



Department of
Cannabis Control
CALIFORNIA

The Hemp Report

Steps and Considerations for
Incorporating Hemp Into the
Commercial Cannabis Supply Chain

Gavin Newsom, Governor
State of California

Lourdes M. Castro Ramírez, Secretary
Business, Consumer Services and Housing Agency

Nicole Elliott, Director
Department of Cannabis Control

Published January, 2023



Table of Contents

Summary	3
Glossary of Terms.....	4
Introduction.....	5
Cannabis and Hemp Regulation	6
Cannabis.....	6
Hemp.....	7
Integration of Hemp into the Commercial Cannabis Supply Chain	9
Hybrid and Hemp-Only Products Within the Commercial Cannabis Supply Chain	9
Tracking Hemp Within the Commercial Cannabis Supply Chain.....	9
Cultivation.....	11
Manufacturing.....	12
Distribution	15
Laboratory Testing.....	16
Retail	17
Market Impacts	19
Economic Impacts on Legal Commercial Cannabis Industry.....	19
Inclusion of Hemp in Other States' Cannabis Supply Chain.....	20
Conclusion.....	21



Summary

Business and Professions Code section 26013.2 requires the Department of Cannabis Control (Department) to prepare a report outlining the steps necessary to incorporate hemp into the commercial cannabis supply chain. As detailed in this report, the inclusion of hemp into the commercial cannabis supply chain is a complex undertaking that requires careful consideration of significant policy questions. The approach utilized to accomplish this end would have direct impacts on the cannabis industry, hemp industry, the standard consumer market, medicinal and adult-use consumers, Department staff and the public.

To support the Legislature's policy deliberations and stakeholder engagement, this report identifies factors that should be considered when determining when or if to incorporate hemp into the commercial cannabis supply chain. Once policy determinations are made and a specific approach is identified, the Department can then further define the statutory, regulatory and administrative changes that would be necessary to implement that policy. These changes could include regulation development and adoption, programmatic development, new and amended contractual arrangements, development and implementation of reconfigurations of database systems, additional staffing to address increased workload, and education for staff, licensees and the public. Irrespective of which approach California adopts, this report makes clear that if that approach includes the incorporation of hemp into the cannabis supply chain at any point, an appropriate amount of time and financial resources would be necessary for comprehensive implementation by the Department.

The foremost issue for the inclusion of hemp is whether it is incorporated into the commercial cannabis supply chain in a way that maintains the integrity of Proposition 64 and the Medicinal and Adult-Use Cannabis Regulation and Safety Act (MAUCRSA), which places protection of the public as the primary objective. This interest is promoted through a closed system framework. For this reason, critical factors such as whether hemp would be tracked in the California Cannabis Track and Trace (CCTT) system, which is used as a tool to prevent interplay between the legal and illegal markets, protect consumers in instances of a recall, and to support the administration of cannabis tax law, are highlighted herein. Further, it must be determined whether hemp and hybrid products would be subject to the same distribution, testing, packaging, and labeling requirements as cannabis, or whether another set of rules would apply to these subsets of products within the commercial cannabis supply chain. Another critical determination is whether hemp that exceeds its allowable tetrahydrocannabinol (THC) level may be converted to cannabis despite being produced without compliance with cannabis rules.

The inclusion of hemp within the cannabis regulatory structure would likely have noteworthy economic impacts on the cannabis industry. Hemp is subject to fewer regulatory requirements, is far less expensive to produce and more widely available. To the extent consumers view it as a substitute for cannabis, it may lead to a decrease in demand for cannabis and cannabis-derived compounds. If cannabis licensees may obtain hemp outside of the cannabis supply chain at lower prices from a wider range of suppliers, this could result in beneficial impacts for some licensees, such as manufacturers and retailers, by allowing them to access cheaper hemp-derived compounds and sell a broader range of products. However, this could concurrently result in negative impacts to cultivators and some manufacturers producing cannabis-derived compounds.

As required by statute, the Department would fund its licensing and regulatory activities through licensing fees. Therefore, under the current framework, the costs associated with relevant policy shifts would be ultimately borne by cannabis licensees. (See Bus. & Prof. Code, § 26180, et seq.)



Glossary of Terms

Cannabis: includes all parts of the plant *Cannabis sativa* Linnaeus, *Cannabis indica*, or *Cannabis ruderalis*; and every compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds, or resin. For the purposes of this report, cannabis includes cannabis plant material, products containing cannabis, and cannabis-derived compounds.

Cannabis products: refers to any product containing cannabis or cannabinoids derived from cannabis.

Hemp: is an agricultural product, whether growing or not, that is limited to types of the plant *Cannabis sativa* L. and any part of that plant, including the seeds of the plant and all derivatives, extracts, the resin extracted from any part of the plant, cannabinoids, isomers, acids, salts, and salts of isomers, with a total delta-9 tetrahydrocannabinol concentration of no more than 0.3 percent on a dry weight basis.

Hemp plant material: includes hemp plant biomass that has not been manufactured into a hemp product.

Hemp products: refers to any product containing hemp or cannabinoids derived from hemp and that does not include THC isolate or other cannabis-derived cannabinoids as an ingredient.

Final form products: refers to all products that are packaged and labeled as they will be sold at retail to a consumer.

Hybrid products: refers to any final form product that would be manufactured with both cannabis and hemp.

Cannabinoids: means active compounds, both intoxicating and non-intoxicating, that are extracted from hemp or cannabis plant material through chemical or physical means.

