SB 2175 SD1

Measure Title: RELATING TO INDUSTRIAL HEMP.

Report Title: Two-year Industrial Hemp Remediation and Biofuel Crop Research Program

Description: Authorizes the dean of the college of tropical agriculture and human resources at the University of Hawaii at Manoa to establish a two-year industrial hemp remediation and biofuel research program. (SD1)

Companion: HB2358

Package: None

Current Referral: AGL/PSM, CPN/JDL

Introducer(s): GABBARD, ESPERO, Baker, Chun Oakland, Green, Nishihara, L. Thielen

HOUSE OF REPRESENTATIVES

STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

TO: Senator Rosalyn H. Baker, Chair, Commerce & Consumer Protection
Senator Clayton Hee, Chair, Judiciary and Labor

HEARING: Tuesday, February 25, 2014 at 10:15 A.M. in Conference Room 229

FROM: Representative Cynthia Thielen

RE: Testimony in Support of SB2175 relating to Industrial Hemp with Amendment

I am writing in support of Senate Bill 2175 Senate Draft 1 requesting that the Bill be amended to include a legal definition of industrial hemp. Upon reviewing Section 7606 of the Federal Farm Act of 2014 relating to the Legitimacy of Industrial Hemp Research and the laws of eight states (Colorado, Maine, Montana, North Dakota, Oregon, Vermont, Washington and West Virginia) which have defined industrial hemp as distinct and removed barriers to its production, it is readily apparent that a legal definition for the crop is needed. The most common definitions include language which states that **the term "industrial hemp" means the plant Cannabis sativa L. and any part of such plant, whether growing or not, with a delta-9-tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis.** A proposed SB 2175 Senate Draft 2 including defining language drafted by the Legislative Reference Bureau is attached to this testimony for the Committees' reference.

Thank you for the opportunity to testify on this measure. I hope your Committees will consider including language from SB2175 SD2 (Proposed).

Enclosure: (1) Senate Bill 2175 Senate Draft 2 (Proposed)

THE SENATE
TWENTY-SEVENTH LEGISLATURE, 2014
STATE OF HAWAII

S.B. NO. 2175 S.D. 2 Proposed

A BILL FOR AN ACT

RELATING TO INDUSTRIAL HEMP.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that section 7606 of the United States Agricultural Act of 2014 authorizes institutions of higher education and state departments of agriculture to conduct industrial hemp research. The legislature also finds that industrial hemp can be grown or cultivated for research purposes.

The legislature further finds that the State will benefit from research for phytoremediation, which is the environmentally-friendly science of using plants and trees to remove toxins in the soil, such as metals, pesticides, solvents, explosives, and crude oil. These toxins can be reduced by planting specific plants and trees, called hyper-accumulators, in polluted areas. Specifically, these plants and trees draw in the toxins, along with beneficial nutrients, through their roots as nourishment and concentrate them in their stems, shoots, and leaves, which can then be harvested and disposed of safely. The nutrient uptake process leaves a clean, balanced, and nutrient

rich soil, which can then be safely used for agriculture or improving conservation habitats.

The legislature also finds that hemp is a superior phytoremediator because it grows quickly and can extract toxins without the need to remove any of the contaminated topsoil. Other factors that make hemp a superior phytoremediator are its ability to grow unaffected by the toxins it accumulates, its fast rate of absorption, and its ability to bind compound contaminants from the air and the soil. A factor that makes the State a particularly compelling candidate for hemp-based phytoremediation is that the State's extensive agricultural operations in the past have left toxins in vast tracts of land. Phytoremediation will remove those toxins.

The legislature also finds that industrial hemp is an environmentally friendly and efficient feedstock for biofuel. Biodiesel plants already in existence in the State are capable of meeting eight per cent of the State's biodiesel needs for ground transportation. These biodiesel plants could increase their efficiency by utilizing industrial hemp as a feedstock, thus reducing the State's reliance on imported fuel.

The purpose of this Act is to authorize the dean of the college of tropical agriculture and human resources at the

University of Hawaii at Manoa to establish a two-year industrial hemp remediation and biofuel crop research program.

SECTION 2. (a) The dean of the college of tropical agriculture and human resources at the University of Hawaii is authorized to establish the two-year industrial hemp remediation and biofuel crop research program. Through the research program, the dean may determine how soils and water may be made more pristine and healthy by phytoremediation, removal of contaminants, and rejuvenation through the growth of industrial hemp, as well as the viability of industrial hemp as a biofuel feedstock. The dean may work in collaboration with the United States Army Corps of Engineers, its affiliates, and the Department of Molecular Biosciences and Bioengineering at the University of Hawaii John A. Burns school of medicine to determine the viability of industrial hemp as a biofuel feedstock.

(b) The dean of the college of tropical agriculture and human resources at the University of Hawaii may submit a final report, including any proposed legislation, to the legislature no later than twenty days prior to the convening of the regular session of 2016 on the following:

(1) The rate of contamination uptake from soil and water;

(2) The mode of efficient uptake from soil and water;

(3) The rate of carbon fixation in the Calvin cycle;

(4) The locations in the roots, stems, leaves, and flowers of the plants at which contaminants are fixated;

(5) What contaminants are stabilized in the plants;

(6) What contaminants on the site need additional treatment in order to make the soil or water healthy and pristine;

(7) A baseline for plants cultivated in a clean soil;

(8) The viability of industrial hemp as a biofuel feedstock; and

(9) Any other data deemed important by the dean.

(c) For purposes of this Act, the term "industrial hemp" means the plant Cannibis sativa L. and any part of that plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 per cent on a dry weight basis. Any plant that meets the definition of "industrial hemp" under this Act shall not constitute "marijuana" as defined in sections 329-1 or 712-1240, Hawaii Revised Statutes.

SECTION 3. No person shall be subject to any civil or criminal sanctions in this State for growing or possessing industrial hemp; provided that the person's growing or

possessing of industrial hemp is part of the individual's participation in the two-year industrial hemp remediation and biofuel crop research program and the person's participation is in full compliance with the requirements of the program.

SECTION 4. This Act shall take effect on July 1, 2014, and shall be repealed on July 1, 2016.

S.B. NO. 2175 S.D. 2 Proposed

Report Title:
Two-year Industrial Hemp Remediation and Biofuel Crop Research Program

Description:
Authorizes the dean of the college of tropical agriculture and human resources at the University of Hawaii at Manoa to establish a two-year industrial hemp remediation and biofuel research program. (SD2 Proposed)

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

Pacific Biodiesel Technologies
40 Hobron Avenue
Kahului, Hawaii 96732
(808) 877-3144
(808) 877-5030 Fax
www.biodiesel.com

February 21, 2014

Senator Rosalyn Baker, Chair
Senator Brian Taniguchi, Vice Chair
COMMITTEE on COMMERCE AND CONSUMER PROTECTION

Senator Clayton Hee, Chair
Senator Maile Shimabukuro, Vice Chair
COMMITTEE ON JUDICIARY AND LABOR

HEARING: Tuesday, Feb. 25, 2014, 10:15am, Conference Room 229

Re: **In support of SENATE BILL 2175, SD1 relating to Industrial Hemp**

Dear Chairs Baker and Hee, Vice-Chairs Taniguchi and Shimabukuro and Committee Members,

Pacific Biodiesel Technologies (PBT) wholeheartedly supports Senate Bill 2175, SD1 which would establish a two-year industrial hemp remediation and biofuel crop pilot program.

As Hawaii's only commercial biofuel production company, PBT has for over a decade been exploring a wide range of potential new feedstocks beyond the state's current supply of waste vegetable oil. We are currently engaged in a federally funded biofuel crop demonstration project, working closely with the U.S. Army Corps of Engineers as our sponsoring agency, to determine viable biofuel crops for Hawaii and develop production models that we can share with local farmers. The PBT farming team has been using cover crops and such in the successful rehabilitation of previously mono-cropped agricultural lands for our current project. It was our desire, with support from our military sponsors, to include hemp in our crop trials; however, we encountered the roadblock of severe requirements due to its designation as a narcotic, which we believe is now widely known to be erroneous.

Hawaii can absolutely be at the forefront of the hemp industry which offers such promise to the revitalization of rural America. In order for Hawaii's law to be compatible with federal legislation, we suggest adding the following definition of Industrial Hemp as stated in the Farm Bill:

"INDUSTRIAL HEMP- The term `industrial hemp' means the plant *Cannabis sativa L.* and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis."

If the legislature passes SB2175, SD1, Pacific Biodiesel would be interested in partnering with UH CTAHR to help reduce costs for the phytoremediation trials. We are currently seeking additional federal funding to include fuel crop trials in Waimea on the island of Hawaii; the PBT team is happy to collaborate using our resources and farming experts.

We believe that when hemp is eventually legalized nationwide, Hawaii will be the ideal place to develop this crop into its incredible potential for soil remediation, food, fuel, building materials, clothing, skin care products, etc. Please pass SB2175, SD1, effective on the earliest possible date.

Sincerely,

Kelly T. King

Kelly King, Vice President
ktk@biodiesel.com

UNIVERSITY OF HAWAI'I SYSTEM
Legislative Testimony

Written Comments to the
Senate Committee on Commerce and Consumer Protection
and
Senate Committee on Judiciary and Labor
Tuesday,Feb ruary 25, 2014 at 10:15 am
by
Maria Gallo,Dean
College of Tropical Agriculture and Human Resources
University of Hawai'i at Mānoa

SB 2175 SD1 – RELATING TO INDUSTRIAL HEMP

Chairs Baker and Hee, Vice Chairs Taniguchi and Shimabukuro,and members of the Senate Committee on Commerce and Consumer Protection and Senate Committee on Judiciary and Labor,tha nk you for this opportunity to testify on SB 2175 SD1, which would authorize the Dean of the College of Tropical Agriculture and Human Resources at the University of Hawai'i at Mānoa to establish a two-year industrial hemp remediation and biofuel research program.

We are not aware of compelling evidence of hemp as superior to other legal crops in accumulating toxins, nor of hemp as a superior source of cellulosic biofuels in comparison with legal grasses under investigation for this purpose. However, limited information is available on hemp due to its illegal status in the United States and limited cultivation elsewhere.Prio r to 1938, hemp was an important source of paper pulp, but has subsequently been eclipsed by the forestry pulp industry.

While we appreciate the intent of the SD1 version of this bill to investigate new crops of potential value to Hawai'i, CTAHR has no internal resources to dedicate to a program of industrial hemp research, nor plans to establish such a program. SB 2175 SD1 appropriates no funds for this purpose.

However, should extramural funds be made available to faculty within CTAHR, and those faculty are able to comply with applicable state and federal regulations, we are supportive of all legally compliant crop research. We must note that although federal regulations may have been eased by passage of the Farm Bill, hemp is classified as a controlled substance under Chapter 329-1 of the Hawai'i Revised Statutes. Again, so long as the Hawai'i Department of Public Safety and the Department of Agriculture are prepared to facilitate research on hemp, and faculty who wish to conduct such research are in legal compliance, such research is perfectly permissible.

Thus, we believe that SB 2175 SD1 is unnecessary, since this research is allowable without it. No authorization by the legislature is necessary for legal faculty research, and no plans nor resources currently exist to establish a hemp research program at the college level.

February 24, 2014

Testimony of Vote Hemp for SB 2175
Hemp in Hawaii
Testimony of Tom Murphy
Vote Hemp National Outreach Coordinator
in support of SB 2175

Senator Rosalyn H. Baker, Chair
Committee on Commerce and Consumer Protection
Senator Clayton Hee, Chair
Committee on Judiciary and Labor
Hawaii State Legislature

Vote Hemp recommends that the Committees vote to pass SB 2175, which authorizes the growing of industrial hemp for certain purposes under specified conditions.

Significant progress has been made on industrial hemp policy in 2014. On February 7th President Obama signed the Farm Bill, which contains an amendment to legalize hemp production for research purposes in the U.S. The amendment, Section 7606 - Legitimacy of Industrial Hemp Research, allows State Agriculture Departments, colleges and universities to grow hemp, defined as the non-drug oilseed and fiber varieties of *Cannabis*, for academic or agricultural research purposes, but it applies only to states where industrial hemp farming is already legal under state law. This is the first time in U.S. history that industrial hemp has been legally defined by the federal government as distinct from drug varieties of *Cannabis*. The full text of the bill may be found at: http://www.votehemp.com/FarmBill

Also, on January 14th the American Farm Bureau Federation adopted a new resolution on industrial hemp at its 95th annual meeting. The policy resolution urges the repeal of the classification of industrial hemp as a controlled substance. The effort was lead by the Indiana Farm Bureau. The resolution, which falls under the "we oppose" category, reads:

"*The classification of industrial hemp as a controlled substance.*"

The Farm Bureau previously passed a policy resolution supporting industrial hemp research in 1995, which read:

"*We recommend that [the] American Farm Bureau Federation encourage research into the viability and economic potential of industrial hemp production in the United States. We further recommend that such research includes planting test plots in the United States using modern agricultural techniques.*"

- Industrial hemp is an agricultural crop.
- Industrial hemp is varieties of *Cannabis* that are low in THC and high in CBD.
- Oilseed and fiber varieties of *Cannabis* are also known as industrial hemp.
- You can not get drugs from oilseed or fiber varieties of *Cannabis*.

• Oilseed, fiber, and drug varieties of *Cannabis* are grown at different densities.
• Drug varieties of *Cannabis* can not be grown with oilseed or fiber varieties without being easily spotted.
• Drug varieties are grown much like a Christmas tree farm, with its spacing, pruning and early harvest, whereas the oilseed and fiber varieties are grown more like pulp wood trees.
• Drug varieties grown in the middle of a fiber hemp crop would become seeded. A fiber crop is harvested when the males shed their pollen, so the pot grower would be left with a seeded buds (the female flowers) in the middle of a field of stubble.
• Drug varieties grown in the middle of an oilseed hemp crop would become seeded as well. The female help plants would become pollinated, along with the pot, and the male hemp plants would die. As the seeds ripen in the hemp the pot would become more obvious because it's still green and a much lower density.

Learn more in our white paper "Different Varieties Of *Cannabis*" at:
http://www.votehemp.com/different

So far in the 2014 legislative season industrial hemp legislation has been introduced or carried over in sixteen states: Arizona, Hawaii, Illinois, Indiana, Maryland, Mississippi, Nebraska, New Jersey (carried over from 2013), New York, Oklahoma, South Carolina, South Dakota, Tennessee, Washington (two bills were carried over from 2013), West Virginia, and Wisconsin. You can keep track of all state hemp legislation on Vote Hemp's State Hemp Legislation Page:

http://www.votehemp.com/state.html

Two industrial hemp bills have been introduced in the 113th Congress so far. H.R. 525, the "Industrial Hemp Farming Act of 2013," was introduced in the U.S. House on February 6, 2013 by Rep. Tom Massie. A companion bill, S. 359, was introduced in the U.S. Senate on February 14, 2013 by Senator Ron Wyden. Senate Republican Leader Mitch McConnell is an original cosponsor. The bills define industrial hemp, exclude it from the definition of "marihuana" in the Controlled Substances Act, and gives states the exclusive authority to regulate the growing and processing of industrial hemp under state law. Full details of both bills are here:

http://www.votehemp.com/federal.html

In early 2013 the Hemp Industries Association (HIA), a non-profit trade association consisting of hundreds of hemp businesses, released final estimates of the size of the U.S. retail market for hemp products. The HIA reviewed sales of clothing, auto parts, building materials and various other products, and it estimates that the total retail value of hemp products sold in the U.S. in 2012 to be at least $500 million.

Steady growth in hemp product sales, combined with a substantial increase in acreage in Canadian hemp fields further validates U.S. farmers' concerns that they are being shut out of the lucrative hemp market that Canadian farmers have cashed in on for over a

decade now. Canadian farmers grew a record 66,700 acres of hemp in 2013, which compares with about 54,000 acres the previous year, according to Health Canada data.

Industrial hemp would make a great addition to Hawaii's rural economy.

There is an international exemption for industrial hemp:

The United Nations Single Convention on Narcotic Drugs, 1961 as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, 1961 states in Article 28:

"2. This Convention shall not apply to the cultivation of the cannabis plant exclusively for industrial purposes (fibre and seed) or horticultural purposes."

