

# HEMP CBD SCORECARD

AN EVALUATION OF  
HEMP CBD PRODUCERS



CENTER FOR  
**FOOD SAFETY**

SEPTEMBER 2019



[www.centerforfoodsafety.org](http://www.centerforfoodsafety.org)

CENTER FOR FOOD SAFETY (CFS) is a national non-profit public interest and environmental advocacy organization working to empower people, support farmers, and protect the earth from the harmful impacts of industrial agriculture. We inform and engage our nearly one million members and the general public about food and personal care products so that they can make fully-informed decisions in the marketplace.

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Nearly half of the companies received a failing or near failing grade (“D” or “F”).

Only 4 companies received an “A.”

## EXECUTIVE SUMMARY

CENTER FOR FOOD SAFETY’S (CFS) “Hemp CBD Scorecard” evaluates many of the top hemp CBD producers on their production and processing methods, testing protocols, and transparency to consumers.

There has been a rapidly growing interest in oils, tinctures, capsules, body lotions, and other personal care products containing cannabidiol, better known as CBD, derived from hemp. These products are popular because of their multiple uses, including potential healing properties and their ability to calm both humans and pets. CBD is one of the naturally occurring, non-psychoactive cannabinoids found in cannabis plants, specifically within the hemp plant.<sup>1</sup> This product has become infamous for its purported ability to help reduce pain and anxiety, leading to a huge growth in the market for products containing CBD.<sup>2</sup> **Through this report, we aim to provide consumers with independent information about how CBD products are produced and processed, allowing them to make more informed decisions in the marketplace.**

CFS evaluated 40 companies that sell hemp CBD products to compare product policies and practices in the following three categories: (1) Hemp Farming and Organic Certification; (2) Processing; and (3) Testing/Auditing. Among other factors, CFS evaluated:

- 🌀 How many products are certified organic or made with organic ingredients;
- 🌀 Which products use ethanol/alcohol versus CO2 during processing;
- 🌀 Which companies test for the presence of pesticides, heavy metals such as lead, and microbiological contaminants;
- 🌀 Which companies are clearly and openly conveying information about their production practices to consumers.

Nearly half of the companies evaluated received a failing, or near failing, grade: a “D” or “F.” Only 4 companies received an “A” grade. Some additional results of interest include: only 6 companies produce primarily USDA Certified Organic products, and only 2 certify that they are glyphosate free, a pesticide classified as a probable carcinogen. On a more positive note, 72% percent of companies report that they support regenerative farming practices and 65% of the companies post their lab results online, an important step toward providing transparency to consumers (see p. 8-9 for full results and the Scorecard.)

Based on these results, CFS offers numerous recommendations for producers and consumers of hemp CBD products.



**Producers** of hemp CBD products should be testing all products for glyphosate, pesticides, heavy metals, and microbiological contamination. Based on consumer concerns related to GMOs, we suggest that companies source non-GMO ethanol and avoid other GMO ingredients that may be coming soon such as GMO CBD produced using synthetic biology. It’s critical that companies use independent certifiers to verify that their products are USDA Certified Organic and clear of contaminants. Most

importantly, producers should be posting all information about how their products are produced, processed, and tested clearly on their website and on product packaging as appropriate.

**Consumers** of hemp CBD products should look for products that are USDA Certified Organic, and that have been independently tested for efficacy as well as the presence of pesticides, heavy metals such as lead, and microbiological contaminants. Products should be certified by independent certification agencies and clearly labeled as such. Lab test results should be available on the company websites. (see p. 10-11 for our full list of recommendations).

## INTRODUCTION

CBD produced from hemp is found in products such as body lotions, tinctures, and capsules, just to name a few. The market for these products is growing rapidly—the CBD industry is expected to grow to \$22 billion by 2022, up from \$327 million in 2017<sup>3</sup>—making many producers eager to join the industry and develop new products. This rapid growth comes with the need for increased scrutiny of these products in order to ensure that companies selling CBD products are using hemp extract and carrier oils that have been grown and processed in ways that are healthy for consumers and the environment, and that these companies are transparent about their production practices in the labeling and advertising of these products.

