

June 10, 2016

Drug Enforcement Administration
Attn: Acting Administrator Chuck Rosenberg
8701 Morrisette Drive
Springfield, VA 22152

Dear Administrator,

The Petitioners identified in the attachment hereby petition the Administrator to initiate proceedings for the amendment of a rule or regulation pertaining to section 201 of the Controlled Substances Act (21 U.S.C. 811).

Enclosed herein and constituting a part of this petition are the following:

- (A) The proposed rules in the form proposed by the Petitioner.
- (B) A statement of the grounds that the Petitioner relies for the issuance of the rules.

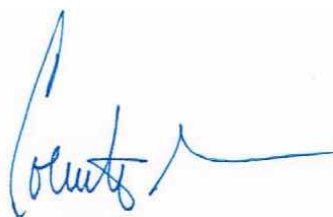
All notices to be sent regarding this petition should be addressed to the signers below.

When you respond to this petition, in the *Federal Register* or elsewhere, we would appreciate it if you would, fully cite as follows (including the URL): Kerr, Andy and Courtney N. Moran. 2016. To Remove Industrial Hemp from the Federal Drug Schedules: An Administrative Rulemaking Petition to the U.S. Drug Enforcement Administration (available at www.naihc.org/images/stories/dearulemakingpetition.pdf)."

Respectfully yours,



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encl. Kerr, Andy and Courtney N. Moran. 2016. To Remove Industrial Hemp from the Federal Drug Schedules: An Administrative Rulemaking Petition to the U.S. Drug Enforcement Administration (available at www.naihc.org/images/stories/dearulemakingpetition.pdf).

**An Administrative Rulemaking Petition
to the**

U.S. Drug Enforcement Administration

From Petitioners

North American Industrial Hemp Council

Ray Berard

Ben Droz

Tyler Frank

Jeff Gain

Gale Glenn

Barry Grissom

Anndrea Hermann

William Holmberg

Colleen Sauv   Keahey

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David Monson

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Floyd Prozanski

Dave Seber

Gerry Shapiro

Erwin A. (“Bud”) Sholts

Cynthia Thielen

Carl Wilson

Filed Pursuant to the Administrative Procedure Act

**To Remove Industrial Hemp From the Federal Drug
Schedules**

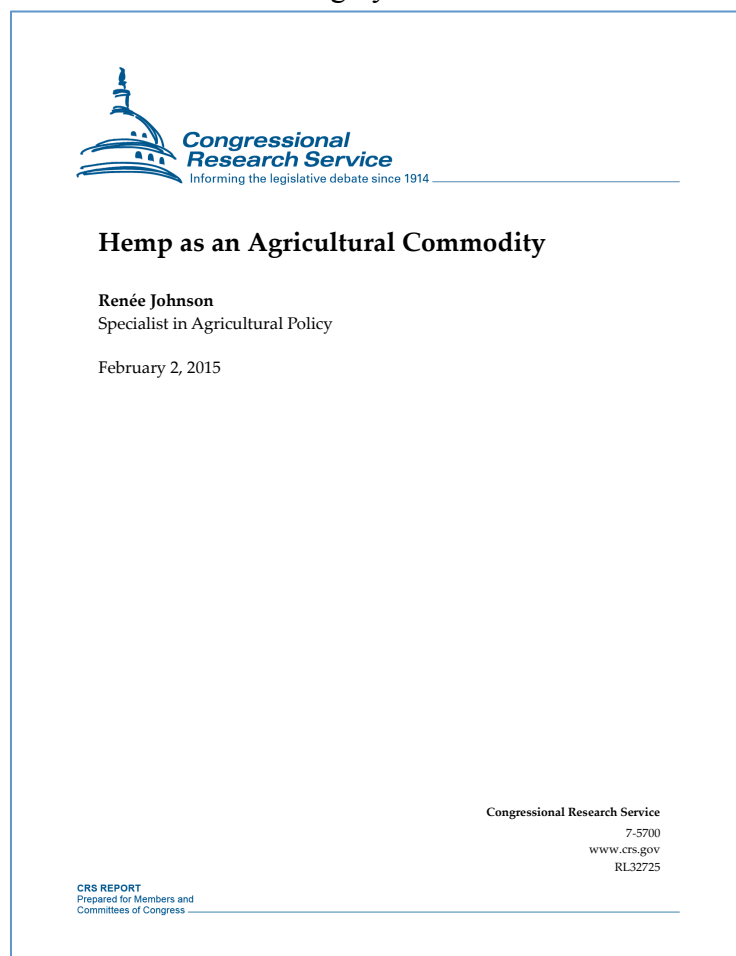
June 2016

***With Special Appreciation to Supporters of the Relegalizing Industrial Hemp
Project Indiegogo Campaign
Authorship***

This petition was drafted by Andy Kerr (andykerr@andykerr.net) of The Larch Company (www.andykerr.net) and Courtney N. Moran, LL.M. (courtney@earthlawllc.com) of EARTH Law, LLC. The authors wish to extend their appreciation to the following that contributed information, thoughts, suggestions, comments, edits and other resources: The office of Rep. Earl Blumenauer, David Bush, North American Industrial Hemp Council, the other petitioners, and the contributors to the Relegalizing Industrial Hemp Project Indiegogo Campaign. There are others we would also like to thank, but it would be impolitic to do so publicly. You know who you are.

The authors also acknowledge and appreciate Jay Halfon, the author of an earlier DEA administrative rulemaking petition to reclassify industrial hemp, which was done under the sponsorship of Essential Information (founded by Ralph Nader).

Because it is both thoroughly researched and well written—as well as in the public domain—this



administrative rulemaking petition incorporates most of the text of a Congressional Research Service report to Members and Committees of Congress entitled *Hemp as an Agricultural Commodity*, authored by Renée Johnson, a Specialist in Agricultural Policy at the Congressional Research Service, dated February 2, 2015. Some portions of the June 25, 2014 CRS report are also included for reference. When incorporating any text, footnotes and appendices from either CRS report into this petition, the sans-serif 11-point Arial typeface is used (save for the Table of Contents). The default font of this document is serif 12-point Times New Roman typeface. As neither Ms. Johnson nor CRS were asked permission to use their report, in no way should the inclusion of their words in this administrative rulemaking petition be construed as support by them for this petitioning effort. The latest 2016 version may be downloaded at (among others, but not

from CRS): <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>.

Suggested citation: Kerr, Andy and Courtney N. Moran. 2016. To Remove Industrial Hemp from the Federal Drug Schedules: An Administrative Rulemaking Petition to the U.S. Drug Enforcement Administration (available at www.naihc.org/images/stories/dearulemakingpetition.pdf).