The United States is a party to the Single Convention.

There are exemptions for hemp products in the U.S as well:

In the Controlled Substances Act, 21 USC Section 802 - Definition (16) states:

"The term "marihuana" means all parts of the plant Cannabis sativa L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds or resin. *Such term does not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture, or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination.*" (Italics added.)

In writing the Controlled Substances Act, and its predecessor the Marihuana Tax Act, it was the clear intent of Congress to exempt the products stated. It was also the intention of Congress that hemp would continue to be grown in the U.S.

Hemp was grown in the United States until 1957, with the last crop being grown in Wisconsin for the Matt Rens Hemp Company as documented in Dennis Rens' self published book "America's Hemp King."

In December 1999 the first hemp seeds were planted in the Hawaii Industrial Hemp Project managed by Dr. Dave West of GamETec. Hemp was grown on a research basis in this project until 2003.

The National Farmers Union (NFU) passed a resolution in 2010 urging "the President, Attorney General and Congress to direct the U.S. Drug Enforcement Agency (DEA) to differentiate between industrial hemp and marijuana and adopt policy to allow American farmers to grow industrial hemp under state law without requiring DEA licenses."

The National Association of State Departments of Agriculture (NASDA) passed a resolution in 2003 urging the U.S. Department of Agriculture, the Drug Enforcement Administration and the White House Office of National Drug Control Policy (ONDCP or Drug Czar's office) to collaboratively develop and adopt an official definition of industrial hemp, and urged Congress to statutorily distinguish between industrial hemp and marijuana and to adopt policies which would allow U.S. farmers to grow industrial hemp.

The National Conference of State Legislatures (NCSL) adopted a resolution in 2000 strongly urging the U.S. Department of Agriculture, the Drug Enforcement Administration and the Office of National Drug Control Policy (Drug Czar's office) to collaboratively develop and adopt an official definition of industrial hemp. This is a strong statement for common sense as the NCSL is widely respected and regarded for its conservative and prudent approach on a variety of issues.

With its multiple growing seasons, Hawaii is in a unique position to do research on hemp for seed breeding purposes under Section 7606 of the 2014 Farm Bill. Varieties developed in Hawaii could be of benefit to clean up sites across the U.S. and the world.

Hawaii should be a leader in the research and development of industrial hemp. I hope that this legislation is passed for the good of all people in the state of Hawaii and to help bring back hemp farming to the U.S.

Vote Hemp recommends that the Committees vote to pass SB 2175.

Thank you very much for the opportunity to present my testimony to the Committee. If I may provide any other information to help in the passage of this bill please feel free to contact me and I will do what I can to help.

Sincerely,

Tom Murphy
National Outreach Coordinator
Vote Hemp
http://www.votehemp.com/
tom@votehemp.com
207-542-4998 cellular
207-236-3137 office

Additional resources:

Vote Hemp http://www.votehemp.com
Download Center http://www.votehemp.com/download_center.html
State Hemp Legislation http://www.votehemp.com/state.html

Hawaii State Page http://www.votehemp.com/state/hawaii.html
Resolutions Page http://www.votehemp.com/resolution.html
Canadian Federal Regulation & Legislation Information
http://www.votehemp.com/canada.html
State Hemp Study Bills http://www.votehemp.com/study.html
Farmers Introduction to Industrial Hemp Farming and Hemp Economics
http://www.votehemp.com/farmers.html

Hemp Industries Association
http://thehia.org/

TestPledge
http://www.testpledge.com/

Canadian Industrial Hemp regulations
hhttp://laws-lois.justice.gc.ca/eng/regulations/SOR-98-156/FullText.html

Alberta Agriculture and Rural Development - Industrial Hemp Production in Canada
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/econ9631

Alberta Agriculture and Rural Development - Alberta Hemp Cost of Production and Market Assessment - Final Report
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/econ14086

Health Canada
List of Approved Cultivars for the 2013 Growing Season
http://www.hc-sc.gc.ca/hc-ps/pubs/precurs/list_cultivars-liste2013/index-eng.php

Hemp as an Agricultural Commodity
by Renée Johnson
Congressional Research Service (CRS)
order code RL32725
February 14, 2013
(PDF file 521k)
http://votehemp.com/CRS

President Obama Signs Farm Bill with Amendment to Allow Industrial Hemp Research
http://www.votehemp.com/PR/2014-02-07-vh_farm_bill_signed.html

Farm Bureau Passes Policy Urging Removal of Industrial Hemp Classification as Controlled Substance
http://www.votehemp.com/PR/2014-01-22-vh_Farm_Bureau_hemp.html

As Momentum Builds for Policy Change, U.S. Market for Products Made from Industrial Hemp Continues to Thrive
http://thehia.org/PR/2013-02-25-hia_$500_million_annual_sales.html

SEC. 7606. LEGITIMACY OF INDUSTRIAL HEMP RESEARCH.

(a) IN GENERAL.—Notwithstanding the Controlled Substances Act (21 U.S.C. 801 et seq.), the Safe and Drug-Free Schools and Communities Act (20 U.S.C. 7101 et seq.), chapter 81 of title 41, United States Code, or any other Federal law, an institution of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)) or a State department of agriculture may grow or cultivate industrial hemp if—

(1) the industrial hemp is grown or cultivated for purposes of research conducted under an agricultural pilot program or other agricultural or academic research; and

(2) the growing or cultivating of industrial hemp is allowed under the laws of the State in which such institution of higher education or State department of agriculture is located and such research occurs.

(b) DEFINITIONS.—In this section:

(1) AGRICULTURAL PILOT PROGRAM.—The term "agricultural pilot program" means a pilot program to study the growth, cultivation, or marketing of industrial hemp—

(A) in States that permit the growth or cultivation of industrial hemp under the laws of the State; and

(B) in a manner that—

(i) ensures that only institutions of higher education and State departments of agriculture are used to grow or cultivate industrial hemp;

(ii) requires that sites used for growing or cultivating industrial hemp in a State be certified by, and registered with, the State department of agriculture; and

(iii) authorizes State departments of agriculture to promulgate regulations to carry out the pilot program in the States in accordance with the purposes of this section.

(2) INDUSTRIAL HEMP.—The term "industrial hemp" means the plant *Cannabis sativa L.* and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis.

(3) STATE DEPARTMENT OF AGRICULTURE.—The term "State department of agriculture" means the agency, commission, or department of a State government responsible for agriculture within the State.

Hemp as an Agricultural Commodity

Renée Johnson
Specialist in Agricultural Policy

February 14, 2014

Congressional Research Service
7-5700
www.crs.gov
RL32725

CRS Report for Congress
Prepared for Members and Committees of Congress

Summary

Industrial hemp is a variety of *Cannabis sativa* and is of the same plant species as marijuana. However, hemp is genetically different and distinguished by its use and chemical makeup. Hemp has long been cultivated for non-drug use in the production of industrial and other goods. Some estimate that the global market for hemp consists of more than 25,000 products. It can be grown as a fiber, seed, or other dual-purpose crop. Hemp fibers are used in a wide range of products, including fabrics and textiles, yarns and raw or processed spun fibers, paper, carpeting, home furnishings, construction and insulation materials, auto parts, and composites. The interior stalk (hurd) is used in various applications such as animal bedding, raw material inputs, low-quality papers, and composites. Hemp seed and oilcake are used in a range of foods and beverages, and can be an alternative food protein source. Oil from the crushed hemp seed is an ingredient in a range of body-care products and also nutritional supplements. Hemp seed is also used for industrial oils, cosmetics and personal care, and pharmaceuticals, among other composites.

Precise data are not available on the size of the U.S. market for hemp-based products. Current industry estimates report that U.S. retail sales of all hemp-based products may be nearly $500 million per year. Because there is no commercial industrial hemp production in the United States, the U.S. market is largely dependent on imports, both as finished hemp-containing products and as ingredients for use in further processing. Under the current U.S. drug policy, all cannabis varieties, including hemp, are considered Schedule I controlled substances under the Controlled Substances Act (CSA, 21 U.S.C. §§801 *et seq.*; Title 21 CFR Part 1308.11). As such, while there are legitimate industrial uses, these are controlled and regulated by the U.S. Drug Enforcement Administration (DEA). Strictly speaking, the CSA does not make growing hemp illegal; rather, it places strict controls on its production and enforces standards governing the security conditions under which the crop must be grown, making it illegal to grow without a DEA permit. Currently, cannabis varieties may be legitimately grown for research purposes only. Among the concerns over changing current policies is how to allow for hemp production without undermining the agency's drug enforcement efforts and regulation of the production and distribution of marijuana.

In the early 1990s a sustained resurgence of interest in allowing commercial cultivation of industrial hemp began in the United States. Several states have conducted economic or market studies, and have initiated or passed legislation to expand state-level resources and production. Several states have legalized the cultivation and research of industrial hemp, including Colorado, Hawaii, Kentucky, Maine, Maryland, Montana, North Dakota, Oregon, Vermont, Washington, and West Virginia. However, because federal law still prohibits cultivation, a grower still must get permission from the DEA in order to grow hemp, or face the possibility of federal charges or property confiscation, despite having a state-issued permit.

The 113th Congress made changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate. The Agricultural Act of 2014 (P.L. 113-79) includes a provision allowing certain research institutions and also state departments of agriculture to grow industrial hemp, if allowed under state laws where the institution or state department of agriculture is located. Other introduced legislation, such as the Industrial Hemp Farming Act of 2013 (H.R. 525; S. 359), could allow for possible commercial cultivation of industrial hemp in the United States. Those bills would amend the CSA to specify that the term "marijuana" does not include industrial hemp, which the bill would define based on its content of delta-9 tetrahydrocannabinol (THC), marijuana's primary psychoactive chemical. Such a change could remove low-THC hemp from being covered by the CSA as a controlled substance and subject to DEA regulation.

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Introduction

For centuries, industrial hemp (plant species *Cannabis sativa*) has been a source of fiber and oilseed used worldwide to produce a variety of industrial and consumer products. Currently, more than 30 nations grow industrial hemp as an agricultural commodity, which is sold on the world market. In the United States, however, production is strictly controlled under existing drug enforcement laws. There is no known commercial domestic production and the U.S. market depends on imports.

The 113th Congress made changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate. The Agricultural Act of 2014 (P.L. 113-79) includes a provision allowing certain research institutions and also state departments of agriculture to grow industrial hemp, if allowed under state laws where the institution or state department of agriculture is located. Similar provisions were not included in the Senate-passed version of the bill, however. Other introduced legislation in the Industrial Hemp Farming Act of 2013 (H.R. 525; S. 359) could provide for even greater opportunities for commercial cultivation of industrial hemp in the United States.

Overview of *Cannabis* Varieties

Although marijuana is also a variety of cannabis, it is genetically distinct from industrial hemp and is further distinguished by its use and chemical makeup.

In this report, "hemp" refers to industrial hemp, "marijuana" (or "marihuana" as it is spelled in the older statutes) refers to the psychotropic drug (whether used for medicinal or recreational purposes), and "cannabis" refers to the plant species that has industrial, medicinal, and recreational varieties.[1]

Comparison of Hemp and Marijuana

There are many different varieties of cannabis plants. Marijuana and hemp come from the same species of plant, *Cannabis sativa*, but from different varieties or cultivars. However, hemp is genetically different and is distinguished by its use and chemical makeup, as well as by differing cultivation practices in its production.[2]

Hemp, also called "industrial hemp,"[3] refers to cannabis varieties that are primarily grown as an agricultural crop (such as seeds and fiber, and byproducts such as oil, seed cake, hurds) and is characterized by plants that are low in THC (delta-9 tetrahydrocannabinol, marijuana's primary psychoactive chemical). THC levels for hemp are generally less than 1%.

[1] This report does not cover issues pertaining to medical marijuana. For information on that subject, see CRS Report RL33211, *Medical Marijuana: Review and Analysis of Federal and State Policies*, or related CRS reports.

[2] See, for example, S. L. Datwyler and G. D. Weiblen, "Genetic variation in hemp and marijuana (Cannabis sativa L.) according to amplified fragment length polymorphisms," *Journal of Forensic Sciences*, Vol. 51, No. 2 (2006).

[3] Use of this term dates back to the 1960s; see L. Grlic, "A combined spectrophotometric differentiation of samples of cannabis," United Nations Office On Drugs and Crime (UNODC), January 1968, http://www.unodc.org/unodc.

Marijuana refers to the flowering tops and leaves of psychoactive cannabis varieties, which are grown for their high content of THC. Marijuana's high THC content is primarily in the flowering tops and to a lesser extent in the leaves. THC levels for marijuana are much higher than for hemp, and are reported to average about 10%; some sample tests indicate THC levels reaching 20%-30%, or greater.[4]

A level of about 1% THC is considered the threshold for cannabis to have a psychotropic effect or an intoxicating potential.[5] Current laws regulating hemp cultivation in the European Union (EU) and Canada use 0.3% THC as the dividing line between industrial and potentially drug-producing cannabis. Cultivars having less than 0.3% THC can be cultivated under license, while cultivars having more than that amount are considered to have too high a drug potential.[6]

Some also claim that industrial hemp has higher levels of cannabidiol (CBD), the non-psychoactive part of marijuana, which might mitigate some of the effects of THC.[7] A high ratio of CBD to THC might also classify hemp as a fiber-type plant rather than a drug-type plant. Opinions remain mixed about how CBD levels might influence the psychoactive effects of THC.

Production Differences

Production differences depend on whether the cannabis plant is grown for fiber/oilseed or for medicinal/recreational uses. These differences involve the varieties being grown, the methods used to grow them, and the timing of their harvest (see discussion in "Hemp" and "Marijuana," below). Concerns about cross-pollination among the different varieties are critical. All cannabis plants are open, wind and/or insect pollinated, and thus cross-pollination is possible.

Because of the compositional differences between the drug and fiber varieties of cannabis, farmers growing either crop would necessarily want to separate production of the different varieties or cultivars. This is particularly true for growers of medicinal or recreational marijuana in an effort to avoid cross-pollination with industrial hemp, which would significantly lower the THC content and thus degrade the value of the marijuana crop. Likewise, growers of industrial hemp would seek to avoid cross-pollination with marijuana plants, especially given the illegal status of marijuana. Plants grown of oilseed are also marketed according to the purity of the product, and the mixing of off-type genotypes would degrade the value of the crop.[8]

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[4] National Institute of Drug Abuse, "Quarterly Report, Potency Monitoring project," Report 100, University of Mississippi, 2008. Based on sample tests of illegal cannabis seizures (December 16, 2007, through March 15, 2008).

[5] E. Small and D. Marcus, "Hemp: A new crop with new uses for North America," In: *Trends in New Crops and New Uses*, J. Janick and A. Whipkey (eds.), American Society for Horticultural Science (ASHS) Press, 2002.

[6] E. Small and D. Marcus, "Tetrahydrocannabinol levels in hemp (Cannabis sativa) germplasm resources," *Economic Botany*, vol. 57, no. 4 (October 2003); and G. Leson, "Evaluating Interference of THC Levels in Hemp Food Products with Employee Drug Testing" (prepared for the Province of Manitoba, Canada), July, 2000.

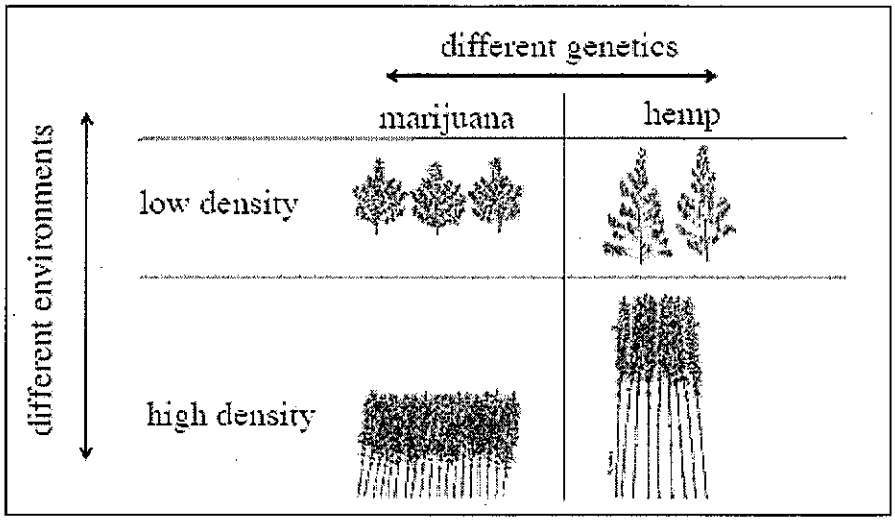
[7] U. R. Avico, R. Pacifici, and P. Zuccaro, "Variations of tetrahydrocannabinol content in cannabis plants to distinguish the fibre-type from drug-type plants," *UNODC Bulletin on Narcotics*, January 1985; C. W. Waller, "Chemistry Of Marihuana," *Pharmacological Reviews*, vol. 23 (December 1971); K.W. Hillig and P. G. Mahlberg, "A chemotaxonomic analysis of cannabinoid variation in Cannabis (Cannabaceae)," *American Journal of Botany*, vol. 91, no. 6 (June 2004); and A. W. Zuardi et al., "Cannabidiol, a Cannabis sativa constituent, as an antipsychotic drug," *Brazilian Journal of Medical and Biological Research*, vol. 39 (2006).

