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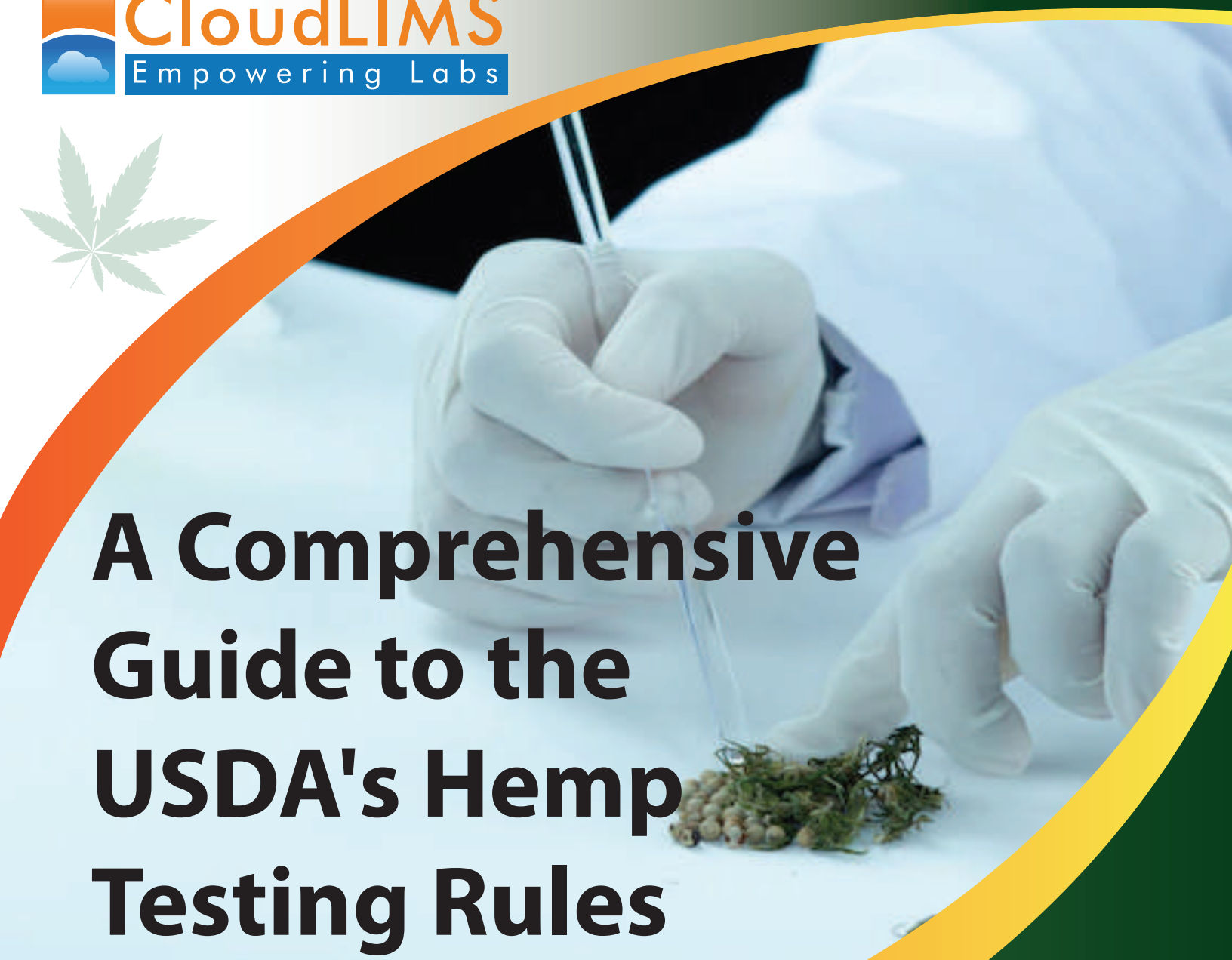

A Comprehensive Guide to the USDA's Hemp Testing Rules

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Introduction

If we were asked to give an analogy of the hemp testing industry, it would be this one: "a fire that's hard to start, but once lit, it keeps going." Here's why we think so.
It's quite difficult to get into hemp, any kind of hemp business for that matter. The red tape surrounding the industry is rigid and quite honestly, redundant to some extent. Unlike "normal" cash crops, hemp has a cousin called cannabis which to date is classified under Schedule 1 by the United States Drug Enforcement Administration
(U.S. DEA). Other compounds in this class include not-so-famous heroin, cocaine, and the like. When it comes to regulation, hemp is held to a similar standard.