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Petition for Rulemaking

Petitioned

This petition for administrative rulemaking pursuant to the Administrative Procedure Act of 1946 (5 U.S.C. § 553) and DEA regulations (21 C.F.R. § 1308.43) is served upon:

Drug Enforcement Administration
Attn: Acting Administrator Chuck Rosenberg
8701 Morrisette Drive
Springfield, VA 22152

Petitioners

The common interests of the Petitioners center exclusively on the cultivation and manufacture of industrial hemp for commercial purposes, including but not limited to, the use of fiber for construction, industrial, and clothing products; seed and oil for use in food, cosmetics, and industrial products; and both fiber and oil as renewable fuel feedstock.

Petitioners are businesses, farmers, attorneys, elected officials, entrepreneurs, technical experts, public policy advocates, and non-profit organizations (listed below) that believe that the United States economy, environment, and national security would greatly benefit from the re-commercialization of industrial hemp in domestic agriculture and manufacturing. Manufacturers use industrial hemp to make fabrics, paper, building materials, paints, foods, cosmetics, and other consumer and industrial products.

The Petitioners are...

- North American Industrial Hemp Council. Founded in 1993, NAIHC seeks to re-establish and expand the use of industrial hemp. Its mission is to:

- Form and establish relationships between academia, farmers, agribusiness, manufactures, government, public interest groups, and marketing firms with emphasis on land management, economic and environmental considerations;
- Develop policies to enhance the stewardship of our lands through the sustainable cultivation, product development, manufacturing and marketing of industrial hemp and other comparable annual fiber crops;
- Promote the development of new products and business based on industrial hemp fibers and seeds;
- Cooperatively foster a better understanding of industrial hemp and other annual fiber crops and their implications for the environment and rural economic development.

- Ray Berard of Portsmouth, RI is retired from Interface Research Corporation, part of Interface, the makers of commercial flooring products, where he served as Senior Vice President of Technology.

- Ben Droz of Washington, DC is a professional photographer and congressional advocate.
- Tyler Frank of Solvang, CA is the owner of Hemptopia, Inc., which specializes in apparel made from industrial hemp.
- Jeff Gain of Hardin, IL previously served as chief executive officer of the National Corn Growers Association and executive director of the American Soybean Association.
- Gale Glenn of Durham, NC used to raise tobacco in Kentucky.
- Barry Grissom of Kansas City, KS is a former U.S. Attorney for the District of Kansas.
- Anndrea Hermann, from Joplin, MO and now of Kleefeld, Manitoba, is an expert in industrial hemp agronomy, field trials, sampling, product quality standards, testing, sales, marketing, product development, regulatory affairs, certifications and licensing.
- William Holmberg long of the Washington, DC area and now in Palm City, FL, enlisted in the Marines during World War II and retired as Colonel and then worked for sustainable agriculture and energy technologies.
- Colleen Sauvé Keahey is the founder of the Tennessee Hemp Industries Association and the National Outreach Coordinator for Vote Hemp and would like to grow industrial hemp on the family farm in middle Tennessee.
- Andy Kerr of Ashland, OR and Washington, DC advocates for the conservation and restoration of America's forests, public lands, watersheds and wildlife.
- Alan Kimbell of Indianapolis, IN is a marketing consultant, who served on the city council for two terms, was with the Indiana Department of Commerce, and is involved with the local baseball club.
- Ed Lehrburger of Fort Lupton, CO is president and CEO of Pure Vision Technology, which is commercializing the refining of industrial hemp into many products.
- Joy Beckerman Maher of Everett, WA has consulted on industrial hemp for over two decades.
- Paul Mahlberg of Baileys Harbor, WI is Professor Emeritus of Biology (plant biology) and Senior Fellow of the Institute of Molecular and Cellular Biology, Indiana University.
- Rep. David Monson of Osnabrock, ND is a farmer who has served in the North Dakota House of Representatives since 1992, where he has held many positions, including Speaker. He is a Republican.
- Courtney N. Moran of Portland, OR specializes in industrial hemp law and advocacy through EARTH Law, LLC.

- George Obernagel of Waterloo, IL farms 14,000 acres in Nebraska, Arkansas and Illinois, and is part owner of seven John Deere dealerships.
- Eric Pollitt of Peoria, IL founded Global Hemp and has been selling products based on industrial hemp since 1993 and would like to do more with domestically cultivated industrial hemp.
- Sen. Floyd Prozanski of Eugene, OR has served in the Oregon Legislature since 1995 and works as a municipal prosecutor. He is a Democrat.
- Dave Seber of Eugene, OR is founder and CEO of Fiber Alternatives and produces Hemp Shield Wood Finisher and Deck Sealer.
- Gerry Shapiro of Eugene, OR owns the Merry Hempsters, which manufactures organic industrial hemp oil-based cosmetics as well as other industrial hemp oil-based skin care products.
- Erwin A. (“Bud”) Sholts of Oregon, WI is a farmer and retired from the Wisconsin Department of Agriculture.
- Rep. Cynthia Thielen of Kailua, HI has served in the Hawai’i House of Representatives since 1990. She is a Republican.
- Rep. Carl Wilson of Grants Pass, OR has served in the Oregon House of Representatives from 1998 to 2002 and from 2015. He is a Republican.

Detailed statements about the petitioners and their interests are found in Appendix 0.

The points of contact for all Petitioners for this request for administrative rulemaking are:

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Proposed Rule

Petitioners request DEA to make the following revision to 21 C.F.R. § 1308.11(d)(23) in the list of Schedule I drugs (additional wording in **bold**):

(23) Marihuana, **but not including “industrial hemp,” which is the plant Cannabis sativa L. and any part of such plant, whether growing or not, with a THC:CBD (delta-9-tetrahydrocannabinol:cannabidiol) ratio of less than 1, and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis.**

In the alternative¹, this formal rulemaking petition requests DEA to revise 21 C.F.R. § 1308.11(d)(23), to include the phrase,

(23) Marihuana, but not including “industrial hemp,” which is 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.

Additionally, Petitioners request that 21 C.F.R. § 1308.11(d)(31) also be revised to comport with the proposed revision to § 1308.11(d)(23) (additional wording in **bold**, deleted wording in *italics*):

(31) Tetrahydrocannabinols

Meaning tetrahydrocannabinols naturally contained in *a plant of the genus Cannabis (cannabis plant)* **marihuana as defined in subparagraph (23)**, as well as synthetic equivalents of the substances contained **in a plant of the genus Cannabis** *in the cannabis plant*, or in the resinous extractives of such plant, and/or synthetic substances, derivatives, and their isomers with similar chemical structure and pharmacological activity to those substances contained in the plant, such as the following:

1 cis or trans tetrahydrocannabinol, and their optical isomers

6 cis or trans tetrahydrocannabinol, and their optical isomers

3, 4 cis or trans tetrahydrocannabinol, and its optical isomers

(Since nomenclature of these substances is not internationally standardized, compounds of these structures, regardless of numerical designation of atomic positions covered.)

