



California Department of Food and Agriculture Standardized Regulatory Impact Assessment

Economic Impact of the Proposed Regulations to Establish Timeframes, Procedures,
Methods, and Confirmation for Industrial Hemp Planting, Sampling, Laboratory Testing,
Harvest, and Destruction

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Background

The California Industrial Hemp Farming Act (Senate Bill 566, Chapter 398, Statutes of 2013) was signed into law to authorize the commercial production of industrial hemp in California. Industrial Hemp, as defined in California Food and Agricultural Code (FAC) Section 81000(a)(6), means “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 (THC) concentration of no more than 0.3 percent on a dry weight basis.”

The Act became effective on January 1, 2017, due to a provision in the Adult Use of Marijuana Act (Proposition 64, November 2016). Proposition 64, which in addition to approving adult use cannabis in California, also repealed a provision requiring FAC Division 24 to be inoperative until federal conformance was achieved. The Act requires CDFA to establish a registration program for the cultivation of industrial hemp in accordance with FAC Division 24 (FAC Section 81010).

FAC Division 24 has undergone several more legislative changes:

- Senate Bill 94 (Budget Committee, Chapter 27, Statutes of 2017) removed the mandate that the Bureau of Cannabis Control regulate and control plants and products that fit within the definition of industrial hemp but that are produced, processed, manufactured, tested, delivered, or otherwise handled under a license issued under the provisions of the Adult Use of Marijuana Act.
- Senate Bill 1409 (Wilk, Chapter 986, Statutes of 2018) made changes that would clarify enforcement and further enable implementation, including the intended uses for industrial hemp crops, approved seed cultivars, pilot program, registration timeframe, sampling procedures, approved laboratories to conduct THC testing, approved testing methodology, fee collection by California county agricultural commissioners, and other minor, technical edits.
- Senate Bill 153 (Wilk, Chapter 838, Statutes of 2019) made changes that would conform to the requirements for a state regulatory plan outlined in the 2018 Farm Bill, including various definitions, board membership, registration requirements, registration reporting requirements, program eligibility requirements, cultivation requirements, sampling requirements, and the testing method.

CDFA have since adopted the following regulations in Title 3 of the California Code of Regulations (CCR):

- Section 4900 pertaining to Industrial Hemp Cultivation Registration Fees. The FAC Section 81005(a) authorized CDFA to establish a registration fee and renewal fee to cover the actual costs of implementing, administering, and enforcing the provisions of FAC Division 24. The current annual registration fee and renewal fee is \$900.00.
- Section 4920 and Section 4921 pertaining to the list of approved cultivars. The FAC Section 81002 requires registered growers to only grow varieties of industrial hemp on the list of approved seed cultivars. The current list of approved cultivars is available in Section 4920 and lists cultivars in FAC Section 81002(b). Section 4921 provides the methodology and procedure to amend the list of approved cultivars in Section 4920.

Additional, CDFA has adopted the following emergency regulations in 3 CCR:

- Sections 4901 and 4902 pertaining to registration requirements. The emergency regulations outline the registration application and process and lists the requirements listed in FAC Section 81003 and 81004. All registrants and key participants as defined in CCR Section 4902 are required to provide criminal history reports to confirm compliance with FAC Section 81013.
- Sections 4940, 4941, 4942, 4943, 4944, 4945, 4946, 4950, and 4950.1 pertaining to industrial hemp sampling, testing for THC concentration, harvest, and destruction. The emergency regulations provide timeframes, procedures, methods, and confirmation of THC concentration for industrial hemp sampling, laboratory testing, harvest, and destruction

The Department opened registration for industrial hemp cultivation on April 30, 2019, following the adoption of Section 4900 of the California Code of Regulations. There are currently two types of industrial hemp registration available: growers and breeders. As of June 11, 2020, there are 625 registered growers and breeders with a total of 32,191 acres registered for planting in 32 counties. California had a total of 782 registrants (664 registered growers and 118 registered breeders) in the first growing year (April 30, 2019 - April 29, 2020).

Industrial hemp cultivation is authorized by the federal government through the Federal Agricultural Act of 2014 (2014 Farm Bill) and the Agriculture Improvement Act of 2018 (2018 Farm Bill). The 2014 Farm Bill authorized institutions of higher education and CDFA to grow and cultivate industrial hemp for the purposes of agricultural or academic research. The 2014 Farm Bill authorized CDFA to promulgate regulations to carry out an agricultural pilot program to study the growth, cultivation, and marketing of industrial hemp.

The 2018 Farm Bill authorizes the United States Department of Agriculture (USDA) to develop national regulations pertaining to industrial hemp cultivation and requires states that allow industrial hemp cultivation to submit a state regulatory plan to USDA for approval.

USDA established the U.S. Domestic Hemp Production Program through an interim final rule on October 31, 2019. The interim final rule provides the requirements for State and Tribal regulatory plans submitted to USDA for review and approval. States may continue to operate under the 2014 Farm Bill until twelve months after the adoption of the interim final rule, which will be October 31, 2020. States that do not have an approved state regulatory plan by October 31, 2020 will be required to follow the USDA plan described in the interim final rule. The 2018 Farm Bill outlines several requirements that state regulatory plans must incorporate, including requirements for sampling, post-decarboxylation testing, crop destruction, and records retention.

Statement of the Need for the Proposed Regulation

Existing law, as amended by Senate Bill 1409, effective January 1, 2019, requires CDFA to establish sampling procedures for industrial hemp, including the number of samples to be taken and the compositing of samples, the portions of the plants to be sampled, plant parts to be included in a sample, and any additional procedures as necessary to ensure accuracy and the sanitation of the samples and fields (Food and Agricultural Code (FAC) Section 81006(e)(3)). Existing law also requires that a laboratory

test report for tetrahydrocannabinol (THC) concentration be issued by a laboratory approved by the Department (FAC Section 81006(e)(5)).

Existing law requires the county agricultural commissioner (commissioner) of the county in which the applicant intends to engage in industrial hemp cultivation determine that the requirements for registration pursuant to FAC Division 24 are met, including requirements for the use of approved cultivars, planting, sampling, laboratory testing, harvesting, and destruction (FAC Sections 81003 and 81004).