Terpenes: means naturally occurring compounds that contribute to the smell and flavor of hemp and cannabis plant material, as well as other plants.



Introduction

This report is submitted to the Governor and Legislature pursuant to Business and Professions Code section 26013.2, which requires the Department to prepare a report outlining the steps necessary to incorporate hemp into the commercial cannabis supply chain, including a discussion of allowing the use of hemp cannabinoids in manufactured cannabis products and the sale of hemp products by cannabis retailers. This report provides an overview of steps and significant policy determinations that must be made to incorporate hemp and hemp products into each portion of the commercial cannabis supply chain and the impacts of those determinations.

Currently, cannabis and hemp are regulated in separate supply chains overseen by three different state agencies. Commercial cannabis activity, which includes all legal activity related to the cultivation, manufacture, distribution, testing, and sale of cannabis in California, is primarily regulated by the Department. The commercial cannabis regulatory framework is a closed system with each portion of the supply chain requiring licensure. Commercial cannabis activity may only be conducted between licensees. Cannabis laws restrict the introduction of hemp into the cannabis supply chain and allow the sale of cannabis to consumers only by licensed cannabis retail businesses.

In contrast, hemp cultivation is primarily regulated by the California Department of Food and Agriculture (CDFA) and hemp manufacturing is regulated by the California Department of Public Health (CDPH). Hemp products can be found in the standard commercial market and do not have to be sold to consumers by retailers licensed by the state for this purpose. Hemp and cannabinoids derived from hemp may enter California from sources outside of the state.

Incorporating hemp into the regulated commercial cannabis supply chain presents both policy and implementation challenges. From the policy perspective, several determinations would need to be made to move forward with the inclusion of hemp. Key factors include at what point would hemp enter the commercial cannabis supply chain (cultivation, manufacturing, distribution, retail), whether it would be subject to cannabis or hemp rules once it enters the commercial cannabis supply chain, how hybrid products containing both hemp and cannabis would be treated, how hemp would be tracked within the commercial cannabis supply chain, and whether it is necessary to track hemp and cannabis separately for taxation purposes.

To mitigate against the introduction of illegal cannabis and ensure public safety, extensive changes would be required to alter the current regulatory structure of the commercial cannabis supply chain to allow for the use of hemp. To successfully incorporate hemp into the legal commercial cannabis supply chain, the Department would likely require significant time and additional funding.



Cannabis and Hemp Regulation

Cannabis and hemp are not just regulated differently in California, they are treated dissimilarly under federal law. Specifically, cannabis is regulated exclusively by the state and is illegal under federal law, while hemp is regulated by both state and federal agencies. California law, unlike federal law, has also established a framework to allow food, beverages, dietary supplements, and cosmetics to contain hemp.

Cannabis

Lawful commercial cannabis activity is regulated by the Department. In 2015, a trio of bills (Assembly Bill 243, Assembly Bill 266, and Senate Bill 643), known originally as the Medical Marijuana Regulation and Safety Act and later as the Medical Cannabis Regulation and Safety Act, established a comprehensive regulatory framework for the cultivation, manufacture, transportation, storage, distribution, and sale of medical cannabis to be administered by the Bureau of Cannabis Control (BCC) within the Department of Consumer Affairs, the CDFA, and the CDPH. In November 2016, Proposition 64 was passed by the voters, legalizing the use of cannabis by adults aged 21 and over. The regulatory framework established by Proposition 64 was substantively similar, but not identical, to the medicinal cannabis framework. In 2018, the two sets of laws were merged through Senate Bill 94, the Medicinal and Adult-Use Cannabis Regulation and Safety Act (MAUCRSA), which created a single licensing and regulatory framework for both medicinal and adult-use commercial cannabis activity. The first state regulations related to commercial cannabis activity became effective in late 2017 and the first state issued licenses were effective January 1, 2018. Subsequently, in July 2021, the Department was created to function as a single licensing authority for all commercial cannabis activity; it inherited all the powers, duties, purposes, functions, responsibilities, and jurisdiction of the three former commercial cannabis licensing entities, which included BCC, CDPH, and CDFA. Today, the Department regulates and licenses all commercial cannabis activity in California. The Department also manages the California Cannabis Track and Trace (CCTT) system, which is used as a tool to track cannabis and cannabis products throughout the regulated commercial cannabis supply chain.

In California, cannabis is defined in MAUCRSA in Business and Professions Code section 26001. It includes all parts of the plant *Cannabis sativa* Linnaeus, *Cannabis indica*, or *Cannabis ruderalis*, whether growing or not; the seeds thereof; the resin, whether crude or purified, extracted from any part of the plant; and every compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds, or resin. Cannabis also means the separated resin, whether crude or purified, obtained from cannabis. Cannabis does not include the mature stalks of the plant, fiber produced from the stalks, oil or cake made from the seeds of the plant, any other compound,



manufacture, salt, derivative, mixture, or preparation of the mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of the plant which is incapable of germination. Cannabis does not mean hemp as defined by Section 11018.5 of the Health and Safety Code. Cannabis products refers to any product containing cannabis or cannabinoids derived from cannabis. (See Bus. & Prof. Code, § 26001.) For the purposes of this report, cannabis includes cannabis plant material, products containing cannabis, and cannabis-derived compounds.

