B208   A New Analytical Scheme for the Analysis of Cannabis Plant Material: Marijuana or Hemp?

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Learning Overview: The goal of this presentation is to provide an overview of the new Drug Enforcement Administration's (DEA's) scheme for the analysis of cannabis submissions and the distinction between marijuana and hemp materials.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by discussing a new analytical scheme for the analysis of cannabis.

Prior to December 2018, DEA laboratories used a three-tier analytical scheme for the analysis of cannabis submissions. This scheme consisted of macro and microscopical tests, the Duquenois-Levine (DL) color test, and separation analysis using either Thin-Layer Chromatography (TLC), Gas Chromatography/Flame Ionization Detector (GC/FID), or Gas Chromatography/Mass Spectrometry (GC/MS). For many years, this protocol for analysis provided the scientific foundation for reporting cannabis conclusions.

On December 20, 2018, the President of the United States signed into law the Agriculture Improvement Act of 2018 (Farm Bill), and with it, two significant changes were introduced. The new law includes an explanation of the term "hemp," now defined as "the plant *Cannabis sativa* L. and any part of that plant, including the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with a delta-9 tetrahydrocannabinol (THC) concentration of not more than 0.3 percent on a dry weight basis." As a second significant change, the new law also excluded the term "hemp" from the definition of marijuana in the Controlled Substances Act. These federal law changes directly affected the manner in which suspected cannabis submissions are analyzed by forensic chemists because the previously established analytical testing requirements—albeit sufficient for cannabis identification—were not fit for the purpose of assessing the level of THC present in a sample and, therefore, fell short of distinguishing between marijuana and hemp. In other words, unlike many other routine drugs encountered by analysts, the new "Farm Bill" requires the assessment of a quantitative property in order to provide a qualitative conclusion regarding the identification of marijuana submissions.

As a result of the federal law changes described above, a new analytical scheme was designed for the analysis of suspected cannabis materials submitted to DEA laboratories. In this presentation, this new testing protocol will be discussed. The new scheme includes macro and microscopical analysis, a new "typification" color test, and GC/MS analysis. The new color test allows differentiation between the two main chemotypes of cannabis by producing a pink color when the CBD concentration in the material is greater than THC (CBD > THC) or a blue color when THC > CBD. The GC/MS test is a limited-purpose method used to asses if the level of THC in a sample is above or below a decision limit of 1% (w/w). This presentation will include information on the background and validation of the new "typification" color test and on the scope, design, and validation of the GC/MS method. The discussion will also describe implementation of the new analytical scheme throughout DEA laboratories, as well as sampling and reporting requirements.

Cannabis, Marijuana, Hemp