



LiveWelltm

CANNABIDIOL (CBD) FROM INDUSTRIAL HEMP OVERVIEW

LiveWell Canada Inc. (TSXV-LVWL) Whitepaper
August 2018

A partial summary of a 218-page internal report is provided herein.

Index

1. CBD legalization and acceptance moving at a rapid pace	2
1.1 Canada: Bill C-45 legalization Oct 2018 – Cannabis Act, SC 2018	2
1.2 United States (U.S.) – 2014 and 2018 Farm Bill	3
1.3 World Health Organization (WHO) recommendation that CBD not be a scheduled substance	4
2. CBD Uses	4
<i>Figure 1. Most common medical conditions treated by CBD</i>	5
<i>Figure 2. CBD usage versus other medical products currently or previously used</i>	6
3. Global Market	6
<i>Figure 3. Global CBD legalization map</i>	7
4. EU Market	7
<i>Figure 4. Global CBD market sales revenue – recent and future forecast</i>	8
5. Pricing	8
<i>Figure 5. Price of CBD (\$ per mg) for various products brands</i>	9
6. Processing	9
7. Summary	10
8. About LiveWell Canada	10
References	11
Disclaimer	13

Cannabidiol (CBD) from Industrial Hemp Overview

CBD is a non-psychoactive compound found in cannabis and hemp, meaning it doesn't have the effect of getting a person high. The chemical composition of CBD from both plants is identical, however, CBD from industrial hemp is cheaper to produce and has a far less restrictive legal framework allowing for wider adoption at a faster pace. This is a quickly growing emerging market that could have CBD in many of the products people consume on a daily basis.

1. CBD legalization and acceptance moving at a rapid pace

1.1 Canada: Bill C-45 legalization Oct 2018 – Cannabis Act, SC 2018

- The Cannabis Act, SC 2018 comes into force on October 17, 2018. There are several regulations that come into force at this time under the *Cannabis Act SC 2018* and the ones that are applicable to Industrial Hemp derived CBD include:
 - *Cannabis Regulations*
 - *Industrial Hemp Regulations*
- CBD is classified as a derivative under the *Cannabis Act* regulations and not under the *Industrial Hemp Regulations*. CBD from Industrial Hemp is extracted from the flower of the Industrial Hemp Plant. Under the *Industrial Hemp Regulations*, a derivative only includes anything derived from the grains or seeds. The *Cannabis Regulations* defines derivative to include CBD extracted from the flower of the Industrial Hemp plant. Therefore, CBD derived from Industrial Hemp falls under the *Cannabis Regulations*.
- Even though CBD derived from Industrial Hemp falls under the *Cannabis Regulations*, the *Industrial Hemp Regulations* allows for the cultivation, sale, as well as the import and export of Industrial Hemp plants and plant parts.
- Upon the *Cannabis Act, SC 2018* coming into force on October 17, 2018, all CBD products will be regulated similarly to cannabis products.
- The *Cannabis Act, SC 2018* provides for three categories of licencing:
 - 1) Cultivation Licence
 - 2) Production Licence
 - 3) Sales Licence

Therefore, a Production Licence will be required to produce CBD and a Sales Licence will be required to sell CBD. Individuals will be legally permitted to possess CBD in the amount equivalent of up to the equivalent of 30 g of dried cannabis.¹²

- Furthermore, patients who require CBD for medicinal purposes can access their prescriptions through licensed retailers that have a Sales Licence.

1.2 United States (U.S.) – 2014 and 2018 Farm Bill

In the United States, Congress passed legislation that sets national agriculture, nutrition, conservation, and forestry policy in the form of omnibus legislation otherwise referred to in common parlance as a “Farm Bill”. The most recent enacted Farm Bill is from 2014 with the most current one being the 2018 Farm Bill currently winding its way through the various levels of the U.S. Legislature.

