



THC Updates - 2024

Georgia Bureau of Investigation - Chemistry Section



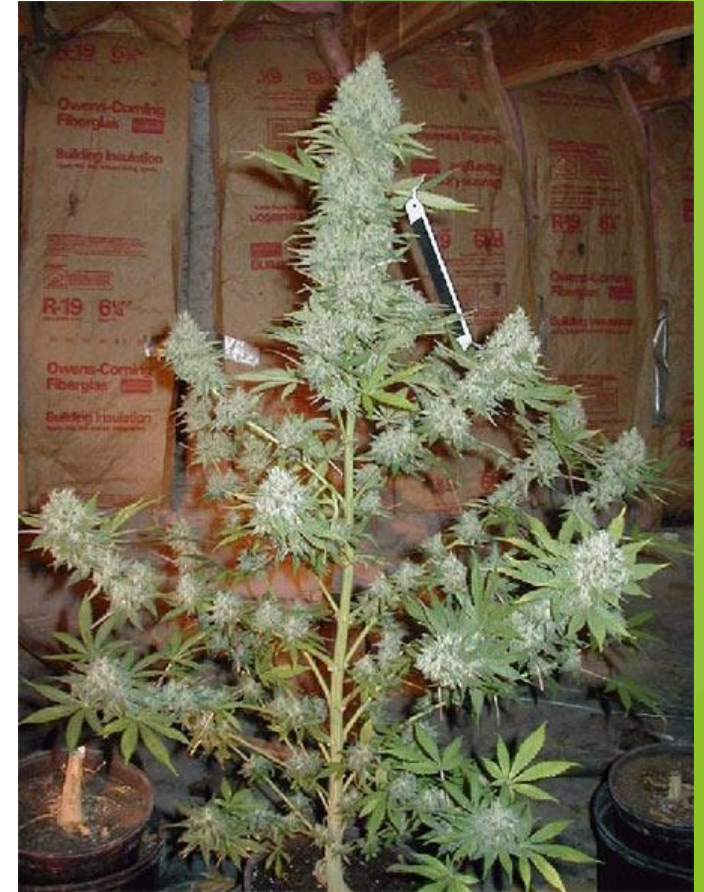
Agenda

- ▶ Types of Evidence
- ▶ Types THC [MJ, hemp, low THC, deltas]
- ▶ GBI Testing

Types of Evidence

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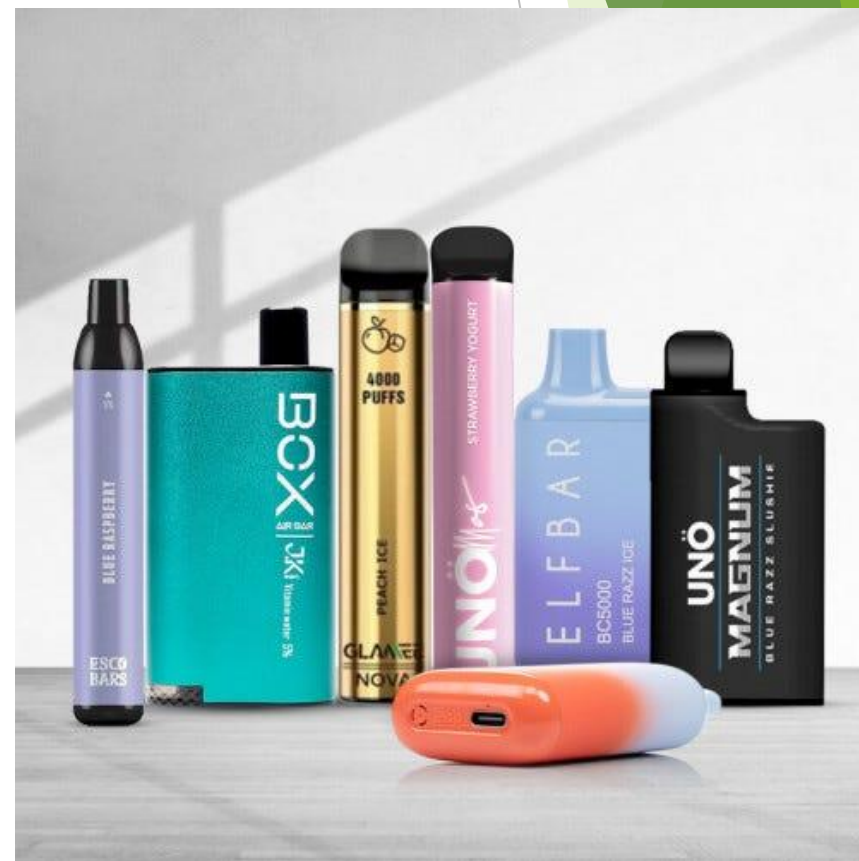
Leafy Material