This means several things for a hemp testing business venture. You will need to work extra hard to get the "permission" to test hemp. Yes, you now need to be registered with the DEA before you will be allowed to offer hemp testing services. The Hemp Final Rule (which we will refer to frequently in this guide) explicitly states that:

"DEA registration is necessary because cannabis that tests above 0.3 percent THC on a dry weight basis, which is, by definition, marijuana and a Schedule 1 controlled substance."

This comes with several other regulatory hurdles that you will need to work through. Unlike the usual samples that typical laboratories handle, hemp samples are under federal scrutiny at all times; just in case the hemp turns "hot." This behooves a fine meshwork of rules and regulations to direct the testing of this multifaceted crop called hemp.

But is it worth all the trouble?

This will take us back to, once lit the fire keeps going. There is an increasing need for hemp testing services, not only in the U.S but the world over. Increasingly more countries are changing their laws on hemp, with some hoping to capitalize on the economic potential of this medical and industrial crop to boost their failing economies. While the startup costs for hemp testing laboratories can be significant, the operational costs are not. Once you get past the regulatory and financial hurdles, you are likely to be turning in profit for a long while, all other factors remaining constant.

What is the Purpose of This e-Book?

This e-Book is intended to help laboratories that test for hemp to work through the regulatory hurdles that make it difficult to get into and thrive in the industry. It not only informs the reader but also goes an extra mile to give practical tips and solutions on how a hemp testing laboratory can achieve 100% compliance. This resource is intended to be a 101 guide on federal regulations that apply to hemp testing labs.

What is Covered in This Book?

This book covers the following:

1. The Agricultural Act of 2014 and State Pilot Programs
2. The Agricultural Act of 2018 and the Hemp Bill
3. The Hemp Final Rule (FR)
4. Operational Changes Introduced by the FR
   . Changes to testing requirements and testing procedures
   . Sampling procedure
   . Reporting procedure
   . DEA registration
   . Measurement of uncertainty
   . Remediation of hot hemp
   . Use of validated test methods
   . Need for quality assurance protocols
   . Need for internal SOPs specific to testing and retesting hemp
   . A practical solution
   . How a LIMS can help hemp testing labs meet the new regulatory requirements.

The Agricultural Act of 2014 & State Pilot Programs

2014 was a milestone year for legal hemp in the U.S. It is at this point that the government began showing some form of "leniency" to the hemp industry. After several years of prohibition, the Agricultural Act of 2014, (also known as the 2014 Farm Bill) legalized the cultivation of hemp for research purposes through State Pilot Programs. This restarted the cultivation of hemp in the U.S. which had been dormant for many decades.

States were at liberty to establish the hemp pilot programs at their own pace. This means that the pilot programs were rolled out at different times. In the first year, only four states reported hemp acreage: Colorado, Indiana, Kentucky, and Vermont. Colorado had the highest acreage under hemp at this time. Tennessee, Virginia, and Oregon joined in 2015 and others joined gradually. In 2015, the Farm Service Agency under the USDA started collecting data on hemp acreage under the hemp pilot programs. Montana grew to become the largest hemp producer in the U.S. By the end of 2018, only three states did not have legislation in place for a hemp pilot program.

Under the state pilot programs, hemp acreage increased from 0 acres to over 90,000 by the close of 2018. Back in 1943 before hemp cultivation was prohibited, the hemp acreage was at 143,000. By 2019, hemp acreage in the U.S. had gone up to 146,000 under the Hemp Farming Act of 2018. By then, all states had developed a hemp farming program other than Idaho, Mississippi, and South Dakota.

