ANSI/ASB Standard 152, First Edition
2021

Standard for the Minimum Content Requirements of Forensic Toxicology Procedures

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ASB Approved July 2021

ANSI Approved September 2021

410 North 21st Street
Colorado Springs, CO 80904

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 Forensic Toxicology Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science.

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All hyperlinks and web addresses shown in this document are current as of the publication date of this standard.

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

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1 Scope

This document provides requirements for the minimum content of 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

The following references are indispensable for the application of the standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ANSI/ASB Standard 017, *Standard Practices for Measurement Traceability in Forensic Toxicology*[a]

ANSI/ASB Standard 036, *Standard Practices for Method Validation in Forensic Toxicology*[a]

ANSI/ASB Standard 053, *Standard for Report Content in Forensic Toxicology*[a]

ANSI/ASB Standard 054, *Standard for a Quality Control Program in Forensic Toxicology Laboratories*[a]

3 Terms and Definitions

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

3.1
Standard Operating Procedures
SOP
Written analytical procedure that describes how to perform certain organization activities

4 Requirements for SOP Content

4.1 General Requirements

All SOPs, however named, shall include the headings (or an equivalent) and related details (or refer to an applicable document) in sections 4.2 through 4.14. The order of presentation is not mandated.

[a] Available from: https://www.asbstandardsboard.org/published-documents/

4.2 Title

4.3 Purpose 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.

4.4 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*.

4.5 Specimen Criteria

A description of specimen type(s), volume, and any required preservation.

4.6 Safety

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

4.7 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.

4.8 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, hydrolysis), extraction, derivatization, and reconstitution.

4.9 Performance Characteristics

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

4.10 Analytical Parameters (as applicable)

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

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

4.11 Data Analysis

4.11.1 *Computations*—Any manual calculations that shall be performed as part of the analytical procedure (e.g., dilution factor, unit conversion, standard addition).

4.11.2 *Acceptance Criteria*—A description of the acceptance criteria for the following:

- Calibrators, controls, and internal standards as identified in ANSI/ASB Standard 054, *Standard for a Quality Control Program in Forensic Toxicology Laboratories*.
- Analyte identification (e.g., library score, chromatography, retention times, abundance, ion ratios).
- Other parameters (e.g., calibration point exclusion, coefficient of determination, carryover, precision variance in casework replicates) as identified in ANSI/ASB Standard 036, *Standard Practices for Method Validation in Forensic Toxicology*.

4.12 Corrective Measures

A description of actions taken (e.g., dilution, re-extraction, re-injection) when acceptance criteria are not met as identified in section 4.11.2.

4.13 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*.

4.14 References

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

5 Document Control

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

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