



## OSAC Research Needs Assessment Form

**Title of research need:**

Acceptance Criteria for Instrumental Data related to Qualitative Seized Drug Analysis

**Keywords:**

Drug Analysis, Gas Chromatography/Mass Spectrometry (GC/MS), Fourier Transform Infrared Spectroscopy (FTIR), Acceptance Criteria, Data Interpretation, Assessment of Data Quality, Data Interpretation Algorithms and Strategy

**Submitting subcommittee(s):**

Seized Drugs

**Date Approved:**

28 Jan 16

*(If SAC review identifies additional subcommittees, add them to the box above.)*

**Background information:**

1. Description of research need:

Establish a statistical or other firm foundation for the interpretation of chromatographic, spectrometric and spectroscopic data. The study should include aspects of retention time and chromatographic peak shape, signal to noise ratio, where in the peak to obtain the best spectrum, assessment of the quality of a mass or infrared spectrum, which may consider overall shape of the spectrum, presence or absence of particular fragments and absorption bands and determination of acceptable ranges for these values. Optional areas of research include development of data interpretation algorithms. The goal of the research is to standardize Acceptance Criteria and develop an interpretation strategy that allows consistent conclusions to be drawn from data of the type indicated above.

2. Key bibliographic references relating to this research need:

- Organizations such as ASTM, AAFS, ASCLD/LAB, SWGDRUG and ABC were searched for the presence of standards or documents detailing acceptance criteria for instrumental data. However, no references were found. SWGTOX has a draft, unpublished document on the subject.
- One researcher, Milman, has done preliminary work published in Trends in Analytical Chemistry in 2005 titled "Identification of Chemical Compounds" addressing aspects of mass spectral data interpretation, however, there are not Acceptance Criteria for other types of data, nor is it specific to forensic science.

3a. In what ways would the research results improve current laboratory capabilities?

Research results would offer standardization for interpreting complex data sets by establishing acceptance criteria.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

Results of this research would provide uniformity for interpreting data to direct the development or refinement of analytical protocols.

3c. In what ways would the research results improve services to the criminal justice system?

The development of Acceptance Criteria would provide procedures to improve an analyst's ability to render a conclusion based upon objectively interpreted data.

4. Status assessment (I, II, III, or IV):

I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

*This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.*

Subcommittee

Approval date:

28 January 2016, 18 yes (unanimous)

*(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)*

SAC

1. Does the SAC agree with the research need? Yes      No

2. Does the SAC agree with the status assessment? Yes      No

*If no, what is the status assessment of the SAC:*

Approval date:

*(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)*