FAC Section 407 authorizes the Secretary to adopt “such regulations as are reasonably necessary to carry out the provisions of this code which she is directed or authorized to administer or enforce.” Additionally, FAC Section 401.5 requires the Department to “seek to enhance, protect, and perpetuate the ability of the private sector to produce food and fiber in a way that benefits the general welfare and economy of the state.”

On April 25, 2019, CCR Section 4900 pertaining to registration and renewal fees for industrial hemp growers and breeders was approved and became effective immediately. CCR Section 4900 allowed for industrial hemp growers and breeders to register with the commissioners and begin to grow industrial hemp.

Regulations specifying the timeframes, procedures, methods, and confirmation for industrial hemp planting, sampling, laboratory testing, harvest, and destruction must be promulgated to allow industrial hemp crops grown by registered growers to be harvested. Currently interim, emergency regulations are in place that prescribe these processes. Before these emergency regulations expire, permanent regulations are needed that are consistent with recently amended state and federal laws and guidelines. Without sampling procedures and approved laboratories, registered growers cannot meet statutory requirements to allow harvest of their industrial hemp crop.

California law currently provides a framework for a state regulatory plan. However, it does not currently reflect all of the federal requirements for a state regulatory plan outlined in the 2018 Farm Bill and the federal interim rules. Non-compliance with federal law and regulations will prevent California growers and processors from shipping or receiving hemp products through interstate commerce and could also put growers that have registered with the state and county at risk of federal enforcement action. Thus, the proposed regulations conform to the requirements for a state regulatory plan outlined in the U.S. Domestic Hemp Production Program.

Summary of the Proposed Regulations

The adoption of Sections 4935-4946, 4950-4950.1 will establish timeframes, procedures, methods, and confirmation for industrial hemp planting, sampling, laboratory testing, harvest, and destruction, as required in FAC Sections 81003, 81004, and 81006. The proposed regulations will allow current and future production of industrial hemp to be harvested in California and allow the growth of the industrial hemp industry in California.

The proposed regulations will require registered growers to submit a planting report to the commissioner in the county that the crop was planted in to confirm that a planting of industrial hemp

has taken place. Registrants must provide planting information to the United State Department of Agriculture Farm Service Agency. In addition, the regulations will require registered growers to request an official sample be collected for THC testing by submitting a pre-harvest report to the commissioner.

The proposed regulations will require that a representative composite sample of the *Cannabis sativa* L. crop be taken by the commissioner, an USDA-approved sampling agent, or a federal, state, or tribal law enforcement agent authorized by USDA prior to harvest. The sample must be collected no later than 6 calendar days before the anticipated harvest start date to allow for the delivery and testing of the sample prior to the anticipated harvest date.

The sample will be required to be tested by an approved laboratory for THC concentration using a suitable instrumentation. Laboratories testing industrial hemp for THC concentration will be required to obtain International Organization for Standardization (ISO) / International Electrotechnical Commission (IEC) 17025 accreditation using a validated method for total THC analysis on plant material. ISO/IEC 17025 enables laboratories to demonstrate that they operate competently and generate valid results. Testing laboratories conducting THC testing will also be required to meet all laboratory registration requirements outlined in Part 990.3 in Title 7 of the Code of Federal Regulations and corresponding guidance.

To ensure that laboratories are ISO/IEC 17025 accredited, meet federal registration requirements, and are testing industrial hemp samples in accordance with the proposed regulations, laboratories conducting testing for THC concentration must obtain written approval from the Department in order to test industrial hemp samples. CDFA will approve the laboratory to conduct THC testing once CDFA confirms that the testing laboratory and its standard operating procedures for THC testing meet the requirements outlined in the proposed regulations. The approval is valid for one year from date of approval and requires annual renewal. Any changes to standard operating procedures of an approved laboratory must be submitted to the Department before implementation so the changes can be reviewed and approved to verify compliance with current requirements.

Testing laboratories must conduct the analysis and report the results to the registered grower and the commissioner concurrently within five calendar days of the collection of the samples. The laboratory test report must identify the test results as passed or failed as industrial hemp. A laboratory test report is considered passing if the percentage content of THC indicated on the report is within the acceptable hemp THC level. If the percentage content of THC indicated on the report is greater than the acceptable hemp THC level, the laboratory test report is considered a failed report. Samples that exceed the acceptable hemp THC level shall be destroyed in a manner compliant with Section 297B of the federal Agricultural Marketing Act of 1946 (added by Section 10113 of the federal Agriculture Improvement Act of 2018 (Public Law 115-334), implementing regulations, and guidance.

Additional sampling and testing for THC content will be required for crops that have THC levels greater than the acceptable hemp THC level of 0.3 percent but does not exceed one percent as allowed in existing statute. Registered growers may harvest the crop if a passing laboratory test report has been received. Harvest must take place no more than 6 days prior to harvest and be completed within 15 calendar days from the sampling date in order to comply with the timeframe allowed under federal requirements. Additional sampling and testing can be conducted to extend the harvest window. Any changes to the harvest date that result in harvest activities to occur more than 15 days after the sample

collection date shall require additional sampling for THC concentration prior to harvest. Registered growers will be required to provide a harvest report following the completion of harvest.

After the registrant's receipt of an electronic copy of the laboratory test report that indicates the percentage concentration of THC exceeds one percent the crop destruction shall begin within 48 hours, and be completed within seven calendar days. If a second laboratory test report from retesting indicates the percentage concentration of THC exceeds the acceptable hemp THC level but is less than one percent, the destruction shall take place as soon as practicable, but no later than 45 calendar days after the registrant's receipt of an electronic copy of the second laboratory test report.

The registered grower must submit a destruction plan to the commissioner for approval prior to the destruction of the crop to confirm that crop will be destroyed in a manner compliant with Section 297B of the federal Agricultural Marketing Act of 1946 (added by Section 10113 of the federal Agriculture Improvement Act of 2018 (Public Law 115-334)). Following the destruction, the registered grower must submit a destruction report to confirm the completion of the destruction activities.