Reasons for the Proposed Rule

Petitioners and others are interested in seeing the cultivation of industrial hemp legal in the United States once again, so that industrial hemp fiber, seed and oil can be made into useful and profitable products.

Industrial hemp is incorrectly classified as a Schedule I drug. In pattern and practice, the Drug Enforcement Administration (DEA) has effectively rendered industrial hemp illegal to cultivate, which severely limits the manufacture and commerce of products made from industrial hemp.

The rationales for this rulemaking petition are set forth below in sections entitled Introduction, Facts, Arguments, Supporting Evidence, and Conclusions.

¹ The alternative proposed revision to 21 C.F.R. § 1308.11(d)(23) is taken verbatim from the definition of industrial hemp, specified by Congress, in the Agricultural Act of 2014 (Farm Bill):

(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.

Agricultural Act of 2014. Public Law 113-79. February 7, 2014. 7 U.S.C. § 5940.

Request for a Hearing

Pursuant to 21 C.F.R. § 1308.42, Petitioners hereby request a hearing with respect to this petition. Petitioners specifically request a hearing allowing for cross-examination of the designee of the Secretary of Health and Human Services who prepares any report(s) and provides any recommendation(s) on any such proposed change to the drug Schedules (21 U.S.C. §811(b)).

Caveats

This administrative rulemaking petition:

1. has the sole purpose of requesting the Drug Enforcement Administration to revise the federal drug schedules to no longer classify industrial hemp as “marihuana,” and therefore a controlled substance;
2. takes no position on the legalization or decriminalization of marijuana, medical or recreational; and
3. takes no position on whether or not CBD has medical use; and
4. should not be consider along side of, conflated with, or confused with a petition filed by the Hemp Industries Association and the Kentucky Hemp Industries Council, dated 1 June 2016 and entitled “Petition for Removal of Industrial Hemp Plants from Schedules Established Under the Controlled Substances Act.”

Any references in this petition to marijuana (recreational or medical) are only for the purpose of advancing the sole purpose of the petition: to properly classify industrial hemp as not being marijuana so it may be cultivated in the United States and manufactured into useful and sold as profitable products.

Introduction

Industrial hemp is an agricultural commodity that is cultivated for use in the production of a wide range of products, including foods and beverages, cosmetics and personal care products, and nutritional supplements, as well as fabrics and textiles, yarns and spun fibers, paper, construction and insulation materials, and other manufactured goods.

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. Currently there is no large-scale commercial production in the United States and the U.S. market depends on imports.

[Industrial h]emp is a variety of Cannabis sativa and is of the same plant species as marijuana. Although industrial hemp is genetically different and distinguished by its use and chemical makeup, and has long been cultivated for non-drug use in the production of industrial and other goods, in the United States, industrial hemp is subject to U.S. drug laws and growing industrial

hemp is restricted. Under current U.S. drug policy all cannabis varieties, including industrial hemp, are considered Schedule I controlled substances under the Controlled Substances Act (CSA, 21 U.S.C. §§801 et seq.; Title 21 C.F.R. Part 1308.11). Despite these legitimate industrial uses, industrial hemp production and usage are controlled and regulated by the U.S. Drug Enforcement Administration (DEA).

The 113th Congress made significant changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate. The Agricultural Act of 2014 (P.L. 113-79) provided that certain research institutions and state departments of agriculture may grow industrial hemp, as part of an agricultural pilot program, if allowed under state laws where the institution or state department of agriculture is located. The FY2015 appropriations (P.L. 113-235) further blocked federal law enforcement authorities from interfering with state agencies, growers, and agricultural research.

The FY2016 appropriations (P.L. 114-113) continued the block on federal law enforcement authorities from interfering with state agencies, growers, and agricultural research, and further provided that no funds be used "in contravention of section 7606 of the Agricultural Act of 2014 (7 U.S.C. 5940); or to prohibit the transportation, processing, sale, or use of industrial hemp that is grown or cultivated in accordance with subsection section 7606 of the Agricultural Act of 2014, within or outside the State in which the industrial hemp is grown or cultivated."

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.

Terminology²

In this administrative rulemaking petition, Petitioners very precisely chose when to use the words **bolded** below.

Cannabis refers to the genus in the botanical family **Cannabaceae** that in its entirety includes **taxon** ("a taxonomic group of any rank, such as a species, family or class") variously (and sometimes in conflict and/or overlap) described as ***Cannabis sativa* (*C. sativa*)** and ***C.***, if not several other ***C. whatever*s** (e.g. *C. ruderalis*, *C. afghanica*, etc.). While there is general scientific agreement as to the "species" of plants included in the genus *Cannabis*, there are scientific differences of opinion as to the number of those species and/or subspecies within the genus. There is general recognition of numerous **cultivars** ("a plant variety that has been produced in cultivation by selective breeding").

Nonetheless, the federal definition of "marihuana" includes any species however described in the Cannabis genus—no matter what amount of THC or THC:CBD ratio. (See box entitled "Cannabis".)

Cannabinoids are "any of a group of closely related compounds that include cannabitol and the active constituents of cannabis." Scientists have identified scores of cannabinoids, the most simultaneously famous and infamous (and the only one found in intoxicating amounts) is **Δ9-**

² All quoted definitions are from: Dictionary Version 2.2.1 (156) Apple, Inc.

tetrahydrocannabinol (THC). The next well-studied cannabinoid is *cannabidiol (CBD)*. Cannabidiol should not be confused with *cannabinol (CBN)*.

Marijuana (or the archaic spelling “**marihuana**”) refers to those varieties of *Cannabis* grown and used for the purpose of achieving an altered mental state and/or medical benefit. Depending on the intended use, such marijuana can be categorized as:

- **Recreational Marijuana** that invariably has high amounts of THC, the chemical compound that produces intoxicating effects desired by users; or
- **Medicinal Marijuana** that often has high amounts of THC, but additionally includes some cultivars of cannabis that have very-low amounts of THC and high amounts of CBD or other cannabinoids—but are nonetheless used to relieve medical conditions.

The scientific literature often describes THC—but not CBD and other cannabinoids— as:

- “**psychoactive**” (“(chiefly of a drug) affecting the mind”); or
- “**psychotropic**” (“relating to or denoting drugs that affect a person’s mental state”)

in an attempt to communicate that THC **intoxicates**” (“[of alcoholic drink or a drug] cause [someone] to lose control of their faculties or behavior”). CBD and other cannabinoids—though psychoactive and psychotropic—are not intoxicating.

Several scientific papers have used the term **psychotomimetic** (“relating to or denoting drugs that are capable of producing an effect on the mind similar to a psychotic state”). One paper defined the term to mean “mood altering.” As CBD has antidepressant and other properties that can affect the mind—aka altering the mood— “intoxicating” best describes the effect of THC on the human mind vis-à-vis other cannabinoids.