[8] CRS communication with Anndrea Hermann, Hemp Oil Canada Inc., December 2009. Pollen is present at a very early plant development stage.

The different cannabis varieties are also harvested at different times (depending on the growing area), increasing the chance of detection of illegal marijuana, if production is commingled. Because of these differences, many claim that drug varieties of cannabis cannot easily be grown with oilseed or fiber varieties without being easily detected.[9] As discussed below (and illustrated in **Figure 1**), among the visual plant differences are **plant height** (hemp is encouraged to grow tall, whereas marijuana is selected to grow short and tightly clustered); **cultivation** (hemp is grown as a single main stalk with few leaves and branches, whereas marijuana is encouraged to become bushy with many leaves and branches to promote flowers and buds); and **planting density** (hemp is densely planted to discourage branching and flowering, whereas marijuana plants are well-spaced).

Figure 1. Trait Variation in Cannabis Phenotype

(marijuana and industrial hemp)



Source: George Weiblen, University of Minnesota, presentation at the 2013 Annual HIA Conference, Washington, DC, November 17, 2013.

Notes: Photographs contrasting marijuana and industrial hemp are available at Vote Hemp's website ("Different Varieties of *Cannibis*," http://www.votehemp.com/different_varieties.html).

Hemp

To maximize production of hemp fiber and/or seed, plants are encouraged to grow taller in height. Cultivated plants become a tall stalky crop that usually reaches between 6 and 15 feet, and generally consist of a single main stalk with few leaves and branches. Hemp plants grown for fiber or oilseed are planted densely (about 35-50 plants per square foot)[10] to discourage branching and flowering. The period of seeding to harvest ranges from 70 to 140 days, depending on the purpose, cultivar or variety, and climatic conditions. The stalk and seed is the harvested product.

[9] D. P. West, "Hemp and Marijuana: Myths & Realities," February 1998, http://www.gametec.com/hemp/hempandmj.html. Also see information posted by Vote Hemp Inc., "Different Varieties of Cannabis" (no date), http://www.votehemp.com/different_varieties.html.

[10] Innvista, "Hemp Biology" (no date), http://www.innvista.com/health/foods/hemp/hempbiol.htm.

The stalk of the plant provides two types of fibers: the outer portion of the stem contains the bast fibers, and the interior or core fiber (or hurds).

Industrial hemp production statistics for Canada indicate that one acre of hemp yields an average of about 700 pounds of grain, which can be pressed into about 50 gallons of oil and 530 pounds of meal.[11] That same acre will also produce an average of 5,300 pounds of straw, which can be transformed into about 1,300 pounds of fiber.

Marijuana

When cannabis is grown to produce marijuana, it is cultivated from varieties where the female flowers of dioecious drug strains are selected to prevent the return of separate male and female plants.[12] The female flowers are short and tightly clustered. In marijuana cultivation, growers remove all the male plants to prevent pollination and seed set. Some growers will hand-pollinate a female plant to get seed; this is done in isolation of the rest of the female plants. The incorporation and stabilization of monoecism in cannabis cultivation requires the skill of a competent plant breeder, and rarely occurs under non-cultivated conditions.

If marijuana is grown in or around industrial hemp varieties, the hemp would pollinate the female marijuana plant. Marijuana growers would not want to plant near a hemp field, since this would result in a harvest that is seedy and lower in THC, and degrade the value of their marijuana crop.

Marijuana is cultivated to encourage the plant to become bushy with many leaves, with wide branching to promote flowers and buds. This requires that plants be well-spaced, by as much as about 1-2 plants per square yard.[13] The flower and leaves are the harvested products.

Hemp Production and Use

Commercial Uses of Hemp

Industrial hemp can be grown as a fiber, seed, or dual-purpose crop.[14] The interior of the stalk has short woody fibers called hurds; the outer portion has long bast fibers. Hemp seed/grains are smooth and about one-eighth to one-fourth of an inch long.[15]

Although hemp is not grown in the United States, both finished hemp products and raw material inputs are imported and sold for use in manufacturing for a wide range of product categories (**Figure 2**). Hemp fibers are used in a wide range of products, including fabrics and textiles, yarns

[11] Agriculture and Agri-Food Canada, "Industrial Hemp" (no date), http://www4.agr.gc.ca/.

[12] H. van Bakel et al., "The draft genome and transcriptome of *Cannabis sativa*," *Genome Biology*, Vol. 12, Issue 10, 2011. In botany, dioecious is a term describing plant varieties that possess male and female flowers or other reproductive organs on separate, individual plants.

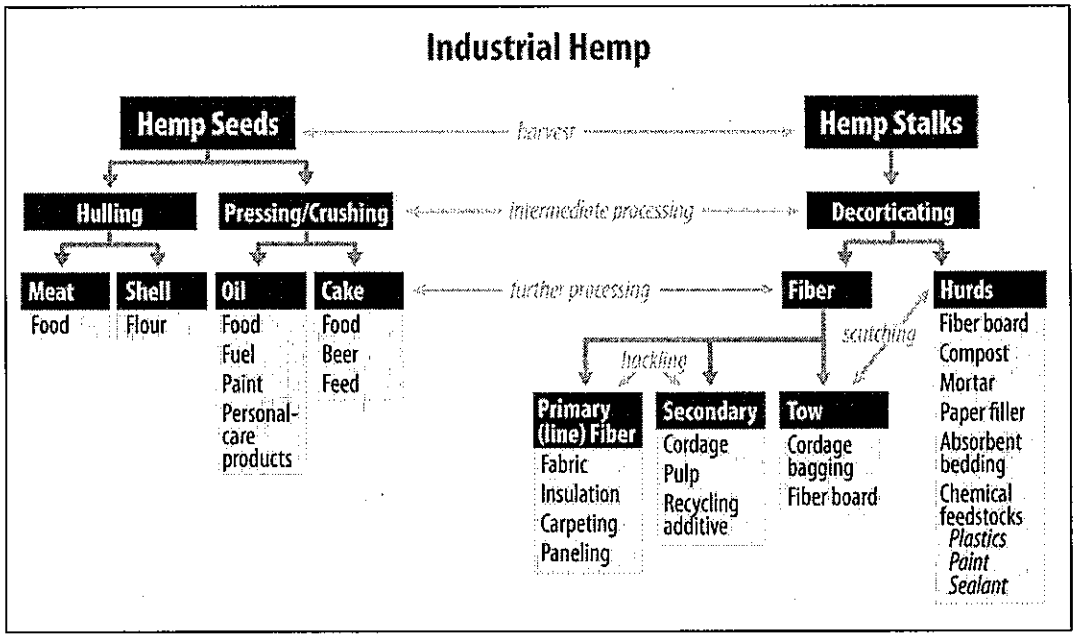
[13] Innvista, "Hemp Biology" (no date), http://www.innvista.com/health/foods/hemp/hempbiol.htm.

[14] Different varieties have been developed may be better suited for one use or the other. Cultivation practices also differ depending upon the variety planted.

[15] For additional information, see U.S. Department of Agriculture, Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential*, ERS Report AGES001E, January 2000.

and spun fibers, paper, carpeting, home furnishings, construction and insulation materials, auto parts, and composites. Hurds are used in various applications such as animal bedding, material inputs, papermaking, and composites. Hemp seed and oilcake are used in a range of foods and beverages, and can be an alternative food protein source. Oil from the crushed hemp seed is used as an ingredient in a range of body-care products and nutritional supplements.[16] Hemp seed is also used for industrial oils, cosmetics and personal care products, and pharmaceuticals, among other composites.

Figure 2. Flowchart of Potential Hemp Products



Source: CRS, adapted from D. G. Kraenzel et al., "Industrial Hemp as an Alternative Crop in North Dakota," AER-402, North Dakota State University, July 23, 1998.

Some estimate that the global market for hemp consists of more than 25,000 products in nine submarkets: agriculture; textiles; recycling; automotive; furniture; food/nutrition/beverages; paper; construction materials; and personal care. For construction materials, such as hempcrete (a mixture of hemp hurds and lime products), hemp is used as a lightweight insulating material.[17] Hemp has also been promoted as a potential biodiesel feedstock,[18] although some analysts

[16] Some have suggested similarities between hempseed oil and hash oil. However, there is evidence suggesting differences regarding initial feedstock or input ingredients (hash oil requires high THC marijuana whereas hempseed oil uses low THC industrial hemp); how they are produced (hash oil is extracted often using a flammable solvent whereas hempseed oil is expeller-pressed or extracted mechanically, generally without chemicals or additives); and how they are used (hash oil is used as a psychoactive drug whereas hempseed oil is used as an ingredient in hemp-based foods, supplements, and body care products). For more background information, contact the author of this report.

[17] "Hemp Homes are Cutting Edge of Green Building," *USA Today*, September 12, 2010; and "Construction Plant," *Financial Times*, January 22, 2010.

[18] Manitoba Agriculture, *National Industrial Hemp Strategy*, March 2008, p. 293; J. Lane, "Hemp Makes Comeback as Biofuels Feedstock in 43-acre California Trial," *Biofuels Digest*, August 24, 2009; and H. Jessen, "Hemp Biodiesel: (continued...)

suggest that competing demands for other products might make it too costly to use as a feedstock.[19]

These types of commercial uses are widely documented in a range of feasibility and marketing studies conducted by researchers at the U.S. Department of Agriculture (USDA) and various land grant universities and state agencies. (A listing of these studies is in the **Appendix**.)

Estimated Retail Market

There is no official estimate of the value of U.S. sales of hemp-based products. The Hemp Industries Association (HIA) estimates that the total U.S. retail value of hemp products in 2012 was nearly $500 million, which includes food and body products, clothing, auto parts, building materials and other products.[20] Of this, HIA reports that the value of hemp-based food, supplements, and body care sales in the United States is about $156 million to $171 million annually. Previous reports about the size of the U.S. market for hemp clothing and textiles is estimated at about $100 million annually.[21]

The reported retail value of the U.S. hemp market is an estimate and is difficult to verify. Underlying data for this estimate are from SPINS survey data;[22] however, because the data reportedly do not track retail sales for The Body Shop and Whole Foods Market—two major markets for hemp-based products—as well as for restaurants, hemp industry analysts have adjusted these upward to account for this gap in the reported survey data.[23]

Available industry information indicates that sales of some hemp-based products, such as foods and body care products, is growing.[24] Growth in hemp specialty food products is driven, in part, by sales of hemp milk and related dairy alternatives, among other hemp-based foods.[25]

Information is not available on other potential U.S. hemp-based sectors, such as for use in construction materials or biofuels, paper, and other manufacturing uses. Data are not available on existing businesses or processing facilities that may presently be engaged in such activities within the United States.

(...continued)

When the Smoke Clears," *Biodiesel Magazine*, February 2007.

[19] North Dakota State University (NSDU), "Biofuel Economics: Biocomposites—New Uses for North Dakota Agricultural Fibers and Oils" (no date).

[20] R. Fletcher, "As Momentum Builds for Policy Change, U.S. Market for Products Made from Industrial Hemp Continues to Thrive: 2012 Annual Retail Sales for Hemp Products Hit $500 Million," February 25, 2013.

[21] HIA, "Hemp Fabric goes High Fashion," February 11, 2008. Estimate reflects best available current information based on personal communication between CRS and HIA.

[22] SPINS tracks data and market trends on the Natural Product Industry sales (http://www.spins.com/).

[23] CRS communication with representatives of Vote Hemp, Inc., May 2010. See also HIA's press release, "Growing Hemp Food and Body Care Sales is Good News for Canadian Hemp Seed and Oil Producers," April 29, 2009.

[24] H. Fastre, CEO of Living Harvest Foods, based on his comments and presentation, "The Future of Hemp," HIA Convention, Washington DC, October 2009; and HIA, "Growing Hemp Food and Body Care Sales is Good News for Canadian Hemp Seed and Oil Producers," April 29, 2009.

[25] HIA, "Hemp Milk Products Boosted Growth of Hemp Food Market in 2007," March 14, 2008.

U.S. Hemp Imports

The import value of hemp-based products imported and sold in the United States is difficult to estimate accurately. For some traded products, available statistics have only limited breakouts or have been expanded only recently to capture hemp subcategories within the broader trade categories for oilseeds and fibers. Reporting errors are evident in some of the trade data, since reported export data for hemp from Canada do not consistently match reported U.S. import data for the same products (especially for hemp seeds).

Given these data limitations, available trade statistics indicate that the value of U.S. imports under categories actually labeled "hemp," such as hemp seeds and fibers, which are more often used as inputs for use in further manufacturing, was nearly $36.9 million in 2013. Compared to available data for 2005, the value of imported hemp products for use as inputs and ingredients has increased more than sixfold. However, import volumes for other products such as hemp oil and fabrics are lower (**Table 1**). Trade data are not available for finished products, such as hemp-based clothing or other products including construction materials, carpets, or hemp-based paper products.

The single largest supplier of U.S. imports of raw and processed hemp fiber is China. Other leading country suppliers include Romania, Hungary, India, and other European countries. The single largest source of U.S. imports of hemp seed and oilcake is Canada. The total value of Canada's exports of hemp seed to the United States has grown significantly in recent years following resolution of a long-standing legal dispute over U.S. imports of hemp foods in late 2004 (see "Dispute over Hemp Food Imports (1999-2004)"). European countries such as the United Kingdom and Switzerland also have supplied hemp seed and oilcake to the United States.

U.S. Market Potential

In the past two decades, several feasibility and marketing studies have been conducted by researchers at the USDA and various land grant universities and state agencies (for example, Arkansas, Kentucky, Maine, Minnesota, North Dakota, Oregon, and Vermont; see **Appendix**).

Studies by researchers in Canada and various state agencies provide a mostly positive market outlook for growing hemp, citing rising consumer demand and the potential range of product uses for hemp. Some state reports claim that if current restrictions on growing hemp in the United States were removed, agricultural producers in their states could benefit. A 2008 study reported that acreage under cultivation in Canada, "while still showing significant annual fluctuations, is now regarded as being on a strong upward trend." Most studies generally note that "hemp ... has such a diversity of possible uses, [and] is being promoted by extremely enthusiastic market developers." Other studies highlight certain production advantages associated with hemp or acknowledge hemp's benefits as a rotational crop or further claim that hemp may be less environmentally degrading than other agricultural crops. Some studies also claim certain production advantages to hemp growers, such as relatively low input and management requirements for the crop.

Other studies focused on the total U.S. market differ from the various state reports and provide a less favorable aggregate view of the potential market for hemp growers in the United States. Two studies, conducted by researchers at USDA and University of Wisconsin-Madison (UW-M), highlight some of the continued challenges facing U.S. hemp producers.