Coated Leafy Material



Vapes



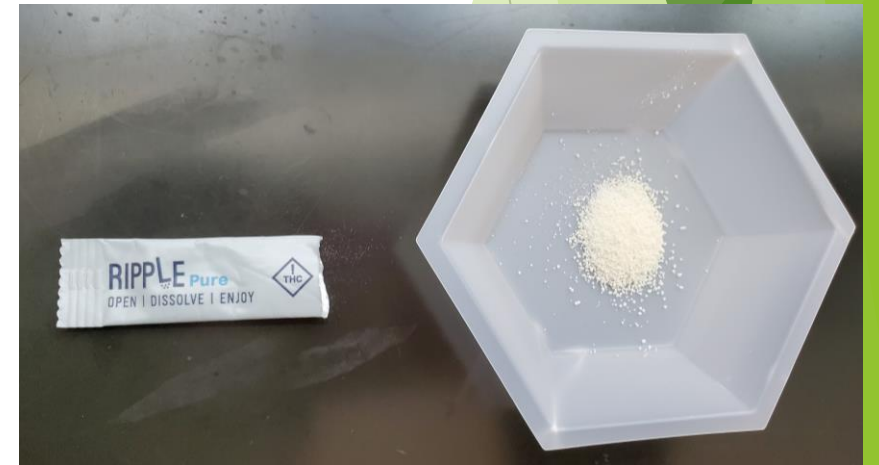
Edibles



More Edibles



Solid Material



Others

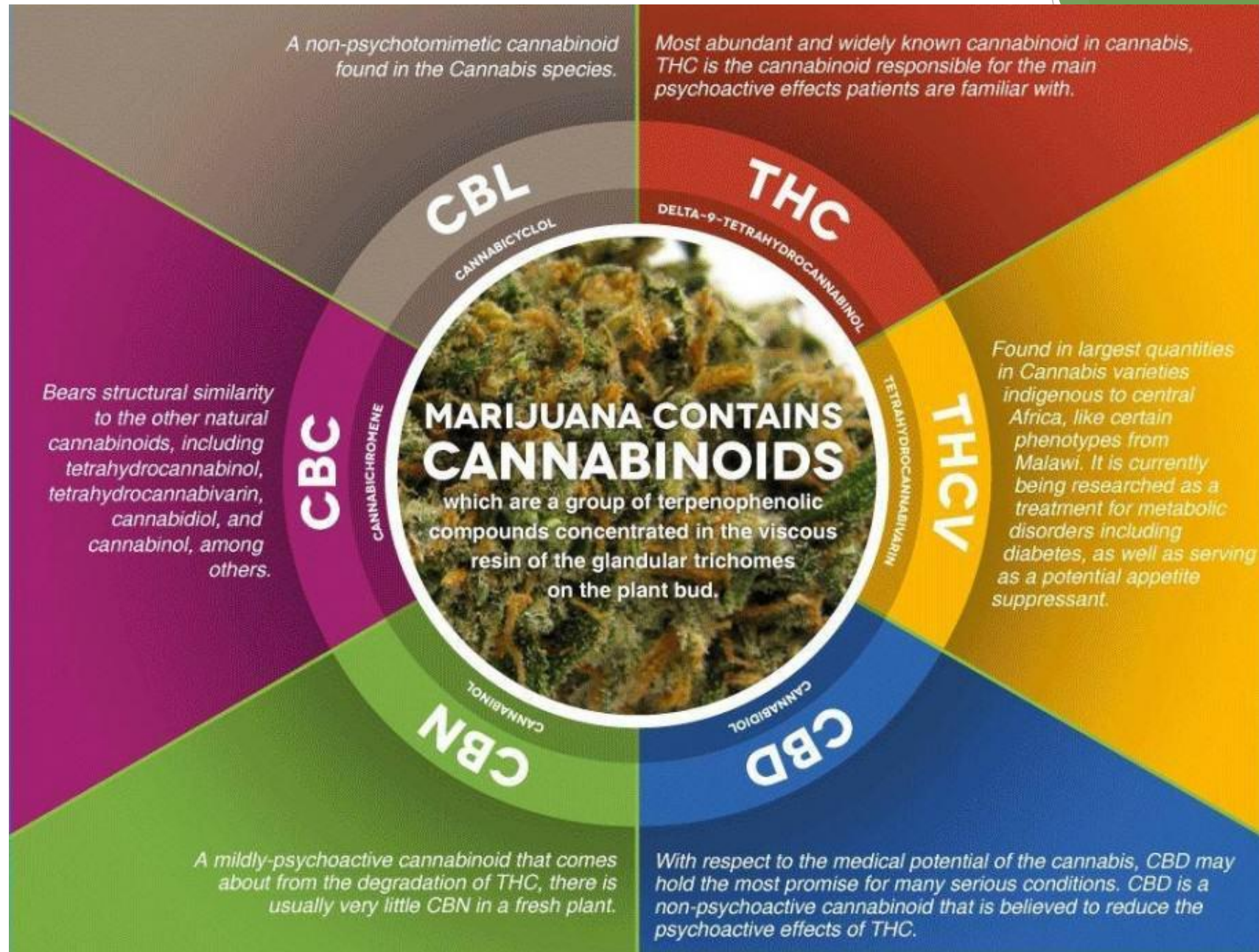


Types of THC

What are Cannabinoids?

- ▶ They are a class of drugs in the genus Cannabis





<https://www.alchimiaweb.com/blogen/cannabinoids-and-their-medicinal-properties/>

Hemp vs Marijuana