Industrial hemp refers to those varieties of cannabis grown for the production of fiber, seed and/or oil for the use in construction, paper, food, cosmetics, clothing, and other products. Such products are fully legal under U.S. law. In the 2014 Farm Bill, Congress defined industrial hemp as “the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol [THC] concentration of not more than 0.3 percent on a dry weight basis” Correspondingly, CBD levels in industrial hemp are very high as compared to marijuana. Section 7606 of the 2014 Farm Bill authorizes the cultivation of industrial hemp in states that have legalized industrial hemp, but only for research purposes.

As a matter of law, Congress has defined industrial hemp as *Cannabis sativa* L. with a THC level of not more than 0.3% on a dry-weight basis. As a matter of fact (and science), industrial hemp could also be distinguished from marijuana by its THC:CBD ratio, along with an additional margin of safety by limiting the THC, irrespective of the ratio being <1, to 1% THC by dry-weight. The science is clear and convincing: it takes at least 1% THC to intoxicate and if the ratio is <1, the plant is not intoxicating.

Cannabis

Cannabis sativa L. is one of the most widely used plants for both recreational and medicinal purposes. To date, a total of 525 natural constituents covering several chemical classes have been isolated and identified from C. sativa. The cannabinoids belong to the chemical class of terpenophenolics, of which 85 have been uniquely identified in cannabis, including the most psychoactive cannabinoid, Δ 9-tetrahydrocannabinol (Δ 9-THC). The most common natural plant cannabinoids (phytocannabinoids) are: Δ 9-THC, cannabidiol (CBD), cannabigerol (CBG), cannabichromene (CBC), and cannabinol (CBN). Several of the identified cannabinoids are both chemically and pharmacologically poorly characterized due to insufficient isolated amounts; however, the pharmacology of Δ 9-THC has been widely studied, and it is regarded as the main psychoactive [intoxicating] constituent of cannabis.³

Scientifically, Cannabis is a genus in the *Cannabaceae* family of plants. Scientists either describe all taxon in the genus *Cannabis* as exclusively one species (*Cannabis sativa*) or also recognizing *C. indica* as a separate species in the same genus. In the first case of only one species in the genus, *indica* is a subspecies (*C. s. indica*). In all cases *indica* is associated with varieties of cannabis with significant amounts of THC. *C. sativa* may or may not have a significant amount of THC, so—depending on how it is defined—it may include marijuana and certainly industrial hemp.

Legally, as far as the federal drug laws in the United States are concerned, it's all "*Cannabis sativa* L." (The "L" stands for Carl Linnaeus, the Swedish botanist who first scientifically described the species in 1753.) The amount of THC, or the purpose for which the plant is cultivated or used, is immaterial.

In 2014, Congress excluded from the definition of "marijuana" (*Cannabis sativa* L.) "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" as long as it is grown in a state that has legalized industrial hemp, by a state or academic institution for research purposes.

In this petition "hemp" is always (save in specific citations or quotations) preceded by "industrial" as "hemp" has different dictionary definitions depending upon the context and casual use of the term can be misleading or result in misunderstandings:

Noun (also Indian hemp)

the cannabis plant, esp. when grown for its fiber.

- *the fiber of the cannabis plant, extracted from the stem and used to make rope, stout fabrics, fiberboard, and paper.*

³ Abir T. El-Alfy, Kelly Ivey, Keisha Robinson, Safwat Ahmed,1, Mohamed Radwan, Desmond Slade, Ikhlas Khan, Mahmoud ElSohl, and Samir Ross. 2010. Antidepressant-like effect of Δ 9-tetrahydrocannabinol and other cannabinoids isolated from *Cannabis sativa* L. *Pharmacol Biochem Behav.* 2010 June; 95(4): 434–442. doi:10.1016/j.pbb.2010.03.004.(citations within omitted).

- *used in names of other plants that yield hemp-like fiber, e.g., Manila hemp.*
- *marijuana.*

This petition uses quotation marks around the word “marijuana” when a quotation or reference to “marijuana” also or exclusively actually means “industrial hemp”. In the case of such quotations, we often bracket the correct terminology, as in the example:

To DEA, all cannabis is legally “marijuana” [cannabis], including “marijuana” [industrial hemp] grown to make paper.

U.S. Citizen Right to Petition

First Amendment

The First Amendment to the U.S. Constitution provides all U.S. Citizens with the right to petition the federal government for a redress of grievances:

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or **the right of the people** peaceably to assemble, and **to petition the Government for a redress of grievances.**⁴

The fact that industrial hemp is statutorily classified as "marihuana," a Schedule I controlled substance in the Controlled Substances Act of 1970 as amended (CSA),⁵ is a grievance that must be redressed.

Administrative Procedure Act

Congress has generally operationalized this First Amendment constitutional right by establishing a framework under the Administrative Procedure Act (APA). APA provides that, “[e]ach agency shall give an interested person the **right to petition for the issuance, amendment, or repeal of a rule.**”⁶

DEA-DOJ Schedule of Controlled Substances Regulations

Consistent with the APA, the Schedule of Controlled Substances Regulations provides, “[a]ny **interested person may submit a petition to initiate proceedings for the issuance, amendment, or repeal of any rule or regulation** issuable pursuant to the provisions of section 201 of the Act.”⁷

⁴ U.S. Const. amend. I (emphasis added).

⁵ 21 U.S.C. § 802 (16).

⁶ 5 U.S.C. § 553 (emphasis added).

⁷ 21 C.F.R. § 1308.43 (emphasis added).

Petitioners

A list of interested petitioners, who are outlined above (see *Petition for Rulemaking*- Petitioners, above), are submitting this petition to initiate proceedings for the amendment of 21 C.F.R. § 1308.11(d)(23) and 21 C.F.R. § 1308.11(d)(31).

Attorney General and DEA Administrator Authority to Revise the Drug Schedules Under the Controlled Substances Act and Regulations Implementing the Act

Regarding the controlled substances listed in the schedules, the Controlled Substances Act (CSA) provides that **"the Attorney General may by rule— (2) remove any drug or other substance from the schedules if he finds that the drug or other substance does not meet the requirements for inclusion in any schedule."**⁸

DEA has not defined "marihuana" in its regulations. Therefore, DEA relies on the statutory definition as, "[a]ny term contained in this part shall have the definition set forth in the [Controlled Substances] Act or part 1300 of this chapter."⁹

The statutory definition of marihuana in the CSA 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, 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.*¹⁰

"Marihuana" is statutorily listed as a Schedule I controlled substance at 21 U.S.C. § 812(c)(10) in the CSA.