2014

- Prior to 2014, Industrial Hemp was a completely prohibited crop however this changed with the passing of and implementation of the *Agricultural Act of 2014* otherwise commonly referred to as the 2014 “Farm Bill”. Section 7606 of the “Farm Bill” empowers any U.S. state to enact legislation that allows for the cultivation of Industrial Hemp. Section 7606 specifically sets out the conditions under which Industrial Hemp may be grown as follows:
 - 1) That the Industrial Hemp must be grown under the auspices of a state agricultural pilot project.
 - 2) That the entity growing the Industrial Hemp must be an institution of higher education or a state department of agriculture that is defined under 20 U.S.C. 1001.¹

2018

- The 2018 Farm Bill is structured similar to that of the 2014 Farm Bill; however, there is a provision that will allow for the full legalization (including cultivation, production, and sales) of Industrial Hemp in the United States. To date, the U.S. Senate has passed the 2018 Farm Bill with the Industrial Hemp amendment included. The version that was passed by U.S. House of Representatives does not have the Industrial Hemp amendment and the immediate next step is for the House of Representatives and the Senate to form a Conference Committee to reconcile the difference between the two versions of the Farm Bill.
- Currently, CBD is legal in all 50 states only if it is derived from industrial hemp that has been cultivated for academic research or agricultural pilot programs.

¹ <https://nifa.usda.gov/industrial-hemp>

1.3 World Health Organization (WHO) recommendation that CBD not be a scheduled substance

- August 13, 2018 – the Director General of the World Health Organization released a letter to the Secretary of the United Nations (UN) (Dated July 23, 2018) which officially recommended that CBD should not be considered as a scheduled substance.^{1,2}
- This is a result of its scientific review of CBD conducted by the WHO.
- Pending the final decision of the UN in March 2019, there is good momentum for the global legalization of CBD.

Implications³

- **CBD could become a legal natural supplement**, similar to fish oil, across all 194 member countries of the WHO. This could, potentially, open up large new global distribution channels for CBD.
- **Clarity over legal status could lead to significant increases in demand for CBD** as both consumer product manufacturers and pharmaceutical companies seek supplies globally to formulate new products. In addition, this should also create an ability for CBD products to be sold in major retailers and pharmacies across WHO member countries.
- **Possible triggering of scheduling decisions in the U.S.** Greater scheduling leniency for CBD internationally could also provide a catalyst for potential scheduling decisions in the U.S.

2. CBD Uses

- There is a growing body of evidence as to CBD's positive health effects including: pain relief, combatting mood disorders, lowering inflammation, etc. Dosing typically starts at 20mg per day for pain but can go as high as 1,000-2,000mg for epilepsy.¹³ Furthermore, the Food and Drug Administration (FDA) just approved the first CBD-based drug to treat epileptic seizures called Epidiolex. The scientific evidence keeps building every day.

- CBD is undergoing pre-clinical testing and clinical trials for many diseases. As research on CBD continues, other mechanisms of action are being discovered. Thus, the number of potential treatable diseases continues to increase.
- Clinical trials are ongoing for other diseases including multiple sclerosis, neuropathic pain, schizophrenia, bipolar mania, anxiety, insomnia, and Huntington’s disease.
- CBD is often used as a wide-ranging self-medication similar to Over-the-Counter (OTC) products in treating aches, pain, headaches, fevers, nausea, and skin issues. However, CBD is used less frequently to treat conditions requiring a diagnosis and prescription from a medical professional.¹⁴
- CBD is often used as a substitute for other remedies which carry more side effects.
- Increased scientific and clinical insight into the therapeutic potential of CBD is anticipated to further peak consumer and commercial interest.

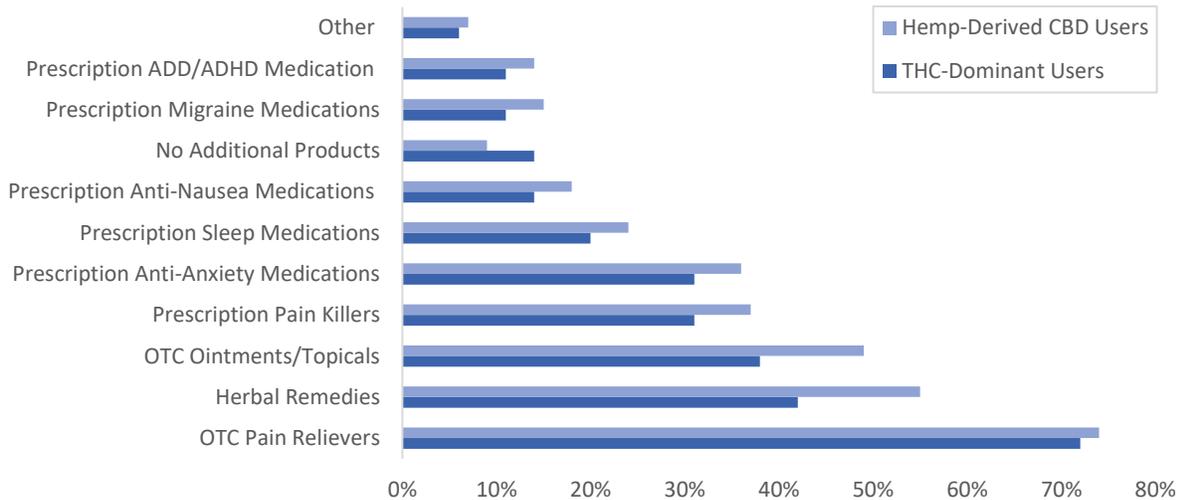


Figure 1. Most common medical conditions treated by CBD.