The proposed regulations also require the destruction of regulatory non-compliant crops for other reasons other than having THC concentrations exceeding the acceptable hemp THC level and specifies the procedure for voluntary destruction of a crop. Under these conditions, the crop must be destroyed within 45 days and the grower will be required to follow the destruction procedures as outlined for a crop that test above the acceptable hemp THC level.

Major Regulation Determination

Based on the aggregated total benefits of the proposed regulation, which includes direct, indirect, and induced costs, the economic impact of the proposed regulations may exceed the \$50 million threshold for a major regulation within the first year following the full implementation of the proposed regulations. CDFA estimates the aggregated benefits for the proposed regulations to range between \$13,766,130 and \$116,250,120. The 12-month period in which the economic impact of the proposed regulation could potentially exceed \$50 million is defined as October 2020 – September 2021 and represents the 12 months following full implementation of the proposed regulations (October 22, 2020).

Methods by Which the Agency Sought Public Input

As part of the rulemaking process, and in keeping with state law (FAC Division 24), CDFA sought public input from stakeholders most affected by the proposed regulations through the Industrial Hemp Advisory Board (IHAB) meetings. Existing law established an Industrial Hemp Advisory Board (IHAB) composed of 13 members that represent and further the interests of the industrial hemp industry (FAC Section 81001). The purpose of the IHAB is to advise the Secretary and make recommendations on matters pertaining to Division 24, including the establishment of timeframes, procedures, methods, and confirmation of THC concentration for industrial hemp planting, sampling, laboratory testing, harvest, and destruction. The IHAB held nine meetings and one task force meeting to discuss sampling,

laboratory testing protocols, and crop destruction standards in 2017 and 2018, which resulted in several recommendations to the Secretary of the CDFA.

In addition, CDFA developed the proposed regulations by reviewing sampling and testing requirements outlined in the federal interim final rule, various state regulatory plans approved by USDA, and sampling and testing practices in other states, including Colorado, Indiana, Kentucky, Minnesota, and Oregon, by considering recommendations from the IHAB. The Department also consulted with county agricultural commissioners, USDA, and the CDFA Center for Analytical Chemistry to determine the necessary amendments to existing emergency regulations.

Economic Impact Method and Approach

The CDFA based estimates of the number of various entities directly impacted by the proposed regulations on current registration activities as of June 11, 2020. The CDFA used data collected from the first 12 months that registration for industrial hemp became available (April 30, 2019 – April 29, 2020), also referred as the first growing year, to make good faith estimates regarding the costs and benefits of implementing the proposed regulations. CDFA also relied on data available in the federal interim final rule.

The CDFA used the Regional Input-Output Modeling System (RIMS II) to objectively assess the potential economic impacts of the proposed regulations. The RIMS II provides multipliers to estimate of the spin-off activity generated in other parts of the economy resulting from direct changes in the industry.

Description of Agency's Baseline

The Hemp Business Journal estimated industrial hemp-based product sales in the United States are expected to increase 14% in 2020, 19% in 2021, and 16% in 2022, despite the uncertainty of the United States Food and Drug Administration's future plan to regulate hemp products containing cannabidiol. Despite this growth in industrial hemp-based product sales, most hemp products processed and manufactured in the United States heavily rely on imported material, according to the Congressional Research Service.

California law requires registration with the local county agricultural commissioner for the cultivation of industrial hemp. The Department opened registration on April 30, 2019, following the adoption of title 3 California Code of Regulations Section 4900. As of June 11, 2020, there are 625 registered growers and breeders in 32 counties. Many of the 58 counties in California have local ordinances restricting the cultivation of industrial hemp.

Existing law exempts registered established agricultural research institutions and registered breeders, as defined in FAC Section 81000, from sampling and testing requirements for THC content as long as sampling and testing are done in accordance with an approved research plan or approved variety development plan. As of June 11, 2020, 100 of the 625 registrants are registered breeders. There are currently no registered established agricultural research institutions as registration is currently not

required. The CDFA does not know how many established agricultural research institutions will register once registration becomes available.

The USDA estimates 99% of all industrial hemp growers in 2018 are considered a small business as defined by the Small Business Administration based on limited data available from other states regarding industrial hemp growers. It is assumed that majority of the California's current registrants are considered small businesses due to lack of data on planting acreages and gross revenue per acre, and given that this new industry started just a year ago in California.

Commissioners are responsible for registration activities and are reimbursed by CDFA for actual costs. Based on invoices received from the counties during May 2019 through December 2019, the estimated cost for all the counties to conduct registration activities is approximately \$530,083 per year. The estimated annual county cost for registration does not include registration efforts that did not result in a registration of an applicant, as these costs are currently unknown; however, these latter costs are expected to be less than 10% of the total efforts needed for registration of applicants.

The registration is for one year and the annual registration fee is currently \$900.00. The registration fee amount is based on the counties' and state's estimated costs for implementing, administering, and enforcing the registration program.

According to Vote Hemp, the United States have seen a significant growth in acreage of industrial hemp cultivation: 9,770 acres of industrial hemp were grown in 2016; 25,713 acres were grown in 2017; and 78,176 acres were grown in 2018. 511,442 acres were authorized across the U.S. in 2019. Currently, there is a total of 32,191 acres registered for industrial hemp planting in California. However, there is no limit on the number of acres that may be included in a registration, so this number bears little resemblance to the current, actual planted acreage. Due to lack of data on planting acreages, this report uses the average planted acreage per grower of 24 acres, the same average used in USDA's regulatory impact analysis for the interim final rule.

This report is based on each registered grower growing one cultivar since approximately 54% of the registered growers in the first growing year had only one cultivar registered for planting. This report also assumes that each registered grower has one planting per year given that 61% of the registered growers in the first growing year had only one registered cultivation site.