The state pilot programs highlighted several challenges that put to question the agronomic and economic potential of the industry. Issues such as competition with other cash crops for acreage, global competitiveness of hemp farming, regulatory challenges as well as market risks came to the surface and required effective solutions to address them. Access to critical production input such as hemp seeds and herbicides also posed a significant challenge. Lastly, the inconsistency in state requirements from one state to another made it difficult for producers to make informed decisions. Most of these challenges were addressed in the Agricultural Act of 2018.

Reference

1. Mark, Tyler, Jonathan Shepherd, David Olson, William Snell, Susan Proper, and Suzanne Thornsbury. February 2020. Economic Viability of Industrial Hemp in the United States: A Review of State Pilot Programs, EIB-217, U.S. Department of Agriculture, Economic Research Service. https://www.ers.usda.gov/webdocs/publications/95930/eib-217.pdf

The Agricultural Act of 2018 & The Hemp Farming Bill

IThe Hemp Farming Act of 2018 was a proposal to remove hemp (defined as cannabis that contains less than (0.3% THC) from Schedule 1 of the controlled substances act (CSA). This Act was meant to classify hemp as any other agricultural commodity in the U.S. The provisions of this act were incorporated into the Agricultural Act of 2018 that became law on December 20, 2018. Hence, hemp became officially legalized under federal law.

Compared to the pilot programs, the hemp farming act is more comprehensive. It allows for a broader sense of hemp cultivation in the U.S.; not restricted to pilot programs. It also allows for the exportation and importation of hemp and hemp products across state lines. It also eliminates restrictions on the sale, possession, and transportation of hemp and hemp-derived products. That said, the "THC by dry weight" should never exceed the 0.3% threshold.

Cannabis Remains Illegal Under Federal Law

Cannabis (containing more than 0.3% THC) remains illegal under federal law. This has several implications for the "now-legal" hemp industry. Because of the close relationship between hemp and cannabis, hemp remains a highly regulated commodity, unlike other cash crops. Hemp cannot be cultivated by whoever and at whatever location without regulatory approvals.
Hemp producers and testing facilities must always bear in mind that hemp that exceeds 0.3% THC is illegal and subject to the DEA. Therefore, every effort must be put in place to ensure that the limit is never exceeded. Secondly, hemp cultivation is governed by a hemp regulatory program run by the state or the USDA. Where there is a state program to license and regulate hemp production, it has to be approved by the USDA. Thirdly, laws have been put in place to define violations such as cultivating hemp without a license and what penalties should be meted out for such violations. Such rules are defined in the Final Rule which took effect last year.

The Hemp Final Rule (FR)

On January 15, 2021, the USDA issued the Final Rule for testing labs and hemp producers. The FR incorporated comments from the public and stakeholders as well as lessons that have been learned during the 2020 hemp growing season. The Final Rule which took effect on March 22, 2021 can be viewed in the Federal Register. The Hemp Final Rule is a set of guidelines that regulates the legal hemp industry in the U.S. It lays out in detail every aspect of the hemp cultivation and testing industry, including the penalties associated with violations. It defines the licensing requirement, information sharing, testing procedures, and parameters.

Reference

1. USDA. Agricultural Marketing Service. USDA Publishes Final Rule for the Domestic Production of Hemp. https://www.ams.usda.gov/press-release/usda-publishes-final-rule-domestic-production-hemp Published January 15, 2021.

Why Should Hemp Be Tested?

The Agriculture Improvement Act of 2018 mandated that the USDA create a federal regulatory framework to govern legal hemp production in the US. Consequently, the interim FR and subsequently, the FR were created. The Hemp Act defines hemp as the cannabis plant that contains less than 0.3% THC on a dry weight basis. The hemp FR requires that all hemp be tested by a third-party laboratory and that the results be reported on a dry weight basis. The main aim of testing hemp is to ensure that the representative sample does not exceed 0.3% THC. In addition, hemp testing labs are required to test for contaminants and heavy metals that could be present in the sample. Lastly, hemp testing labs should also test for other cannabinoids and terpenes that may be present in the sample.

Is Hemp Testing Profitable?