Table 1. Value and Quantity of U.S. Imports of Selected Hemp Products, Selected Years, 1996-2013

	units	1996	2000	2005	2009	2010	2011	2012	2013
Hemp Seeds (HS 1207990220)[a]	$1000	—	—	271	3,320	5,154	6,054	13,057	26,710
Hemp Oil and Fractions (HS 1515908010)	$1000	—	—	3,027	1,042	1,833	1,146	1,098	2,264
Hemp Seed Oilcake and Other Solids (HS 2306900130)	$1000	—	—	—	1,811	2,369	2,947	4,388	6,279
True Hemp, raw/processed not spun (HS 5302)	$1000	100	577	228	114	94	181	157	78
True Hemp Yarn (HS 5308200000)	$1000	25	640	904	568	296	580	496	478
True Hemp Woven Fabrics (HS 5311004010)	$1000	1,291	2,258	1,232	894	1,180	1,363	1,363	1,057
	Total	**1,416**	**3,475**	**5,662**	**7,749**	**10,926**	**12,271**	**20,559**	**36,866**
Hemp Seeds (HS 1207990220)[a]	metric ton	—	—	92	602	711	623	1,237	2,272
Hemp Oil and Fractions (HS 1515908010)	metric ton	—	—	287	128	215	157	208	450
Hemp Seed Oilcake and Other Solids (HS 2306900130)	metric ton	—	—	—	201	240	298	441	601
True Hemp, raw/processed not spun (HS 5302)	metric ton	53	678	181	83	42	89	66	72
True Hemp Yarn (HS 5308200000)	metric ton	6	89	113	76	42	86	88	70
	Subtotal	**59**	**767**	**673**	**1,090**	**1,250**	**1,253**	**2,040**	**3,465**
True Hemp Woven Fabrics (HS 5311004010)	m2 (1000)	435	920	478	263	284	270	319	224

Source: Compiled by CRS using data from the U.S. International Trade Commission (USITC), http://dataweb.usitc.gov. Data are by Harmonized System (HS) code. Data shown as "—" indicate data are not available as breakout categories for some product subcategories were established only recently.

a. Data for 2007-2011 were supplemented by reported Canadian export data for hemp seeds (HS 12079910, Hemp seeds, whether or not broken) as reported by Global Trade Atlas, http://www.gtis.com/gta/. Official U.S. trade data reported no imports during these years for these HS subcategories. The Canadian export data as reported by Global Trade Atlas also differ for hemp seed oilcake (15159020, Hemp oil and its fractions, whether or not refined but not chemically modified) but were not similarly substituted since other countries exported product to the United States.

For example, USDA's study projected that U.S. hemp markets "are, and will likely remain, small, thin markets" and also cited "uncertainty about long-run demand for hemp products and the potential for oversupply" among possible downsides of potential future hemp production.

Similarly, the UW-M study concluded that hemp production "is not likely to generate sizeable profits" and although hemp may be "slightly more profitable than traditional row crops" it is likely "less profitable than other specialty crops" due to the "current state of harvesting and processing technologies, which are quite labor intensive, and result in relatively high per unit costs."[26] The study highlights that U.S. hemp growers could be affected by competition from other world producers as well as by certain production limitations in the United States, including yield variability and lack of harvesting innovations and processing facilities in the United States, as well as difficulty transporting bulk hemp. The study further claims that most estimates of profitability from hemp production are highly speculative, and often do not include additional costs of growing hemp in a regulated market, such as the cost associated with "licensing, monitoring, and verification of commercial hemp."[27]

A 2013 study by researchers at the University of Kentucky highlights some of the issues and challenges for that state's growers, processors, and industry. The study predicts that in Kentucky, despite "showing some positive returns, under current market conditions, it does not appear that anticipated hemp returns will be large enough to entice Kentucky grain growers to shift out of grain production," under most circumstances; also, "short run employment opportunities evolving from a new Kentucky hemp industry appear limited (perhaps dozens of new jobs, not 100s)," because of continued uncertainty in the industry.[28] Overall, the study concludes there are many remaining unknowns and further analysis and production research is needed.

Given the absence since the 1950s of any commercial and unrestricted hemp production in the United States, it is not possible to predict the potential market and employment effects of relaxing current restrictions on U.S. hemp production. While expanded market opportunities might exist in some states or localities if current restrictions on production are lifted, it is not possible to predict the potential for future retail sales or employment gains in the United States, either nationally or within certain states or regions. Limited information is available from previous market analyses that have been conducted by researchers at USDA and land grant universities and state agencies.[29]

Global Production

International Production

Approximately 30 countries in Europe, Asia, and North and South America currently permit farmers to grow hemp. Some of these countries never outlawed production, while some countries

[26] T. R. Fortenbery and M. Bennett, "Opportunities for Commercial Hemp Production," *Review of Agricultural Economics*, 26(1): 97-117, 2004.

[27] Ibid.

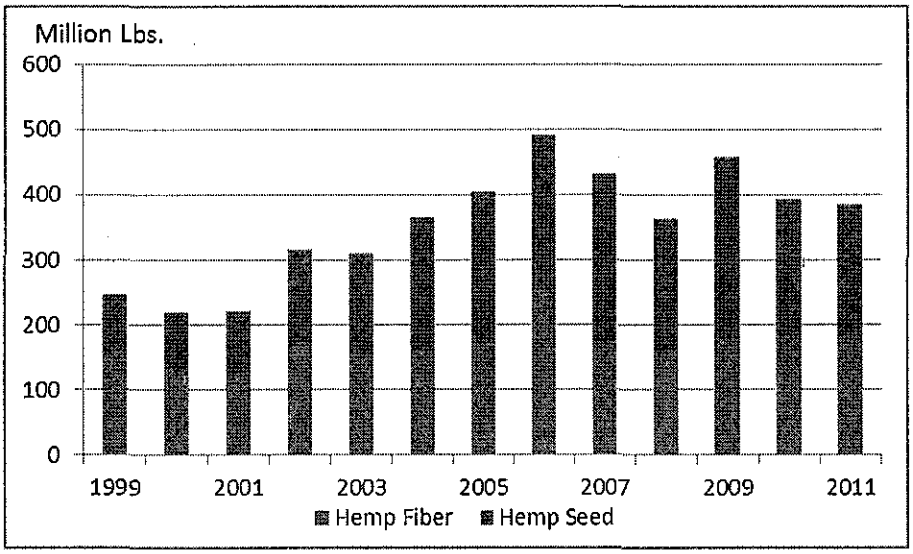
[28] University of Kentucky, Department of Agricultural Economics, *Economic Considerations for Growing Industrial Hemp: Implications for Kentucky's Farmers and Agricultural Economy*, July 2013.

[29] For more information, see CRS Congressional Distribution Memorandum, "Potential U.S. Market Effects of Removing Restrictions on Growing Industrial Hemp," March 4, 2013), available from Renée Johnson (7-9588).

banned production for certain periods in the past. China is among the largest producing and exporting countries of hemp textiles and related products, as well as a major supplier of these products to the United States. The European Union (EU) has an active hemp market, with production in most member nations. Production is centered in France, the United Kingdom, Romania, and Hungary.[30]

Acreage in hemp cultivation worldwide has been mostly flat to decreasing, reported at about 200,000 acres globally in 2011.[31] Although variable year-to-year, global production has increased overall from about 250 million pounds in 1999 to more than 380 million pounds in 2011, mostly due to increasing production of hemp seed (**Figure 3**). Upward trends in global hemp seed production roughly track similar upward trends in U.S. imports of hemp seed and oil, mostly for use in hemp-based foods, supplements, and body care products (**Table 1**).

Figure 3. Hemp Fiber and Seed, Global Production (1999-2011)



Source: FAOSTAT, http://faostat.fao.org/site/567/default.aspx#ancor.

Many EU countries lifted their bans on hemp production in the 1990s and, until recently, also subsidized the production of "flax and hemp" under the EU's Common Agricultural Policy.[32] EU hemp acreage was reported at about 26,000 acres in 2010, which was below previous years, when more than 50,000 acres of hemp were under production.[33] Most EU production is of hurds, seeds, and fibers. Other non-EU European countries with reported hemp production include Russia, Ukraine, and Switzerland. Other countries with active hemp grower and/or consumer markets are Australia, New Zealand, India, Japan, Korea, Turkey, Egypt, Chile, and Thailand.

[30] Other EU producing countries include Austria, Denmark, Finland, Germany, Italy, Netherlands, Poland, Portugal, Slovenia, and Spain.

[31] Food and Agriculture Organization (FAO) of the United Nations, FAOSTAT crop data, http://faostat.fao.org/.

[32] For information on the EU's prior agricultural support for industrial hemp, see the EU's notification to the World Trade Organization regarding its domestic support for agricultural producers (G/AG/N/EEC/68; January 24, 2011).

[33] M. Carus et al., "The European Hemp Industry," May 2013. Also see European Industrial Hemp Association, "European Commission: Hemp and Flax, AGRI C5, 2009," February 2009.

Canada is another major supplier of U.S. imports, particularly of hemp-based foods and related imported products. Canada's commercial hemp industry is fairly new: Canada began to issue licenses for research crops in 1994, followed by commercial licenses starting in 1998.

The development of Canada's hemp market followed a 60-year prohibition and is strictly regulated.[34] Its program is administered by the Office of Controlled Substances of Health Canada, which issues licenses for all activities involving hemp. Under the regulation, all industrial hemp grown, processed, and sold in Canada may contain THC levels no more than 0.3% of the weight of leaves and flowering parts. Canada also has set a maximum level of 10 parts per million (ppm) for THC residues in products derived from hemp grain, such as flour and oil.[35] To obtain a license to grow hemp, Canadian farmers must submit extensive documentation, including background criminal record checks, the Global Positioning System (GPS) coordinates of their fields, and supporting documents (from the Canadian Seed Growers' Association or the Canadian Food Inspection Agency) regarding their use of low-THC hemp seeds and approved cultivars; and they must allow government testing of their crop for THC levels.[36] Since hemp cultivation was legalized in Canada, production has been variable year-to-year (**Figure 4**), ranging from a high of 48,000 acres planted in 2006, to about 4,000 acres in 2001-2002, to a reported nearly 39,000 acres in 2011. Canada's hemp cultivation still accounts for less than 1% of the country's available farmland. The number of cultivation licenses has also varied from year to year, reaching a high of 560 licenses in 2006, followed by a low of 77 licenses in 2008 (with 340 licenses in 2011).[37]

Historical U.S. Production

Hemp was widely grown in the United States from the colonial period into the mid-1800s; fine and coarse fabrics, twine, and paper from hemp were in common use. By the 1890s, labor-saving machinery for harvesting cotton made the latter more competitive as a source of fabric for clothing, and the demand for coarse natural fibers was met increasingly by imports. Industrial hemp was handled in the same way as any other farm commodity, in that USDA compiled statistics and published crop reports,[38] and provided assistance to farmers promoting production and distribution.[39] In the early 1900s, hemp continued to be grown and researchers at USDA continued to publish information related to hemp production and also reported on hemp's potential for use in textiles and in paper manufacturing.[40] Several hemp advocacy groups, including the Hemp Industries Association (HIA) and Vote Hemp Inc., have compiled other historical information and have copies of original source documents.[41]

[34] Industrial Hemp Regulations (SOR/98-156), as part of the Controlled Drugs and Substances Act.

[35] Agriculture Canada, "Canada's Industrial Hemp Industry," March 2007, http://www4.agr.gc.ca.

[36] See Health Canada's FAQs on its hemp regulations and its application for obtaining permits (http://www.hc-sc.gc.ca/). Other information is at the Canadian Food Inspection Agency website (http://www.inspection.gc.ca/).

[37] Health Canada, Industrial Hemp Section, "Cultivation Licenses," October 25, 2011.

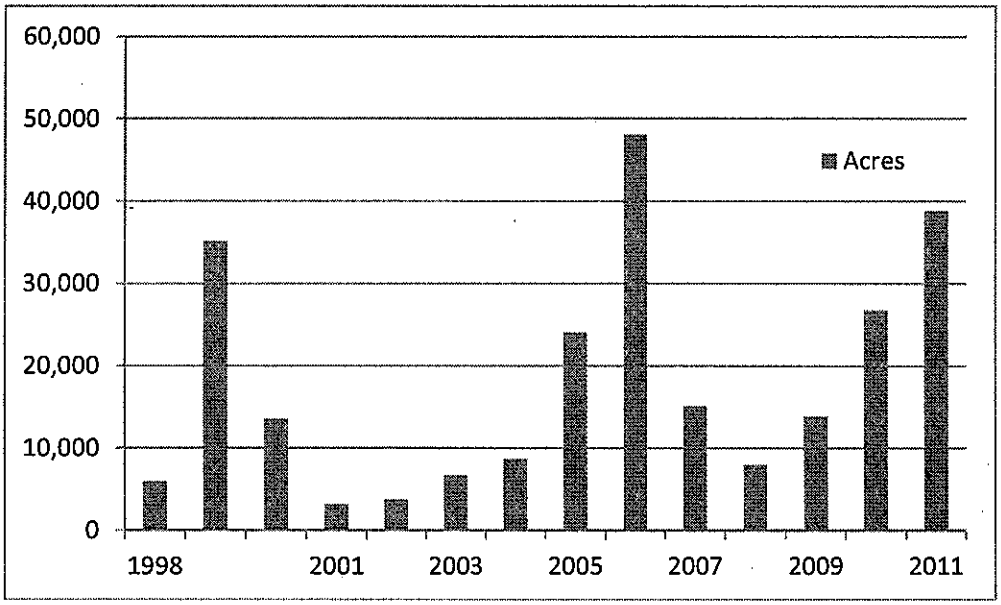
[38] See, for example, editions of USDA *Agricultural Statistics*. A compilation of U.S. government publications is available from the Hemp Industries Association (HIA) at http://www.hempology.org/ALLARTICLES.html.

[39] See, for example, USDA's 1942 short film "Hemp for Victory," and University of Wisconsin's Extension Service Special Circular, "What about Growing Hemp," November 1942.

[40] Regarding papermaking, see L. H. Dewey and J. L. Merrill, "Hemp Hurds as Paper-Making Material," USDA Bulletin No. 404, October 14, 1916. A copy of this document is available, as posted by Vote Hemp Inc., at http://www.votehemp.com/17855-h/17855-h.htm. Other USDA and state documents from this period are available at http://www.hempology.org/ALLARTICLES.html.

[41] See links at http://www.thehia.org/history.html and http://www.hemphistoryweek.com/timeline.html.

Figure 4. Canadian Hemp Acreage, 1998-2011



Source: Agriculture and Agri-Food Canada, "Industrial Hemp Statistics," http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1174420265572&lang=eng.

Note: The downturn in 2007 is viewed as a correction of overproduction in 2006, following the "success of the court case against the DEA in 2004, and continued improvements in breeding, production, and processing," which resulted in part in a "dramatic reduction in hemp acreage planted" in 2007. The 2007 downturn is also attributed to "increasingly positive economics of growing other crops" (Manitoba Agriculture, National Industrial Hemp Strategy, March 2008, prepared for Food and Rural Initiative Agriculture and Agri-Food Canada).

Between 1914 and 1933, in an effort to stem the use of *Cannabis* flowers and leaves for their psychotropic effects, 33 states passed laws restricting legal production to medicinal and industrial purposes only.[42] The 1937 Marihuana Tax Act defined hemp as a narcotic drug, requiring that farmers growing hemp hold a federal registration and special tax stamp, effectively limiting further production expansion.

In 1943, U.S. hemp production reached more than 150 million pounds (140.7 million pounds hemp fiber; 10.7 million pound hemp seed) on 146,200 harvested acres. This compared to pre-war production levels of about 1 million pounds. After reaching a peak in 1943, production started to decline. By 1948, production had dropped back to 3 million pounds on 2,800 harvested acres, with no recorded production after the late 1950s.[43]

Currently, industrial hemp is not grown commercially in the United States. No active federal licenses allow U.S. commercial cultivation at this time.

[42] R. J. Bonnie and C. H. Whitebread, *The Marihuana Conviction: A History of Marihuana Prohibition in the United States* (Charlottesville: University Press of Virginia, 1974), p. 51.

[43] USDA *Agricultural Statistics*, various years through 1949. A summary of data spanning 1931-1945 is available in the 1946 edition. See "Table 391—Hemp Fiber and hempseed: Acreage, Yield, and Production, United States."

Legal Status in the United States

Federal Law

In 1937, Congress passed the first federal law to discourage Cannabis production for marijuana while still permitting industrial uses of the crop (the Marihuana Tax Act; 50 Stat. 551). Under this statute, the government actively encouraged farmers to grow hemp for fiber and oil during World War II. After the war, competition from synthetic fibers, the Marihuana Tax Act, and increasing public anti-drug sentiment resulted in fewer and fewer acres of hemp being planted, and none at all after 1958.