USDA estimated the gross revenue per acre of industrial hemp to be between \$2,443 to \$25,682, depending on the type of crop grown. According to USDA, industrial hemp is grown for three major products: floral material, fiber, and grain. USDA estimates that two-thirds of the industrial hemp grown is floral production, while the remaining one-third of all plantings is for fiber and grain production. Registered growers are not currently required to report the purpose of the crop grown. However, CDFA assume that the gross revenue for registered growers is \$0 for the baseline since they are unable to harvest absent the proposed regulations. The website Hemp CBD Business Plans presents costs of CBD hemp production that add up to \$15,195 per acre, almost all of which is scalable. Therefore, absent the proposed testing regulations that make harvesting possible, CDFA expect direct invested losses to amount to slightly over \$19,000,000 if the estimated current hemp acreage in California of 1,260 acres was prevented from harvest and sale.

The International Organization for Standardization/International Electrotechnical Commission 17025 accreditation is a common standard for testing laboratories that offer THC analysis services. On the other hand, there are currently seven DEA registered laboratories in California at this time; only two of the seven DEA-registered laboratories are ISO/IEC 17025 accredited.

California industrial hemp growers are not currently subject to the cultivation requirements outlined in the federal interim rule. However, states that do not have an approved state regulatory plan by October 31, 2020 will be required to follow the USDA plan described in the interim final rule. Regardless of any federal requirements, all hemp growers in California must comply with existing state laws and regulations as well as any local restrictions that may apply.

The federal interim rule and guidelines currently requires the following as part of a state plan for approval:

- Industrial hemp growers must complete harvest within 15 days from sample collection.
- A federal, state, local, or tribal law enforcement agency or other federal, state, or tribal designated person will must collect the samples from the flower material of the plants.
- The sampling method must ensure a confidence level of 95% that no more than 1% of the plants in the sampled planting would exceed the acceptable hemp THC level.
- The industrial hemp grower or an authorized representative must be present during the collection of the plants.
- Authorized samples must have unrestricted access to all cannabis and industrial hemp plants and all areas used for cultivation, handling, or storage of such plants.
- Growers cannot harvest the crop prior to sample collection.
- Samples from different plantings must be maintained and tested separately.
- Testing laboratories must be meeting specific standards to ensure the validity and reliability of the measurements of THC concentrations.
- The testing method must measure delta-9 THC concentrations post-decarboxylation or include consideration for the potential conversion of tetrahydrocannabinolic acid (THC-A) into THC. Total THC concentrations must be measured on a dry-weight basis.

USDA has issued a notice delaying enforcement of the following state plan requirements due to the current insufficient capacity in United States for testing hemp and disposing of non-compliant plants until October 31, 2021, or publication of the final rule, whichever occurs first:

- Testing must be conducted by a DEA-registered testing laboratory.
- Crops that have been tested above the acceptable hemp THC level must be disposed using a DEA-approved reverse distributor.

No individual consumers will be directly affected by hemp production, as industrial hemp is a raw product that must be processed to produce usable products such as fiber, hemp seed oil, hemp seeds, or CBD. Until recently, although processed hemp products were imported into the United States, there was little hemp processing or manufacturing in the United States. That has begun to change as several states have initiated industrial hemp programs. The growth of hemp production in California may favor the growth of hemp processing businesses in nearby areas. The actual advantages of hemp processors' proximity to hemp production is unknown. Given the efficient and well-established general commodity distribution network in the United States, proximity advantages may be low. Nevertheless, the highly

regulated nature of cannabis distribution of any kind may initially favor processing raw hemp within the state. Any such advantages and industry growth are expected to be gradual. Few would accrue within the first year following the full implementation of the proposed regulations. Consumers of hemp products, such as CBD, would profit indirectly from larger hemp production in the form of lowered prices as production and ensuing competition increases. Many of these cost savings would involve products including CBD, currently the most valuable of hemp products. The future price of retail hemp products also will be significantly influenced by the degree of continued popularity of hemp products such as CBD.

Economic Impacts of the Proposed Regulations

Registered Growers

There are currently 525 registered growers that will be required to pay for sampling and testing for THC content in order to harvest the planting. Some plantings may require additional sampling and testing if initial test results show that THC concentration exceeds the acceptable hemp THC level and/or allows extending the harvest window. Once a laboratory test report is obtained, a registered grower will need to pay for harvest and/or destruction costs as well.

Currently, four California counties have approximately half of the total registered growers in the state: Fresno, Kern, Riverside, and San Diego County. Therefore, the monetary and employment benefits accruing from the proposed regulations will be disproportionately concentrated in these counties.

County Agricultural Commissioners

Currently 32 counties have registered growers in their county. The proposed regulation will directly impact commissioners who will be involved with the planting, sampling, testing, harvest, and destruction process. There will be an initial cost to the counties to train county staff to conduct sampling activities, and samplers will be required to take USDA's training module for sampling. County staff will also need to coordinate with the growers and testing laboratories for sample collection, sample delivery, and test reporting. Lastly, county staff will also be responsible for confirming destruction activities.

Comparable to the impact to registered growers, the impact to counties will be disproportionate as some counties currently have local restrictions on hemp cultivation. The 26 counties that have restrictions on hemp cultivation will be unaffected by the proposed regulations. Out of the 32 counties that do allow hemp cultivation, four of the counties have approximately half of the total hemp grower registrations for the state.

Testing Laboratories

Testing laboratories conducting THC testing will be required to obtain approval from CDFA in order to test regulatory industrial hemp samples for THC concentration. Testing laboratories will be required to submit an application including proof of ISO/IEC 17025 accreditation and standard operating procedures

for THC testing to CDFA for review, and meet any federal registration requirements. Department approval for testing laboratories are valid for one year; after the one year, testing laboratories will need to renew using the same initial approval process. For the purposes of this analysis, CDFA assumes that testing laboratories will be required to registered with DEA in the first year of the implementation of the proposed regulations.

Description of Economic Costs Due to the Proposed Regulations

Cost of Initial Implementation

This analysis includes the costs and benefits for all stakeholders affected by the proposed regulations during 12-month period following full implementation of the proposed regulations in October 2020.

Sampling

Registered growers will be required to pay the commissioner to collect samples prior to harvest. Sampling costs for registered growers will vary based on the number of plantings and approved cultivars to be harvested. The proposed rulemaking will require a separate composite sample be taken of each approved cultivar for each planting.

