

## Standard for Mass Spectral Analysis in Forensic Toxicology



### 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?

Mass spectrometry techniques are among the most commonly used instrumental methods in forensic toxicology.

This standard sets minimum criteria for accepting data from mass spectrometers during the analyses of compounds that are typically encountered in forensic toxicology testing.

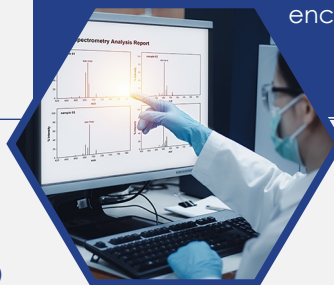
This standard was designed to be used in conjunction with [ANSI/ASB 113, 1st Ed., 2023](#), which establishes requirements for identification criteria of analytes.

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

The criteria for the acceptance of mass spectral data are initially set during method development activities. These criteria are then used during method validation and upon successful validation, are used in on-going analyses. The requirements in this standard ensure that the necessary rigor is applied to the criteria set for mass spectral monitored ions.

This standard applies to all forensic toxicology providers. This broad application allows users of forensic toxicology results to have confidence in the testing protocols followed by the forensic science service provider (FSSP).

FSSPs that provide forensic toxicology services are encouraged to meet these minimum requirements.



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

This standard establishes requirements for developing forensic toxicology methods that rely upon mass spectrometry and the required criteria to accept the data from these instruments.

It outlines the criteria for selecting the mass spectral ions to monitor, the minimum number of ions that must be monitored under different scenarios, and the acceptable tolerances for ratios of ions to each other.

Requirements apply to data acquired on single- or multiple-stage mass spectrometers using low- or high-resolution. The acquisitions may be conducted in full-scan, selected ion monitoring, or multiple reaction monitoring modes.

This standard applies to data acquired with a variety of ionization processes, such as electron ionization, chemical ionization, electrospray ionization, or atmospheric pressure chemical ionization. This standard does not address the use of matrix-assisted laser desorption, inductively coupled plasma, or ion mobility mass spectrometry.

Analytical testing methods must be validated in accordance with [ANSI/ASB 036, 1st Ed., 2019](#) and monitored according to [ANSI/ASB 054, 1st Ed., 2023](#).