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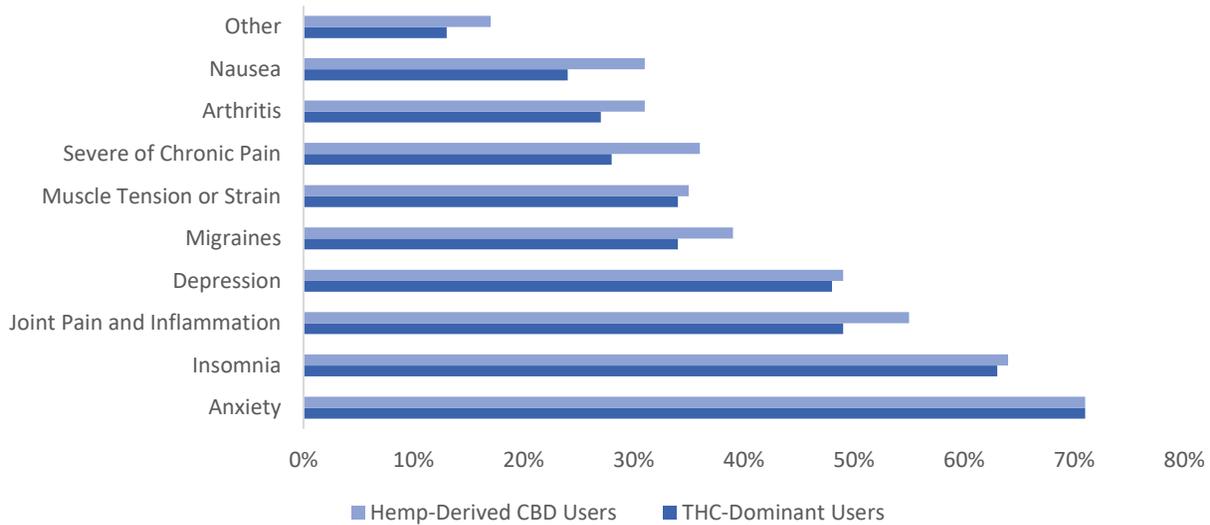


Figure 2. CBD usage versus other medical products currently or previously used.

3. Global Market

- The market for health-oriented products and services in North America is experiencing an upward growing trend with projected growth of US\$281 billion from 2018-2022.¹⁵ 37% of the growth will come from the US. Retail value for products such as vitamins, supplements, infused products, weight management, and sports nutrition products are expected to grow 14 % by 2020. One of the key drivers for this market will be the increasing adoption of healthy eating habits.
- According to the market research group Orian Research, the global CBD market was valued at US\$873.91 million in 2016 and is estimated to reach a value of US\$4.73 billion by 2021 with a CAGR of 40.15 %.¹⁶ With improved regulations for CBD in the USA and Global, the CBD market could be 10 times the size projected for 2021.