Estimated costs for sampling conducted by the commissioners would vary because counties generally determine costs based on a standard hourly rate and charge accordingly. In 2017, the County Agricultural Commissioners and Sealers Association conducted a survey of each county's hourly costs related to testing weighing and measuring devices. 30 out of 58 counties responded, with rates ranging from \$42.37 to \$161.28. The statewide average hourly rate from all counties that participated in the survey was \$84.36. However, most of the counties where industrial hemp cultivation will occur are considered rural, where county hourly rates are generally lower than the statewide average hourly rate.

Alternatively, a federally contracted inspector would cost approximately \$152 an hour for sampling according to USDA.

The cost of sampling will also depend on the number and size of the plantings. If a registered grower grows multiple cultivars and/or multiple plantings, a separate composite sample must be taken for each cultivar in each planting. The number of samples to be taken for each composite sample will be based on a calculation formula to ensure the composite sample represents a homogenous composition of the planting.

Given the average planted acreage per grower is 24 acres and assuming that registered growers are only planting one crop using one approved cultivar, it is estimated it would take four hours to collect 22 samples from different plantings as determined by the formula described in CCR 4241(b)(2)(C). Thus, yearly sampling costs for a registered grower is estimated to be between \$337 to \$608.

If the first laboratory test report indicates a percentage content of THC that is greater than the acceptable hemp THC level but does not exceed one percent, additional samples would be collected and tested. CDFA assumes 25% of crops will need additional testing due to a failed initial laboratory test report and the need to delay and/or extend the harvest activities.

The estimate for sampling does not include the sample delivery costs as it widely varies depending on the location of the planting and its proximity to the testing laboratory. Samples can be delivered by the commissioner or registered grower, picked up by the testing laboratory, or mailed to the testing laboratory.

Laboratory Accreditation \ DEA Registration

Although ISO/IEC 17025 accreditation is already common for testing laboratories that offer THC analysis services, a testing laboratory who wishes to test industrial hemp may need to become accredited or at least maintain their existing accreditation. The length of the initial accreditation process and the cost of maintaining accreditation depend on several factors, including the accreditation body used, the scope of the laboratory activities, and the size of lab. The initial accreditation process can be a lengthy process that includes an application review and surveillance assessment by an accreditation assessor. Following the initial accreditation process, laboratories will undergo a two-year cycle to maintain accreditation. Testing laboratories would be required to renew their accreditation every two years.

The CDFA obtained a quote from a well-established accreditation body for \$6,740 for the initial accreditation process. The CDFA's Center for Analytical Chemistry estimates that they spend approximately between \$10,000 to \$12,000 for a two-year accreditation cycle. CDFA estimates accreditation activities for a testing laboratory range between \$5,000 to \$6,740 a year.

DEA registration is required for laboratories who are testing industrial hemp for THC concentration. USDA issued a notice delaying enforcement of the DEA registration requirements for testing laboratories due to the current insufficient capacity in United States for testing hemp until October 31, 2021, or publication of the final rule, whichever occurs first. When DEA registration is required, testing laboratories must renew their registration with DEA each year. The annual application fee for testing laboratories to handle controlled substances is \$244.

Laboratory Testing

Based on quotes from three different cannabis laboratories that are ISO/IEC 17025 accredited in California, estimated testing costs for THC content are approximately \$63 per sample:

Testing Laboratory	Testing Cost Per Sample
Testing Laboratory 1	\$75.00
Testing Laboratory 2	\$70.00
Testing Laboratory 3	\$45.00

USDA estimates that testing conducted by a federally employed lab technician would cost approximately \$155 to \$311 per sample.

Assuming that each registered grower will need testing services once a year, the yearly testing costs is estimated to be between \$63 to \$311 for one planting of one approved cultivar. CDFA assumes 25% of the crops planted will require additional testing due to a failed initial laboratory test report and the need to delay and/or extend the harvest activities.

Harvest / Destruction

Harvesting methods varies based on the type of crop grown. For the purposes of this report, CDFA will use USDA’s estimated harvest costs of \$100 per acre based on the cost of harvesting and transporting hemp grown for fiber according to the University of Kentucky crop enterprise budgets for hemp.

Due to the lack of data on the costs for destruction, USDA estimated destruction costs at \$200 per acre based on their estimated harvest costs. USDA doubled the harvest costs per acre to account for additional oversight and documentation required to demonstrate legal disposal.

Assuming that each registered grower will only harvest or destroy the estimated average planting acreage of 24 acres, the yearly harvest and destruction costs for each registered grower is estimated to be between \$2,400 to \$4,800.

County Staff Training

Commissioners will be responsible for conducting sampling and confirming the planting, testing, harvest and destruction of industrial hemp crops grown by registered growers. County staff would be required to complete the USDA Hemp Sampling Training Module, a simple training that consists of 26 slides. CDFA estimates the training module would take no more than 30 minutes for a county staff member to review.

In addition, county staff will likely need hands-on training during an actual sample collection event. CDFA estimates that sample collection would take four hours to collect 23 samples for an average planting of 24 acres. CDFA also estimates that training county staff to confirm planting, testing, harvest, and destruction would take another four hours. In total, CDFA approximates that each county staff collecting samples and overseeing planting, testing, harvest, and destruction would need 8.5 hours of training.

Currently there are 32 counties that have registered growers that will need county staff to collect samples and confirm the planting, testing, harvest and destruction of their crops. The average number of registrants for each county that is currently registering growers is approximately 16. Based on data collected from counties regarding registration activities in the first growing year, CDFA estimates that each county will need to train approximate 3 staff members in order to meet the additional workload due to the proposed regulations. Each county will therefore spend approximately 25.5 hours on staff training. CDFA assumes that county staff will also need retraining on a year basis in preparation for the growing season. Using the statewide average hourly rate from all counties that participated in the survey (\$84.36), county staff training is projected to be approximately \$2,151 a year for each county.