Strictly speaking, the Controlled Substances Act of 1970 (CSA, 21 U.S.C. §801 et. seq.) does not make growing hemp illegal; rather, it places strict controls on the production of hemp, making it illegal to grow the crop without a DEA permit.

The CSA adopted the same definition of *Cannabis sativa* that appeared in the 1937 Marihuana Tax Act. The definition of "marihuana" (21 U.S.C. §802(16) reads:

> The term marihuana means all parts of the plant Cannabis sativa L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds or resin. Such term does not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound ... or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination.

The statute thus retains control over all varieties of the cannabis plant by virtue of including them under the term "marijuana" and does not distinguish between low- and high-THC varieties. The language exempts from control the parts of mature plants—stalks, fiber, oil, cake, etc.—intended for industrial uses. Some have argued that the CSA definition exempts industrial hemp under its term exclusions for stalks, fiber, oil and cake, and seeds.[44] DEA refutes this interpretation.[45]

Since federal law prohibits cultivation without a permit, DEA determines whether any industrial hemp production authorized under a state statute is permitted, and it enforces standards governing the security conditions under which the crop must be grown. In other words, a grower needs to get permission from the DEA to grow hemp or faces the possibility of federal charges or property confiscation, regardless of whether the grower has a state-issued permit.[46]

DEA issued a permit for an experimental quarter-acre plot at the Hawaii Industrial Hemp Research Program during the period from 1999 to 2003 (now expired).[47] Most reports indicate that the DEA has not granted any current licenses to grow hemp, even for research purposes.[48] To

[44] See, for example, *Hemp Industries Association v. Drug Enforcement Administration*, 357 F.2d (9th Circuit 2004).

[45] 66 *Federal Register* 51530.

[46] Registration requirements are at 21 CFR 823. See also DEA's registration procedures and applications at http://www.deadiversion.usdoj.gov/drugreg/process.htm.

[47] See, for example, DEA, "Statement from the Drug Enforcement Administration on the Industrial Use of Hemp," March 12, 1998, http://www.justice.gov/dea/pubs/pressrel/pr980312.htm.

[48] S. Raabe, "First major Hemp Crop in 60 Years is Planted in Southeast Colorado," *Denverpost.com*, May 13, 2013.

date, all commercial hemp products sold in the United States are imported or manufactured from imported hemp materials. In May 2013, it was reported that hemp is being cultivated in Colorado, following changes to that state's laws in November 2012.[49]

Even if DEA were to approve a permit, it could be argued that production might be limited or discouraged because of the perceived difficulties of working through DEA licensing requirements and installing the types of structures necessary to obtain a permit. Obtaining a DEA permit to produce hemp requires that the applicant demonstrate that an effective security protocol will be in place at the production site, such as security fencing around the planting area, a 24-hour monitoring system, controlled access, and possibly armed guard(s) to prevent public access.[50] DEA application requirements also include a nonrefundable fee, FBI background checks, and extensive documentation. It could also be argued that, because of the necessary time-consuming steps involved in obtaining and operating under a DEA permit, the additional management and production costs from installing structures, as well as other business and regulatory requirements, could ultimately limit the operation's profitability.

The United States is a signatory of the United Nations Single Convention on Narcotic Drugs, 1961 (as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, 1961).[51] The principal objectives of the convention are to "limit the possession, use, trade in, distribution, import, export, manufacture and production of drugs exclusively to medical and scientific purposes and to address drug trafficking through international cooperation to deter and discourage drug traffickers."[52] The convention requires that each party control cannabis cultivation within its borders; however, Article 28.2 of the convention states: "This Convention shall not apply to the cultivation of the cannabis plant exclusively for industrial purposes (fibre and seed) or horticultural purposes."[53] Thus the convention need not present an impediment to the development of a regulated hemp farming sector in the United States.

Previous DEA Actions

DEA's 2003 Rules

In March 2003, DEA issued two final rules addressing the legal status of hemp products derived from the cannabis plant. The DEA found that hemp products "often contain the hallucinogenic substance tetrahydrocannabinols (THC) ... the primary psychoactive chemical found in the cannabis (marijuana) plant."[54] Although the DEA acknowledged that "in some cases, a Schedule I controlled substance may have a legitimate industrial use," such use would only be allowed under highly controlled circumstances. These rules set forth what products may contain "hemp" and also prohibit "cannabis products containing THC that are intended or used for human

[49] S. Raabe, "First major Hemp Crop in 60 Years is Planted in Southeast Colorado," *Denverpost.com*, May 13, 2013.

[50] University of Kentucky Cooperative Extension Service, "Industrial Hemp—Legal Issues, September 2012.

[51] United Nations Single Convention on Narcotic Drugs, 1961 (as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, 1961), Article 28.

[52] Information posted on International Narcotics Control Board (INCB) website.

[53] Ibid.

[54] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

consumption (foods and beverages)."[55] Development of the 2003 rule sparked a fierce battle over the permissibility of imported hemp-based food products that lasted from 1999 until 2004.

Dispute over Hemp Food Imports (1999-2004)

In late 1999, during the development of the 2003 rules (described in the previous section), the DEA acted administratively to demand that the U.S. Customs Service enforce a zero-tolerance standard for the THC content of all forms of imported hemp, and hemp foods in particular.

The DEA followed up, in October 2001, with publication of an interpretive rule in the *Federal Register* explaining the basis of its zero-tolerance standard.[56] It held that when Congress wrote the statutory definition of marijuana in 1937, it "exempted certain portions of the *Cannabis* plant from the definition of marijuana based on the assumption (now refuted) that such portions of the plant contain none of the psychoactive component now known as THC." Both the proposed rule (which was published concurrently with the interpretive rule) and the final 2003 rule gave retailers of hemp foods a date after which the DEA could seize all such products remaining on shelves. On both rules, hemp trade associations requested and received court-ordered stays blocking enforcement of that provision. The DEA's interpretation made hemp with any THC content subject to enforcement as a controlled substance.

Hemp industry trade groups, retailers, and a major Canadian exporter filed suit against the DEA, arguing that congressional intent was to exempt plant parts containing naturally occurring THC at non-psychoactive levels, the same way it exempts poppy seeds containing trace amounts of naturally occurring opiates.[57] Industry groups maintain that (1) naturally occurring THC in the leaves and flowers of cannabis varieties grown for fiber and food is already at below-psychoactive levels (compared with drug varieties); (2) the parts used for food purposes (seeds and oil) contain even less; and (3) after processing, the THC content is at or close to zero. U.S. and Canadian hemp seed and food manufacturers have in place a voluntary program for certifying low, industry-determined standards in hemp-containing foods. Background information on the TestPledge Program is available at http://www.TestPledge.com. The intent of the program is to assure that consumption of hemp foods will not interfere with workplace drug testing programs or produce undesirable mental or physical health effects.

On February 6, 2004, the U.S. Court of Appeals for the Ninth Circuit permanently enjoined the enforcement of the final rule.[58] The court stated that "the DEA's definition of 'THC' contravenes the unambiguously expressed intent of Congress in the CSA and cannot be upheld."[59] In late September 2004 the Bush Administration let the final deadline pass without filing an appeal.

[55] Ibid.

[56] 66 *Federal Register* 51530.

[57] 21 U.S.C. §802 (19) and (20).

[58] 68 *Federal Register* 14113.

[59] *Hemp Industries Association v. Drug Enforcement Administration*, 357 F.2d (9th Circuit 2004).

Other Policy Statements

In a recent DEA report, the agency acknowledged that it has been reviewing inquiries about the legal status of hemp-based products (such as those shown in **Figure 2**), including inquiries from U.S. Customs inspectors regarding the need for guidance regarding imported hemp products:[60]

> DEA took the position that it would follow the plain language of the Controlled Substances Act (CSA), which expressly states that anything that contains "any quantity" of marijuana or THC is a schedule I controlled substance. However, as a reasonable accommodation, DEA exempted from control legitimate industrial products that contained THC but were not intended for human consumption (such as clothing, paper, and animal feed).

DEA's position that "anything that contains 'any quantity' of marijuana or THC" should be regarded as a controlled substance is further supported by reports published by the National Institute on Drug Abuse (NIDA), which is part of the National Institutes of Health. Although NIDA does not have a formal position about industrial hemp, NIDA's research tends to conflate all cannabis varieties, including marijuana and hemp. For example, NIDA reports: "All forms of marijuana are mind-altering (psychoactive)" and "they all contain THC (delta-9-tetrahydrocannabinol), the main active chemical in marijuana."[61] The DEA further maintains that the CSA does not differentiate between different varieties of cannabis based on THC content.[62]

Regarding DEA's issuance of its 2003 rules and the import dispute that followed (discussed in the previous report sections), the agency continues to maintain that the courts have expressed conflicting opinions on these issues:[63]

> Despite the plain language of the statute supporting DEA's position, the ninth circuit ruled in 2004 that the DEA rules were impermissible under the statute and therefore ordered DEA to refrain from enforcing them. Subsequently, in 2006, another federal court of appeals (the eight circuit) took a different view, stating, as DEA had said in its rules: "The plain language of the CSA states that schedule I(c) includes 'any material ... which contains any quantity of THC' and thus such material is regulated."...[64] Thus, the federal courts have expressed conflicting views regarding the legal status of cannabis derivatives.

Regarding interest among growers in some states to cultivate hemp for industrial use, DEA claims that the courts have supported the agency's current policy that all hemp growers—regardless of whether a state permit has been issued and of the THC content—are subject to the CSA and must obtain a federal permit:[65]

> Under the CSA, anyone who seeks to grow marijuana for any purpose must first obtain a DEA registration authorizing such activity. However, several persons have claimed that growing marijuana to produce so-called "hemp" (which purportedly contains a relatively low percentage of THC) is not subject to CSA control and requires no DEA registration. All such claims have

[60] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

[61] NIDA, "Marijuana: Facts for Teens" (no date), http://www.drugabuse.gov/MarijBroch/teenpg1-2.html.

[62] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

[63] Ibid.

[64] DEA-cited court case: *United States v. White Plume*, 447 F.3d 1067, 1073 (8th Cir. 2006).

[65] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources. DEA-cited court cases: *New Hampshire Hemp Council, Inc. v. Marshall*, 203 F.3d I (1st Cir 2000); *United States v. White Plume*, supra; *Monson v. DEA*, 522 F.Supp.2d 1188 (D. N.D. 2007), No. 07-3837 (8th Cir. 2007).

> thus far failed, as every federal court that has addressed the issue has ruled that any person who seeks to grow any form of marijuana (no matter the THC content or the purpose for which it is grown) must obtain a DEA registration.

Regarding states that have enacted laws legalizing cannabis grown for industrial purposes, "these laws conflict with the CSA, which does not differentiate, for control purposes, between marijuana of relatively low THC content and marijuana of greater THC content."[66]

2013 Guidance Outlined in "Cole Memo"

In August 2013, DOJ updated its federal marijuana enforcement policy following 2012 state ballot initiatives in Washington and Colorado that "legalized, under state law, the possession of small amounts of marijuana and provide for the regulation of marijuana production, processing, and sale."[67] The guidance—commonly referred to as the "Cole memo"—outlines DOJ's policy, clarifying that "marijuana remains an illegal drug under the Controlled Substances Act and that federal prosecutors will continue to aggressively enforce this statute." DOJ identified eight enforcement areas that federal prosecutors should prioritize. These include:[68]

- preventing the distribution of marijuana to minors;
- preventing revenue from the sale of marijuana from going to criminal enterprises, gangs, and cartels;
- preventing the diversion of marijuana from states where it is legal under state law in some form to other states;
- preventing state-authorized marijuana activity from being used as a cover or pretext for the trafficking of other illegal drugs or other illegal activity;
- preventing violence and the use of firearms in the cultivation and distribution of marijuana;
- preventing drugged driving and the exacerbation of other adverse public health consequences associated with marijuana use;
- preventing the growing of marijuana on public lands and the attendant public safety and environmental dangers posed by marijuana production on public lands; and
- preventing marijuana possession or use on federal property.

Although the Cole memo does not specifically address industrial hemp, because DOJ regards all varieties of the cannabis plant as "marijuana" and does not distinguish between low- and high-THC varieties, the August 2013 guidance appears to cover industrial hemp production as well. Accordingly, some are interpreting the guidance as allowing states to proceed to implement their laws regulating and authorizing the cultivation of hemp.[69]

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[66] DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

[67] Letter providing guidance regarding marijuana enforcement from Deputy U.S. Attorney General James Cole to all U.S. States Attorneys, August 29, 2013, http://www.justice.gov/opa/pr/2013/August/13-opa-974.html.

[68] Ibid.

[69] Letter to interested parties from Joe Sandler, Counsel for Vote Hemp, November 13, 2013.

In November 2013, in response to a letter to Representative Earl Blumenauer, DOJ officials in Oregon clarified that since " 'industrial hemp' is marijuana, under the CSA, these eight enforcement priorities apply to hemp just as they do for all forms of cannibis" and that "federal prosecutors will remain aggressive" when it comes to protecting these eight priorities.[70]

Other Federal Actions

In 1994, President Clinton issued Executive Order 12919, entitled "National Defense Industrial Resources Preparedness," which was intended to strengthen the U.S. industrial and technology base for meeting national defense requirements. The order included hemp among the essential agricultural products that should be stocked for defense preparedness purposes.[71] Some hemp supporters have argued that the executive order gives hemp a renewed value as a strategic crop for national security purposes, in line with its role in World War II.[72]

USDA has supported research on alternative crops and industrial uses of common commodities since the late 1930s. Some alternative crops have become established in certain parts of the United States—kenaf (for fiber) in Texas, jojoba (for oil) in Arizona and California, and amaranth (for nutritious grain) in the Great Plains states. Many have benefits similar to those ascribed to hemp, but are not complicated by having a psychotropic variety within the same species.

The Critical Agricultural Materials Act of 1984 (P.L. 98-284, 7 U.S.C. §178) supports the supplemental and alternative crops provisions of the 1985 and 1990 omnibus farm acts and other authorities, and funds research and development on alternative crops at USDA and state laboratories. In 2010, USDA recommended $1.083 million for programs under the act.[73] In addition, Section 1473D of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA, 7 U.S.C. §3319d(c)) authorizes USDA to make competitive grants toward the development of new commercial products derived from natural plant material for industrial, medical, and agricultural applications.[74] In 2010, USDA recommended $835,000 for the program.[75] To date, these authorities have not been used to develop hemp cultivation and use.

State Laws

The past decade has witnessed a resurgence of interest in the United States in producing industrial hemp. Farmers in regions of the country that are highly dependent upon a single crop, such as tobacco or wheat, have shown interest in hemp's potential as a high-value alternative crop, although the economic studies conducted so far paint a mixed profitability picture.

[70] Letter to Representative Earl Blumenauer, from S. Amanda Marshall, U.S. Attorney, District of Oregon, November 7, 2013.

[71] Hemp is included under the category of "food resources," which it defined to mean, in part, "all starches, sugars, vegetable and animal or marine fats and oils, cotton, tobacco, wool, mohair, hemp, flax, fiber and other materials, but not any such material after it loses its identity as an agricultural commodity or product."

[72] J. B. Kahn, "Hemp ... Why Not?" Berkeley Electronic Press (bepress) Legal Series, Paper 1930, 2007.

[73] USDA's 2011 Explanatory Notes, http://www.obpa.usda.gov/17nifa2011notes.pdf.

[74] For information, see USDA, http://www.csrees.usda.gov/funding/rfas/pdfs/10_alt_crops.pdf.

[75] See USDA's 2011 Explanatory Notes, http://www.obpa.usda.gov/17nifa2011notes.pdf.

Beginning around 1995, an increasing number of state legislatures began to consider a variety of initiatives related to industrial hemp. Most of these have been resolutions calling for scientific, economic, or environmental studies, and some are laws authorizing planting experimental plots under state statutes. Nonetheless, the actual planting of hemp, even for state-authorized experimental purposes, remains regulated by the DEA under the Controlled Substances Act.