Hemp CBD products are minimally regulated by the United States Food and Drug Administration (FDA).<sup>4</sup> Without stronger regulatory oversight, there may be issues about production and processing methods of these products, and if company claims about its

Hemp CBD products are minimally regulated by the FDA. Without stronger regulatory oversight, there may be issues about production and processing methods of these products, and if company claims about its products are actually true.

products are actually true. Since federal requirements for these products are weak, industry self-regulation, supported by independent certifications and consumer advocacy groups, is necessary in this growing field as federal and state regulations develop. This report seeks to inform consumers and promote transparency about hemp CBD products.

## CBD BENEFITS

The increased interest in CBD products can be traced to its potential benefits which include reducing joint pain, decreasing anxiety, and improving sleep.<sup>5</sup> Since hemp was classified as an illegal Schedule 1 drug for decades, clinical trials on these effects have been limited.

According to the National Academies of Sciences, Engineering and Medicine, there is substantial evidence that cannabis or CBD products can help treat chronic pain, chemotherapy induced nausea and vomiting, and assist in the treatment of multiple sclerosis spasticity.<sup>6</sup> The report also found moderate evidence that cannabis or CBD are effective for improving short-term sleep outcomes in individuals with sleep disturbance associated with obstructive sleep apnea syndrome, fibromyalgia, chronic pain, and multiple sclerosis. Several therapy trials have also found that certain doses of CBD can be used to help treat specific forms of epilepsy.<sup>7</sup> According to Congressional testimony presented by the Director of the National Institute on Drug Abuse, pre-clinical studies have shown that CBD may be therapeutically useful for its anti-seizure, antioxidant, neuroprotective, anti-inflammatory, analgesic, anti-tumor, anti-psychotic, and anti-anxiety properties.<sup>8</sup> Notably, the World Health Organization states that “no public health problems (such as driving under the influence of drugs cases or comorbidities) have been associated with the use of pure CBD,” which should help assuage public safety concerns.<sup>9</sup> All of these findings are encouraging signs of the benefits of hemp CBD products.

Ultimately, more independent studies should be conducted to evaluate the benefits of CBD and how best CBD can be utilized to improve the lives of people and pets.

## HISTORY OF HEMP

Hemp is found in a number of everyday products and its uses go beyond the hemp CBD products mentioned above. While hemp has been grown for thousands of years, currently it is cultivated for commercial or research purposes in at least 47 countries, and is utilized by indigenous populations for textiles.<sup>10</sup> The main producers of industrial hemp are China (400,000 acres), Canada (100,000 acres) and the United States (78,176 acres)<sup>11,12</sup> Hemp has been, and continues to be, a valuable commodity across cultures due to its multiple uses. It



### HUMAN ENDOCANNABINOID SYSTEM

The effects of cannabis on the human body were largely unknown until the discovery of endocannabinoids in 1990.<sup>1</sup> Endocannabinoids are natural, cannabis-like molecules produced by the human body to aid in the regulation of homeostasis.<sup>2</sup> Found at almost every pain pathway from nerves and immune cells to the spinal cord and brain, endocannabinoid receptors allow endocannabinoids to bind and signal to the body's endocannabinoid system (ECS) to address any bodily functions that are out of balance.<sup>3</sup>

The endocannabinoid system plays a crucial role in regulating a range of functions including sleep, mood, and memory. CBD—which mimics endocannabinoids in the body—could assist in the regulation of homeostasis and thus provide relief from pain and anxiety. Animals also have endocannabinoid systems, which may explain why CBD products appear to be helpful to some domestic dogs and cats as well as people.



