

Hemp Analysis



Hemp is analyzed for total THC concentration for state regulatory compliance and consumer safety.



Quality control practices are critical to produce sound results. The laboratory follows the ISO 17025 standard to produce precise, accurate testing and calibration data.



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Regulatory and Environmental Affairs Division

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Hemp Testing Laboratory Program



West Virginia
Department of Agriculture





Introduction

Cultivation of hemp for commercial purposes was expanded in 2017 by the West Virginia Legislature's Industrial Hemp Development Act, Code §19-12-E. The West Virginia Department of Agriculture licenses growers and performs testing of industrial hemp during its growing period to determine the THC, or tetrahydrocannabinol levels. THC is a naturally-occurring cannabinoid in *Cannabis sativa L.* that is of interest for its pharmacological and toxicological characteristics.

Hemp's many uses include oils, fiber, and medicine. Hemp can include any part of the plant, including seeds, extracts, cannabinoids, and other derivatives.

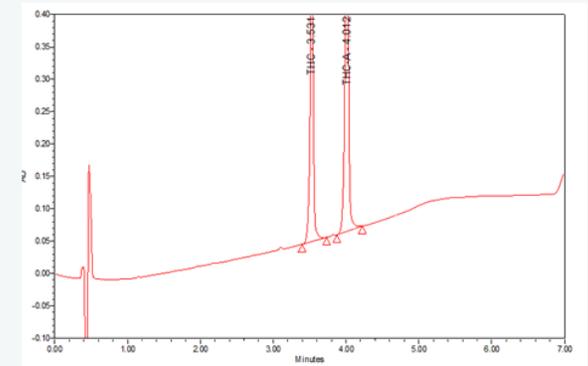
Licensing and Collection

The WV Legislative Rule dealing with Industrial Hemp, 61CSR29.5.1, requires the licensee to contact the WVDA at least 30 days prior to the intended harvest date to allow time for sampling and testing. Notifications may be sent by email to HEMP@WVDA.US. Insert "HARVEST NOTIFICATION" in the subject line, and list the intended date of harvest and licensee's name in the body of the email.

Upon notification, a WVDA sampler will contact the grower to arrange a meeting. The licensee or designated representative is required to be present at the time of sample collection. All associated costs are the responsibility of the licensee.

WVDA will collect a representative sample of each variety, at each location covered under a grower's license. If two hemp varieties are grown at one location, two samples will be collected. A sufficient amount of material will be collected from each sample to complete two separate tests. This allows the lab to verify test results if needed.

The terminal 3-6 inches of plants will be sampled, targeting flower and bud material. Samples will be sealed in paper bags, marked for identification, and delivered to the lab, observing "Chain of Custody" procedures.



In preparation for analysis, the plant is dried to a constant weight and ground or pulverized. Samples are stored at -20°C until they are analyzed for total THC. Ultra-high-performance liquid chromatography (UHPLC) is used to chromatographically separate and quantitate the THC and THC-A.

Total THC is calculated using the percentages of delta-9-tetrahydrocannabinol (THC) and delta-9-tetrahydrocannabinolic acid (THC-A), then calculating the loss of CO_2 in THC-A.

$$\% \text{Total } \Delta 9\text{-THC} = \% \Delta 9\text{-THC} + (\% \Delta 9\text{-THCA} \times 0.877).$$

Results are used to confirm the total THC concentration on a dry weight basis. Samples that have results above 0.3 total THC are retested in duplicate to confirm results.