According to the advocacy organization Vote Hemp, as of early 2014, more than 30 states have introduced legislation favorable to hemp cultivation, and 20 states have already passed such legislation.[76] A summary of current state legislative actions regarding industrial hemp is as follows (also see text box):

- Several states have defined industrial hemp as distinct and removed barriers to its production (California, Colorado, Kentucky, Maine, Montana, North Dakota, Oregon, Vermont, Washington, and West Virginia).
- Several states have passed bills creating commissions or authorizing research (Hawaii, Kentucky, and Maryland).
- Several states have passed hemp resolutions (California, Colorado, Illinois, Montana, New Hampshire, New Mexico, North Dakota, Vermont, and Virginia).
- Several states have passed hemp study bills (Arkansas, Illinois, Maine, Minnesota, New Mexico, North Carolina, North Dakota, and Vermont). (Some states have done studies without legislative directive.)

Although several states have established programs under which a farmer may be able to grow industrial hemp under certain circumstances, a grower would still need to obtain a DEA permit and abide by the DEA's strict production controls. This relationship has resulted in some high-profile cases, wherein growers have applied for a permit but DEA has not approved (or denied) a permit to grow hemp, even in states that authorize cultivation under state laws. Ongoing cases involve attempts to grow hemp under state law in North Dakota, Montana, Vermont, and other states. DEA permits to grow hemp have been issued to some university researchers and to the Hawaii Industrial Hemp Research Program.[77]

Changes to Colorado's and Washington's state laws in November 2012 now allow for industrial hemp cultivation. Industrial hemp was reported as being grown in Colorado in 2013.[78] Challenges facing growers and state authorities regarding implementing the Colorado's law include sampling, registration and inspection, seed availability and sourcing, disposition of non-complying plants, and law enforcement concerns, as well as production issues such as hemp agronomics, costly equipment and limited manufacturing capacity, among other grower and processor concerns.[79]

[76] Vote Hemp, "U.S. Federal Industrial Hemp Legislation," http://www.votehemp.com/legislation.html.

[77] CRS communication with Vote Hemp representatives, July 24, 2013.

[78] S. Raabe, "First major Hemp Crop in 60 Years is Planted in Southeast Colorado," *Denverpost.com*, May 13, 2013; also see E. Hunter, "Industrial Hemp in Colorado," November 17 (presentation at the 2013 HIA conference).

[79] R. Carleton, "Regulating Industrial Hemp: The Colorado Experience," February 3, 2013 (presentation at the 2014 National Association of State Department of Agriculture (NASDA) winter meeting); and E. Hunter, "Industrial Hemp in Colorado," November 17, 2013 (presentation at the 2013 HIA conference).

Selected State Laws Providing for Hemp Cultivation and Research

California (2013): SB566 would establish a framework for state and county agricultural commissioners to oversee registration of hemp cultivation and to allow farmers to sell seed, oil, and fiber to manufacturers. Previous efforts in 2011 to allow for a hemp pilot program in selected counties in California were vetoed by the state's governor.

Colorado (2012): Ballot inititaitve (Amd. 64) defined "Industrial Hemp" as the plant of the genus *Cannabis* and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration that does not exceed 0.3% on a dry weight basis. Instructed the state legislature to enact legislation governing the cultivation, processing and sale of industrial hemp.

Hawaii (2002, 2001, 1996): Provided an extension of previous legislation allowing for privately funded industrial hemp research to be conducted in Hawaii under certain conditions (HB57 and HB32). Defined industrial hemp as containing "0.3 percent or less of THC." Provided for the cultivation of an initial test plot of industrial hemp. Previous action in 1996 provided for "a study on the economic potential, problems, and other related matters of growing nonpsychoactive industrial cannabis hemp as an agricultural product in Hawaii" (completed in 1997). Newly introduced legislation in 2013 would set-up an advisory board to oversee registration among producers.

Kentucky (2013, 2001): SB50 povided for the creation of a regulated framework to allow for the production and marketing of industrial hemp if it is legalized at the federal level. Previously, provided for an industrial hemp research program to conduct research on industrial hemp as an agricultural product in Kentucky.

Maine (2009, 2003): Provided for the growing of industrial hemp if a person holds a license issued by the Commissioner of Agriculture, Food and Rural Resources and the hemp is grown under a federal permit in compliance with the conditions of that permit (LD 1159). A previous 2003 law authorized the Maine Agricultural Experiment Station to study cultivation of industrial hemp and defined industrial hemp as any variety of Cannabis sativa L. with a THC concentration that "does not exceed 0.3% on a dry weight basis" and that is "grown under a federal permit in compliance with the conditions of that permit" (LD 53).

Maryland (2000): Established a pilot program to study the growth and marketing of industrial hemp under certain conditions and in consultation with specified state and federal agencies; also established licensing procedures for researchers who wish to grow hemp for research purposes (HB 1250).

Montana (2001): Authorized the production of industrial hemp as an agricultural crop under certain conditions; recognized hemp with no more than 0.3% THC as an "agricultural crop" (SB 261).

North Dakota (2007, 2005, 1999, 1997): Authorized the production of industrial hemp, and established licensing procedures to allow local farmers to grow hemp commercially. Other subsequent bills allowed for feral hemp seed collection and breeding at North Dakota State University (2005, HB 1492), and related to the sale of industrial hemp seed (2007, HB 1490), among other actions (including resolution related to federal policies and appropriations). Previous action in 1997 provided for a study of industrial hemp production in the state (completed in 1998).

Oregon (2009): Permitted production and possession of industrial hemp and trade in industrial hemp commodities and products. Authorized the State Department of Agriculture to administer licensing, permitting and inspection program for growers and handlers of industrial hemp. Allowed the department to charge fees to growers and handlers, and to impose civil penalty not exceeding $2,500 for violation of license or permit requirements.

Vermont (2013, 2008, 1996): SB50 provided for creation of a state-sanctioned process to grow hemp, despite federal regulations prohibiting cultivation. Previous actions provided for the development of an industrial hemp industry in Vermont and also provided for a study of industrial hemp production in the state (completed in 1997).

Washington (2012): Provided for the following definition of "marijuana" to mean all parts of the plant *Cannabis*, whether growing or not, with a THC concentration greater than 0.3 percent on a dry weight basis."

West Virginia (2002): Provided for licensing procedures to allow local farmers to plant, grow, harvest, possess, process and sell hemp commercially. Newly introduced legislation in 2013 would create a licensing system to allow for hemp production.

Other states: States considering removing barriers to growing hemp, according to press reports, include: Indiana, Nebraska, New Hampshire, New Jersey, New York, South Carolina, Tennessee, and Wisconsin.

Source: Compiled by CRS from legislation information at various state website and summary information posted by Vote Hemp (http://www.votehemp.com/state.html) and NORML (http://norml.org/index.cfm?Group_ID=3395). Other information is from "State Hemp Cultivation Bills Sprout," *Politico*, January 27, 2014.

It remains unclear how federal authorities will respond to production in states where state laws permit growing and cultivating hemp.

In November 2012, following the passage of Colorado's state law legalizing marijuana in some cases and also allowing for the cultivation of hemp, state authorities wrote a letter to DOJ requesting clarification about how federal enforcement authorities might respond to its newly enacted laws and forthcoming regulations.[80] Since federal law regards all varieties of the cannabis plant as "marijuana," many regard DOJ's August 2013 guidance ("Cole memo") as also likely applicable to the regulation of industrial hemp.[81] Nevertheless, in November 2013, Colorado's State Department of Agriculture officials wrote to the U.S. Department of Agriculture requesting clarification regarding the cultivation for industrial hemp specifically.[82]

In September 2013, Representative Blumenauer sent a letter to Oregon state officials urging them to implement that state's hemp laws.[83] In response, DOJ officials in Oregon indicated that they do not intend to interfere with their state's hemp production as long as it is well-regulated and subject to enforcement.[84] Some now regard that correspondence as further indicative of how federal authorities might respond to production in states where state laws permit growing and cultivating hemp.[85]

Despite these developments, in the past there has been ongoing tension between federal and state authorities over state hemp policies. After passing its own state law authorizing industrial hemp production in 1999,[86] researchers at North Dakota repeatedly applied for, but did not receive, a DEA permit to cultivate hemp for research purposes in the state.[87] Also in 2007, two North Dakota farmers were granted state hemp farming licenses and, in June 2007, filed a lawsuit in U.S. District Court (North Dakota) seeking "a declaratory judgment" that the CSA "does not prohibit their cultivation of industrial hemp pursuant to their state licenses."[88] The case was dismissed in November 2007.[89] The case was appealed to the U.S. Court of Appeals (Eighth Circuit), but was again dismissed in December 2009.[90] They filed an appeal in May 2010.[91]

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[80] Letter to Eric Holder, Jr., U.S. Attorney General, from the Governor and Attorney General of the State of Colorado, November 13, 2012.

[81] See discussion in "2013 Guidance Outlined in "Cole Memo"." Letter to interested parties from Joe Sandler, Counsel for Vote Hemp, November 13, 2013.

[82] Letter to Tom Vilsack, Secretary of Agriculture, from the Commissioner of the Colorado Department of Agriculture, November 13, 2013.

[83] Letter from Representative Earl Blumenauer to Oregon Department of Agriculture and State Board of Agriculture officials, September 17, 2013.

[84] Letter to Representative Earl Blumenauer, from S. Amanda Marshall, U.S. Attorney, District of Oregon, November 7, 2013. See also N. Crombie, "U.E. Rep. Earl Blumenauer urges Oregon to implement industrial hemp law," *The Oregonain*, September 18, 2013.

[85] CRS communication with representatives of Vote Hemp, Inc., January 2014.

[86] The North Dakota Department of Agriculture issued final regulations in 2007 on licensing hemp production. For information on the state's requirements, see http://www.agdepartment.com/Programs/Plant/HempFarming.htm.

[87] See, for example, letter from North Dakota State University to the DEA, July 27, 2007.

[88] *David Monson and Wayne Hauge v. Drug Enforcement Administration and United States Department of Justice*, Complaint for Declaratory Judgment, U.S. District Court for the District of North Dakota, June 18, 2007. For an overview, see Vote Hemp Inc. website: http://www.votehemp.com/legal_cases_ND.html#overview

[89] *Monson v. DEA*, 522 F. Supp. 2d 1188 (D.N.D. 2007).

[90] *Monson v. DEA*, 589 F.3d 952 (8th Cir. 2009).

[91] S. Roesler, "ND farmers file another industrial hemp appeal in district court," *Farm & Ranch Guide*, June 4, 2010.

Similarly, Montana passed its state law authorizing hemp production in 2001. In October 2009, Montana's Agriculture Department issued its first state license for an industrial hemp-growing operation in the state. Media reports indicate that the grower does not intend to request a federal permit, which would make the grower's attempt to grow hemp technically illegal. Some argue that this case could pose a potential challenge to DEA of whether it is willing to override the state's authority to allow for hemp production in the state, as well as a test of state's rights.[92]

Legislative Activity

2014 Farm Bill

The 113th Congress considered various changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate.[93] In the Senate, Senators Wyden, McConnell, Paul, and Merkley introduced an amendment to the Senate version of the farm bill (S. 954, the Agriculture Reform, Food and Jobs Act of 2013). The amendment (S.Amdt. 952) would have amended the CSA to exclude industrial hemp from the definition of marijuana. The amendment was not adopted as part of the Senate-passed farm bill.

In the House, Representatives Polis, Massie, and Blumenauer introduced an amendment to the House version of the farm bill (H.R. 1947, the Federal Agriculture Reform and Risk Management Act of 2013) during floor debate on the bill. The amendment (H.Amdt. 208) would allow institutions of higher education to grow or cultivate industrial hemp for the purpose of agricultural or academic research, and would apply to states that already permit industrial hemp growth and cultivation under state law. The amendment was adopted by the House of Representatives. However, the full House ultimately voted to reject H.R. 1947. Similar language was included as part of a subsequent revised version of the House bill (H.R. 2642), which was passed by the full House.

During conference on the House and Senate bills, the House provision was adopted with additional changes. The enacted law, Agricultural Act of 2014 (P.L. 113-79), expands the House bill provision to allow both certain research institutions and also state departments of agriculture to grow industrial hemp, as part of an agricultural pilot program, if allowed under state laws where the institution or state departments of agriculture is located. The provision also provides a statutory definition of "industrial hemp" as "the plant *Cannabis sativa L.* and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis."[94] The provision was included as part of the research title of the enacted 2014 farm bill. The provision did not include an enactment date that would suggest any kind of program rollout, and there appears to be nothing in the conference report or bill language to suggest that the states might not be able to immediately begin initiate action on this provision.

[92] M. Brown, "First license issued to Montana hemp grower," *Missoulian*, October 27, 2009.

[93] For information on the farm bill, see CRS Report R43076, *The 2014 Farm Bill (P.L. 113-79): Summary and Side-by-Side*.

[94] P.L. 113-79 (§ 7606).

Other Legislation

Other introduced legislation would provide for even greater opportunities for commercial cultivation of industrial hemp in the United States.

The Industrial Hemp Farming Act was first introduced in the 109th Congress by former Representative Ron Paul, and was reintroduced in subsequent legislative sessions (H.R. 1831, 112th Congress; H.R. 1866, 111th Congress; H.R. 1009, 110th Congress; H.R. 3037, 109th Congress). In the 112th Congress, Senator Ron Wyden introduced S. 3501 in the Senate.[95]

In the 113th Congress, the Industrial Hemp Farming Act of 2013 (Massie/H.R. 525; Wyden/S. 359) is intended to facilitate the possible commercial cultivation of industrial hemp in the United States. The bill would amend Section 102 of the Controlled Substances Act (21 U.S.C. 802(16)) to specify that the term "marijuana" does not include industrial hemp, which the bill would define based on its content of delta-9 tetrahydrocannabinol (THC), marijuana's primary psychoactive chemical. Such a change could remove low-THC hemp from being covered by the CSA as a controlled substance and subject to DEA regulation, thus allowing for industrial hemp to be grown and processed under some state laws. If enacted, these bills could remove low-THC hemp from being covered by the CSA as a controlled substance and subject to DEA regulation. The bill could grant authority to any state permitting industrial hemp production and processing to determine whether any such cannabis plants met the limit on THC concentration as set forth in the CSA. In any criminal or civil action or administrative proceeding, the state's determination may be conclusive and binding. Some in Congress believe that industrial hemp production could result in economic and employment gains in some states and regions.[96]

Groups Supporting/Opposing Further Legislation

In addition to groups such as HIA and Vote Hemp Inc. that are actively promoting reintroducing hemp as a commodity crop in the United States, some key agricultural groups also support U.S. policy changes regarding industrial hemp. For example:

- The National Farmers Union (NFU) updated its 2013 farm policy regarding hemp to urge the President, Attorney General, and Congress to "direct the U.S. Drug Enforcement Administration (DEA) to reclassify industrial hemp as a non-controlled substance and adopt policy to allow American farmers to grow industrial hemp under state law without affecting eligibility for USDA benefits."[97] Previously NFU's policy advocated that the DEA "differentiate

[95] Previous versions of the bill differ. Section 3 of the 2009 bill would apply when a state has an industrial hemp regulatory scheme, whereas the 2011 bills would apply whenever state law permits "making industrial hemp," which a state might do by exempting hemp making from its controlled substance regulatory scheme. Section 3 of the 2009 bill would have afforded state officials "exclusive authority" to construe the proposed hemp exclusion from the definition of marijuana (amending 21 U.S.C. §802(16)(B)), whereas the 2011 bills would include within the proposed industrial hemp exclusion (amending 21 U.S.C. §802(57)) any industrial hemp grown or possessed in accordance with state law relating to making industrial hemp. For more information, contact Charles Doyle, CRS attorney, 7-6968.

[96] See, for example, B. Schreiner, "Senate Committee Approves Hemp Legislation," *Associated Press*, February 11, 2013; also press release of Senate Minority Leader, Mitch McConnell, "Industrialized Hemp Will Help Spur Economic Growth and Create Jobs in Kentucky," January 31, 2013.