### HEMP vs MARIJUANA

The difference between hemp and marijuana can be confusing. Hemp and marijuana are both cannabis plants, but have a different chemical composition. Marijuana is classified as cannabis plants that contain more than 0.3% of the psychoactive chemical compound tetrahydrocannabinol (THC); hemp plants and hemp-derived cannabidiol (CBD) are from cannabis plants with less than 0.3% THC; and hemp seeds have no THC or CBD.<sup>45</sup>

This difference is important, as CBD and hemp are not psychoactive, and therefore cannot get you “high,” whereas marijuana is psychoactive due to it containing higher levels of THC.<sup>6</sup>

Notably, the term marijuana is no longer widely used by most commercial cannabis producers as it has come to be associated with the idea that cannabis is a dangerous and addictive intoxicant, a stigma that has played a big part in slowing down cannabis legalization efforts throughout the U.S.<sup>7</sup>

is commonly found in a wide range of foods and beverages, cosmetics, nutritional supplements, fabrics and textiles, yarns and ropes, construction materials, and paper products.<sup>13</sup> Hemp can be grown as a fiber, seed, or other dual-purpose crop.<sup>14</sup> Hemp’s wide range of uses demonstrates the potential value of the hemp industry and calls attention to the need for further examination into the best cultivation and processing practices within it.

Hemp was classified as a Schedule I substance until 2014, with no accepted medical use and a high potential for abuse, making all cannabis cultivation in the U.S. illegal.<sup>15</sup> This political landscape began to shift after the passage of the 2014 Farm Bill which allowed hemp cultivation by certain research institutions and state departments of agriculture.<sup>16</sup> As a result of the success of these pilot programs, the 2018 Farm Bill federally legalized the production and distribution of hemp as long as the THC (the psychoactive component of cannabis) content remained 0.3% or lower. While the crop remains regulated, the law establishes a loose framework of shared oversight by federal, state, and Native American tribe authorities.

## PRODUCTION METHODS

**Farming** Given the recent federal legalization of hemp, there is minimal data regarding domestic hemp cultivation. A U.S. Hemp Crop report published by Vote Hemp estimates that there were more than 78,176 acres of hemp grown in the U.S. in 2018, up from 25,713 acres in 2017.<sup>17</sup> The report found 3,546 state licenses issued and 40 universities conducting growing hemp nationwide.<sup>18</sup> Because these numbers were collected before the 2018 Farm Bill was passed, CFS expects to see a significant increase in the number of operations cultivating and producing domestic hemp in the years to come.

As industrial hemp production increases, a number of farmers are beginning to turn toward regenerative agricultural practices. Regenerative agriculture includes farming and grazing practices that increase biodiversity, enrich soils, improve watersheds, and enhance overall ecosystem health.<sup>19</sup> These practices include no-till/minimum till as well as the application of cover crops, crop rotations, and compost.<sup>20</sup>

The federal legalization of hemp is an exciting development for hemp CBD producers given their ability to exert control over the product from the time the crop is planted to when the product is sold. Given that the production of hemp for CBD use is young and the research is ongoing, it is imperative that companies making CBD products are transparent about production practices to the public.

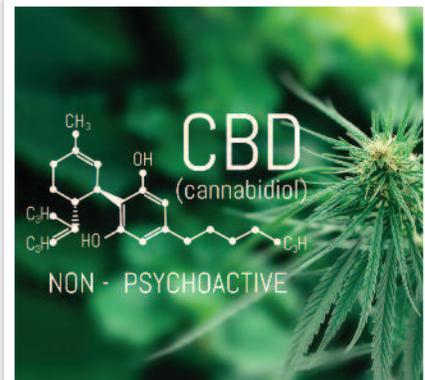
**Pesticide Use** The federal legalization of hemp has left many important questions unanswered, including which types of pesticides can be used on the crop. At the federal level, there currently are no

pesticides registered by the U.S. Environmental Protection Agency (EPA) specifically for use on cannabis.<sup>21</sup> However, because industrial hemp cultivation has been ongoing at the state level since 2014 (in states such as Kentucky, South Carolina, and Colorado), there have been a number of state approvals for pesticide use on cannabis. Most state-approved pesticides are exempt from the tolerances that EPA typically sets on pesticides nationally, because these pesticides are classified as minimum risk pesticides.<sup>22</sup> For example, the Washington State Department of Agriculture has actively been updating a list of pesticides that can be used on hemp within the state that are also used on a wide range of crops whereas Colorado has approved pesticides specifically to be used on cannabis.<sup>23</sup> According to a number of hemp farmers interviewed for this report, some large, commercial hemp growers may be using unapproved chemically-derived pesticides, including insecticides to kill insects and fungicides to kill mildew. Some farmers may also be using the weed-killer glyphosate, although it is not approved for use at the federal or state level, primarily on the soils prior to planting in an effort to kill any weed-seed left in the soil. As hemp production continues to increase, it will be necessary for the EPA to mandate cannabis-specific pesticides to ensure streamlined and transparent hemp cultivation practices that include tolerance levels for allowed usage.