Pursuant to the provisions of MAUCRSA, the lawful commercial cannabis industry in California operates as a closed system. Cannabis from outside California is not allowed in the commercial cannabis supply chain, and licensees may not export cannabis outside of the state. Licensees can only conduct business with other licensed businesses. Cannabis products are tested prior to retail sale and must meet specific safety standards and labeling requirements to protect human health. Additionally, California law imposes cannabis specific taxes on cannabis in the legal commercial cannabis supply chain. Cannabis may only be sold to consumers by a licensed cannabis retailer. Hemp was specifically excluded from the commercial cannabis regulatory framework in Proposition 64 and this exclusion remains in MAUCRSA. (See Bus. & Prof. Code, § 26000, et seq.)

Despite California's regulation of licensed commercial cannabis activity, cannabis is still considered a Schedule I Controlled Substance under federal law. Although enforcement of federal statutes has been withheld in jurisdictions with regulated commercial cannabis activity, state regulated commercial cannabis activity is still considered a violation of federal statutes and is exclusively regulated by the state.

Hemp

Unlike cannabis, hemp has been decriminalized under federal law. In 2018, the Federal Agriculture Improvement Act of 2018 (Farm Bill) removed hemp-derived cannabinoids from the federal Controlled Substances Act. (Pub.L. No. 115-334.) It is now permissible to import hemp seeds and hemp plants into the United States from other countries. In fact, hemp and hemp-related products may even be shipped through the United States Postal Service. Although no longer considered a controlled substance, hemp-derived cannabinoids have not been approved as a food additive by the United States Food and Drug Administration (FDA); therefore, any food product containing hemp-derived cannabinoids is considered adulterated under federal law.

Consistent with federal law, California also does not prohibit the importation of hemp seeds and plants, including unprocessed hemp material, into the state, subject to certain requirements. Hemp, as defined in the Health and Safety Code, is an agricultural product, whether growing or not, that is limited to types of the plant *Cannabis sativa* L. and any part of that plant, including



the seeds of the plant and all derivatives, extracts, the resin extracted from any part of the plant, cannabinoids, isomers, acids, salts, and salts of isomers, with a delta-9 tetrahydrocannabinol concentration of no more than 0.3 percent on a dry weight basis. Hemp does not include cannabinoids produced by chemical synthesis. Hemp products refer to any product containing hemp or cannabinoids derived from hemp and that does not include THC isolate as an ingredient. (See Health & Saf. Code, §§ 11018.5 and 111920.) For the purposes of this report, hemp includes hemp plant material, products containing hemp, and hemp-derived compounds.

The CDFA serves as the state regulatory agency for hemp cultivation activities. (Health & Saf. Code, § 11018.5.) In California, cultivators must register in each county through the County Agricultural Commissioner to engage in hemp cultivation. (Cal. Code Regs., tit. 3, § 4901; FAC, § 81000, et seq.)

California law, pursuant to the Health and Safety Code, specifically allows for the inclusion of hemp-derived cannabinoids in food, beverages, dietary supplements, and cosmetic products. The CDPH serves as the state regulatory agency for manufactured hemp and is in the process of adopting regulations. (Health & Saf. Code, §§ 110611 and 111691.) Extract manufacturers of hemp within California and outside of California must obtain a license or registration from the CDPH to lawfully sell their product in and outside of California. However, California does not require licenses or registrations for out-of-state manufacturers of final form products to be sold within the state. Unlike cannabis, hemp products can be sold to consumers within the standard commercial market, for example, within grocery stores, beauty retailers, and general merchandise retailers. These retailers are not required to obtain a hemp specific state license or registration to sell hemp products to consumers. (Health & Saf. Code, § 111920, et seq.)



Integration of Hemp into the Commercial Cannabis Supply Chain

Hybrid and Hemp-Only Products Within the Commercial Cannabis Supply Chain

Cannabis is subject to the provisions of MAUCRSA and its implementing regulations. To incorporate hemp and hemp products into the commercial cannabis supply chain, the first step that policy makers would need to take is to determine whether cannabis licensees would be required to treat hemp in the same manner as cannabis. If MAUCRSA continues to apply to any product containing cannabis, it follows that hybrid products would be treated as cannabis. However, MAUCRSA does not speak to hemp only products within the commercial cannabis supply chain. This policy determination is a critical step in the effort to integrate hemp as it will impact what statutory and regulatory provisions would apply to hemp once it enters the commercial cannabis supply chain.

The requirements for hemp cultivation, manufacturing, distribution, and sale differ from those for cannabis. In many ways, hemp regulation is less complex than cannabis regulation and hemp product regulation is less developed. To provide consistency with other products in the commercial cannabis supply chain and ensure hemp products are held to the same safety standards as cannabis products, hemp would need to be subject to the same rules - including manufacturing practices and protocols, packaging and labeling requirements, and testing standards. Conversely, requiring cannabis licensees to comply with different and potentially conflicting rules for hemp and cannabis activities on the same licensed premises would likely lead to confusion for both licensees and Department staff. Furthermore, requiring cannabis licensees to comply with a different set of rules for hemp on the same premises licensed for cannabis activities could result in licensees not meeting the public health and safety standards outlined within MAUCRSA.

Finally, in contrast to cannabis, inhalable hemp products are not currently allowed to be sold within the state at this time pending the introduction of an inhalable hemp tax. Thus, a determination as to whether the current prohibition against inhalable hemp applies when the product contains both hemp and cannabis, or when inhalable products containing only hemp enter the commercial cannabis supply chain, would be necessary.