Notwithstanding defining "marihuana" by statute, Congress nonetheless delegated to the Attorney General (through DEA) the authority to revise the drug schedules in 21 U.S.C. § 811(a):

(a) Rules and regulations of Attorney General; hearing
The Attorney General shall apply the provisions of this subchapter to the controlled substances listed in the schedules established by section 812 of this title and to any other drug or other substance added to such schedules under this subchapter. Except as provided in subsections (d) and (e) of this section, the Attorney General may by rule—

⁸ 21 U.S.C. § 811(a) (emphasis added).

⁹ 21 C.F.R. § 1305.02.

¹⁰ 21 U.S.C. § 802(16).

(1) add to such a schedule or transfer between such schedules any drug or other substance if he—
(A) finds that such drug or other substance has a potential for abuse, and
(B) makes with respect to such drug or other substance the findings prescribed by subsection (b) of section 812 of this title for the schedule in which such drug is to be placed; or
*(2) remove any drug or other substance from the schedules if he finds that the drug or other substance does not meet the requirements for inclusion in any schedule.*¹¹

Congress made no exception to the authority it delegated to the Attorney General for “marihuana,” even though it expressly defined “marihuana” in the CSA. Industrial hemp is not a drug, but it is an “other substance.”

Facts

1. Industrial Hemp is, *in Fact*, Not Marijuana

*Cannabis can be separated into psychoactive [intoxicating] and nonpsychoactive [non-intoxicating] cultivars according to the ratio of Δ^9 -tetrahydrocannabinol (THC), the primary psychoactive [intoxicating] agent, and cannabidiol (CBD).*¹²

As a matter of scientific fact, industrial hemp is not marijuana. As a matter of some—but not all—federal law, industrial hemp is defined as marijuana.

There are many different varieties of cannabis plants. Marijuana and industrial hemp come from the same ~~species~~—[genus] of plant, *Cannabis sativa*, but from different varieties or cultivars. However, industrial hemp is genetically different and is distinguished by its use and chemical makeup, as well as by differing cultivation practices in its production.¹³

Hemp, also called “industrial hemp,”¹⁴ refers to cannabis varieties that are primarily grown as an agricultural crop (such as seeds and fiber, and by-products 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 industrial hemp are generally less than 1%.

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

¹¹ 21 U.S.C. § 811(a) (emphasis added).

¹² Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. *J Forensic Sci*, March 2006, Vol. 51, No. 2 doi:10.1111/j.1556-4029.2006.00061.x (references in original omitted).

¹³ 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).

¹⁴ Use of this term dates back to the 1960s; see L. Grlc, “A combined spectrophotometric differentiation of samples of cannabis,” United Nations Office on Drugs and Crime (UNODC), January 1968, <http://www.unodc.org/unodc>.

industrial hemp, and are reported to average about 10%; some sample tests indicate THC levels reaching 20%- 30%, or greater.¹⁵

The U.S. Department of Agriculture stated in *Industrial Hemp in the United States: Status and Market Potential* (January 2000),

*Marijuana and industrial hemp are different varieties of the same plant species, Cannabis sativa L. Marijuana typically contains 3 to 15 percent THC on a dry-weight basis, while industrial hemp contains less than 1 percent.*¹⁶

A *Mayo Clinic Proceedings* editorial notes:

*Most of the marijuana sold illegally today in the United States actually contains no CBD, or very low amounts of it, and the THC levels in marijuana may vary from about 3% to 25%.*¹⁷

Scientific Distinction

The following explanation on the genetic differences between marijuana and industrial hemp is provided from Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Env'tl. L. Rev. 383 (Spring 2015):

*Cannabis sativa L. is the Latin name for the industrial hemp plant.*¹⁸ *C. sativa is a member of the Cannabaceae family.*¹⁹ *The [industrial] hemp plant is distinct from the marijuana plant, another variety of C. sativa.*²⁰ *Scientists have identified fixed genetic differences between marijuana and non-psychoactive [non-intoxicating] [industrial] hemp.*²¹ *Typically, marijuana contains THC*

¹⁵ 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).

¹⁶ U.S. Dep't. Agric. Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential, Identification: Industrial Hemp or Marijuana?*, 2, (January 2000), available at http://www.ers.usda.gov/media/328202/ages001eb_1_.pdf.

¹⁷ Raphael Mechoulam. "Cannabis—A Valuable Drug That Deserves Better Treatment." *Mayo Clinic Proceedings* February 2012;87(2):107-109. doi:10.1016/j.mayocp.2011.12.002.

¹⁸ See Daryl T. Ehrensing, *Feasibility of Industrial Hemp Production in the United States Pacific Northwest* (May 1998), available at <http://extension.oregonstate.edu/catalog/html/sb/sb681/>.

¹⁹ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, Feb. 2, 2015, 2, footnote 7, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

²⁰ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, Feb. 2, 2015, 1, footnote 7, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

²¹ Shannon L. Datwyler & George D. Weiblen, *Genetic Variation in Hemp and Marijuana (Cannabis sativa L.) According to Amplified Fragment Length Polymorphisms*, J. Forensic Sci. Vol. 51 No. 2, 371, 371 (March 2006), available at <http://geo.cbs.umn.edu/Datwyler&Weiblen2006.pdf>.

concentrations of 3 to 15 percent or higher on a dry weight basis.²² Industrial hemp, on the other hand, typically contains less than one percent THC.²³ Canadian regulations, the U.S. Agricultural Act of 2014, and some state legislation in the U.S. limit THC concentration in industrial hemp to 0.3 percent.²⁴ THC is the main cannabinoid found in *C. sativa* that has a psychotropic [intoxicating] effect.²⁵

C. sativa contains at least 60 cannabinoids.²⁶ Cannabinoids are terpenophenolic substances, or plant metabolites, that accumulate mainly in the glandular trichomes, or hairs on the flowers, of the plant.²⁷ THC and cannabidiol ("CBD") are the most abundant cannabinoids.²⁸ The difference between *C. sativa* classified as industrial hemp (low-THC) and as marijuana (high-THC) is the cannabinoid profile, or the ratio of THC and CBD.²⁹ [Industrial h]emp has a low THC:CBD ratio compared to marijuana.³⁰ High-CBD or low-THC *C. sativa* cultivars ([industrial]hemp) will produce similarly high-CBD or low-THC cultivars when self-pollinated, whereas high-THC *C. sativa* strains (marijuana) will produce similarly high-THC strains when self-pollinated.³¹ If a high-CBD or

²² U.S. Dept. of Agric., Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential, Identification: Industrial Hemp or Marijuana?*, 2, January 2000, http://www.ers.usda.gov/media/328202/ages001eb_1_.pdf.