**Organic Hemp** Prior to the passage of the 2018 Farm Bill, the USDA was unable to certify hemp-derived products as organic because growing hemp had been illegal nationally. According to the USDA, “USDA certified organic foods are grown and processed according to federal guidelines addressing, among many factors, soil quality, animal raising practices, pest and weed control, and use of additives. Organic producers rely on natural substances and physical, mechanical, or biologically based farming methods to the fullest extent possible.”<sup>24</sup> A product can claim it is “produced with organic ingredients” if it contains at least 70% organic ingredients, while the remaining 30% of ingredients are non-GMO.<sup>25</sup>

Because the USDA Certified Organic classification for hemp products is so new due to the recent legalization of the crop, it is understandable that there are only a few organic certified hemp CBD products on the market today. When scoring companies, CFS considered the USDA Certified Organic labels in addition to “made with organic” claims. Ideally, as more companies enter the market, the availability of USDA Certified organic hemp products will increase to ensure consumers are purchasing products that are true to their claims.

**Processing** The current extraction landscape within the hemp CBD industry is controversial due to the limited research regarding extraction methods as they relate to human health. While there are many ways to extract CBD oil from the hemp plant, the two most common methods are liquid solvent extraction and “supercritical CO2 extraction.”<sup>26</sup>



### LAB PRODUCED CBD, COMING SOON?

A next wave of genetic engineering is synthetic biology, which is essentially the creation of engineered living organisms in a lab. Through synthetic biology, new genetic sequences are created from basic components and added to microbes, such as yeast. Several companies are currently working on creating CBD using synthetic biology instead of deriving it from the plants in which it occurs naturally.<sup>8</sup> Through the process of synthetic biology, new compounds including proteins may be created that have never been consumed by humans before, thus the impact of these compounds on our gut and overall health is unknown. FDA does not currently have an adequate regulatory process in place to conduct scientific review of these novel products or their potential impacts on humans. While this technology is still in its infancy, and regulation is lacking, CFS will continue to push for regulation of products using synthetic biology and for these products to be clearly labeled as genetically engineered.



### BIOREMEDIATION

Aside from its potential benefits to human health, hemp is also considered to be good for the environment. Hemp is a bio-remediation plant, meaning it can break down hazardous substances found in soil and turn them into non-toxic or less toxic substances.<sup>9</sup> Studies have shown that hemp is an effective remediator of several toxic substances such as heavy metals, pesticides, and oil.<sup>10</sup> For example, in 2001 researchers confirmed that hemp was able to extract toxic materials from the Chernobyl site in Ukraine. Similar studies are underway in Italy and the U.S.—specifically at Colorado State University—to better understand the various ways hemp can be used for bio-remediation.<sup>11</sup> While hemp may be used to clean up polluted areas, there may be unintended consequences in processing hemp planted in previously-polluted soils. Although there is limited research on the unintended consequences of bioremediation in hemp, **it is important that hemp CBD brands test their products for pesticides and microbiological contaminants including heavy metals, VOCs, and mycotoxins** to ensure that customers are not exposed to incidental contaminants in their final products.

