include calibration model and weighting, as appropriate.

4.1.10 Data Analysis

4.1.10.1 Acceptance Criteria—A description of the acceptance criteria for the following.

— Calibrators, controls, and internal standards as identified in ASB Standard 054, *Standard for a Quality Control Program in Forensic Toxicology Laboratories (not yet published)* and ASB Standard 055, *Standard for Breath Instrument Calibration (not yet published)*.

— Analyte identification (e.g., library score, chromatography, retention times, abundance, ion ratios) as identified in ASB Standard 113, *Standard for Identification Criteria in Forensic Toxicology (not yet published)*, and ASB Standard 098, *Standard for Mass Spectral Data Acceptance in Forensic Toxicology (not yet published)*.

— Other parameters (e.g., calibration point exclusion, coefficient of determination, carryover, precision variance in casework replicates) as identified in ASB Standard 054, *Standard for a Quality Control Program in Forensic Toxicology Laboratories (not yet published)* and ANSI/ASB Standard 036, *Standard Practices for Method Validation in Forensic Toxicology*.

4.1.11 Corrective Measures—A description of actions taken (e.g., dilution, re-extraction, re-injection) when acceptance criteria are not met as identified in ASB Standard 054, *Standard for a Quality Control Program in Forensic Toxicology Laboratories (not yet published)*.

4.1.12 Reporting—A description of how results and uncertainty of measurement (as applicable) are reported (e.g., units of measure, significant figures, dilution factors, truncating/rounding rules, qualitative terminology), as specified in ANSI/ASB Standard 053, *Standard for Report Content in Forensic Toxicology* and ASB Standard 056, *Standard Practice for Evaluating Measurement Uncertainty of Quantitative Measurements in Forensic Toxicology (not yet published)*.

4.1.13 References—A list of pertinent publication(s) used to formulate the procedure.

5 Document Control

The effective date, version, approving authority, and pagination (x of y) are required.

Annex A (informative)

Bibliography

The following bibliography is not intended to be an all-inclusive list, review, or endorsement of literature on this topic. The goal of the bibliography is to provide examples of publications addressed in the standard.

- 1] ASB/ANSI Standard 017, *Standard Practices for Measurement Traceability in Forensic Toxicology*¹.
- 2] ASB/ANSI Standard 036, *Standard Practices for Method Validation in Forensic Toxicology*¹.
- 3] ASB/ANSI Standard 053, *Standard for Report Content in Forensic Toxicology*¹.
- 4] ASB Standard 054, *Standard for a Quality Control Program in Forensic Toxicology Laboratories*¹. *(not yet published)*
- 5] ASB Standard 055, *Standard for Breath Instrument Calibration*¹. *(not yet published)*
- 6] ASB Standard 056, *Standard Practice for Evaluating Measurement Uncertainty of Quantitative Measurements in Forensic Toxicology*¹. *(not yet published)*
- 7] ASB Standard 098, *Standard for Mass Spectral Data Acceptance in Forensic Toxicology Measurements in Forensic Toxicology*¹. *(not yet published)*
- 8] ASB Standard 113, *Standard for Identification Criteria in Forensic Toxicology*¹. *(not yet published)*
- 9] ASB Best Practice Recommendation 156, *Guideline in Forensic Toxicology for Specimen Collection and Preservation*¹. *(not yet published)*

¹ Available from: www.asbstandardsboard.org/

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Academy Standards Board
410 North 21st Street
Colorado Springs, CO 80904

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