The demand for hemp testing services in the U.S. is growing at an unprecedented rate, and will continue to do so as long as cannabis remains under Schedule 1. As more states move to legalize cannabis, both for medical and adult-use, the need for high-quality hemp increases commensurately. In addition to the regulatory requirement to have hemp tested, consumers are also becoming sophisticated and are demanding to see laboratory reports for each batch of hemp products to ensure that the products they are consuming are safe and are of the same composition as mentioned on the product label. This underscores the need for hemp testing services.

The market size for hemp testing exceeded USD 2.9 billion in 2020 and is projected to have a CAGR of 21.1% in subsequent years until 2027. While the opportunity is great, the rules are stringent and the associated risks high.

To date, not many laboratories are offering hemp testing services and the reasons are obvious. Unlike other industries, hemp testing is highly regulated, and the stigma surrounding the cannabis industry is yet to disappear, even with legalization.

Laboratories that take the risk to offer hemp testing services will have a lot to gain in the long run. In spite of the inherent risks, the economic benefits vis-à-vis work involved is significant. Hemp testing laboratories pocket about 40% of the profit. Granted, startup costs for a hemp testing facility can be through the roof, but the operational costs are very minimal. This makes it easy to turn into a profitable business.

Reference

Global Market Insights. Cannabis Testing Market Report Coverage. Report ID: GMI3567. Published October 2021.https://www.gminsights.com/industry-analysis/cannabis-testing-market

What Hemp Testing Labs Should Know

1. Hemp cultivated under the USDA, State, or Tribal program is subject to sampling and compliance testing. However, producers such as research institutions and facilities that cultivate immature plants may be subject to different testing requirements.

2. All hemp testing labs should meet standards that have been set for the quantification of cannabinoids in plant material aka the AOAC International standard method performance requirements for Quantitation of Cannabinoids in Plant Materials of Hemp (Low THC Varieties Cannabis sp).

3. Hemp testing involves the measurement of the total THC concentration that is present in a sample submitted to a laboratory for analysis. A hemp testing laboratory is required to perform chemical analysis using a post-decarboxylation method or a similar reliable method that takes into account the decarboxylation of THCA into THC which is psychoactive and illegal.

4. The total THC concentration is determined and reported on a dry weight basis.

5. Hemp testing labs should calculate the measurement of uncertainty (MU) and report the value as a positive or negative value. This is usually reported in the form of +/- 0.05, this should follow principles of figure rounding. The MU can be calculated using resources such as GUM, ISO, and Eurachem.

6. The USDA recommends that hemp testing labs be ISO accredited. However, it is not mandatory.

7. The licensed hemp producer is required to pay any fees associated with hemp testing and retesting.

8. Quality Assurance (QA) protocols should be in place to guarantee that the test results are valid, reproducible, and reliable.

9. The testing methods should be valid, verifiable, and fit-for-purpose. Laboratories should also have the equipment, staff, and expertise to carry out the required tests.

9 Operational Changes Imposed by the FR on Hemp Testing Laboratories

The hemp final rule outlines specific procedures on how laboratories should test hemp. This includes the collection and preparation of the sample as well as the testing methods and procedures. It also includes the steps that should be taken for retesting and the remediation of hot hemp. Lastly, it gives directions on how the test information should be shared. The next section details 10 operational changes that hemp testing labs need to be familiar with.

1. Compulsory DEA Registration

The Hemp Final Rule stipulates that all hemp testing facilities must be registered with the DEA. However, the USDA has allowed labs until the last day of 2022 to meet this requirement. This will allow labs sufficient time to get the necessary approvals. Several commenters wanted to do away with this requirement. However, the USDA felt that it was necessary to have this in place since the labs might be handling samples that exceed 0.3% THC, and therefore illegal under the Controlled Substances Act (CSA), 21 CFR part 1301.13.

Meanwhile, all hemp testing laboratories will be required to comply with all other requirements in the FR, even as they await to finalize DEA registration. They must adhere to the standards of performance as stipulated in the FR. The DEA is in the process of reviewing applications submitted by labs based on the criteria under the Controlled Substances Act (21 U.S.C. 823(f)).