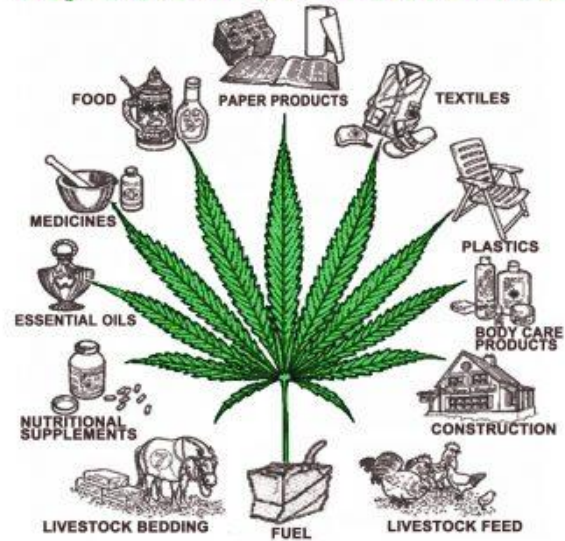


<https://www.cannabisinfocus.com/blog/5-differences-between-hemp-and-marijuana-34>



HEMP

50,000 USES & BENEFITS



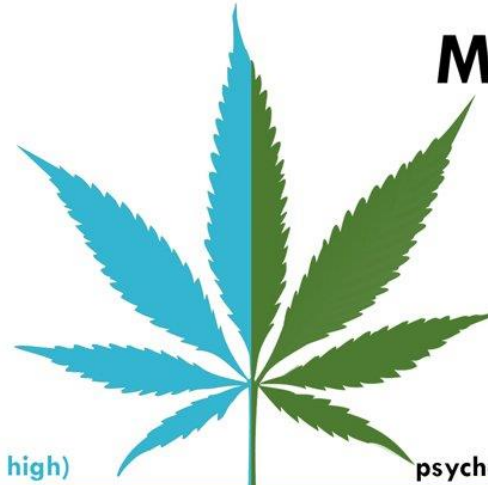
Cannabis Sativa

Hemp

Higher CBD
 Traces of THC < 0.3%
 Medicinal uses
 Various industrial uses
 Food

Marijuana

Higher THC (5-25%)
 Recreational uses
 Medicinal uses



non-psychoactive (no high)

