Hemp, CBD, and Marijuana – Standards Update from NSF
Terminology – Cannabis vs. Marijuana vs. Hemp

- **Cannabis**
  - Species = *Cannabis Sativa L.*
  - Hemp and marijuana = 2 different varieties

- **Marijuana**
  - THC level: high (% varies based on strain) → psychoactive effects
  - Main uses: recreational, medicinal
  - Appearance: broad leaves, dense buds, bushy

- **Hemp**
  - THC level: very low (0.3% or less) → no psychoactive effects
  - Main uses: industrial
  - Appearance: skinny leaves, tall
THE MANY USES OF HEMP

HEMP PLANT HAS UP TO 50,000 USES

STALK
- FIBER
  - TEXTILES
  - INSULATION
  - ROPE
  - FIBER BOARD
- HURDS
  - PAPER
  - ORGANIC COMPOST
  - ANIMAL BEDDING

SEEDS
- OIL
  - COOKING/SEASONING OIL
  - DIETARY SUPPLEMENT
  - FUEL
- SEED CAKE
  - FLOUR
  - BEER
  - ANIMAL FEED
- HEMP NUT
  - MILK/DAIRY
  - BAKERY
  - PROTEIN POWDER

ROOTS
- MEDICINE
- ORGANIC COMPOST

LEAVES/FLOWERS
- ANIMAL BEDDING
- MULCH/COMPOST
- MEDICINE/RECREATION
Cannabidiol (CBD)

- **Cannabis contains 100+ phytocannabinoids**
  - 2 most common (and most studied) are THC and CBD
  - Both have significant therapeutic attributes

- **CBD provides health benefits of THC without a high**
  - Non-psychoactive, non-toxic, no adverse effect in humans or animals

- **Epidiolex (cannabidiol)**
  - Approved by FDA June 25, 2018 as treatment for 2 pediatric seizure disorders
  - Changed from Schedule I to Schedule V

- **Increasing popularity in general population**
  - Seen as a natural alternative to pharmaceuticals without harsh side effects
  - Commonly cited as beneficial for:
    - Anxiety, stress, depression, general wellness/mood
    - Arthritis, inflammation, general pain
    - Sleep disorders

- **Available in increasingly different forms**
  - Tinctures, isolates, edibles, topicals, vape, capsules, concentrate, edibles, topicals, sprays

- **Is CBD legal under federal controlled substances law?**
  - It depends
  - Derived from **hemp (0.3% THC or less)** or mature stalks/sterile seeds
  - Derived from **marijuana (>0.3% THC)**
## Changes in U.S. Law Under 2018 Farm Bill

<table>
<thead>
<tr>
<th>Before 2018 Farm Bill (old law)</th>
<th>After 2018 Farm Bill (new law)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distinction between hemp and marijuana</strong></td>
<td><strong>Hemp + marijuana treated similarly</strong></td>
</tr>
<tr>
<td>• Hemp + marijuana treated similarly</td>
<td>• Hemp distinguished from marijuana</td>
</tr>
<tr>
<td>• <strong>Controlled Substances Act listed both hemp + marijuana as a Schedule I drugs</strong></td>
<td>• Hemp removed from Schedule I of CSA</td>
</tr>
<tr>
<td>• <strong>Controlled Substances Act listed both hemp + marijuana as a Schedule I drugs</strong></td>
<td>• Marijuana stays on Schedule I of CSA</td>
</tr>
<tr>
<td><strong>Legality of hemp under federal controlled substances laws</strong></td>
<td><strong>Focus = THC level</strong></td>
</tr>
<tr>
<td>• Focus = part of plant from which material was derived</td>
<td>• Hemp distinguished from marijuana</td>
</tr>
<tr>
<td>• No distinction between hemp and marijuana</td>
<td>• “Hemp” = any CSL plant with 0.3% THC or lower</td>
</tr>
<tr>
<td>• <strong>All Cannabis Sativa L plants were unlawful</strong></td>
<td></td>
</tr>
<tr>
<td>• <strong>EXCEPT for</strong></td>
<td>• Marijuana = any CSL plant that is not “hemp”</td>
</tr>
<tr>
<td>• <strong>Mature stalk + sterile seeds of any CSL plant</strong></td>
<td>• <strong>EXCEPT for</strong></td>
</tr>
<tr>
<td>• <strong>Mature stalk + sterile seeds of any CSL plant</strong></td>
<td>• <strong>Mature stalk + sterile seeds of any CSL plant</strong></td>
</tr>
<tr>
<td><strong>U.S.-Produced Hemp</strong></td>
<td><strong>May be marketed or sold for commercial purposes in the USA</strong></td>
</tr>
<tr>
<td>• Could not be marketed or sold for commercial purposes in the USA</td>
<td>• As long as produced pursuant to an approved state or USDA plan*</td>
</tr>
<tr>
<td>• Could be grown only for research purposes</td>
<td>• Hemp farmers may obtain crop insurance, federal water access, and low-interest loans</td>
</tr>
<tr>
<td>• No crop insurance, federal water access, or low-interest loans</td>
<td><strong>Imported Hemp</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Imported “hemp” can be marketed and sold for commercial purposes in USA</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Imported mature stalk + sterile seeds can be marketed and sold for commercial purposes in USA</strong></td>
</tr>
</tbody>
</table>
Suddenly, CBD is everywhere.