Jeff Greene, one of the directors of The Florida Hemp Council thinks that this is a good sign, anticipating that the Biden-Harris administration will amend the hemp final rule. Pushing the deadline ahead could mean that the USDA is unsure of this requirement. This implies that there is a room for discussion. However, it is up to the industry to demonstrate to the USDA that this is not necessary by ensuring that all samples tested are within the acceptable limits.

2. Calculation of Measurement of Uncertainty (MU)

Hemp testing laboratories are required to calculate and report the Measurement of Uncertainty (MU) which is defined as the parameter, that is the result of a measurement characterizing the dispersion of the values which could reasonably be attributed to a measurable quantity."

The USDA does not define any standard upper or lower boundary for labs to use when calculating the measurement of uncertainty. Therefore, there is no standardized MU value. On the other hand, the MU is based on test methods such as the AOAC Standard Method Performance Requirements 2019.003 that is available at https://www.aoac.org/resources/smpr-2019003/.

3. Sampling of Hemp for Testing

The hemp final rule brought about significant changes to hemp sampling. For example, the sampling window was increased from 15 days to 30 days. This means that a representative sample must be collected for testing within 30 days prior to harvesting. With an extra 15 days, licensed producers have more leg room to get the samples tested from an authorized laboratory of their choice. This move was prompted by comments from stakeholders who felt that the 15-day window period was very stringent. This did not give the producers ample time to collect an appropriate representative sample, send it to a laboratory for testing, and receive the results back in time to initiate harvesting. Sample Preparation

Sample Preparation

1. Once a hemp testing laboratory receives the composite sample, the laboratory should dry it to get rid of all the moisture content. The dried sample should be brittle and moisture-free. This allows the laboratory to report the THC concentration on a dry weight basis.

2. The sample should be dried within 24 hours after it has been received. If this is not possible, the sample should be frozen at a temperature of -20°C or lower.

3. Once the sample has been adequately dried, the laboratory should grind the sample into small particles and mix to ensure that it is homogenous. This includes parts of the flower, leaves, and stem as described in the final rule.

4. The testing laboratory should then divide the sample into two parts. One part should be marked "Test" and the other "Retain." The method of division should be stipulated in the laboratory's internal SOP.

5. The sample to be retained should be stored safely while the other sample should proceed to the testing stage.

4. Parts of Hemp Plant to be Tested

The FR gave more flexibility on the parts of the hemp plant that can be tested. The FR allows the samples to be collected from the top 5-8 inches from the main stem. This includes parts of the leaves and buds, the terminal bud found at the end of the stem, and central cola which is the part of the stem that develops into the bud. This is for as long as these parts are located at the top 5-8 inches of the main stem.

This change makes it possible for sampling agents to collect samples from the stem and leaves. Of course, it is also expected to reduce the chances of "hot hemp". Cannabinoids, such as THC, are concentrated in the buds while stems and leaves have minimal amounts.

Some comments had suggested that sampling be done from the whole plant material which would have greatly reduced the chances of hot hemp. However, the USDA insisted on samples to be collected primarily from the floral parts of the plant.

5. Testing Methods & Procedure

. Begin by determining the moisture content; the sample should be dry.
. The moisture content should be within 5-12% which is an expression of the amount of water in the sample to that of the solid plant material. This allows the laboratory to report the THC concentration on a dry weight basis.
. Carry out chemical analysis using a post-decarboxylation method; or a similar method that takes into account the decarboxylation process.

At a minimum, the testing method should employ post-decarboxylation or any similar method that should be approved in writing by the secretary. Raw hemp contains an acidic form of THC known as delta-9 tetrahydrocannabinolic acid (THCA). When exposed to heat, the THCA converts into the psychoactive THC. Therefore, the testing method should factor in the possible conversion of THCA to THC. Other methods that meet the post-decarboxylation criteria include gas and liquid chromatography.
Alternative testing methods will be considered to give states and tribes some flexibility. However, these methods should be comparable to the baseline mandated by the USDA. They should also be approved in writing.

Why Does the USDA Insist on Post-Decarboxylation Methods?