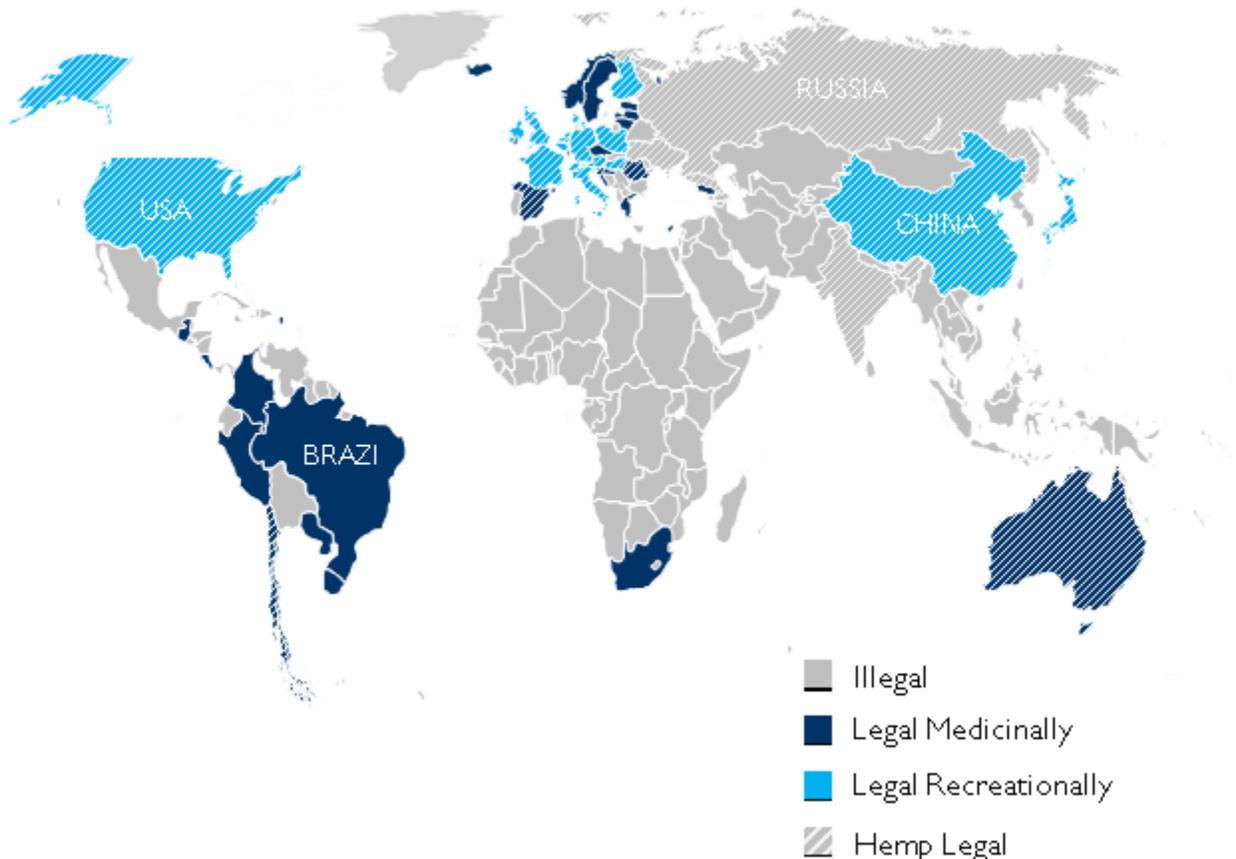


Figure 3. Global CBD legalization map. Countries are classified according to whether CBD is illegal, legal medicinally, legal recreationally, and whether hemp cultivation is legal.

4. EU Market

- Although the legal cannabis market in Europe is targeted strictly towards medical patients, the use of CBD for recreational purposes is legally permitted across much of the continent.
- The European Industrial Hemp Association (EIHA) is an association of hemp processing companies consisting of 31 different countries, within the EU, concerned with the use of hemp fibres, shavings, seeds, and isolated cannabinoids. Under regulations put forth by the EIHA, citizens across Europe are permitted to possess and consume hemp-derived CBD and CBD products provided that the THC content is below 0.2%.¹⁷

- According to the Orian Research Group, the current market size for CBD in Europe is USD\$523 million representing 31 % of the global CBD oil market share, second only to North America with a market share of 40 %.¹⁶
- Within Europe, select countries have a more profound impact on the CBD market. For instance, Switzerland legally permits the sale, possession, and consumption of both legal and recreational CBD with a THC content as high as 1.0 %. Furthermore, CBD products are available for purchase in tobacco shops. As a result, the softening of THC limitations and ease of consumer access makes Switzerland one of the biggest European players within the CBD market.¹⁷