[97] NFU, "Policy of the National Farmers Union," March 2-5, 2013.

between industrial hemp and marijuana and adopt policy to allow American farmers to grow industrial hemp under state law without requiring DEA licenses."[98]

- The National Association of State Departments of Agriculture (NASDA) "supports revisions to the federal rules and regulations authorizing commercial production of industrial hemp," and has urged USDA, DEA, and the Office of National Drug Control Policy to "collaboratively develop and adopt an official definition of industrial hemp that comports with definitions currently used by countries producing hemp." NASDA also "urges Congress to statutorily distinguish between industrial hemp and marijuana and to direct the DEA to revise its policies to allow USDA to establish a regulatory program that allows the development of domestic industrial hemp production by American farmers and manufacturers."[99]
- The National Grange voted in 2009 to support "research, production, processing and marketing of industrial hemp as a viable agricultural activity."[100]
- Regional farmers' organizations also have policies regarding hemp. For example, the North Dakota Farmers Union (NDFU), as part of its federal agricultural policy recommendations, has urged "Congress to legalize the production of industrial hemp."[101] The Rocky Mountain Farmers Union (RMFU) has urged "Congress and the USDA to re-commit and fully fund research into alternative crops and uses for crops" including industrial hemp; also, they "support the decoupling of industrial hemp from the definition of marijuana" under the CSA and "demand the President and the Attorney General direct the U.S. Drug Enforcement Agency (DEA) to differentiate between industrial hemp and marijuana and adopt a policy to allow American farmers to grow industrial hemp under state law without requiring DEA licenses," to "legalize the production of industrial hemp as an alternative crop for agricultural producers."[102]
- In California, ongoing efforts to revise the definition of marijuana to exclude "industrial hemp" (SB 566) is supported by the State's Sheriffs' Association.[103] Previous efforts in 2011 to establish a pilot program to grow industrial hemp in selected counties were supported by the county farm bureau and two sheriff's offices (although the bill, SB 676, was later vetoed by the state's governor).[104]

Despite support by some, other groups continue to oppose policy changes regarding cannabis. For example, the National Alliance for Health and Safety, as part of Drug Watch International, claims

[98] NFU, "National Farmers Union Adopts New Policy on Industrial Hemp," March 22, 2010. Also see NFU, "Policy of the National Farmers Union," enacted by delegates to the 108th annual convention, Rapid City, SD, March 14-16, 2010.

[99] NASDA, "New Uses of Agricultural Products," 2010, http://www.nasda.org/cms/7196/9017/9350/7945.aspx.

[100] The National Grange, "Legislative Policies," http://www.nationalgrange.org/legislation/policy/policy_ag.htm; also see The National Grange, "Hemp Policy," http://www.grangehemppolicy.info/.

[101] NDFU, "2010 Program of Policy & Action," p. 8; also see http://www.ndfu.org.

[102] RMFU, "Policy 2010," http://www.rmfu.org/pdfs/RMFUPolicy10.pdf, p. 6, pp. 15-16, and p. 24.

[103] Letter from the California State Sheriff's Association to Chairwoman Cathleen Galgiani of the State Senate Agriculture Committee, March 21, 2013.

[104] Letters of support for SB 678 to California State Senator, Mark Leno, from the Imperial County Farm Bureau (June 16, 2011), Office of Sheriff, Kings County (July 19, 2011), and Office of Sheriff, Kern County (July 21, 2011).

that proposals to reintroduce hemp as an agricultural crop are merely a strategy by "the international pro-drug lobby to legalize cannabis and other illicit substances."[105] The California Narcotic Officer's Association claims that allowing for industrial hemp production would undermine state and federal enforcement efforts to regulate marijuana production, since they claim the two crops are not distinguishable through ground or aerial surveillance, but would require costly and time-consuming lab work to be conducted.[106] This group also claims that these similarities would create an incentive to use hemp crops to mask illicit marijuana production, since marijuana is such a lucrative cash crop.[107] Concerns about the potential linkages to the growing and use of illegal drugs are also expressed by some parent and community organizations, such as Drug Free America Foundation, Inc. and PRIDE Inc.[108]

Given the DEA's current policy positions (see section titled "Previous DEA Actions") and perceived DEA opposition to changing its current policies because of concerns over how to allow for hemp production without undermining the agency's drug enforcement efforts and regulation of the production and distribution of marijuana, further policy changes regarding industrial hemp are likely not forthcoming absent congressional legislative action.

Concluding Remarks

Hemp production in the United States faces a number of obstacles in the foreseeable future. The main obstacles facing this potential market are U.S. government drug policies and DEA concerns about the ramifications of U.S. commercial hemp production. These concerns are that commercial cultivation could increase the likelihood of covert production of high-THC marijuana, significantly complicating DEA's surveillance and enforcement activities and sending the wrong message to the American public concerning the government's position on drugs. DEA officials and a variety of other observers also express the concern that efforts to legalize hemp—as well as those to legalize medical marijuana—are a front for individuals and organizations whose real aim is to see marijuana decriminalized.[109]

Hemp production in the United States also faces competition from other global suppliers. The world market for hemp products remains relatively small, and China, as the world's largest hemp fiber and seed producer, has had and likely will continue to have major influence on market prices and thus on the year-to-year profits of producers and processors in other countries.[110] Canada's head start in the North American market for hemp seed and oil also would likely affect the profitability of a start-up industry in the United States.

[105] See, for example, Drug Watch International, "Position Statement on Hemp (*Cannabis sativa* L.)," November 2002.

[106] Letter from the California Narcotic Officer's Association to Governor Arnold Schwarznegger, September 18, 2007.

[107] CRS conversation with John Coleman, August 22, 2011.

[108] Information provided to CRS by Jeanette McDougal, National Alliance for Health and Safety, August 22, 2011.

[109] For more information on legislative and executive branch actions concerning illegal drugs, see CRS Report RL32352, *War on Drugs: Reauthorization and Oversight of the Office of National Drug Control Policy.* For information on issues pertaining to medical marijuana, see CRS Report CRS Report RL33211, *Medical Marijuana: Review and Analysis of Federal and State Policies.*

[110] T. R. Fortenbery and M. Bennett, "Opportunities for Commercial Hemp Production," *Review of Agricultural Economics*, vol. 26, no. 1, Spring 2004, pp. 97-117. The time period covered in this study ends with the year 2000.

Nevertheless, the U.S. market for hemp-based products has a highly dedicated and growing demand base, as indicated by recent U.S. market and import data for hemp products and ingredients, as well as market trends for some natural foods and body care products. Given the existence of these small-scale, but profitable, niche markets for a wide array of industrial and consumer products, commercial hemp industry in the United States could provide opportunities as an economically viable alternative crop for some U.S. growers.

Appendix. Listing of Selected Hemp Studies

Below is a listing of reports and studies, ranked by date (beginning with the most recent).

- University of Kentucky, Department of Agricultural Economics, *Economic Considerations for Growing Industrial Hemp: Implications for Kentucky's Farmers and Agricultural Economy*, July 2013, http://www2.ca.uky.edu/cmspubsclass/files/EconomicConsiderationsforGrowingIndustrialHemp.pdf.
- C. A. Kolosov, "Regulation of Industrial Hemp under the Controlled Substances Act" *UCLA Law Review,* vol. 57, no. 237, October 2009, http://uclalawreview.org/pdf/57-1-5.pdf.
- Manitoba Agriculture, *National Industrial Hemp Strategy*, March 2008 (prepared for Food and Rural Initiative Agriculture and Agri-Food Canada).
- Reason Foundation, "Illegally Green: Environmental Costs of Hemp Prohibition," Policy Study 367, March 2008, http://www.reason.org/ps367.pdf.
- Agriculture and Agri-Food Canada, *Canada's Industrial Hemp Industry*, March 2007, http://www.agr.gc.ca/misb/spcrops/sc-cs_e.php?page+hemp-chanvre.
- Maine Agricultural Center, *An Assessment of Industrial Hemp Production in Maine*, January 2007, http://www.mac.umaine.edu/.
- N. Cherrett et al., "Ecological Footprint and Water Analysis of Cotton, Hemp and Polyester," Stockholm Environment Institute, 2005, http://www.sei-international.org/mediamanager/documents/Publications/Future/cotton%20hemp%20polyester%20study%20sei%20and%20bioregional%20and%20wwf%20wales.pdf.
- T. R. Fortenbery and M. Bennett, "Opportunities for Commercial Hemp Production," *Applied Economics Perspectives and Policy,* 26(1): 97-117, 2004.
- E. Small and D. Marcus, "Hemp: A New Crop with New Uses for North America," In: *Trends in New Crops and New Uses*, 2002, http://www.hort.purdue.edu/newcrop/ncnu02/v5-284.html.
- T. R. Fortenbery and M. Bennett, "Is Industrial Hemp Worth Further Study in the U.S.? A Survey of the Literature," Staff Paper No. 443, July 2001, http://ageconsearch.umn.edu/bitstream/12680/1/stpap443.pdf.
- J. Bowyer, "Industrial Hemp (Cannabis sativa L.) as a Papermaking Raw Material in Minnesota: Technical, Economic and Environmental Considerations," Department of Wood & Paper Science Report Series, May 2001.
- K. Hill, N. Boshard-Blackey, and J. Simson, "Legislative Research Shop: Hemp," University of Vermont, April 2000, http://www.uvm.edu/~vlrs/doc/hemp.htm
- USDA, Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential*, AGES001E, January 2000, http://www.ers.usda.gov/publications/ages001e/ages001em.pdf.

- M. J. Cochran, T. E. Windham, and B. Moore, "Feasibility of Industrial Hemp Production in Arkansas," University of Arkansas, SP102000, May 2000.
- D. G. Kraenzel et al. "Industrial Hemp as an Alternative Crop in North Dakota," AER 402, North Dakota State University, Fargo, July 1998, http://ageconsearch.umn.edu/handle/23264.
- E. C. Thompson et al., *Economic Impact of Industrial Hemp in Kentucky*, University of Kentucky, July 1998.
- D. T. Ehrensing, *Feasibility of Industrial Hemp Production in the United States Pacific Northwest*, SB 681, Oregon State University, May 1998, http://extension.oregonstate.edu/catalog/html/sb/sb681/.

Author Contact Information

Renée Johnson
Specialist in Agricultural Policy
rjohnson@crs.loc.gov, 7-9588

TESTIMONY ON SENATE BILL 2175 SD1
A BILL FOR AN ACT RELATING TO INDUSTRIAL HEMP
By
Keith Kamita
Committee on Commerce and Consumer Protection
Senator Rosalyn H. Baker, Chair
Senator Brian T. Taniguchi, Vice Chair

Senate Committee on Judiciary and Labor
Senator Clayton Hee, Chair
Senator Maile S.L. Shimabukuro, Vice Chair

Tuesday, February 25, 2014 at 10:15 AM
State Capitol, Room 229

Chairs Baker and Hee, Vice Chairs Taniguchi and Shimabukuro and Members of the Committees:

Today I am testifying as a private citizen however I have 27 years of experience in the regulation and enforcement of controlled substance laws in the State of Hawaii. I **cannot support Senate Bill 2175 SD1 as written** that would authorizes the dean of the college of tropical agriculture and human resources at the University of Hawaii at Manoa to establish a two-year industrial hemp remediation and biofuel research program. Section 3 of Senate Bill 2175 SD1 attempts to prohibit any person from enforcing existing State law relating to controlled substance registration and violations as delineated under Chapter 329 HRS. Presently under existing State law and language in SB2175 SD1 there is not definition of "industrial hemp." However present federal and state law indicates that any cannabis plant with a tetrahydrocannabinol level over zero percent is considered marijuana a hallucinogenic Schedule I controlled substance and therefore requires a State and Federal Controlled Substance certificate to conduct research.

DEA Administrator Asa Hutchinson stated, "many Americans do not know that hemp and marijuana are both parts of the same plant and that hemp cannot be produced without producing marijuana." While most of the THC in cannabis plants is concentrated in the marijuana, all parts of the plant, including hemp, have been found to contain THC. The existence of THC in hemp is significant because THC, like marijuana, is a schedule I controlled substance. Federal law prohibits human consumption and possession of schedule I controlled substances. In addition, the Food and Drug Administration do not approve them for medical use. The rules that DEA is publishing explain which hemp products are legal and which are not. This will depend on whether the product causes THC to enter the human body. If the product does cause THC to enter the human body, it is an illegal substance that may not be manufactured, sold, or consumed in the United States. Such products include "hemp" foods and beverages that contain THC. If, however, the product does not cause THC to enter the human

body, it is a noncontrolled substance that may lawfully be sold in the United States. Included in the category of lawful hemp products are textiles, such as clothing made using fiber produced from cannabis plant stalks. Also in the lawful category are personal care products that contain oil from sterilized cannabis seeds, such as soaps, lotions, and shampoos.

I would like to bring to your attention that Section 3 of Senate Bill 2175 SD1 does not address the fact that anyone seeking to do research with marijuana/cannabis hemp must apply for a controlled substance registration with both the State's Narcotics Enforcement Division and the Federal Drug Enforcement Administration as a "researcher." A person registered to conduct research with a basic class of controlled substances listed in Schedule I shall be authorized to manufacture or import such class if and to the extent that such manufacture or importation is set forth in the research protocol submitted at the time of registration. In order to complete the process of registration as a researcher of controlled substances, the DEA and State considers certain criteria. These criteria include:

(1) Maintenance of effective controls against diversion of controlled substances into other than legitimate medical, scientific, or industrial channels;
(2) Compliance with applicable state and local law;
(3) Any convictions of the applicant under any federal and state laws relating to any controlled substance;
(4) Past experience in the manufacture or distribution of controlled substances, and the existence in the applicant's establishment of effective controls against diversion;
(5) Furnishing by the applicant of false or fraudulent material in any application filed under this chapter;
(6) Suspension or revocation of the applicant's federal registration to manufacture, distribute, prescribe or dispense controlled substances as authorized by federal law; and
(7) Any other factor relevant to and consistent with the public health and safety.

Controlled substance registration under Federal and State law does not entitle a registrant to manufacture, dispense, prescribe, and distribute controlled substances in Schedule I or II other than those specified in the registration.

A controlled substance registration is necessary due to the fact that under Chapter 329-1 of the Hawaii Revised Statutes there is no distinction made between the plant genuses Cannabis which both hemp and Marijuana is part of. State law defines "Marijuana" as all parts of the plant (genus) Cannabis whether growing or not; the seeds thereof, the resin extracted from any part of the plant; and every compound, manufacture, salt, derivative, mixture, or preparation of the plant, its seeds, or resin. It 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 there from), fiber, oil, or cake, or the sterilized seed of the plant

that is incapable of germination. The law focuses on the THC content of the plant genus Cannabis with a level over 0%.

Under present federal and state law, any cannabis plant with a tetrahydrocannabinol level over zero percent is considered marijuana a hallucinogenic Schedule I controlled substance and cannot be manufactured for sale to the public. However, if the product does not contain THC then is not considered a controlled substance but the manufacture would still have to be registered with DEA and Narcotics Enforcement Division to process the raw material and dispose of the controlled substance containing by products.

Thank you for the opportunity to testify on this matter.

SB2175
Submitted on: 2/24/2014
Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Unmani Cynthia Groves	Individual	Support	No

Comments: Additional file to attach to testimony.

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SB2175
Submitted on: 2/24/2014
Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Unmani Cynthia Groves	Individual	Support	No

Comments: Letter re: Hemp from the Dept of Justice

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Selected State Laws Providing for Hemp Cultivation and Research

Several states have taken steps to legalize the cultivation and research of industrial hemp, including Colorado, Hawaii, Kentucky, Maine, Maryland, Montana, North Dakota, Oregon, Vermont, Washington, and West Virginia.

Colorado (2012): Defined "Industrial Hemp" as the plant of the genus *Cannabis* and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration that does not exceed 0.3% on a dry weight basis. Instructed the state legislature to enact legislation governing the cultivation, processing and sale of industrial hemp by July 1, 2014 (Amendment 64; http://www.leg.state.co.us/; http://www.colorado.gov/).

Hawaii (2002, 2001, 1996): Provided an extension of previous legislation allowing for privately funded industrial hemp research to be conducted in Hawaii under certain conditions (HB57, http://www.capitol.hawaii.gov/session2002/status/HB57.asp; HB32, http://www.capitol.hawaii.gov/session1999/bills/hb32_sd2_.htm). Defined industrial hemp as containing "0.3 percent or less of THC." Provides for the cultivation of an initial test plot of industrial hemp. A previous 1996 law provided for "a study on the economic potential, problems, and other related matters of growing nonpsychoactive industrial cannabis hemp as an agricultural product in Hawaii" (completed in 1997).