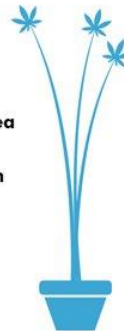
psychoactive (gets you high)

CBD

THC

Widely-Known Benefits

- | | |
|----------------------|------------------|
| Anxiety | Pain Relief |
| Cramps | Bone growth |
| Migraine/Headache | Muscle spasms |
| Inflammation | Vomiting/Nausea |
| Arthritis | Lupus |
| Hypertension | Bacterial growth |
| Blood sugar levels | Cancer growth |
| Seizures/Convulsions | |



Widely-Known Benefits

- Vomiting/Nausea
- Appetite
- Sleep
- Cancer growth
- Glaucoma
- Pain Relief
- Muscle spasms
- Asthma
- GI Tract



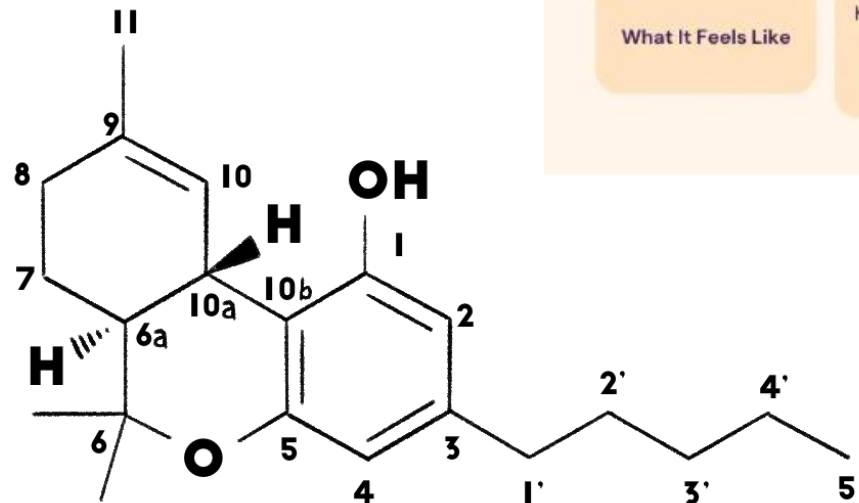
CBD does not directly bind with the CB1 receptor, instead CBD interacts with other receptors and pathways in the body which explains specific and non-psychoactive relieved health benefits.

THC directly binds to CB1 receptors in the body, which are predominantly found in the brain and nervous system. The CB1 receptor activation is therefore responsible for the "high" from consuming cannabis.

THC

► Several isomers

- Delta-9
 - Most psychoactive
- Delta-8
- Delta-10
- Delta-6a,10a



Delta 8 Vs Delta 9

	Delta-8	Delta-9
Psychoactive Properties	Mild psychoactive effects, often described as clear-headed and less intense.	Strong psychoactive effects, typically resulting in a more intense high.
Presence in Cannabis	Found in very low concentrations in the cannabis plant. Often needs to be converted from CBD or Delta 9 THC for commercial products.	The most abundant psychoactive compound in the cannabis plant. 0.3% in hemp and up to 25% in marijuana.
Legality	Federally legal in the U.S. if derived from hemp and contains less than 0.3% Delta 9 THC, but legality varies by state.	Marijuana-derived THC is federally illegal but legal in for recreational use in some states. Hemp-derived delta-9 may be legal.
What It Feels Like	Known to provide a body high with feelings of relaxation, clarity, and an uplifted mood. Can lead to altered perception and a mild distortion of time.	Known for its powerful high that can increase creativity, enhance sensory experiences, and lead to introspection. Can cause altered perception and time distortion.