²³ U.S. Dept. of Agric., Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential, Identification: Industrial Hemp or Marijuana?*, 2, January 2000, http://www.ers.usda.gov/media/328202/ages001eb_1_.pdf. See also, Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, Feb. 2, 2015, 1-2, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

²⁴ About Hemp and Canada's Hemp Industry, Frequently Asked Questions, HEALTH CANADA, <http://www.hc-sc.gc.ca/hc-ps/substancontrol/hemp-chanvre/about-apropos/faq/index-eng.php> (last updated Apr. 27, 2016). See eg., MONT. CODE ANN. § 80-18-102 (2001); N.D. CENT. CODE § 4-41-03 (2007); OR. REV. STAT. § 571.300(5)(a) (2011); VT. STAT. ANN. tit. 6, § 562(3) (2008).

²⁵ Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa L.*, 163 Genetics 335, 335 (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>.

²⁶ Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa L.*, 163 Genetics 335, 335 (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>.

²⁷ *Id.* See also, Karl W. Hillig & Paul G. Mahlberg, *A Chemotaxonomic Analysis of Cannabinoid Variation in Cannabis (Cannabaceae)*, 91(6) Am. J. of Botany 966, 966 (Feb. 12, 2004), available at <http://www.amjbot.org/content/91/6/966.full.pdf+html>.

²⁸ *Id.*

²⁹ Shannon L. Datwyler & George D. Weiblen, *Genetic Variation in Hemp and Marijuana (Cannabis sativa L.) According to Amplified Fragment Length Polymorphisms*, J. Forensic Sci. Vol. 51 No. 2, 371, 371 (March 2006), available at <http://geo.cbs.umn.edu/Datwyler&Weiblen2006.pdf> at 371.

³⁰ *Id.* See also, Hillig & Mahlberg, Karl W. Hillig & Paul G. Mahlberg, *A Chemotaxonomic Analysis of Cannabinoid Variation in Cannabis (Cannabaceae)*, 91(6) Am. J. of Botany 966, 967 (Feb. 12, 2004), available at <http://www.amjbot.org/content/91/6/966.full.pdf+html>.

. ([Scientists have] recognized two chemotypes: a THC/CBD ratio >1.0 characteristic of "drug-type" plants, and a THC/CBD ratio <1.0 characteristic of "fiber-type" plants.).

³¹ Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa L.*, 163 Genetics 335, 339 (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>. (If the clone originally used to produce the S2 was of a pure CBD or THC chemotype, this chemotype is preserved throughout all the subsequent inbred generations, although the absolute amount of the dominant cannabinoid still shows considerable variation, as demonstrated by the standard deviations found.); see also, *id.* at 336; Yotoryama et al. (1980) analyzed the F2 from F1hybrids containing both CBD and THC in similar amounts and found segregation of the chemotypes with pure CBD, mixed CBD-THC, and pure THC profiles in a 1:2:1 ratio. The subsequent generations of the pure CBD plants were further investigated and they showed a fixed CBD chemotype.

*low-THC cultivar ([industrial]hemp) is cross-pollinated with a high-THC strain (marijuana), the progeny plant's cannabinoid profile would depend on the plant's specific genetic background, but would result in a mixed CBD-THC content.³² If this heterozygous progeny (one parent high-CBD ([industrial]hemp) cultivar and one parent high-THC (marijuana) strain) was self-pollinated, the balance of THC to CBD would remain fixed.³³ Industrial hemp and marijuana are distinct varieties of *C. sativa*, and each "individual plant invariably belongs to its distinct chemical group throughout its life cycle."³⁴*

Cannabis' Complex Constituents

The *Cannabis* plant is chemically quite complex. Unique to taxon in the *Cannabis* genus are cannabinoids (naturally occurring compounds found in the *Cannabis sativa* plant).

*The total number of **identified cannabis constituents** has increased from 489 in 2005 to **537** in 2009, while the **number of cannabinoids** has increased from 70 to **109**. The main psychoactive [intoxicating] ingredient in cannabis is Δ^9 -THC; however, other cannabinoids have also demonstrated pharmacological activities, e.g., the nonpsychotropic [nonintoxicating] cannabinoid cannabidiol (CBD) displays antipsychotic, antihyperalgesic, anticonvulsant, neuroprotective, and antiemetic properties.³⁵*

Cannabinoids are not only found in plants in the *Cannabis* genus (phytocannabinoids), but also are made naturally in the human body (endocannabinoids), and can now be synthesized (synthetic cannabinoids).

Mechoulam and Gaoni (1967) defined cannabinoids as a group of C₂₁ terpenophenolic compounds uniquely produced by cannabis. The subsequent development of synthetic cannabinoids (e.g., HU-210) has blurred this definition, as has the discovery of endogenous [within the human body] cannabinoids (e.g., anandamide), defined as "endocannabinoids" by Di Marzo and Fontana (1995).

³² Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa L.*, 163 *Genetics* 335, 334 (Jan. 1, 2003). When two homozygous parents are crossed, one with a certain isoform of CBD synthase, the other with a certain isoform of THC synthase, the CBD/THC ratio in the F₁'s will depend on the balance between the efficiencies of the two synthases and will remain fixed in any further heterozygous descendant obtained through self-fertilization.

³³ Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa L.*, 163 *Genetics* 335, 334 (Jan. 1, 2003).

³⁴ *Id.* at 336. See also, *id.* at 344. (Some heritable factor seems to affect the balance between CBD and THC synthase in their competition to convert the CBG precursor.). See also, Karl W. Hillig & Paul G. Mahlberg, *A Chemotaxonomic Analysis of Cannabinoid Variation in Cannabis (Cannabaceae)*, 91(6) *Am. J. of Botany* 966, 967 (Feb. 12, 2004).

³⁵ Zlatko Mehmedic, et al. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. *Forensic Sci*, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x (emphasis added; references in original omitted).

*Thus, Pate (1999) proposed the term phytocannabinoids to designate the C21 compounds produced by cannabis.*³⁶

Phytocannabinoids, save pure THC, are neither toxic nor intoxicating to humans.

*Phytocannabinoids exhibit very low mammalian toxicity, and mixtures of cannabinoids are less toxic than pure THC (Thompson et al. 1973).*³⁷

One, Two, Three or More Taxonomic Species?

Taxons in the *Cannabis* genus are complex organisms. Taxonomists do not agree on whether all members of the *Cannabis* genus are one species (albeit perhaps with subspecies and/or varieties) or two or more species. One expert summarizes that taxonomy as follows.

Debates about cannabis are not confined to its value as a medicine or to its possible hazards as a recreational drug. Something much more fundamental has been engaging the experts for years: its taxonomy. Are all plants belonging to the genus Cannabis mere varieties of a single species—or is it correct to recognise at least three separate species?

In his original 1753 classification, Carl Linnaeus identified just one, Cannabis sativa. The first indication of dissent came in 1785 when another eminent biologist, Jean-Baptiste Lamarck, was given some plant specimens collected in India. On the basis of several characteristics including their firm stems, thin bark, and the shape of their leaves and flowers, Lamarck felt that they should be distinguished from C sativa. Accordingly he invoked a new species, C indica.