Cost for County Employee Training	Estimated Direct Costs
25.5 hr staff training/county	\$68,832

Yearly Costs of Implementation of the Proposed Regulations

CDFA estimates the direct costs for registered growers for registration, sampling, testing, harvest and/or destruction to be between \$1,995,000 to \$3,595,594 for the first year.

Cost for Registered Growers	Estimated Direct Costs	RMS II Multiplier	Projected Economic Impact
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Registration Fees	\$472,500	2.0168 ¹	\$952,938
Sampling	\$221,156 – 399,000	2.0168 ¹	\$446,027 – 804,703
Testing	\$41,344 – 204,094	2.1787 ²	\$90,076– 444,660
Harvest/Destruction	\$1,260,000 – 2,520,000	2.0168 ¹	\$2,541,168 – 5,082,336
Total Costs for Registered Growers	\$1,995,000 – 3,595,594		\$4,030,209– 7,284,637

Testing laboratories will be required to renew their ISO 17025 accreditation every two years, and DEA registration every year. Although it is unknown how many testing laboratories are interested in offering testing services for industrial hemp, there are currently 34 cannabis testing laboratories licensed under the Bureau of Cannabis Control that are ISO/IEC accredited. Assuming that there will be approximately the same number of testing laboratories available for industrial hemp as there are for cannabis testing, CDFA estimates the direct cost for testing laboratories conducting THC analysis for industrial hemp to be between \$178,000 and \$238,000 each year.

Cost for Testing Laboratories	Estimated Direct Costs	RMS II Multiplier	Projected Economic Impact
ISO/IEC 17025 Accreditation	\$170,000 – 229,160	2.1787 ²	\$370,379– 499,271
DEA Registration	\$8,296	2.1787 ²	\$18,075
Total Costs for Testing Laboratories	\$178,296 – 237,456		\$388,454– 517,346

CDFA estimates the direct costs to commissioners for training staff to collect samples and confirm the planting, testing, harvest, and destruction of industrial hemp grown by registered growers to be approximately \$68,832 each year for all 32 currently active counties. CDFA anticipates filling one vacant Environmental Scientist position as a 24-month limited term to handle the additional workload. The incurred cost for the additional staff member is estimated to be approximately \$67,290 a year.

CDFA anticipates the number of registered growers to gradually increase in the next five years under the proposed regulations due to the profitability of CBD production and federal legalization of industrial hemp. However, there is no available data at this time to estimate the increase in registration activities. California had a total of 664 registered growers in the first year of registration. Grower registration has since decreased as a result of more stringent statutory requirements for cultivation and the surplus of existing harvested industrial hemp material. Thus, the estimated direct and benefits costs are projected to remain the same for the next five years.

Benefits of the Proposed Regulations

The goal of the proposed regulations is to allow currently registered growers obtain the laboratory test report needed in order to harvest and prevent the harvest of non-compliant crops. USDA estimates the average gross revenue per acre of hemp is between \$2,443 and \$25,682. With 100% sales and no destruction of crop due to non-compliance, the potential gross revenue for the 525 currently registered

¹ RMS II, Other crop farming 111900, Output

² RMS II, 50-Professional, scientific, and technical services, Output

growers ranges from \$30,781,800 to \$323,593,200. CDFA believes that the potential gross revenue for registered growers in California is realistically much lower. Several states have indicated that growers have not been able to sell a significant amount of the hemp grown for various reasons. The following table outlines the percentage of hemp grown in 2019 in various states that have not been sold:

State	Percentage of 2019 Hemp Crops Grown That Remains Unsold
Maryland	70%
Michigan	53%
Wisconsin	94%

In addition, the Kentucky Department of Agriculture reported that approximately 19% of the hemp crop grown in 2020 exceeded the 0.3% THC threshold, while the Arizona Department of Agriculture has reported that nearly 40% of the hemp crop grown to date had to be destroyed due a failed THC test report.

Assuming that conservatively 15% of the crop grown in California will be destroyed due to laboratory test reports indicating a THC concentration that exceeds the acceptable hemp THC level and approximately 50% of the crop will remain unsold, CDFA estimates the potential gross revenue for the 525 currently registered growers to range between \$10,773,630 and \$113,257,620. Based on the estimated potential gross revenue, the projected sales tax revenue estimated at 7.25 % from sales of hemp in California in the first year of implementation of the proposed regulations is expected to range from \$781,088 to \$8,211,178. Based on 525 registered growers in California and the projected gross sales range with a multiplier of 14.667³ per million dollars, CDFA also expect an increase of between 147 and 1,657 jobs in the first year.

Without the proposed regulations, current registered growers would not be able to harvest and instead would be required to destroy their crops. Destruction of all currently planted crops is estimated to cost approximately \$2,520,000.

The proposed regulations will also impact the revenue CDFA collects through registration and renewal fees. CDFA currently collects approximately \$472,500 in fees to cover the actual costs of implementing, administering, and enforcing the provisions of FAC Division 24. Without the proposed regulations, CDFA expects no new hemp grower registrations, resulting in a lost revenue of \$472,500 to support the Industrial Hemp Program.

Benefits	Estimated Direct Impact	RMS II Multiplier	Projected Economic Impact
Registration Fees	\$472,500	2.0168 ¹	\$1,019,702
Gross Revenue	\$10,773,630 – 113,257,620	2.0168 ¹	\$22,748,520 – 239,143,465
Income Increase		0.57954 ⁴	\$6,243,319 – 65,632,791
Crop Destruction Savings	\$2,520,000	2.0168 ¹	\$5,082,336

³ RMS II, Other crop farming 111900, Employment

⁴ RMS II, Other crop farming 111900, Earnings

Total Benefits	\$13,766,130 – 116,250,120	\$35,093,877– 310,878,294
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If the proposed regulations are not in place, California will not be able to submit a state regulatory plan to USDA for review and approval in compliance with the 2018 Farm Bill. If a state does not have an approved plan by October 31, 2020, the state will be subjected to the federal regulatory plan.

Regardless of any federal requirements, all hemp growers in California must comply with existing state laws and regulations. This may cause issues for registered growers as existing law was amended by SB 1409 prior to the establishment of the federal interim final rule and there are incongruencies between state and federal requirements. Non-compliance with federal law could put growers that have registered with the commissioners at risk of federal enforcement action.