The more traditional extraction method is liquid solvent extraction. Examples of liquid solvents include ethanol, butane, alcohol, or isopropyl.<sup>27</sup> The solvent is run through the plant material stripping it of the cannabinoids which are transferred to the liquid. The liquid is then evaporated from the mixture, leaving the concentrated cannabinoids in an oil form.<sup>28</sup> Liquid solvent hemp oil extraction systems often have lower capital costs, but also have drawbacks which can include working with flammable materials and purity considerations of the finished oils as trace amounts of the solvent could be present. A majority of ethanol is made from GMO corn, most of which is not approved for food crops. The growing of GMO corn for ethanol has been shown to contaminate food-grade corn and can cause economic losses for farmers, in addition to other problems. GMO corn is heavily sprayed with glyphosate and other pesticides, and most GMO seeds are dipped in a class of pesticides called neonicotinoids that are known to be highly toxic to bees and other pollinators.<sup>29</sup>

Alternatively, the use of supercritical carbon dioxide—commonly known as CO2 extraction—for hemp oil has recently gained acceptance as a safer and potentially higher yielding extraction method.<sup>30</sup> CO2 extraction uses pressurized carbon dioxide to extract CBD from the plant while preserving CBD purity. Compared to traditional liquid solvent methods of extraction, CO2 extraction doesn't present any flammable petroleum-based solvents in contact with the finished product. Therefore shifting to the CO2 extraction method not only removes the risk of processing explosions, but also eliminates contact of potentially harmful byproducts in the extracted CBD oil. Currently, the startup cost of CO2 extraction is significantly more expensive and time intensive compared to other extraction methods, which could explain why it is not as widely used. It should be noted that some producers using CO2 extraction methods also use ethanol, which may be GMO, to clean up processing prior to bottling.

Another less-common extraction method is lipid extraction. This method uses the fats, or “lipids,” to absorb and encapsulate the hemp-produced compounds. Often organic coconut oil is used in this extraction process. Lipid extraction does not require the use of any harsh solvents or CO2.<sup>31</sup>

If consumers want to ensure that products have not come in contact with GMO ethanol, butane, alcohol, or isopropyl, they should purchase products that are USDA Certified Organic, which legally cannot contain ethanol derived from GMO corn, or ones that use CO2 or lipid extraction methods.

**Efficacy in CBD Products** The potency of CBD products by milligrams (mg) of CBD or hemp extract can be found on the ingredients label or the product's packaging. It is important to note that potency is based on its recommended dosage, which varies by

product. So when comparing products according to potency, consumers should look at the amount of CBD or hemp extract (measured in mg) listed on the product's label and compare that amount across products. In general, the amount of CBD taken depends on a range of factors including body weight, the condition being treated, and individual body chemistry.

Since the amount of CBD is not regulated or tested by FDA, producers should independently test their products for efficacy to ensure that their products contain the dosage of CBD that is advertised.

## METHODOLOGY & SCORING CRITERIA

CFS evaluated 40 hemp CBD companies to compare product policies and practices regarding three categories: (1) Hemp Farming and Organic Certification; (2) Processing; and (3) Testing/ Auditing. Survey results and independent research were used to create an industry scorecard that assesses the practices and commitments of hemp CBD companies on farming, processing, testing, and transparency.



When scoring companies, CFS evaluated, among other things:

- ✿ How many products are certified organic or made with organic ingredients;
- ✿ Which products use ethanol/alcohol versus CO2 during processing;
- ✿ Which companies test for the presence of glyphosate or heavy metals such as lead, and microbiological contaminants;
- ✿ Which companies are clearly and openly conveying information about their production practices to consumers.

Surveys were sent via surface mail and email. In addition to reviewing company responses to the survey, CFS reviewed company websites and other publicly available information on company practices. At least two follow up emails and at least one follow up phone call were made in cases where companies did not respond to the survey. Some companies had inactive phone numbers and mailing addresses which made it difficult to contact them. In cases where survey responses were not clear, CFS followed up with clarification questions via email or phone. In total, companies had 31 days to respond to CFS survey questions. All survey responses were self-reported. CFS did not ask for official documentation proving certain company claims, however, this is something we will implement in future scorecards. The scores in this report are based on survey and website research as of August 29, 2019.

The scorecard is intended to help consumers make educated choices about the products they use and encourage companies in this industry to improve their production and sourcing policies. Companies were scored based on criteria described in the Appendix which is weighted according to various factors.