Tracking Hemp Within the Commercial Cannabis Supply Chain

Fundamental to the regulation of the commercial cannabis supply chain is the CCTT system. The CCTT system is used by all commercial cannabis licensees to identify the location of cannabis from seed to sale, which allows the Department to track where cannabis is in the supply chain, what cannabis was used in each cannabis product, and the ultimate disposition of all cannabis



within the regulated market. This level of tracking provides critical information for purposes of tracking sales, taxes, recalls and ultimately helps prevent regulated cannabis from being diverted into the illegal market and illegal cannabis being inverted into the regulated market. The current configuration of the CCTT system does not have the ability to track hemp and the inclusion of hemp was not contemplated when the system was developed.

Without modification of the CCTT system, hemp could only be treated as any other ingredient used in cannabis products, such as sugar or flour, which are not specifically tracked. While incorporating hemp into the commercial cannabis supply chain in this manner would not require modification to the CCTT system, such incorporation would create potential inconsistencies between products containing exclusively hemp or exclusively cannabis and hybrid products containing a combination of hemp and cannabis. Without modifying the CCTT system to track hemp, the Department would be unable to determine the source of the cannabinoids, track the disposition of the product in the supply chain as is done with cannabis, or trace back for health and safety purposes in instances of recalls. Due to the similar composition of the cannabinoids, laboratory testing would be unable to distinguish the amount or potency of cannabinoids from cannabis separately from cannabinoids from hemp within a hybrid cannabis product. As such, this may provide an opportunity for untested and illegally produced cannabinoids to enter the commercial cannabis supply chain. Further, if products that are exclusively hemp are not entered into the CCTT system, this would limit the Department's ability to track the disposition of these products in the same manner it does cannabis for regulatory compliance, recall, and tax purposes. Lastly, treating hemp as an ingredient is likely to distort the tracking of cannabis products within the CCTT system, which identifies irregularities for auditing in part based on the expected output as derived from the volume of cannabis produced within the legal commercial cannabis supply chain.

To integrate the tracking of hemp into the commercial cannabis supply chain, it would be necessary to reconfigure the CCTT system. This would require significant contractual and budget changes. The existing contract with the Department's CCTT vendor is set to expire June 30, 2024. Even if hemp tracking could be incorporated in the current contract without engaging a new bid process, negotiating, developing the necessary business architecture processes, and incorporating those prior to the expiration of the contract will be extremely challenging. A major reconfiguration of the CCTT system would be necessary to track hemp plant material, extract, and the disposition of hemp throughout the supply chain whether in cannabis products or for exclusive hemp products. These reconfigurations would allow the Department to put into place provisions to identify the amount of hemp in a cannabis product, as well as institute controls that prevent untested cannabinoids from entering the legal commercial cannabis supply chain.



Additionally, the Department would need to be able to verify that the hemp entering the cannabis supply chain is legal and compliant with CDFA hemp cultivation and CDPH manufacturing regulatory provisions. Essentially, the Department would need to be able to track hemp with the same precision it tracks cannabis once hemp enters the commercial cannabis supply chain to maintain the integrity of the closed loop system and protect public health and safety. Modifications to the CCTT system and providing the Department with the statutory authority to track hemp that has entered the commercial cannabis supply chain as we track cannabis is a fundamental necessary step regardless of what point of the supply chain California determines that hemp may enter.

Cultivation

The cultivation of cannabis and hemp are separately regulated with different requirements. While cannabis cultivation is exclusively regulated by the state through the Department, hemp cultivation is regulated by both Agricultural Commissioners, the CDFA and the United States Department of Agriculture (USDA).

Pursuant to the federal Farm Act, the USDA promulgated rules governing the cultivation of hemp. These rules require states allowing hemp cultivation to operate under an approved state plan. California's plan was approved by the USDA and became effective on January 1, 2022. The plan approved by the USDA reflects existing state laws and regulations and, as such, contains a provision that hemp cannot be grown on a premises licensed to cultivate or process cannabis, as well as a provision that considers any hemp cultivated on such premises is subject to MAUCRSA. These provisions of the USDA-approved state plan are codified in section 81006 of the California Food and Agriculture Code.

If the state hemp plan remains unaltered, hemp could not be integrated into the commercial cannabis supply chain at the point of cultivation. Moreover, altering the state hemp plan would need to be harmonized with Proposition 64, which expressed the voters' intent to "[a]llow industrial hemp to be grown as an agricultural product . . . and regulated separately from the strains of cannabis with higher delta-9 tetrahydrocannabinol concentrations." (Prop. 64 (2016), Sec. 3, subd. (aa).)

Licensed cannabis cultivators are subject to more extensive statutory and regulatory requirements at the state level compared to hemp cultivators. The primary requirements for hemp cultivators include, but are not limited to, registering with each county in which they cultivate hemp, cultivating on a registered site, obtaining seeds and propagated material from an approved cultivator, completing a planting report to the agricultural commissioner before each planting, complete pre-harvest testing for THC content, and submitting to inspections. Hemp cultivators may receive seeds and plants from sources



outside of California, thereby increasing the variety of strain sources. (See Cal. Code Regs., tit. 3, § 4890, et seq.)

In comparison, licensed cannabis cultivators are subject to a far more rigorous regulatory system that is confined to California; thus, Department licensees may only conduct business with other Department licensees. Regulatory provisions span from requirements about what must and must not be incorporated into a licensed cannabis premises, the size of canopy, cultivation practices including allowable uses of pesticides, and robust laboratory testing for numerous contaminants and substances that can negatively impact human health. The use of a licensed distributor is required for quality assurance review and transportation of cannabis, and outputs may only be sold to consumers by state licensed retailers who are restricted to selling cannabis, cannabis products, cannabis accessories, and branded merchandise. Commercial cannabis license fees are typically higher than those for hemp, and cannabis is subject to taxes inapplicable to hemp. (See Cal. Code Regs., tit. 3, § 4900, et seq. and tit. 4, § 15000, et seq.). The cost of cultivating cannabis is therefore generally significantly higher than the cost of cultivating hemp.