In a lengthy and detailed review of the cannabis species problem, Ernest Small of the Canadian Biosystematics Research Institute commented that Lamarck seems to have reached his decision after “relatively little study.” He adds that “in the ‘exploratory age’ of plant taxonomy scientists often were forced to come to conclusions on the basis of very limited material.”

The third and least well founded species is C ruderalis. This was the name that a Russian, Janischevsky, gave to the cannabis plants he found growing in the south eastern central region of his country. The differences he noted were mostly in the size, shape, and casing of the seeds. And even Janischevsky himself seems not to have been totally convinced that these justified a new species.

³⁶ John M. McPartland and Ethan B. Russo. Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts? in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. Handbook of Cannabis Therapeutics: From Bench to Bedside. The Hayworth Press.

³⁷ John M. McPartland and Ethan B. Russo. Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts? in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. Handbook of Cannabis Therapeutics: From Bench to Bedside. The Hayworth Press.

*Debates among “splitters” and “lumpers” over the correct classification of Cannabis rumbled on for much of the last century, although the lumpers seem to have won the majority vote. One commonly expressed opinion is that indica, ruderalis, and other so-called species should be regarded as no more than subspecies or even variants of C. sativa.*³⁸

Another pair of experts summarizes the taxonomy as follows.

*Modern taxonomists have variously characterized Cannabis. All taxonomists recognize the species Cannabis sativa. Small and Cronquist subdivide C. sativa into two subspecies each with two varieties. Schultes et al. divide Cannabis into three species; C. sativa, C. indica, and C. ruderalis. Several other researchers do not preserve C. ruderalis, but recognize both C. sativa and C. indica. The present authors consider C. sativa to circumscribe all wild, [industrial] hemp, and drug Cannabis races with the possible exception of the races used for hashish production in Afghanistan and Pakistan. These morphologically and chemically distinct races may deserve the separate specific name of C. afghanica following the variety name for C. indica determined by Vavilov. Validation of this theory awaits further chemotaxonomic and genetic research. In all of these systems, C. sativa represents the largest and most diverse taxon. C. afghanica is commonly referred to by marijuana breeders and growers, as well as medical cannabis users, as “indica.” Chemovars of this variety have their own distinctive acrid organic aromas and are often rich in CBD as well as THC. The great variety of chemical, physiological, and morphological traits encountered in Cannabis has proven very attractive to plant breeders for years.*³⁹

Whether the *Cannabis* genus is inhabited by only one species and several subspecies or of several species is not relevant in ruling on the merits of this administrative rulemaking petition.

Federal CSA Definition of “Marihuana” Does Not Recognize Genetic Distinction

Any scientific taxonomic distinctions have—so far—not been relevant, in interpreting the U.S. CSA, which defines “marihuana” as “all parts of the plant *Cannabis sativa* L.” (21 U.S.C. 802(16)). Courts have interpreted this definition to apply to all taxon in the *Cannabis* genus.⁴⁰

Federal drug law doesn’t generally recognize that industrial hemp and marijuana are genetically distinctly different, though botanical science, health science, law enforcement research, *Cannabis* producers (licit and illicit) and *Cannabis* consumers (licit and illicit) do generally recognize such distinctions—as does now the United States Congress in prescribed circumstances limited to research by states and institutions of higher education.

³⁸ Geoff Watts. 2006. Science Commentary: Cannabis Confusions. BMJ Volume 332:175-176 21 January.

³⁹ Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York (references in original omitted).

⁴⁰ See, for example: *People v Van Alstyne* (1975). Court of Appeals of California Second Appellate District, Division 3. <http://online.ceb.com/calcases/CA3/46CA3d900.htm>. See also, *N.H. Hemp Council Inc. v. U.S.A. Drug Enforcement*, 203 F.3d 1 (1st Cir., 1999); *Monson v. Drug Enforcement Admin.*, 589 F.3d 952 (8th Cir. 2009).

Biological Science Recognizes the Differences

Most *Cannabis* scientists distinguish marijuana from industrial hemp and generally do so not by any morphological distinctions or the geography of where it was “originally” grown, but by aligning individual taxon and/or cultivars along a THC:CBD ratio continuum. The scientific literature clearly distinguishes the drug and fiber strains of *C. sativa*. Here is one example:

*Cannabis can be separated into psychoactive and nonpsychoactive cultivars according to the ratio of Δ^9 -tetrahydrocannabinol (THC), the primary psychoactive agent, and cannabidiol (CBD). [Industrial h]emp plants have a relatively low THC:CBD ratio compared with marijuana. Recent studies suggest that THC and CBD are derived from a common precursor, cannabigerol, and that the THC:CBD ratio might be controlled by a single gene affecting cannabinoid biosynthesis.*⁴¹

Here is another example:

*Cannabinoid content and composition is highly variable among cannabis plants. Those with high THCA/low-CBDA chemotype are termed marijuana, whereas those with low-THCA/high-CBDA chemotype are termed [industrial] hemp.*⁴²

And here is another example:

*Comparison of the transcriptome of Purple Kush [marijuana] with that of the [industrial] hemp cultivar ‘Finola’ revealed that many genes encoding proteins involved in cannabinoid and precursor pathways are more highly expressed in Purple Kush and in ‘Finola’. The exclusive occurrence of Δ^9 -tetrahydrocannabinol (THC) is produced in marijuana, but not in [industrial] hemp.*⁴³

And yet another example:

[Industrial hemp strains] are usually relatively low in THC (average <1% dry weight), with a CBD content averaging about twice as high. [Note:] THC is the primary psychoactive [intoxicating] compound produced by Cannabis, and

⁴¹ Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. *J Forensic Sci*, March 2006, Vol. 51, No. 2 doi:10.1111/j1556-4029.2006.00061.x (emphasis added; references in original omitted)

⁴² Harm van Bakel, et al. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02. (emphasis added)

⁴³ Harm van Bakel, Jake M Stout, Atina G Cote, Carling M Tallon, Andrew G. Sharpe, Timothy R Hughes and Jonathan E Page. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02 (emphasis added).

*nonpsychoactive [non-intoxicating] CBD is the other most common naturally occurring cannabinoid.*⁴⁴

Table 1 also illustrates the point.

TABLE 1. Chemotypes of Cannabis

Chemotype	Products	Leading cannabinoids	THC content	Psychoactivity
Drug type	marijuana, hashish	Δ^9 -THC	1-20%	yes
Intermediate type		Δ^9 -THC, CBD	0.3-1.0%	possible
Fiber type	fiber, edible oil	CBD (cannabidiol)	<0.3%	no

Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Definitions. Haworth Press. New York. Note: “Psychoactivity” in the above table actually means “intoxicating.”