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**Grade: A**

Fountain of Health  
Green Gorilla  
Palmetto Harmony  
RE Botanicals

**Grade: B**

CBD Living  
Gaia Herbs  
Inesscents  
Innovative CBD  
Mediterra  
Nature's Love  
Sagely Naturals  
Vital Leaf

**Grade: C**

Bluebird Botanicals  
Charlotte's Web  
Feals  
Garden of Life  
HempWorx  
Koi CBD  
Medical Marijuana, Inc.  
NuLeaf  
Plus CBD Oil  
Prime My Body

**Grade: D**

CBD Distillery  
Joy Organics  
Kannaway  
Premium Jane  
Pure Hemp Botanicals  
Straight Hemp  
SunSoil  
Upstate Elevator Supply

**Grade: F**

Ancient Nutrition  
Barleans  
CBD Mendo  
Gnome Serum  
Haleigh's Hope  
Hemp Fusion  
Irwin Naturals  
Lord Jones  
Nature's Plus  
Shikai

# HEMP CBD SCORECARD

GRADE	COMPANY
A	   
B	       
C	         
D	       
F	         



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## KEY FINDINGS

Below are some of the key findings from our survey and research, in addition to the actual grades displayed on page 8.

**Overall Grades:** Of the 40 companies evaluated, only 4 scored an “A” while 10 scored a “F.” Nearly half of the companies received a “D” or an “F.” The companies that received an “A” score are: Fountain of Health, Green Gorilla, Palmetto Harmony, and RE Botanicals.

**Farming/Production:** Only 6 of the 40 hemp CBD companies surveyed claim to produce primarily USDA Certified Organic CBD products: Ancient Nutrition, Green Gorilla, Haleigh’s Hope, Nature’s Love, Palmetto Harmony, and RE Botanicals. Of the remaining companies, 17 claim that they use organic ingredients, however nearly all of them do not provide verification of these claims on their products or websites. A number of companies state that their hemp is grown “naturally” or grown using “state of the art” farming techniques. These terms do not have any standards or regulations to back them up so are essentially meaningless. Some companies also claim their products are non-GMO however the products are not organic which does not allow for the use of GMOs in production—without certification to back it up, this is also a hollow claim. The majority of companies (87%) are sourcing hemp grown in the U.S. In an exciting development, 72% of companies report that they support regenerative farming practices, although again, these claims are not based on certifications or independent verifications.



These terms do not have any standards or regulations to back them up so are essentially meaningless. Some companies also claim their products are non-GMO however the products are not organic which does not allow for the use of GMOs in production—without certification to back it up, this is also a hollow claim. The majority of companies (87%) are sourcing hemp grown in the U.S. In an exciting development, 72% of companies report that they support regenerative farming practices, although again, these claims are not based on certifications or independent verifications.

**Processing:** Because research regarding the impacts of many of the processing methods is scarce, companies received 5 points if they used CO<sub>2</sub> or lipid extraction, or organic non-GMO ethanol or alcohol. The majority of companies (80%) use CO<sub>2</sub>, lipid extraction, or non-GMO ethanol or alcohol.

**Testing:** Overall, companies scored relatively high in the testing category, with 65% testing for the presence of microbiological contaminants and 67% testing for heavy metals such as lead and arsenic. Nearly half (45%) test for the presence of pesticides, broadly, however glyphosate requires a different type of extraction which is not compatible with most extractions used for multi-residue analysis, so separate testing is necessary. Out of the companies that responded to the survey, more than half of them reportedly test for the presence of glyphosate in their finished products, however their test results did not list specific findings for glyphosate. Only two companies certify that their products are glyphosate free: Fountain of Health and RE Botanicals. The majority of companies (80%) test their products for efficacy.

**Transparency:** Most companies lost points in the transparency category, mainly for not using third-party certifications such as USDA Organic, not responding to the survey, or not having information clearly available on their website. We were pleased to see that 65% of the companies post lab results online and hope this number will increase.

Seventeen (17) companies that are not USDA Certified Organic claim that they use organic ingredients, however nearly all of them do not provide verification of these claims on their products or websites.