Additionally, cannabis cultivators are currently allowed to cultivate, process, package, and sell cannabis and nonmanufactured cannabis products such as pre-rolls containing only plant material to other cannabis licensees. To incorporate hemp into the commercial cannabis supply chain, a determination would need to be made as to whether cultivators can conduct similar activities with hemp by procuring it from hemp cultivators. The ability to engage in similar activities for hemp may increase opportunities for cultivators to expand their businesses. At the same time, as there are no physical indicators to distinguish hemp and cannabis plant material; this may create greater opportunities for illegal cannabis or hemp to enter the legal commercial cannabis supply chain, or diversion into the illegal cannabis market.

Manufacturing

As a result of Assembly Bill 45 (Aguiar-Curry, Chapter 576, Statutes of 2021), products containing hemp are legal in California and regulated by the CDPH. Manufactured products include finished products containing hemp that are fit for human or animal consumption, as defined in section 111920 (g)(1)(B)(ii) of the Health and Safety Code. California businesses engaging in the manufacturing, packing, holding or sale of hemp products are required to register with or be licensed by the CDPH. Additionally, hemp extract manufacturers, regardless of where they are located, must obtain a license or registration from CDPH to lawfully ship their product into California. However, California does not require licenses or registrations for out-of-state manufacturers of final form products that are sold within the state. California does require product manufactured out of state to meet all of California's regulatory requirements for final form hemp products.



To distribute or sell hemp products to other businesses within California, a hemp manufacturer must provide a certificate of analysis from an independent testing laboratory verifying the THC concentration does not exceed 0.3 percent, the product was tested for hemp derivatives identified on the label or in advertising, and the hemp product was produced from hemp cultivated in compliance with California hemp law requirements if cultivated within the state or licensed in accordance with USDA requirements if sourced from out of state.

Currently, licensed cannabis manufacturers are prohibited from manufacturing hemp and from including hemp-derived cannabinoids in their products. If California's USDA-approved hemp State Plan remains unaltered and the cultivation of cannabis and hemp remain segregated under different regulatory regimes, cannabis manufacturing licensees would be required to obtain hemp from outside the commercial cannabis supply chain. Presumably, cannabis licensees would be required to obtain hemp from a cultivator in compliance with CDFA requirements and hemp products from a manufacturer in compliance with CDPH requirements. Additionally, any unprocessed hemp plant material from an out-of-state hemp cultivator presumably must also be in compliance with USDA hemp requirements and must satisfy any agricultural import requirements set forth by CDFA.

Hemp that complies with all legal requirements could be obtained for use in the commercial cannabis supply chain in two primary ways. The first would be to allow cannabis businesses to procure, for use in their products, only hemp-derived extracts manufactured by a hemp manufacturer. Alternatively, cannabis manufacturers could be allowed to procure hemp plant material and perform the extraction themselves, as well as procure extracts from hemp manufacturers. Both methods would provide cannabis licensees with the ability to purchase hemp-derived extracts which may be available at lower cost than cannabis extracts. However, the second alternative would also allow cannabis manufacturers to leverage equipment in which they have already invested to perform cannabis extractions, which could reduce costs and provide greater flexibility in their operations.

The introduction of hemp plant matter in the commercial cannabis supply chain may increase the opportunity for inversion and diversion of illegal cannabis and may create enforcement challenges as there are no visual physical indications delineating hemp and cannabis plant material, or cannabinoids derived from hemp as opposed to cannabinoids derived from cannabis.

Additionally, which cannabinoids may be included in hemp that enters into the commercial cannabis supply chain is another determination that policy makers must address. California's statutory definition of hemp requires it to have 0.3 percent or less THC and does not include cannabinoids produced by chemical synthesis. Moreover, THC includes tetrahydrocannabinol,



tetrahydrocannabinol acid, and any cannabinoid, except cannabidiol (CBD), that CDPH determines causes intoxication. Thus, it follows that hemp entering the commercial cannabis supply chain must meet these statutory requirements to be classified as hemp. If this provision is not applicable to hemp entering into the commercial cannabis supply chain, it creates an opportunity for a person to cultivate or manufacture cannabis under the guise of hemp, then introduce it into the commercial cannabis supply chain amongst cannabis and cannabis products legally produced in compliance with cannabis laws. Applying the same requirements for what cannabinoids may be contained in hemp creates consistency and minimizes confusion for producers, regulators and consumers.

Cannabinoids naturally occur within and can be extracted from hemp and cannabis plants. However, cannabinoids can also be artificially created through processes such as chemical or biological synthesis, most commonly by using derivatives of hemp plants. As the type, bodily effects, and intoxication level of each cannabinoid that could be chemically or biologically synthesized from hemp derivatives is not well known, the allowance of cannabinoids other than CBD may create health concerns. One way of addressing this health concern is to restrict the inclusion of what cannabinoids may be derived from hemp into the commercial cannabis supply chain to only well-known formulations, such as CBD. Another alternative would be to allow hemp-derived CBD to be incorporated into manufactured cannabis products and require that any other cannabinoids be approved by the Department for use as an ingredient. Another approach would be to allow the inclusion of other, specific non-intoxicating compounds such as cannabichromene (CBC), cannabigerol (CBG), and terpenes. If hemp or hemp products entering the commercial cannabis supply chain are not limited by the existing restrictions applicable to hemp and are allowed to contain synthetic or intoxicating cannabinoids other than CBD, such as Delta-8 tetrahydrocannabinol, there would be inconsistencies with how hemp and hemp products are treated between agencies and likely cause confusion and compliance challenges. Further, the inclusion of these compounds could have market impacts, which we will explore below.