**U.S. HEMP-BASED PRODUCT SALES BY CATEGORY 2022**

- **Hemp-Derived CBD**: $1,299
- **Industrial Applications**: $588
- **Personal Care**: $259
- **Food**: $212
- **Consumer Textiles**: $183
- **Supplements**: $54
- **Other Consumer Products**: $23

**27.2% 5-YEAR CAGR**

The hemp-derived CBD market will grow from a $390 million market in 2018, to a $1.3 billion market by 2022.

Available at Amazon

© 2019 New Frontier Data | Source: Hemp Business Journal
The CBD boom is way ahead of the science. Strict regulations have stunted research on cannabidiol, but that hasn’t hampered product popularity.

MARCH 27, 2019

“Consumer education is paramount. In the United States, 69 percent of people say either there is no difference between the effects of CBD and THC, or they don’t know the answer.”

January 30, 2019

But in examining more than 10,000 research papers on the effectiveness of CBD, University of Michigan scientists Kevin Boehnke … and Daniel J. Clauw … wrote in a January article in the Annals of Internal Medicine that while there is evidence of anti-inflammatory and pain relief effects from CBD use, the product quality and potency vary widely because the product is so ubiquitous — and often untested — in both stores and online.”

March 3, 2019

“But with scant evidence-backed scientific research regarding the impact of each ratio, consumers resort to trial and error to see what works for them.”

December 14, 2018

CBD regulation remains jumbled in the marijuana market nationwide

March 3, 2019

“Consumer education is paramount. In the United States, 69 percent of people say either there is no difference between the effects of CBD and THC, or they don’t know the answer.”

January 30, 2019

But in examining more than 10,000 research papers on the effectiveness of CBD, University of Michigan scientists Kevin Boehnke … and Daniel J. Clauw … wrote in a January article in the Annals of Internal Medicine that while there is evidence of anti-inflammatory and pain relief effects from CBD use, the product quality and potency vary widely because the product is so ubiquitous — and often untested — in both stores and online.”

March 3, 2019

“But with scant evidence-backed scientific research regarding the impact of each ratio, consumers resort to trial and error to see what works for them.”

December 14, 2018

CBD regulation remains jumbled in the marijuana market nationwide

March 3, 2019

“Consumer education is paramount. In the United States, 69 percent of people say either there is no difference between the effects of CBD and THC, or they don’t know the answer.”

January 30, 2019

But in examining more than 10,000 research papers on the effectiveness of CBD, University of Michigan scientists Kevin Boehnke … and Daniel J. Clauw … wrote in a January article in the Annals of Internal Medicine that while there is evidence of anti-inflammatory and pain relief effects from CBD use, the product quality and potency vary widely because the product is so ubiquitous — and often untested — in both stores and online.”

March 3, 2019
NSF Stance

- US Based Hemp is Illegal until a state plan or USDA plan is approved
- Reality - Products are already flooded in the market
- We have an obligation to protect public health and safety
- We are generating standards and services for this space
  - DS/Food/Raw Materials