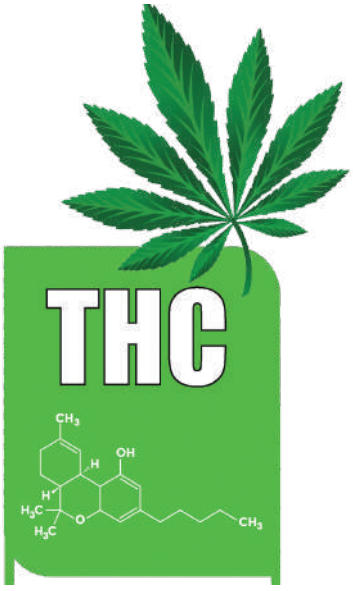
The reason is quite simple: to avoid labs ratifying non-compliant hemp as compliant. As discussed above, methods that fail to account for decarboxylation will not report an accurate amount of total THC.

A choice method should either initiate the process of decarboxylation, which includes gas chromatography, or it should be able to analyze both THCA and THC, this includes liquid chromatography-based methods.

Why Does the USDA Insist on THC By Dry Weight?

The Final Rule stipulates that the total THC must be reported on a dry weight basis. This means that the sample used for analysis must be dry. This is important for one reason; standardization.

If labs were to test and report samples as they are presented, it would be difficult to account for the moisture content in "wet samples." This will increase errors and inconsistencies dramatically. Additionally, standardization will be hard to achieve when some labs are reporting THC based on wet sample analysis and the rest are reporting based on dry sample analysis. The "dry-weight" requirement eliminates variance and makes standardization possible.



When Test Results Exceed 0.3% THC Concentration

When a sample that has been submitted to a laboratory for testing is found to have a total THC concentration above 0.3%, it shall be assumed that the lot represented by the sample has a similar amount of THC, and is therefore hot hemp. In such a case, the hemp testing laboratory is required to alert the producer, the state or tribal agency, as well as the USDA on this incidence of hot hemp.

6. Negligence Threshold

The hemp final rule raised the hemp negligence threshold from 0.5% to 1%. This means when the total THC concentration in the hemp exceeds 1%, it is considered a violation of the rules. Hemp that exceeds 0.3% THC but tests below 1% THC will be considered as negligent violation and will not be legally penalized. However, it will still need to be remediated or disposed of.

If the THC concentration exceeds 1%, the licensed producer (LP) will receive a notice of violation. This will be considered a violation of hemp rules and will require a corrective action plan where the progress must be reported to the USDA.

0.5% to 1%

If a licensed producer receives three or more notices of negligent violation within a five-year period, they will be disqualified from participating in the licensed hemp program for a period not less than five years. Licensed producers will receive a maximum of one notice of violation per year, regardless of whether multiple lots test above 1% THC.

7. Sharing of Test Results

Hemp testing labs are required to share test results for THC with different stakeholders, including the USDA, the licensed producer, and the appropriate State Department of Agriculture or Tribe.. Form 22 from the Agricultural Marketing Service (AMS) must be filled and sent to the USDA. The test results sent to the USDA must be marked "official compliance." Internal tests to monitor THC levels should not bear this stamp. Hemp testing labs must retain a legible copy of the test results for a minimum of three years from the day of analysis. The test results should be available for inspection by federal and other officials.

Hemp testing labs should provide the test results to the licensed producers in a form that best-suits the LP's needs. A legible copy of the test results issued to the LPs must be available for inspection upon request.

What Happens When an LP Asks for a Retest?

A licensed producer can ask for a retest when the sample has tested above the 0.3% THC. When this happens, the hemp testing laboratory should retest the hemp sample at the expense of the LP.

The retesting procedure is the same as the testing procedure, and this should be stipulated in the SOP. Once the retest has been conducted, the testing laboratory shall issue the results to the licensed producer and send a copy of the results to the USDA.

8. Remediation of Hot Hemp

The Final Rule gives an allowance for the remediation of hot hemp. This means that the hemp can be put to other use, after the "hot" parts or the flowers have been removed. The "cold parts" such as the seeds, stalk, stems, and leaves can be put to other use. However, the licensed producer should not attempt to extract THC from the parts that are to be remediated and reintroduce the hemp into the market as compliant.