The integration of hemp into the commercial cannabis supply chain also raises the question of whether a licensee can utilize the same equipment for both activities. If it is determined that cannabis licensees can manufacture hemp products under their cannabis license and the requirements for such manufacturing do not conflict with those for cannabis, then it seems to follow that this would be allowable, especially if hemp products are subject to cannabis rules. However, the use of the same equipment for cannabis and hemp presents an opportunity for cross contamination, which may inappropriately introduce psychoactive substances into hemp products. Thus,



if this is allowable, measures to prevent cross contamination would be necessary for the dual use of equipment.

Further, allowing a manufacturer to engage in hemp manufacturing pursuant to a license or registration from CDPH on a licensed cannabis premises could raise challenges if the regulatory requirements for each type of premises are not the same. A shared premises would likely make it difficult to determine the actual requirements that apply to the activity if both are conducted simultaneously and whether a potential violation has occurred under the hemp or cannabis license. Additionally, this could impact the ability to properly trace the source of contamination for recall purposes. If the premises requirements for hemp and cannabis manufacturing are not in conflict and a shared premises structure is contemplated, provisions similar to those for shared manufacturing facilities could assist with the resulting challenges, such as requiring separate storage areas, specified times for each activity, and dual responsibility for noncompliance.

Distribution

Unlike the closed cannabis system, the hemp framework does not currently require the use of a separately licensed distributor. However, the commercial cannabis supply chain requires that cannabis be transported by a licensed distributor who generates a shipping manifest in the CCTT system and is subject to laboratory testing and quality assurance on the premises of a licensed distributor. Department regulations specify that a licensed distributor may distribute only cannabis, cannabis products, cannabis accessories, and licensees' branded merchandise and promotional materials.

If it is determined that hemp may be incorporated into the commercial cannabis supply chain, consideration would have to be given to whether hemp may be transported and stored with cannabis, and whether these products must be transported by a licensed distributor. Additionally, consideration would need to be given to the quality assurance review distributors conduct on cannabis for packaging and labeling requirements and whether similar review should be conducted on hemp products prior to their distribution to and sale at retail.

As cannabis is visually indistinguishable from hemp and hemp products, there is potential for confusion amongst licensees, the Department, other state entities and law enforcement if hemp and cannabis were to be stored and transported together. A cannabis distributor carries proof that establishes they are transporting legal cannabis for law enforcement to inspect, but as hemp and cannabis are visually indistinguishable, it could be mistaken for illegal cannabis activity.

Additionally, transportation and quality assurance by a distributor allows the Department to monitor and trace distribution to prevent diversion into the illegal market and addresses any subsequent health risks associated with the



cannabis, such as a product recall. If hemp within the commercial cannabis supply chain is not subject to the same distribution requirements, the incongruity may lead to confusion and could result in hemp having fewer health and public safety requirements than cannabis within the same supply chain. It would also subject hemp within the commercial cannabis supply chain to requirements that are not applicable to hemp in the standard commercial market.

Laboratory Testing

Hemp crops are required to be tested prior to harvest to confirm the percentage concentration of THC is at or below the federal allowable limit. Hemp that exceeds the allowable percentage must be destroyed. Hemp testing must be conducted by a laboratory approved by the CDFA utilizing specific test methods.

The testing of hemp products closely resembles the testing requirements within the commercial cannabis supply chain, which tests for allowable THC level as well as numerous contaminants that impact public health for final form products. Testing requirements include levels of pesticides, residual solvents and processing chemicals, foreign materials, microbial impurities, mycotoxins, heavy metals, moisture content, and cannabinoids. For hemp testing, the CDPH requires that testing be done by an independent laboratory. Unlike hemp, the testing of cannabis within the commercial cannabis supply chain is not limited to an allowable percentage concentration of THC and the overall focus for the required compliance testing within the commercial cannabis supply chain is on protecting human health. Similar to hemp, testing of cannabis must be conducted by an independent testing laboratory, however, these labs are licensed and regulated by the Department.

Currently licensed testing laboratories are allowed to use their own validated test method to test for cannabinoid content. However, pursuant to Senate Bill 544 (Laird, Chapter 547, Statutes of 2021), the Department must establish a test method for use by all cannabis testing laboratories to provide greater accuracy and consistency in testing.

The primary difference distinguishing the definitions of hemp and cannabis is that hemp must be under a certain THC limit. Thus, an initial determination that is necessary when considering if and how to integrate hemp into the commercial cannabis supply chain is whether it is acceptable to utilize pre-harvest test results for hemp and CDPH required testing for cannabis products, or if the hemp or hemp product must be tested pursuant to cannabis laws before entering the commercial cannabis supply chain. While hemp testing requirements resemble cannabis testing requirements, the current hemp testing structure does not wholly mirror the commercial cannabis testing structure. Therefore, certain benefits mandated under laws



applicable to cannabis, such as California's lab standardization efforts, would not be realized.