## RECOMMENDATIONS FOR CBD PRODUCERS

### Source Ingredients that are Certified Organic & Support Regenerative Agriculture:

To ensure products that are healthy for people and the planet, producers should source ingredients that are USDA Certified Organic. As the emerging field of regenerative agriculture continues to evolve, source ingredients that are produced using regenerative agriculture that do not use petro-chemically derived pesticides and fertilizers.

**Test for Glyphosate and Other Pesticides:** Currently, EPA has not approved pesticides for use on hemp, including glyphosate, the primary herbicide found in products such as Roundup. This pesticide is used to kill weeds and some farmers also apply it to soils in an effort to kill any weed-seed remaining in the soil prior to planting. Glyphosate is classified by the World Health Organization as a probable carcinogen, and has also been shown to be lethal to amphibians such as frogs.<sup>32</sup> To ensure that there are no glyphosate residues in their products, hemp CBD producers should have their products tested regularly by an ISO certified lab for glyphosate and other pesticides, noting that glyphosate requires a separate test. Products containing glyphosate should not be sold, and the farms that produced the hemp should be closely monitored to ensure their products are glyphosate-free.

**Test for Efficacy:** Efficacy tests should be done on CBD products regularly to ensure that products contain the dosage of CBD that is advertised on the product. Producers should also encourage studies by universities and independent entities to better understand the benefits and side effects of CBD products.

**Test for Heavy Metals and Microbiological Contaminants:** Since hemp is a known crop for bioremediation (see sidebar on p. 6), regular testing for heavy metals and other toxins should be done to ensure the safety of CBD products. Crops planted on soil with high mercury, lead, or other contaminants could lead to the plant absorbing these dangerous metals or chemicals, which then ends up in the oil that's produced. Products should also be tested for microbiological contaminants such as bacteria and mold. It is critical that independent testing by an ISO certified lab is done to avoid conflict of interest and to ensure the safety of the products.

**Avoid GMOs:** Polls continue to show that consumers want to avoid products made with GMOs. As such, companies should source non-GMO ethanol and certified organic or non-GMO ingredients. Additionally, companies should also avoid using CBD produced using synthetic biology (see sidebar on p. 5) until there is adequate testing and regulation of the health impacts of these novel products produced with this unique method.

**Utilize Independent Certifications:** Independent certifications, such as USDA Certified Organic, Fair Trade, or SCS Pesticide Residue Free, should be used to ensure the highest integrity of testing and promote consumer confidence.

**Provide Transparency to Consumers:** We encourage hemp CBD companies to continue to be transparent with their customers about what their products contain, the tests being run on their products, if their products are produced using genetically engineered (including the use of GMO ethanol), and any other information consumers should know when making decisions about hemp CBD.

Producers of CBD products should be sourcing certified organic and non-GMO ingredients; testing for pesticides, heavy metals, microbiological contaminants, and efficacy; and using independent certifications.

Companies should be transparent and provide all this information to consumers via packaging and websites.

## RECOMMENDATIONS FOR CONSUMERS

**Look for products that are USDA Certified Organic:** Products that bear the “USDA Certified Organic” label is the only way to truly know if the product is produced using organic production methods, and grown without pesticides, GMOs, and other chemical inputs. A product can claim it is “Produced with Organic Ingredients” if it contains at least 70% organic ingredients, and the rest produced without GMOs.

**Check with the Non-GMO Project** for the current status of genetic engineering and GMOs in CBD and full spectrum hemp products. While the Project is not currently verifying CBD products, it monitors this category closely and offers education on how genetic engineering and GMOs are being used in ingredients and inputs.

**Look for products that test for pesticides and heavy metals:** Because hemp crops may be grown with—or contaminated by—pesticides or heavy metals such as lead, choose brands that do independent testing of their products. Companies should provide official results of product testing on their websites.

**Consider the processing methods used:** Look for products that are USDA Certified Organic, use only “supercritical carbon dioxide,” also known as “CO2 extraction,” or use lipid infusion, if you want to avoid products processed with liquid solvents such as ethanol (which may be GMO), butane, alcohol, or isopropyl.