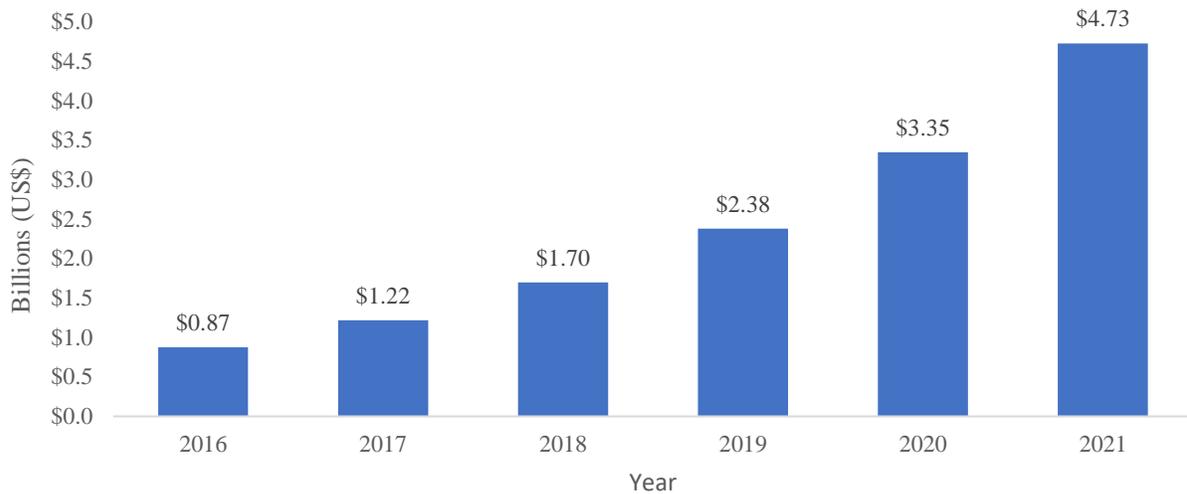


Figure 4. Global CBD market sales revenue – recent and future forecast.

5. Pricing¹⁸

- Average CBD retail price is USD\$110,000/kg
- Wholesale CBD pricing ranges from USD\$5,000/kg to \$15,000/kg
- First FDA-approved prescription price of CBD (Epidiolex by GW Pharmaceuticals) is ~USD\$32,500/patient/year

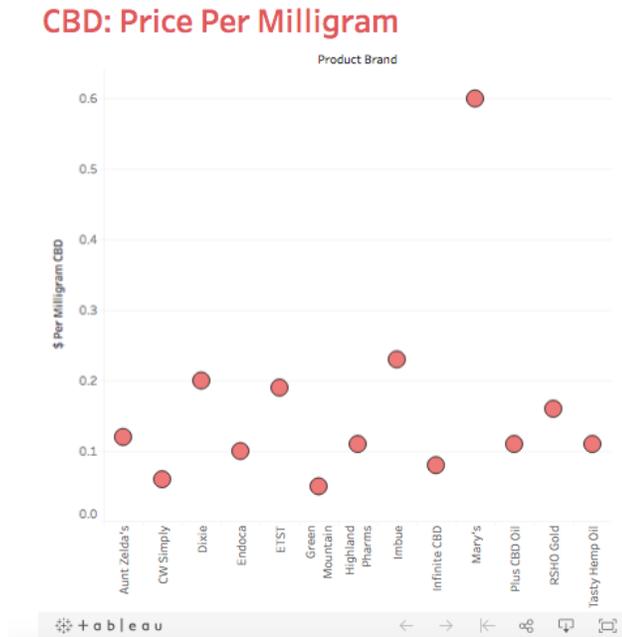


Figure 5. Price of CBD (\$ per mg) for various products brands.

6. Processing

- Current industry CBD processing comes from cannabis industry methods which are based on small scale/underground extraction operations using equipment and processing methods that are not geared to operate at scale. The hardware and processing methods designed for an illegal cannabis market required discrete, small volume methods due to the potency of the product and illegal nature of the operations. Basically, they had to be small to not get caught. These operations are being led by people with cannabis experience rather than large scale food experience.
- There are several examples of large scale processing in the food industry, particularly seed oils and refineries.
- For example, Bunge, one of the world's largest oilseed processing companies (soy, canola, sunflower), extracts 30 million tons/yrs.¹⁹

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7. Summary

- Given the numerous reported health benefits of CBD, without any psychoactive effects, CBD has the ability to gain rapid mainstream acceptance. Recent regulatory changes to the CBD and industrial hemp legal frameworks will facilitate rapid global adoption of CBD from industrial hemp, into the mainstream global health and wellness food market.

8. About LiveWell Canada

LiveWell Canada Inc. (TSX-V:LVWL) is an emerging leader in a new approach to health and wellness. The company is driving innovation by conducting advanced research on Cannabidiol (CBD) and other cannabinoids in its world-class Global Research and Innovation Centre located in Litchfield, Québec. The company's mission also includes developing and distributing prescription and consumer health products. With more than 1.5 million square feet of greenhouses under construction located in Ontario and Québec, the company is supported by renowned academic and business partners such as Canopy Growth (TSX:WEED, NYSE:CGC) and Canopy Rivers. For more information, visit livewellcorp.com

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