Additionally, what occurs if hemp is found through laboratory testing to be above the allowable THC limits would need to be addressed. Because cannabis and cannabis products do not have the same THC limits as hemp, hemp that does not meet the federally allowable THC limit could be inverted into the commercial cannabis supply chain, preventing it from being destroyed. This approach provides an opportunity for an entity to cultivate or manufacture hemp out of compliance with California's State Plan for hemp as well as out of compliance with California's commercial cannabis regulatory framework yet reap the benefits of licensed activity. This could compromise the integrity of hemp production in California and would negatively impact cannabis licensees, particularly those legal cannabis cultivators and manufacturers that comply with requirements for commercial cannabis activity, including with the more extensive regulatory requirements and higher license fees.

Retail

Presently, commercial cannabis retailers are not able to sell hemp or products containing hemp derivatives. Hemp manufactured products are subject to regulation by the CDPH and are not required to be sold exclusively to consumers by businesses licensed or registered specifically for that purpose. At this time the testing requirements for contaminants in hemp are consistent with those for testing cannabis, however they could differ in the future. (See Health & Saf. Code, § 111925.2.) These products are not subject to the same packaging and labeling requirements in MAUCRSA. Moreover, hemp products are not subject to the cannabis taxation rates applicable to the commercial cannabis and cannabis products.

If hemp products that meet CDPH regulatory standards are allowed to enter the commercial cannabis supply chain at retail, then hemp products for sale to consumers in the standard commercial market and the legal cannabis market would be subject to the same standards and requirements set by CDPH; thus, maintaining consistency amongst hemp sold to consumers. This approach may also allow cannabis retailers to diversify their inventory and obtain hemp products regulated by CDPH which they may be able to sell at a lower price point, as hemp is not subject to the more extensive requirements applicable to cannabis products. This may also attract a broader consumer base for cannabis retailers if consumers are allowed to purchase hemp and cannabis products in one location.

However, allowing hemp to enter the commercial cannabis supply chain initially at retail could create an incongruity between products containing cannabinoids sold by that retailer, potentially disadvantaging the consumer. When a consumer purchases from a licensed cannabis retailer, the



expectation is that the product has been through the legal commercial cannabis supply chain and met all cannabis regulatory requirements.

For example, MAUCRSA has very specific labelling requirements. These requirements are mandated to further specific objectives, such as informing and educating consumers or preventing youth exposure. Allowing hemp products not subject to MAUCRSA requirements to be sold at licensed cannabis retail locations may inadvertently disadvantage the consumer by making it difficult for the consumer to adequately understand the differences between what appear to be similar products. Similarly, allowing hemp products that are not subject to MAUCRSA's strict packaging and labeling requirements related to attractiveness to children has the potential to undermine the public health and safety objectives of these cannabis specific requirements.

Further, allowing hemp products to be sold on licensed cannabis retail premises, when subject to different standards, can complicate operations for retailers and regulatory compliance oversight by agencies. This overlapping jurisdiction would require the application of different rules and oversight authority that may or may not conflict.

However, if hemp for sale at retail is required to be integrated at an earlier stage of the commercial cannabis supply chain, many of the foregoing concerns could be addressed. Restricting the allowance of hemp products within the commercial cannabis supply chain to products manufactured by commercial cannabis licensees could be an effective way to do so. Under this scenario, final form hemp products would be subject to all the same requirements as cannabis products, and the differences between the products could be narrowed to whether the cannabinoids were sourced exclusively from hemp or cannabis. Additionally, entering hemp into the commercial cannabis supply chain earlier could allow for more effective tracking of hemp, including test results within the CCTT system and separate tracking for taxation purposes. Moreover, because of the application of MAURCSA's increased regulatory provisions and associated costs of compliance, requiring hemp products to be manufactured by cannabis licensees would likely result in more price parity.



Market Impacts

Economic Impacts on Legal Commercial Cannabis Industry

Integrating hemp into the commercial cannabis supply chain would have economic impacts on cannabis businesses. Hemp is substantially less expensive to produce per acre and can have substantially higher yields than cannabis. Many compounds from hemp and cannabis may be viable substitutes for one another; therefore, it would be expected that buyers may turn to certain hemp-derived cannabinoids rather than higher-cost cannabis-derived cannabinoids. If cannabis manufacturers are allowed to source non-intoxicating cannabinoids from hemp to produce hybrid cannabis products, or if the demand for cannabis decreases due to the availability of hemp within the commercial cannabis supply chain, then this may further decrease the demand for cannabis as a source for non-intoxicating cannabinoids. In either of these scenarios, cannabis cultivators would likely experience a further decrease in wholesale prices of cannabis plant material.

Additionally, if other intoxicating cannabinoids from hemp are allowed into the cannabis supply chain, then the demand for cannabis could further decrease. However, this would likely not be true for products containing levels of THC above the 0.3 percent limit applicable to hemp. Because THC levels in cannabis have increased over time, hemp-derived THC is likely not a viable substitute for higher THC products. As a result, cannabis and cannabis products containing higher levels of THC should not be negatively impacted by the inclusion of hemp into the commercial cannabis supply chain.

While a decrease in the demand for cannabis plant material would likely negatively impact cannabis cultivators, it may create an opportunity for cannabis manufacturers, who would effectively have access to a more expansive and less expensive supply chain. If manufacturers are able to decrease production costs through the use of hemp-derived cannabinoids, this may lead to lower product prices for consumers. This could also lead to expanding revenue streams for manufacturers to the extent consumers view hemp and cannabis-derived CBD as substitutes. Moreover, if hemp products are included in the cannabis supply chain at retail, California retailers would likely expand their consumer base and potentially have access to hemp products manufactured both within and outside of the state; thereby increasing not only the type of products they can sell, but the suppliers they can purchase from.