Testing Remediated Hemp Samples

The Hemp Final Rule allows licensed producers to remediate hot hemp. Hemp that has failed an initial test can be shredded into a biomass and a sample of the biomass sent to a hemp testing laboratory for retesting. The same procedure that is used to test hemp is used to test the remediated hemp. The laboratory should submit a copy of the results to the LP, the state or tribal agency, and the USDA. The results should be submitted to the LP in a form preferred by the LP. The LP is required to keep a legible copy of the results for a period of three years, starting from the day when the chemical analysis was performed.

Remediation allows LPs to salvage some parts of the hemp and hence minimize their losses. The licensed producers are able to make some money from the "rejected hemp" while at the same time, the USDA ensures that the non-compliant hemp does not enter the market. More information about hemp remediation can be found on the USDA website.

9. Disposal of Hot Hemp

The FR has given licensed producers the liberty to destroy their hot hemp. Initially, LPs were required to hand over their hot hemp to a DEA-registered distributor or law enforcement who could then destroy the hot hemp. This had to do with the hot hemp being classified as marijuana and hence a Schedule 1 substance.

The hemp final rule has given more options for the disposal of hot hemp based on feedback from states and tribes as well as consultation with the DEA. This includes the following:

. Plowing under
. Mulching/ Composting
. Burning onsite
. Disking
. Deep Burial
. Bush mowing

The non-compliant hemp must be destroyed on-site and not transported to a different location. Each state and tribe is at liberty to create their own protocols for the disposal of hot hemp, but this must comply with the applicable federal laws. Other possible destruction techniques for hot hemp are available on the USDA website.

References

USDA. Agricultural Marketing Society. Laboratory Testing Guidelines. U.S. Domestic Hemp Production Program.
1. https://www.ams.usda.gov/sites/default/files/media/TestingGuidelinesforHemp.pdf.Issued January 15, 2021
2. USDA. Agricultural Marketing Society. Disposal Practices vs. Disposal Outcome. https://www.ams.usda.gov/rules-regulations/hemp/disposal-activities. Accessed Jan 15, 2021.

Things to Remember

1. Total THC refers to a sum of the available THC and THCA that is analyzed and reported on a dry weight basis.

2. A post-decarboxylation method must be used to analyze the hemp sample. Similar methods that account for the decarboxylation process where THCA is converted to the psychoactive molecule THC will be considered. In such a case, use of similar methods must be requested in writing to the USDA.

3. All testing activities carried out by hemp testing laboratories must be validated and evaluated for a measurement of uncertainty.

Analytical tests used by laboratories should be sensitive to the compounds being tested and should be fit-for-purpose.

5. Laboratories should have testing standard protocols in place that specify the sampling, testing and retesting procedures, and the disposal procedure for non-compliant samples. This should be in accordance with the hemp final rule requirements.

6. MU should be calculated and reported with the test results.

7. The sample preparation procedure shall involve grinding of the sample to guarantee a homogenous sample prior to testing.

8. Total THC concentration should be measured and reported on a "dry weight" basis.

9. Laboratories should have an internal SOP that should be available on request for inspection.

Digitization: A Practical Solution to Regulatory Challenges

The good news is that compliance with regulatory guidelines can be achieved through operational digitization. Automation makes it possible for hemp testing labs to monitor their compliance targets on an ongoing basis, thereby eliminating the need for physical spot checks. Digital tools designed specifically for laboratory use can streamline testing processes, automate routine tasks, generate on-the-spot reports, and most importantly ensure 100% compliance.

How Can a LIMS Help?

A Laboratory Information Management System (LIMS) is an automated software designed specifically to support the operations of a modern laboratory. A LIMS offers a turnkey solution to hemp testing labs that are struggling to remain compliant with applicable state and federal regulations.

A cloud-based LIMS can help automate laboratory processes to boost efficiency and reduce human error. A LIMS streamlines laboratory processes and creates productive workflows to amplify the output of laboratories. This will go a long way in helping hep testing labs to keep up with the increased demand for hemp testing services. Most importantly, a LIMS works in real-time to eliminate delays that can turn out to be costly.