**Contact your favorite hemp CBD producers** and encourage them to seek organic certification, change their production and processing practices to ones that are safer for human health and the environment, and provide results of independent testing labs on their website.

## CONCLUSION

This “Hemp CBD Scorecard” shows that nearly half of the CBD companies evaluated are receiving failing, or near failing, grades for how they are producing and processing their products, as well as how they are providing this information to consumers. As the CBD industry continues to grow, producers should aim to make their products safe and healthy for consumers and the environment. This includes sourcing certified organic and non-GMO ingredients, testing for pesticides and contaminants, utilizing independent certifications, and providing clear and transparent information on their products and websites.

Center for Food Safety encourages shoppers of CBD products to use their power in the marketplace by purchasing products that have received high grades and are adhering to the practices recommended in this report. If your favorite producer of hemp CBD products is not following the best practices identified in this report, contact them and request they make the changes necessary to produce hemp CBD products to these standards. With this report, we hope that CBD producers will continue to improve their products to ensure a clean and clear CBD industry for all!

### USE YOUR POWER IN THE MARKETPLACE!

Contact your favorite hemp CBD producers and encourage them to seek organic certification or change their production and processing practices to ones that are safer for human health and the environment.

## APPENDIX

**GRADING** The final grade awarded to companies is based on total points earned out of total possible points. Companies that scored between 90–100 points received an A; 80–89 points received a B; 70–79 points received a C; 60–69 points received a D, and 0–59 points received an F.

### SCORING CRITERIA

**Category #1: Production** *Total Potential Points: 25.* Given the recent legalization of hemp in the U.S., including USDA Organic certifications, we did not put as great of an emphasis on production methods when compared to other categories. In future scorecards, and as more companies seek organic certification, we anticipate placing greater emphasis on organic production and regenerative farming practices. Our goal over time is to encourage companies to adopt strong organic production policies and/or source hemp from organic farmers.

Companies score the full number of points if their products are USDA Certified Organic, support regenerative farming practices, use U.S. grown hemp, and are part of a Hemp Member Association (i.e. Hemp Industries Association, U.S. Hemp Authority, U.S. Hemp Roundtable, etc.). If a company did not respond to our survey and we were unable to locate publicly available information regarding their production methods, for the purposes of the scorecard, we assume that the company does not follow the encouraged production methods mentioned above.

**Category #2: Processing** *Total Potential Points: 5.* Companies received 5 points if they used CO<sub>2</sub> or lipid extraction, or organic non-GMO ethanol or alcohol; 2.5 points were given if the company used both CO<sub>2</sub> extraction and ethanol extraction (but didn't specify non-GMO organic); 0 points were given if the company did not specify non-GMO ethanol.

**Category #3: Testing** *Total Potential Points: 30.* Regular and independent testing of ingredients and finished products ensure a company's claims regarding a product are fair and accurate. Therefore, companies scored the full number of points if they test for pesticides, microbiological contaminants, heavy metals, efficacy, and also follow Good Management Practices. Partial credit was given to companies that tested for pesticide residues but did not specifically list glyphosate, as most standard pesticide testing panels do not include glyphosate.

**Category #4: Transparency** *Total Potential Points: 40.* Because hemp CBD products are so new, we chose to place the greatest emphasis on transparency within the industry. Companies score the full number of points if they list their extraction methods and product lab results online, and use third party certifications such as USDA Certified Organic or ISO lab Tested. Companies were also scored on their responsiveness to the CFS survey, phone calls, and general follow ups. Half credit was given to companies in instances where partial information was received. For example, we gave half credit to companies who only filled out a portion of our survey but skipped important questions. We also gave half credit to companies that provide lab results to customers upon request or after purchase given our strong belief that consumers should have a right to know what they are consuming prior to purchasing a product.

As the CBD industry continues to grow, producers should aim to make their products safe and healthy for consumers and the environment. CFS encourages shoppers of these products to use their power in the marketplace by purchasing products that have received high grades and are adhering to the practices recommended in this report.

## ENDNOTES

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