If hemp were to be incorporated into the commercial cannabis supply chain, methods for distinguishing hemp from cannabis and to further adapt enforcement efforts would need to be developed. Under the current fee framework, this would result in additional costs to the Department's licensee population, potentially furthering the disparity between cannabis and hemp since the Department is statutorily required to charge licensees fees that fund



the Department's regulatory activities. Thus, under the current framework, the costs of incorporating hemp into the commercial cannabis supply chain would fall to the cannabis licensees and increase their costs, which could further the disparity between production costs for cannabis and hemp.

Lastly, there is a possibility that incorporating hemp into the cannabis supply chain can have impacts for cannabis tax revenue generation, potentially undermining California's cannabis tax administration and revenue allocation goals. We strongly encourage the Legislature to thoughtfully deliberate and consider these tax impacts when determining whether and how to incorporate hemp into the cannabis supply chain.

Inclusion of Hemp in Other States' Cannabis Supply Chain

California is not alone in grappling with the best way to incorporate industrial hemp into the commercial cannabis market. Regulatory systems for hemp and cannabis established in Oregon, Colorado, Michigan, New York, and Washington have medicinal and adult-use cannabis systems and industrial hemp programs similar to those in California. All five states permit hemp and hemp-derived cannabinoids to be used as ingredients in cannabis products. Furthermore, Colorado and Oregon permit cannabis retailers to sell hemp-only products in addition to cannabis products containing hemp. Each of these states require industrial hemp to be tested for potency, at a minimum, prior to entering the cannabis supply chain.

Colorado, Michigan, and Washington restrict hemp products that exceed 0.3 percent THC on a dry weight basis from being used as ingredients in cannabis products. In contrast, Oregon and New York permit hemp products to exceed the 0.3 percent THC threshold. In Oregon, harvested hemp and hemp products entering the cannabis market may not contain a total THC concentration exceeding 1 percent to 5 percent, depending on the product type. In addition, some hemp products are limited in the total milligrams of THC they may contain.

In all states, once hemp is incorporated into cannabis products, these products are treated as any other cannabis products and must be tested, packaged, labeled, and taxed accordingly. Not all states require hemp products held by cannabis businesses to be entered in their states' cannabis track and trace systems, but all require cannabis products containing hemp to be tracked like any other cannabis product. In Oregon, hemp growers and handlers registered with the Oregon Department of Agriculture are issued certificates that provide them access to the cannabis track and trace system. This allows hemp growers and handlers to transfer hemp biomass and hemp products to cannabis licensees. Michigan, New York, and Washington require cannabis licensees with hemp products to enter them into their track and trace systems. In contrast, Colorado has not permitted hemp registrants access to the cannabis track and trace system, therefore industrial hemp products are not required to be entered in the track and trace system prior to sale by a licensed cannabis retailer.



Conclusion

As detailed in this report, the inclusion of hemp into the commercial cannabis supply chain is complex and requires careful consideration of significant policy questions to arrive at an approach that is in the best interests of California. The approach utilized to accomplish this end would directly impact the cannabis industry, hemp industry, standard commercial market, medicinal and adult-use consumers, and the Department and other responsible California state agencies. While this report raises significant policy considerations to inspire and support deliberations between policy makers and stakeholders, it should not be interpreted as containing every single issue that may need to be considered and addressed by policy makers to determine when or if to incorporate hemp into the cannabis supply chain. If California chooses to allow hemp into the commercial cannabis supply chain, irrespective of which approach California adopts, implementation will likely require significant time and resources.

As the statutory and regulatory provisions for hemp and cannabis currently reflect two separate systems and supply chains, the first step in this process must be for policy makers to identify a more specific policy direction, which will in turn inform the development of necessary statutory changes. Once these statutes are enacted and necessary funding is appropriated, the Department would engage in extensive programmatic development, including engaging in state contracting processes that would likely implicate current contracts when feasible and new contracts when necessary to implement specific mandates, including modifications to the CCTT system and possibly the Department's licensing systems.

To develop regulations, the Department would need to engage with stakeholders before beginning the rulemaking process to ensure their input is appropriately considered in the further refinement of any policy mandate. Regulatory efforts often take no less than a year from the date the public comment period commences. Changes in the requirements for cannabis licensees would necessitate re-training of Department staff related to new processes and procedures resulting from the inclusion of hemp, changes in licensure requirements, and revised protocols for inspections, investigations and determinations related to compliance with the new laws. In addition to re-training current staff, the Department would need time to complete the state hiring process and train new employees to assist with the increased workload. Therefore, the Department anticipates it would take several years to comprehensively incorporate hemp into the commercial cannabis supply chain once statutes are enacted.

The Department thanks the Legislature for the opportunity to provide the critical information contained in this report for consideration, as the policy determinations made about hemp within the commercial cannabis supply



chain would have profound impacts on the Department's work and the legal cannabis industry it regulates. Given the scale of the various options for hemp integration into the commercial cannabis supply chain, the Department looks forward to receiving more specific direction from policy makers about whether and how they would like hemp to be incorporated. With more information on the specific policy direction, the Department will then be able to provide additional detailed information on the statutory and regulatory changes required to effectuate the policy direction, as well as administrative impacts and costs that would result from the policy direction.