7 Benefits of a LIMS for Hemp Testing Laboratories

1. Manages sensitive hemp samples from when they are received to when they are destroyed
2. Keeps track of every gram of sample throughout the sample life cycle
3. Keeps track of the testing process and flags hot hemp
4. Generate custom Certificates of Analytes (CoA)
5. Enables sharing of test results with the licensed producer (LP) through the client portal
6. Supports integration with the reporting system of the USDA & state department of agriculture for automatic sharing of test results
7. Manages SOPs and other quality protocols

Reference

Martha Hernández. The USDA's Hemp Testing Rules Have Changed. Are You Ready? Analytical Cannabis. Published: Mar 21, 2022
https://www.analyticalcannabis.com/articles/the-usdas-hemp-testing-rules-have-changed-are-you-ready-313729

Infographic: Factors to Consider When Setting up a Cannabis Extraction Lab

Download

Conclusion

The 2018 Farm Bill legalized hemp at the federal level. While this was intended to make hemp to be like "any other cash crop," this cannot be achieved in a state where hemp's cousin- marijuana is still illegal at the federal level. Consequently, the hemp industry is highly regulated.

Cultivating hemp is associated with several uncertainties; fluctuating climatic conditions, pests and diseases, and the risk of hemp turning hot among others. Apart from the initial startup costs which can be steep, hemp testing has fewer oddities. This makes hemp testing an attractive venture, one where it can be easy to earn profit.

Laboratories that carry out hemp testing need to be conversant with the many laws and regulations that apply to the industry. These laws are spelled out in the hemp final rule that took effect on March 22, 2021. Under the new rule, hemp farmers and testing labs will have a longer time to harvest and test hemp. This window period has been extended from 15 days to 30 days which begins on the day when sampling is conducted to the day when the hemp should be harvested.

The FR requires all hemp testing facilities to be registered with the DEA. As much as this is compulsory, labs have until 31st December 2022 to become compliant. In the meantime, the labs are required to comply with all the other regulations that have been stipulated in the FR.

The THC compliance threshold is maintained at 0.3%. Hemp samples that test above this limit are considered "hot hemp" and should therefore be disposed of or remediated. The THC is measured on a dry-weight basis. This means that laboratories should remove moisture from the sample before testing it. This is necessary for standardization across the industry.

Hemp testing labs are required to calculate and report the measurement of uncertainty. Laboratories should have a quality assurance protocol in place for all the processes. Laboratories must also have an internal SOP for testing and retesting hemp, this should be available for inspection at all times.

Labs must use post-decarboxylation methods when carrying out the chemical analysis to determine the concentration of THC. Gas and liquid chromatography can be used. Other "similar methods" can also be used; however, a request in writing must be submitted to the USDA.

The results must be reported immediately to the licensed producer, the state or tribal agency, as well as the USDA. If the licensed producer is not content with the results, they can request a retest at their own expense.

The final rule allows samples to be collected from the stems and leaves (5-8 inches from the stem). This reduces the incidence of hot hemp as these parts don't have a high concentration of cannabinoids.

Under the final rule, LPs can remediate hemp by shredding it and converting it into biomass. This allows the LPs to turn in some profit from the hot hemp. A sample of the remediated hemp should be submitted to an authorized laboratory for retesting.

These compendiums of regulations can be a steep climb for most hemp testing labs, especially given the increasing demand for hemp testing services. Digitization presents a turn-key solution to this problem. A LIMS can help automate laboratory processes and keep track of all compliance requirements. This enables laboratories to streamline QA/QC processes, eliminate human error, and increase the efficiency of the hemp testing facility. A LIMS can also be used to share results automatically with the LP and the USDA.

This brings us to the end of this brief guide. You should now be familiar with the opportunity that hemp testing presents. You should also be familiar with all the rules that hemp testing labs need to comply with. Lastly, you should be confident that compliance and automation is possible with the right tools; including laboratory software such as LIMS. A cloud product saves on costs while offering a gamut of services for seamless operations.

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