<https://viaahemp.com/blog/what-is-delta-8-thc/>

<https://www.linkedin.com/pulse/science-product-makers-understanding-d8-d9-d10-thc-harold-han>

Prior to Federal Farm Bill → MJ CEC

- ▶ MJ CEC classes were based on microscopy and color tests [D-L and FBB]
- ▶ The combination of tests confirms Genus Cannabis but does not differentiate between hemp and marijuana

Part A
Results of Microscopic Testing for Marijuana

Positive _____

Negative _____

Part B
Results of Chemical Testing for Marijuana (Duquenois-Levine Reagent System)

Positive _____

Negative _____

Part C
Results of Chemical Testing for Marijuana (KN-Reagent Fast Blue B Salt)

Positive _____

Negative _____

Total Net Weight: () Less than one ounce
 () More than one ounce Grams

The results of all three tests listed above are conclusive and recognized by the Georgia Bureau of Investigations, Division of Forensics Sciences, as showing a positive presence of Marijuana.

Georgia Bureau of Investigation Division of Forensic Sciences



HEREBY CERTIFIES THAT

Has participated in the Marijuana-Certified Examiner Course offered by the GBI, Division of Forensic Sciences and has successfully completed the requirements for the identification of marijuana by microscopic analysis, the Duquenois Levine Test, and the Fast Blue B Test. This certificate is subject to the policies and procedures of the Georgia Bureau of Investigation

Marijuana-Identification Instructor

Date Issued: September 13, 2018
Date Expires: September 13, 2022

2018 Federal Farm Bill

- ▶ Removed hemp from the marijuana definition
- ▶ Hemp: Genus Cannabis with no more than 0.3% delta-9-THC [O.C.G.A 2-23-3]
- ▶ Allows hemp cultivation [with certain restrictions]
- ▶ Allows hemp products to be transferred across state lines

2019 Georgia Hemp Farming Act [HB 213]

- ▶ Hemp: Cannabis sativa L. plant and any part of such plant, including the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers, whether growing or not, with the federally defined THC level for hemp or a lower level
 - ▶ Federally defined THC level for hemp: delta-9 THC concentration of not more than 0.3% on a dry weight basis
- ▶ Hemp products: all products with the federally defined THC level for hemp derived from, or made by, processing hemp plants or plant parts that are prepared in a form available for legal commercial sale, but not including food products infused with THC unless approved by the US FDA

2019 Georgia Hemp Farming Act [HB 213] - cont.

- ▶ Marijuana: all parts of the plant of the genus Cannabis, whether growing or not, the seeds thereof, the resin extracted from any part of such plant, its seeds or resin - shall not include hemp or hemp products
- ▶ Schedule I: tetrahydrocannabinol, tetrahydrocannabinolic acid, or a combination of tetrahydrocannabinol and tetrahydrocannabinolic acid which does not contain plant material exhibiting the external morphological features of the plant of the genus Cannabis - not including such substance when found in hemp or hemp products

Medical Marijuana

- ▶ Low THC Oil: oil that contains an amount of cannabidiol and not more than 5% by weight of tetrahydrocannabinol, tetrahydrocannabinolic acid, or a combination, which does not contain plant material exhibiting the external morphological features of the plant of the genus Cannabis
- ▶ Lawful to possess 20 ounces or less if in a labeled pharmaceutical container indicating the percentage of THC and has a card - otherwise is a misdemeanor
- ▶ Product: low THC oil through oil, tincture, transdermal patch, lotion, or capsule, but not including any food products infused with low THC oil
- ▶ It is unlawful to ingest low THC oil or products in a manner that employs a heating element, power source, electronic circuit, or other electronic, chemical, or mechanical means that can be used to produce vapor in a solution or other form

Classifications in Georgia

Hemp	<0.3% THC in leafy material and hemp products - LEGAL
Marijuana	>0.3% THC in leafy material - MISD/FELONY/TRAFFICKING
Edibles	<ul style="list-style-type: none">- No leafy material - SCHEDULE I- Leafy material - potentially marijuana
Oils/Vapes	<ul style="list-style-type: none">< 0.3% THC - hemp - legal5% or less in combination with CBD - medical marijuana>5% THC - schedule I

GBI Testing

Leafy Material

- ▶ Incident date: 5/10/19 or later
- ▶ Over one ounce OR under one ounce with a felony drug charge
- ▶ Testing scheme
 - ▶ Weight
 - ▶ Microscope
 - ▶ GC-MS [semi-quantitative]
- ▶ Reporting
 - ▶ Genus Cannabis
 - ▶ Greater than or less than 1% delta-9 THC

