VERMONT
AGENCY OF AGRICULTURE, FOOD & MARKETS
www.Agriculture.Vermont.gov

Frequently Asked Questions

Interpreting a Certificate of Analysis (CoA) and understanding compliance.

This FAQ is to help growers interpret the results of a certificate of analysis (CoA) and determine if they are in compliance with Vermont's Hemp Program. It will discuss the difference between delta-9 THC, THC-A, and total theoretical THC, and how to interpret results for compliance with the acceptable potency level in Vermont's Hemp Program. It will also provide examples of CoAs that indicate compliant and non-compliant material. Furthermore, it will discuss how to calculate potency level based on the results of a CoA.

- **What is the acceptable potency level for a hemp harvest lot?**
  - The acceptable potency level, as shown on a CoA, is a delta-9THC concentration of 0.3 percent or less, **and** a total theoretical tetrahydrocannabinol concentration of one percent or less reported on a dry weight basis.
- **How do I know if the contents of my CoA are reported on a "dry weight" basis?**
  - The report should include the statement reported on a "dry basis" or "dry weight basis".
  - If the CoA results are not reported on a dry basis, the laboratory must report "moisture content" or "percent moisture". Cannabinoid content can then be calculated to represent a dry basis %.
- **How do I determine if my harvest lot meets the acceptable potency level and is compliant with Vermont's program based on the results of a CoA?**
  - A CoA must provide the information necessary to determine if a harvest lot is compliant with the acceptable potency level.
  - A cannabinoid summary should include % weight data for delta-9 THC (also sometimes represented as d9-THC or Δ9-THC) and THC-A, CBD and CBD-A, and total theoretical CBD and THC.

Definitions

Acceptable potency level means a hemp crop that has a delta-9 THC concentration of 0.3 percent or less and a total theoretical tetrahydrocannabinol concentration of one percent or less.

Cannabidiol or **CBD** is one of the naturally occurring cannabinoids found in the Cannabis sativa L. plant.

Certificate of analysis (CoA) means a report prepared by a certified laboratory that contains the analytical testing it performed and the results of the testing.

Delta 9 tetrahydrocannabinol, also referred to as "**THC**," is the principal psychoactive cannabinoid found in Cannabis sativa L.

Dry weight basis means the weight of plant material with no greater than 13% moisture content; percent moisture will often be reported on a CoA.

Tetrahydrocannabinolic acid is the precursor of delta- 9 THC before decarboxylation.

Total theoretical tetrahydrocannabinol or THC content is the maximum amount of possible delta-9 THC in a hemp crop if total conversion occurred. Also sometimes listed as Total Max, theoretical, or potential THC.

VERMONT
AGENCY OF AGRICULTURE, FOOD & MARKETS
www.Agriculture.Vermont.gov

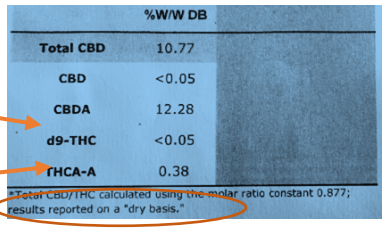
- If your laboratory results do not provide total theoretical values for THC, a calculation is required to determine the total theoretical results for a harvest lot based on other results contained in a CoA.

Illustration 1

(<0.05% or 0%) + (0.38% x 0.877) = 0.33% Total theoretical THC

delta-9 THC = <0.05 % or 0%

THC-A = 0.38%



	%W/W DB
Total CBD	10.77
CBD	<0.05
CBDA	12.28
d9-THC	<0.05
THCA-A	0.38

*Total CBD/THC calculated using the molar ratio constant 0.877; results reported on a "dry basis."

This is a compliant hemp harvest lot. The delta-9 THC concentration is < 0.05% or 0% (< 0.3%) and the total THC concentration is 0.33% (< 1%).

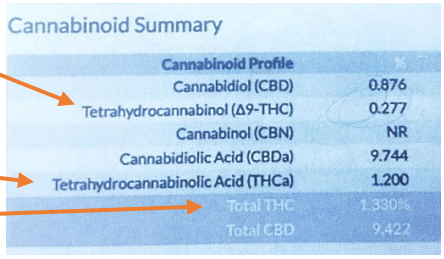
Illustration 2

(0.277%) + (1.2% x 0.877) = 1.33% Total theoretical THC

Delta 9-THC is below 0.3 %

THC-A is 1.2%

Total Theoretical THC is 1.330%.



Cannabinoid Summary

Cannabinoid Profile	%
Cannabidiol (CBD)	0.876
Tetrahydrocannabinol (Δ9-THC)	0.277
Cannabinol (CBN)	NR
Cannabidiolic Acid (CBDa)	9.744
Tetrahydrocannabinolic Acid (THCa)	1.200
Total THC	1.330%
Total CBD	9.422

This harvest lot is not compliant and not considered hemp. The delta 9-THC concentration is 0.27% (<0.3 %), but the total theoretical THC concentration is 1.33% (greater than 1 %).

- **What is the difference between delta-9 THC, THC-A, and total theoretical THC, and why does it matter?**
  - It is important to understand all of the values presented in a CoA. Illustration 2, shows a harvest lot under 0.3% delta-9 THC, and over 1% total theoretical THC, which does not meet the accepted potency level and is out of compliance.
- **When should I test my crop?**
  - To be in compliance with Vermont law, harvest lots must be designated, sampled, and tested no more than 28 days before harvest as outlined in Vermont Pre-Harvest Sampling Protocol.

Calculations

Total theoretical cannabinoid calculation:

(delta 9-THC%) + (THC-A% x 0.877)= Total theoretical THC %

Dry weight basis calculation:

Total theoretical cannabinoid % / (1.0 - wet weight %/100) = adjusted cannabinoid content or dry weight

Resources

https://agriculture.vermont.gov/public-health-agricultural-resource-management-division/hemp-program/hemp-resources-and-guidance

Hemp Pre-Harvest Sampling and Testing Protocol

Onsite Sampling Form

Chain of Custody Form