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Standard Practice for Identification of Seized Drugs¹

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1. Scope

1.1 This practice describes minimum criteria for the qualitative analysis (identification) of seized drugs.

1.2 Listed are a number of analytical techniques for the identification of seized drugs. These techniques are grouped on the basis of their discriminating power. Analytical schemes based on these groupings are described.

1.3 Additional information is found in Guides E1968 and E1969 and Practices E2326 and E2327.

2. Referenced Documents

2.1 ASTM Standards:²

E1968 Guide for Microcrystal Testing in the Forensic Analysis of Cocaine³

E1969 Guide for Microcrystal Testing in the Forensic Analysis of Methamphetamine and Amphetamine³

E2326 Practice for Education and Training of Seized-Drug Analysts

E2327 Practice for Quality Assurance of Laboratories Performing Seized-Drug Analysis

2.2 Other Document:

Scientific Working Group for the Analysis of Seized Drugs
Recommendations for: Education and Training, Quality Assurance, Methods of Analysis

3. Significance and Use

3.1 These are minimum standards applicable to the identification of seized drugs.

3.2 It is recognized that the correct identification of a drug or chemical depends on the use of an analytical scheme based on validated methods and the competence of the analyst.

3.3 This practice requires the use of multiple uncorrelated techniques. It does not discourage the use of any particular method within an analytical scheme. Unique requirements in

different jurisdictions may dictate the actual practices followed by a particular laboratory.

3.4 These are minimum standards for identification of commonly seized drugs. However, it should be noted that they may not be sufficient for identification of all drugs in all circumstances. Within this practice, it is up to the individual laboratory to determine which combination of analytical techniques best satisfies the requirements of its jurisdictions.

4. Categories of Analytical Techniques

4.1 For the purpose of this practice, techniques for the analysis of drug samples may be divided into three categories based on their discriminating power. Table 1 provides examples of techniques in order of decreasing discriminating power, from A to C.

5. Identification Criteria

5.1 This practice requires that the following minimum criteria be followed when making analytical identifications

5.1.1 When a validated Category A technique is incorporated into an analytical scheme, then at least one other technique (from either Category A, B or C) must be used.

5.1.1.1 This combination must identify the specific drug present and must preclude a false positive identification.

5.1.1.2 When sample size allows, the second technique should be applied on a separate sampling for quality assurance reasons. When sample size is limited, additional measures should be taken to assure that the results correspond to the correct sample.

5.1.1.3 All Category A techniques must have data that are reviewable.

5.1.2 When a Category A technique is not used, then at least three different validated methods must be employed.

5.1.2.1 These in combination must demonstrate the identity of the specific drug present and must preclude a false positive identification.

5.1.2.2 Two of the three methods must be based on uncorrelated techniques from Category B.

5.1.2.3 A minimum of two separate samplings should be used in these three tests. When sample size is limited, additional measures should be taken to assure that the results correspond to the correct sample.

5.1.2.4 All Category B techniques must have reviewable data.

¹ This practice is under the jurisdiction of ASTM Committee E30 on Forensic Sciences and is the direct responsibility of Subcommittee E30.01 on Criminalistics.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

TABLE 1 Categories of Analytical Techniques

Category A	Category B	Category C
Infrared Spectroscopy	Capillary Electrophoresis	Color Tests
Mass Spectrometry	Gas Chromatography	Fluorescence Spectroscopy
Nuclear Magnetic Resonance Spectroscopy	Ion Mobility Spectrometry	Immunoassay
Raman Spectroscopy	Liquid Chromatography	Melting Point
	Microcrystalline Tests	Ultraviolet Spectroscopy
	Pharmaceutical Identifiers	
	Thin Layer Chromatography	
	Cannabis only:	
	Macroscopic Examination	
	Microscopic Examination	

5.1.3 For the use of any method to be considered of value, test results must be considered “positive.” While “negative” test results provide useful information for ruling out the presence of a particular drug or drug class, these results have little value toward establishing the forensic identification of a drug.

5.1.4 In cases where hyphenated techniques are used (for example, gas chromatography-mass spectrometry, liquid chromatography-diode array ultraviolet spectrophotometry), they will be considered as separate techniques provided that the results from each are used. If a hyphenated technique is used as the sole means of identifying a substance, it should be applied to two separate samplings, for quality assurance reasons.

5.1.5 Cannabis exhibits tend to have characteristics that are visually recognizable. Thus, macroscopic and microscopic examinations of cannabis will be considered Category B techniques when observations include documented details of botanical features. Additional testing must follow the scheme outlined in 5.1.1 and 5.1.2.

5.1.5.1 For exhibits of cannabis that lack sufficient observable macroscopic and microscopic botanical detail (for example, extracts or residues), D9-tetrahydrocannabinol (THC)

or other cannabinoid must be identified utilizing the principles set forth in 5.1.1 and 5.1.2.

5.1.6 An identification of botanical material may be made utilizing morphological characteristics alone provided sufficient botanical features appropriate for identification are observed. Such examinations shall be made by analysts competent in botanical identifications. In this context botanical competence applies to those examiners recognized as professional botanists or those assessed to be competent by such. Identifications of chemical components contained in botanicals (mescaline, opiates, psilocin, etc.) should rely on principles of chemical identification set down in Table 1.

5.1.7 Examples of reviewable data are:

5.1.7.1 Printed spectra, chromatograms and photographs, digital images or photocopies (color where appropriate) of TLC plates.

5.1.7.2 Contemporaneous documented peer review, as well as photographs and digital images, for microcrystalline tests.

5.1.7.3 Recording of detailed descriptions of morphological characteristics for cannabis (only).

5.1.7.4 Reference to published data for pharmaceutical identifiers.

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