Vapes

- ▶ Testing scheme
 - ▶ Typically NO weight or volume
 - ▶ Visual examination and/or microscopic examination
 - ▶ Instrumental analysis [typically GC-MS]
- ▶ Reporting
 - ▶ Most abundant cannabinoid
 - ▶ If Delta-9, purity CAN be determined [when requested]

Edibles

- ▶ Testing scheme
 - ▶ Will test when it's the only item in the case
 - ▶ Visual examination and/or microscopic examination
 - ▶ Instrumental analysis [typically GC-MS and HPLC]
- ▶ Reporting
 - ▶ THC/THCA [when present]
 - ▶ No schedule

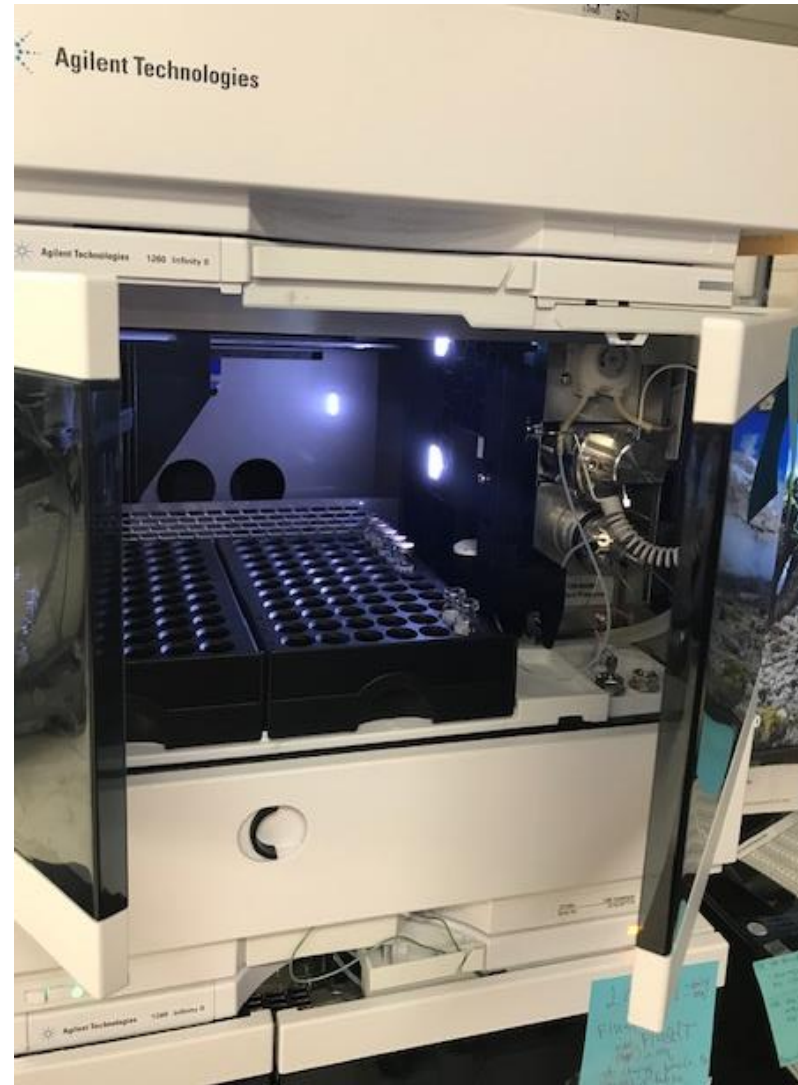
Solid Material, Coated Leafy Material, Liquids, Etc.

- ▶ Testing scheme
 - ▶ Visual examination and/or microscopic examination
 - ▶ Instrumental analysis [typically GC-MS and HPLC]
 - ▶ CANNOT determine purities
- ▶ Reporting
 - ▶ THC/THCA [when present]
 - ▶ No schedule

Microscopy



HPLC



GC-MS



What About Color Tests?



Image credit: DetectaChem via Benzinga

Summary/Key Takeaways

The background of the slide is white with abstract green geometric shapes on the right side. These shapes include overlapping triangles and polygons in various shades of green, ranging from light lime to dark forest green. The shapes are layered, creating a sense of depth and movement.

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