Kentucky (2001): Provided for an industrial hemp research program to conduct research on industrial hemp as an agricultural product in Kentucky (HB 100, http://www.lrc.state.ky.us/recarch/01rs/HB100.htm).

Maine (2009, 2003): Provided for the growing of industrial hemp if a person holds a license issued by the Commissioner of Agriculture, Food and Rural Resources and the hemp is grown under a federal permit in compliance with the conditions of that permit (LD 1159, http://www.mainelegislature.org/LawMakerWeb/summary.asp?ID=280032156). A previous 2003 law authorized the Maine Agricultural Experiment Station to study cultivation of industrial hemp and defined industrial hemp as any variety of Cannabis sativa L. with a THC concentration that "does not exceed 0.3% on a dry weight basis" and that is "grown under a federal permit in compliance with the conditions of that permit" (LD 53, http://www.mainelegislature.org/legis/bills_121st/LD.asp?LD=53).

Maryland (2000): Established a pilot program to study the growth and marketing of industrial hemp under certain conditions and in consultation with specified state and federal agencies; also established licensing procedures for researchers who wish to grow hemp for research purposes (HB 1250, http://mlis.state.md.us/2000rs/billfile/HB1250.htm).

Montana (2001): Authorized the production of industrial hemp as an agricultural crop under certain conditions; recognized hemp with no more than 0.3% THC as an "agricultural crop" (SB 261).

North Dakota (2007, 2005, 1999, 1997): Authorized the production of industrial hemp, and established licensing procedures to allow local farmers to grow hemp commercially (HB 1428, http://www.legis.nd.gov/assembly/56-1999/bill-actions/ba1428.html). Other subsequent bills allowed for feral hemp seed collection and breeding at North Dakota State University (2005, HB 1492), and related to the sale of industrial hemp seed (2007, HB 1490), among other actions (including resolution related to federal policies and appropriations). A previous action in 1997 provided for a study of industrial hemp production in the state (completed in 1998).

Oregon (2009): Permitted production and possession of industrial hemp and trade in industrial hemp commodities and products. Authorized the State Department of Agriculture to administer licensing, permitting and inspection program for growers and handlers of industrial hemp. Allowed the department to charge fees to growers and handlers, and to impose civil penalty not exceeding $2,500 for violation of license or permit requirements (SB 676, http://www.leg.state.or.us/09reg/measures/sb0600.dir/sb0676.intro.html).

Vermont (2008, 1996): Provided for the development of an industrial hemp industry in Vermont (H 267, http://www.leg.state.vt.us/database/status/summary.cfm?Bill=H%2E0267&Session=2008). A previous action in 1996 provided for a study of industrial hemp production in the state (completed in 1997).

Washington (2012): Provided for the following definition of "marijuana" to mean all parts of the plant *Cannabis*, whether growing or not, with a THC concentration greater than 0.3 percent on a dry weight basis" (Initiative 502; http://apps.leg.wa.gov/documents/billdocs/2011-12/Pdf/Initiatives/Initiatives/INITIATIVE%20502.pdf).

West Virginia (2002): Provided for licensing procedures to allow local farmers to plant, grow, harvest, possess, process and sell hemp commercially (SB 447, http://www.legis.state.wv.us/Bill_Text_HTML/2002_SESSIONS/RS/Bills/SB447%20INTR.htm).

Source: Compiled by CRS from legislation information at various state website and summary information posted by Vote Hemp (http://www.votehemp.com/state.html) and NORML (http://norml.org/index.cfm?Group_ID=3395).

U. S. Department of Justice
Drug Enforcement Administration

Washington, D.C. 20537

MAR 3 0 2001

Honorable Cynthia Thielen
State of Hawaii House of Representatives
State Capitol
Honolulu, Hawaii 96813

Dear Representative Thielen:

This is in response to your inquiry dated December 21, 2000, requesting that the Drug Enforcement Administration (DEA) not issue any new rules in the Federal Register with respect to "industrial hemp."

"Industrial hemp" is a term that some use to refer to cannabis plants that are grown to produce fiber and oil used in industrial products. The end products made from cannabis plants, such as paper, rope, clothing, and industrial solvents, are likewise referred to by some as "hemp" products. All cannabis plants -- including those grown for "industrial hemp" -- contain marijuana and tetrahydrocannabinols (THC), which are hallucinogenic substances listed in schedule I of the Controlled Substances Act (CSA). Therefore, as the principal federal agency charged with enforcing the CSA, DEA is responsible for regulating production of cannabis and cannabis-derived products.

DEA has been consulting with the Department of Justice, the Office of National Drug Control Policy, and other federal agencies, in an effort to determine how to balance the protection of the health and safety of the general public with the needs of private industry. Taking such considerations into account, DEA has drafted proposed regulations that will specify which cannabis-derived products are subject to control under the CSA. The drafted regulations focus on whether the particular cannabis-derived "hemp" product causes THC to enter the human body. If so, the product will remain a schedule I controlled substance subject to control under the CSA. If, however, use of the product (such as paper or clothing) does not cause THC to enter the human body, the product will be exempted from control and thereby not subject to any of the CSA regulatory provisions that apply to controlled substances.

In accordance with the Administrative Procedure Act, DEA must publish notice of any proposed regulations in the Federal Register and provide members of the public with the opportunity to submit comments. If such publication occurs, it will specify the time and manner for the public to submit comments. All comments will be carefully considered by DEA and taken into account in arriving at the final rule.

If I may be of further assistance to you in this matter, please do not hesitate to contact me.

Sincerely,

Toni P. Teresi
Chief, Office of Congressional Affairs

SB2175
Submitted on: 2/22/2014
Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Robert Bacher	Hawaiian Standard & Green Futures	Support	Yes

Comments: I am very excited that Hawaii will again be able to grow hemp and will be working with UH to ensure that this time, it can create more than just jobs thousands of full-filling careers for people who will help make valuable and sustainable products for a healthy lifestyle. It is a great opportunity for our company, the experts and students of UH, and for Hawaii. I have attached a short list of some of the more profitable of the 50,000 possibles uses of Hemp that we will focus on.

Please note that testimony submitted less than 24 hours prior to the hearing, improperly identified, or directed to the incorrect office, may not be posted online or distributed to the committee prior to the convening of the public hearing.

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Hemp Plastic Products (JV or partnership with Hawaiian Plastics?)

1. hemp plastic pellets (for sale to manufacturers)
2. frisbee
3. plate-lunch-box
4. coolers
5. water sports products

Hemp Construction Materials

1. Hempcrete (possible licensing agreement with Ameron)
2. Fiberboard / Lumber products

Hemp Battery Products

1. nanomaterial
2. High performance batteries for wholesale to buyer like Tesla & SolarCity, and maybe cellphone and computer companies for use in their products
3. maybe Consumer batteries for retailers like Lowes, Walmart & RadioShack

Hemp Cosmetics

1. sunscreen
2. makeup
3. lotions
4. massage oils

Hemp Foods

1. HempSeeds
2. HempSeed Oil
3. Macadamia/Hempseed Oil Pesto
4. Granola Bars

Hemp Paper/Rope (Hawaii Grown? taken?)

SB2175
Submitted on: 2/24/2014
Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Denise Key	Individual	Support	No

Comments: Feb 24, 2014 SB2175 SD1 Legalizing the growing of Industrial hemp Hearing Feb 25, 2014 10:15 AM Aloha Senators, I, Denise Key, am in full support of SB2175 SD1 to legalize the growing of industrial hemp in Hawaii. There are 10 states who, currently have legalized the growing of industrial hemp. CA, CO, KY, ME, MT, ND, OR, VT, WA, and WV LET'S BE THE 11TH STATE TO LEGALIZE INDUSTRIAL HEMP and reap the many benefits of this amazing plant while reducing our need for imports! On Feb 7, 2014 President Obama signed the Farm Act into Law "With the U.S. hemp industry estimated at over $500 million in annual retail sales and growing, a change in federal law to allow colleges and universities to grow hemp for research means that we will finally begin to regain the knowledge that unfortunately has been lost over the past fifty years," says Vote Hemp President Eric Steenstra. "This is the first time in American history that industrial hemp has been legally defined by our federal government as distinct from drug varieties of Cannabis. The market opportunities for hemp are incredibly promising-ranging from textiles and health foods to home construction and even automobile manufacturing. This is not just a boon to U.S. farmers, this is a boon to U.S. manufacturing industries as well."
http://www.marijuana.com/news/2014/02/president-obama-signs-farm-bill-amendment-to-allow-industrial-hemp-research-by-state-agriculture-departments-colleges-and-universities/ As you may know, Hawaii did legalize a pilot program in 1999 for research on the industrial hemp plant. David P West PhD conducted the research and concluded "In this Project I was able to demonstrate that the genetic potential exists within the world's hemp germplasm to create a variety of hemp capable of growing in a few months in a tropical environment a forest of 10 foot plants to provide fiber to any of a long list of industries. I had the plants; I showed it could be done. Perhaps, in some more reasonable future, it may be done again."
http://www.votehemp.com/PDF/Final_Report101303.pdf Since we already have a study and know it can be grown successfully in HI. The benefits of industrial hemp would bring a positive boost to the well being of our environment, economy creating new business, jobs and help us be more self sustainable reducing our need for import. I would like to see this bill not limited to a few acres of research but open, with the proper permits, to other local farmers and industries to help heal our aina and replace current crops that do not benefit the aian or people of HI. Respectfully, Denise Key Kihei, Maui www.ihemphi.com

SB2175
Submitted on: 2/23/2014
Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Dona Willoughby	Individual	Support	No

Comments: I am in favor of the dean of the college of tropical agriculture and human resources at the University of Hawaii at Manoa to establish a two-year industrial hemp remediation and biofuel research program. (SD1) Please allow this for the sake of our environment. Mahalo, Cdr. Willoughby, ret. USN

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SB2175
Submitted on: 2/24/2014
Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Barbara Barry	Individual	Support	No

Comments: Growing this useful crop would solve many of Maui's problems with pesticide, herbicide, fungicide poisonings since this crop needs none of the above, is low water usage and cleans the soil and air. The many uses of the plant will be a source of jobs and revenue for the Island of Maui. Please pass this bill. Mahalo, Barbara Barry

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SB2175
Submitted on: 2/21/2014
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Submitted By	Organization	Testifier Position	Present at Hearing
Harriet Witt	Individual	Support	No

Comments: Our soils have been dangerously depleted by plantation agribusiness. We need the soil regeneration that the growing of hemp accomplishes.

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SB2175
Submitted on: 2/21/2014
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Submitted By	Organization	Testifier Position	Present at Hearing
Keith Ranney	Individual	Support	No

Comments: The industrial hemp industry offers a far great return on investment than sugar in terms of land and human health.

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SB2175
Submitted on: 2/20/2014
Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Lyn Howe	Individual	Support	No

Comments: There is so much potential with this resource. food, building materials, etc. This would be a great resource for the islands and for potential revenue. Please pass this bill. Thank you

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Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Tracy E Mills	Individual	Support	No

Comments: Let's clean up Hawaii and replace the pollution from cane to the rejuvenation of growing and exporting hemp. Let's give those workers a chance to work without being poisoned and let's give our tourist industry a boost.

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SB2175
Submitted on: 2/21/2014
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Submitted By	Organization	Testifier Position	Present at Hearing
Michael Reed Gach	Individual	Support	No

Comments: I support SB2175 for creating a two year study on Industrial Hemp in Hawaii. Hemp has been used successfully for food, pest and mold resistant building supplies, fuel, paper and clothing. Drought and pest resistant hemp revitalizes and detoxes soil. I recommend this bill to study industrial hemp because of its potential for greater SUSTAINABILITY IN HAWAII: Hemp produces 4 times the raw material than trees for paper making. Hemp can be planted between 1-3 times a season, depending on location and can be recycled up to 10 times, compared to 3 or 4 for wood pulp paper. The same fibre products that the hemp harvest produces also provides raw-materials for a host of other sustainable products. This study would prohibit growing marijuana. Industrial hemp is completely different in this composition, structure, and chemistry to marijuana and the two are difficult to cultivate together. It's not possible to use hemp as a drug or grow marijuana in hemp fields as the hemp grows faster and suffocates the marijuana while degrading it through cross pollination. Industrial Hemp is a healthy alternative to reduce or eliminate the need for Pesticides on our islands and to save water. This hardy, healthy crop benefits the well being of our Ohana and Aina. I urge you to support SB 2175, for this valuable 2-year Industrial Hemp Remediation and Biofuel Crop Research Program. I believe Industrial Hemp can be one of our major answers to self-sustainability. It can now make Hawaii more independent from imports and vital economically. Michael Reed Gach, Ph.D. Kihei, Maui, HI Resident

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Submitted on: 2/20/2014
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Submitted By	Organization	Testifier Position	Present at Hearing
Annie Nelson	Individual	Support	No

Comments: Dear Committee Members, Please thoughtfully consider this bill for the State of Hawaii as we need the resource of hemp desperately. Apart from the ancillary benefits of textile, high protien food, fiber, building material INCLUDING HEMPCRETE which Hawaii desperately needs as it is strong & anti mould, it is a good source of oil for human consumption as well as a feedstock for biodiesel!

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SB2175
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Testimony for CPN/JDL on Feb 25, 2014 10:15AM in Conference Room 229

Submitted By	Organization	Testifier Position	Present at Hearing
Joy Nelson	Individual	Support	No

Comments: Our architect is drawing up plans for our new home on Maui. We would like to be able to use as much hemp as possible in the building materials. Hawaii is the ideal location to develop this crop.

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Submitted By	Organization	Testifier Position	Present at Hearing
marta greenleaf	Individual	Support	No

Comments: Hemp is the crop that can create fuel, food, paper, building materials, etc. also, it grows quickly and without pesticides.

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Submitted By	Organization	Testifier Position	Present at Hearing
Mike Moran	Individual	Support	No

Comments: Strongly support this bill. Please approve it to go forward. This is just a start, but a positive move, & we need to plan ahead. Say yes to INDUSTRIAL hemp. Mahalo, Mike Moran Kihei

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Submitted By	Organization	Testifier Position	Present at Hearing
Gail Swanson	Individual	Support	No

Comments: I absolutely support this bill. Bio-fuel and hemp are the future. Thank you!

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Submitted By	Organization	Testifier Position	Present at Hearing
Louisa Wooton	Individual	Support	No

Comments: I strongly support this legislation.

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Submitted By	Organization	Testifier Position	Present at Hearing
Neil Vonhof	Individual	Support	No

Comments: This is such and logical step forward, there should be nothing to debate. It should just be done! Mahalo for providing this ability to interact!

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Submitted By	Organization	Testifier Position	Present at Hearing
Ryan Anderson	Individual	Support	No

Comments: Hawaii can lead the nation here. Let's not miss the boat on this one!

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Submitted By	Organization	Testifier Position	Present at Hearing
Sharon Marvel	Individual	Support	No

Comments: Let's grow hemp and clean it all up! The air, the aina, the water give their thanks to us!

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Submitted By	Organization	Testifier Position	Present at Hearing
Carey Lillis Tinsley	Individual	Support	No

Comments: Hemp will help hawaii!

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Submitted By	Organization	Testifier Position	Present at Hearing
chris kobayashi	Individual	Support	No

Comments: mahalo for your support for this amazing useful crop. let's do it!

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Submitted By	Organization	Testifier Position	Present at Hearing
Maria Clark	Individual	Support	No

Comments: Please support SB 2175 Mahalo, Maria Clark

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Submitted By	Organization	Testifier Position	Present at Hearing
Jenna Long	Individual	Support	No

Comments:

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Submitted By	Organization	Testifier Position	Present at Hearing
M Loftus	Individual	Support	No

Comments:

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Submitted By	Organization	Testifier Position	Present at Hearing
Erin Wooldridge	Individual	Support	No

Comments:

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Submitted By	Organization	Testifier Position	Present at Hearing
Barbara Best	Individual	Support	No

Comments:

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Submitted By	Organization	Testifier Position	Present at Hearing
Judie Hoeppner	Individual	Support	No

Comments:

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Submitted By	Organization	Testifier Position	Present at Hearing
nicolle jones	Individual	Support	No

Comments:

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Submitted By	Organization	Testifier Position	Present at Hearing
daniel uppendahl	Individual	Support	No

Comments:

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