Fiscal Impact to State and Local Government Attributable to the Proposed Regulations

Assuming the total hemp sales revenue to range between \$10,773,630 – 113,257,620, the projected sales tax revenue estimates at 7.25 % from sales of hemp in California in the first year of implementation of the proposed regulations range from \$781,088 to \$8,211,178. This would result in an economic impact between \$1,575,298 to 16,560,302 using the RMS II, Other crop farming 111900, Output multiplier. In addition, CDFA anticipates collecting approximately \$472,500 in registration fees each year as a result of this regulation, assuming that registration activities will remain constant year to year.

The proposed regulations will require commissioners to collect samples and oversee hemp planting, sampling, testing, harvest, and destruction activities in their county. Local costs for such activities can be recouped directly from the registered grower by the commissioner. FAC Section 81005(c) authorizes the county to establish a fee in a necessary amount to cover actual costs of the commissioner and county for implementing, administering, and enforcing the requirements for industrial hemp cultivation.

The proposed regulations will require CDFA to develop and implement forms and templates for registered growers, testing laboratories, and commissioners to use as well as guidance documents to inform stakeholders of the new requirements for industrial hemp planting, sampling, testing for THC concentration, harvest and destruction. CDFA will also be required to establish a review and approval process for testing laboratories interested in conducting testing on industrial hemp for THC concentration.

As a result, CDFA anticipates filling one vacant Environmental Scientist position to handle the additional workload. The incurred cost for the additional staff member, estimated to be approximately \$67,290 for each year, will be recouped through registration and renewal fees.

Alternatives Considered

Below are two alternatives CDFA considered for the proposed regulations:

- **Alternative 1 – Allow Registered Growers to Collect Samples for THC Testing**

CDFA considered allowing the registered grower to collect their own samples to minimize the sampling costs to registered growers. Growers would be responsible to collect samples in accordance with the proposed sampling requirement and deliver the samples to the testing laboratory for THC analysis.

The alternative would provide registered growers more flexibility than the proposed regulations because they would be able to use other resources like farmworkers and testing laboratories to collect samples. The USDA Economic Research Service estimated the hourly wage for all farm occupations in 2019 to be approximately \$14.91. CDFA estimates that it would take approximately four hours to collect the required 23 samples for a crop size of 24 acres. It would cost a registered grower approximately \$60 to hire farmworkers to collect samples.

Alternatively, some testing laboratories offer sampling services in addition as well. Due to the limited data available on the sampling fees, sampling costs to use a testing laboratory is estimated to be approximately \$210 based on an estimate CDFA obtained from a testing laboratory. The estimated costs include an estimated mileage cost of \$110, assuming the average trip would be approximately 200 miles to account for plantings in rural areas.

This alternative would result in a total annual cost for growers between \$1,805,344 and \$3,301,594. The total economic impact would range between \$3,641,018 and \$6,658,655.

Cost for Registered Growers	Estimated Direct Costs	RMS II Multiplier	Projected Economic Impact
Registration Fees	\$472,500	2.0168 ²	\$952,938
Sampling	\$31,500 – 110,250	2.0168 ¹	\$63,530 – 222,352
Testing	\$41,344 – 204,094	2.1787 ⁵	\$90,076– 444,660
Harvest/Destruction	\$1,260,000 – 2,520,000	2.0168 ¹	\$2,541,168 – 5,082,336
Total Costs for Registered Growers	\$1,805,344 – 3,306,844		\$3,647,712– 6,702.286

Compared to the sampling costs associated with the proposed regulations, the registered growers would potentially save between \$189,656 and \$294,000 per year in direct costs using alternative samplers instead of the county staff. The total benefits compared to the proposed regulation would remain unchanged.

Although this alternative would, if feasible, prove more cost effective for registered growers, it was abandoned because of concerns regarding regulatory action, specifically crop destruction, based on samples not taken by a regulatory official. This alternative would necessitate additional sampling and testing conducted by the commissioner to confirm THC results before abatement of the crop. Additional sampling and testing would cause delays in destruction enforcement that would increase the likeness for the illegal harvest of the crop. In addition, this

² RMS II, Other crop farming 111900, Output

⁵ RMS II, 50-Professional, scientific, and technical services, Output

alternative likely would conflict with amended federal requirements. USDA’s current sampling guidelines prohibit growers from collecting testing samples themselves.

- **Alternative 2 – Require Bureau of Cannabis Control License for Testing Laboratories**

CDFA considered requiring the use of testing laboratories licensed by the Bureau of Cannabis Control (BCC). A Testing Laboratory license issued by BCC allows a laboratory in the state of California to offer or perform testing of cannabis goods. Testing laboratories under the BCC license must obtain and maintain ISO/IEC 17025 accreditation. BCC-licensed laboratories were considered because the laboratories had already gone through a vetting process to conduct THC analysis on cannabis material.

The cost of a BCC testing laboratory license varied between \$3,000 to \$112,000, depending on the estimated annual gross revenue of the testing laboratory. Based on the number of testing laboratories currently licensed by the BCC and using the previously stated estimated cost for ISO/IEC accreditation, the total annual costs for testing laboratories under this alternative would range between \$280,296 to \$4,045,456. This alternative would result in an additional \$610.681– 8,813.836 in costs for the testing laboratories and the economy. The total benefits compared to the proposed regulation would remain unchanged.

Cost for Testing Laboratories	Estimated Direct Costs	RMS II Multiplier	Projected Economic Impact
ISO/IEC 17025 Accreditation	\$170,000 – 229,160	2.1787 ²	\$370,379 – 499,271
DEA Registration	\$8,296	2.1787 ²	\$18,075
BCC License	\$102,000 – 3,808,000	2.1787 ²	\$222,227 – 8,296,490
Total Costs for Testing Laboratories	\$280,296 – 4,045,456		\$610.681– 8,813.836

However, this alternative was abandoned because the alternative would cause an unnecessary financial burden on the testing laboratories. Although BCC regulates licensed laboratories for cannabis testing, the BCC would be unable to provide any regulatory oversight for industrial hemp testing activities.

CDFA determined that simply requiring ISO/IEC 17025 accreditation would provide both the confidence in the testing laboratories that are performing THC testing and quality assurance in the test results. The ISO/IEC 17025 standard is also an internationally recognized and widely accepted confirmation of testing competency. Generally, ISO-accreditation would ensure that testing methods used by testing laboratories meet the following federal standards:

- Laboratory quality assurance must ensure the validity and reliability of test results,
- Analytical method selection, validation, and verification must ensure that the testing method used is appropriate and that the laboratory can successfully perform the testing,
- Demonstration of the testing validity must ensure consistent, accurate analytical performance, and

Method performance specifications must ensure analytical tests are sufficiently sensitive for the purposes of detectability requirements.

Regulatory Impact on California Jobs through Implementation of Proposed Regulations

It is anticipated that the proposed regulations would result in the creation of new jobs in California, although the number is unknown. In 2017 the hemp pilot program in Kentucky resulted in 81 new full-time jobs based on 249 licensed growers, according to a Kentucky Department of Agriculture press release dated April 3, 2018. Based the projected gross sales range with a multiplier of 14.667² per million dollars, CDFA expect an increase in jobs in the first year to be between 147 and 1657.

CDFA does not anticipate any reduction of jobs due to the proposed regulation being implemented.

Impacts on California Due to Implementation of Proposed Regulations

Creation or loss of California businesses

It is anticipated that the establishment of the proposed regulations will impact the creation of new businesses and the expansion of businesses in California. Although CDFA projects that the number of registered growers will remain consistent in the near term, with some addition and some attrition, CDFA anticipates an increase in demand for industrial hemp processors and manufacturers as registered growers are able to harvest their crop due to the proposed regulations. In Kentucky, there are currently 42 registered hemp processing companies. These all represent new businesses or the expansion of preexisting businesses. Because the number of expected licensed growers in California is similar to that of Kentucky in 2017, CDFA expects similar growth of businesses in California.

CDFA does not anticipate any reduction of businesses due to the proposed regulation being implemented.

Competitive advantages or disadvantages to California Businesses

Without the proposed regulations, registered growers will not be able to obtain test results and harvest their crop. This would limit the amount of domestic hemp available to processors and manufacturers and result in higher prices to California consumers if California is not contributing to the domestic hemp supply.

The implementation of the proposed regulations will affect all testing laboratories interested in conducting testing on industrial hemp for THC concentration, regardless of their geographical location. There is no anticipated out of state competition, advantage, or disadvantage to California testing laboratories since the requirements are applicable to any testing laboratory that is interested in testing industrial hemp for THC concentration.

Benefits for California Residents

The proposed regulation will help improve the health and safety of Californians by protecting the public and environment from illegal cannabis cultivation activities. The proposed regulations will provide the necessary oversight to ensure that registered growers are cultivating a crop that meets the definition of industrial hemp. The lack of oversight may lead to the cultivation of cannabis under the guise of industrial hemp.

Changes to Investment within California

The implementation of new federal and state regulations regarding hemp cultivation is likely to increase the stability of the hemp market in the next 12 months. In addition, increase in processing capacity to meet consumer demands will likely result in increased marketability of hemp raw product. Therefore, CDFA anticipates there will be more interest in investing in industrial hemp businesses within California following the implementation of the proposed regulations, but the ongoing changes mentioned above render past data useless for predicting future trends. The proposed regulations will harmonize state cultivation requirements with federal interim final rule and provide a pathway for current registered growers to harvest their industrial hemp crop.

Potential for Innovation in Products, Materials, and Processes

The implementation of the proposed regulations will potentially lead to innovation in the cultivation, harvesting, processing, and manufacturing of industrial hemp in California. Currently, hemp is mainly cultivated for CBD production. Hemp breeders are in pursuit to develop hemp cultivars that can provide the highest yields of CBD, but CDFA also expects to see the development of cultivars for other cannabinoids.

There is likely a demand for efficient harvesting methods due to the shorter harvest timeframe for hemp flowers (a short harvest window is best for CBD production to avoid loss of quality due to overmaturity or inclement weather), as compared to fiber or seed production when longer harvest windows do not result in loss of quality. Currently, most crops grown for CBD production are hand-harvested because of the lack of harvesting equipment that can effectively harvest hemp flowers.

According to the Congressional Research Service, there are over 25,000 different types of hemp products. Processing and manufacturing practices are expected to rapidly change to meet the needs and trends of the growing industry.

Total Costs and Benefits in Dollar Amounts – Total Costs

The costs of implementing the regulations in the first year is estimated to range between **\$4,554,791** and **\$7,938,111**. The aggregated cost includes direct costs to growers for sampling, testing, harvest and/or destruction, accreditation and registration costs for testing laboratories, training costs to commissioners, and staffing costs to CDFA.

Industry	Estimated Costs
Registered Growers	\$4,030,209– 7,284,637
Testing Laboratories	\$388,454-517,346
Commissioners	\$68,838
CDFA	\$67,290
Total	\$4,554,791 – 7,938,111

Total Costs and Benefits in Dollar Amounts – Total Benefits

Using the estimated of the benefits to accrue to the state of California due to these regulations, it is estimated that the implementation of these regulations will result in a total economic benefit between \$35,093,877 to \$310,878,294 in the first year. This includes potential gross revenue for growers, elimination of the cost to destroy existing crops in the absence of the proposed regulation, and registration fees to be collected by CDFA. Additional benefits include the creation of 147 to 1,657 jobs, the ability of California to submit a state regulatory plan to USDA in accordance to the 2018 Farm Bill, and alleviating risk to growers of falling into non-compliance with federal law.

Benefits	Estimated Impact
Registration Fees	\$1,019,702
Gross Revenue	\$22,748,520 – 239,143,465
Income Increase	\$6,243,319 – 65,632,791
Crop Destruction Savings	\$5,082,336
Total Benefits	\$35,093,877 – 310,878,294

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