Medical Science Recognizes the Differences

Medical professionals also recognize the difference between industrial hemp and marijuana:

*The concentration of Δ -9-tetrahydrocannabinol (THC), the psychoactive [intoxicating] ingredient in cannabis, ranges from less than 0.2% in fiber-type hemp (so-called ditch weed) to 30% in the flower buds of highly hybridized sinsemilla.*⁴⁵

Law Enforcement Researchers Recognize the Scientific Differences

Industrial hemp and marijuana are distinguishable at the molecular level:

*Molecular markers closely linked to drug content in Cannabis have forensic utility in that they can distinguish illicit material from licit cultivars in countries where a distinction is made.*⁴⁶

⁴⁴ Robert C. Clarke and David Paul Watson. Botany of Natural Cannabis Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York (emphasis added).

⁴⁵ J. Michael Bostwick. “Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana.” Mayo Clinic Proceedings. February 2012;87(2):172-186. doi:10.1016/j.mayocp.2011.10.003 (emphasis added; footnotes in original deleted).

⁴⁶ Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (Cannabis sativa L.) According to Amplified Fragment Length Polymorphisms. J Forensic Sci, March 2006, Vol. 51, No. 2 doi:10.1111/j1556-4029.2006.00061.x.

Distinctive DNA analysis shows that industrial hemp and marijuana are different.

*In the field of drug enforcement, **the utility of Cannabis DNA fingerprinting parallels that of human DNA typing**. Genetic markers separating [industrial] hemp and marijuana already have practical utility for drug enforcement in Canada and Europe, where [industrial] hemp cultivation is permitted but marijuana is illegal.*⁴⁷

Even to law enforcement *researchers* (as distinct from federal law enforcement officers)—despite a legal definition of “marihuana” that includes all taxon in the *Cannabis* genus—there is a substantive difference between industrial hemp and marijuana:

Sample classification is based on physical characteristics according to the following guidelines:

Cannabis Samples—All samples were received as raw plant material. These samples were further categorized as follows:

- Marijuana (*known as herbal cannabis in Europe*): usually found in four forms:
(i) loose material - loose cannabis plant material with leaves, stems, and seeds;
(ii) leaves - cannabis plant material consisting primarily of leaves; (iii) kilo bricks - compressed cannabis with leaves, stems, and seeds (typical Mexican packaging); and (iv) buds - flowering tops of female plants with seeds.
- Sinsemilla: *flowering tops of unfertilized female plants with no seeds (subdivided as for marijuana with most samples being classified as buds).*
- Thai sticks: *leafy material tied around a small stem (typical Thailand packaging).*
- **Ditchweed: fiber type wild cannabis found in the Midwestern region of the United States (subdivided as for marijuana).**⁴⁸

The on-line Urban Dictionary both defines “ditchweed” as:

*bad marijuana: wild marijuana that grew 'in a ditch by the side of the road'.*⁴⁹

and uses the word in an illustrative sentence:

⁴⁷ Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. *J Forensic Sci*, March 2006, Vol. 51, No. 2 doi:10.1111/j.1556-4029.2006.00061.x (emphasis added).

⁴⁸ Zlatko Mehmedic, et al.. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. *Forensic Sci*, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x (emphasis added).

⁴⁹ Urban Dictionary. Ditchweed. <http://www.urbandictionary.com/define.php?term=ditch%20weed> (accessed 21 July 2014).

*Shit, ain't no point in sending Jimmy out to buy us no good weed. He'll just bring home a \$50 bag of ditch weed again, just like last time.*⁵⁰

People more astute than Jimmy know that “ditchweed” is “wild” (more accurately “feral”) industrial hemp that remains along the uncultivated margin of ditches next to fields that once grew industrial hemp. (See Sholts Affidavit, Appendix O).

The researchers above who categorized their samples of “marijuana” as marijuana, sinsemilla, Thai sticks and ditchweed, defined ditchweed as:

*Marijuana [sic] samples with Δ^9 -THC <1% and CBD > Δ^9 -THC were classified as ditchweed.*⁵¹

To summarize, these law enforcement researchers—in a study funded by the National Institute of Drug Abuse—categorize “ditchweed” as either:

- having a THC content of less than 1%; *and*
- having more CBD than THC.

Even if the substance in question has greater than 0.3 percent—but less than 1 percent—THC, it’s not real “marijuana” to law enforcement researchers because the CBD overwhelmingly antagonizes the THC.

In addition, this law enforcement research study found that while THC levels in real “marijuana” consistently increased between 1993 and 2008, that ditchweed remained “relatively constant”:

*The yearly arithmetic mean Δ^9 -THC concentration for the different types of cannabis samples shows large variation within categories and over time, with **only the ditchweed samples being relatively constant.***⁵²

Growers of real “marijuana” were incentivized by buyers of real marijuana to increase THC content through breeding and cultivation. Since no one (save for a few clueless Jimmys) is buying ditchweed on purpose (if a seller does sell ditchweed, the customer will not likely be a repeat customer).

These same law enforcement researchers noted that:

⁵⁰ Urban Dictionary. Ditchweed. <http://www.urbandictionary.com/define.php?term=ditch%20weed> (accessed 21 July 2014).

⁵¹ Zlatko Mehmedic, Suman Chandra, Desmond Slade, Heather Denham, Susan Foster, Amit S. Patel, Samir A. Ross, Ikhlas A. Khan, and Mahmoud A. ElSohly. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. *Forensic Sci*, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x.

⁵² Zlatko Mehmedic, et al. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. *Forensic Sci*, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x (emphasis added).

CBD is the major cannabinoid found in ditchweed and is present in elevated amounts in intermediate type cannabis (moderate levels of both Δ^9 -THC and CBD) used to make hashish. The cannabinoid content of hashish and hash oil samples shows that, while hashish is prepared from intermediate type cannabis, hash oil is prepared from drug-type cannabis (high Δ^9 -THC and low CBD levels).... [D]itchweed has very low Δ^9 -THC content ($0.4\% \pm 0.3\%$).⁵³

“ $0.4\% \pm 0.3\%$ ” works out to be a range from 0.1% to 0.7% THC content.

Consistent with the findings of law enforcement researchers, Petitioners request DEA to revise the definition of a “marihuana” to no longer include “industrial hemp,” which is the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a THC:CBD ratio of less than 1 and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis.

In the alternative, Petitioners ask DEA to define “marihuana” as greater than 0.3 percent THC by dry weight, which is well below the 1 percent THC intoxication threshold. If DEA accepts the alternative rule revisions requested by this petition, the “intermediate” type of *Cannabis* defined by the law enforcement researchers as “moderate levels of both Δ^9 -THC and CBD”⁵⁴ would still, under federal law, be defined as “marijuana”.

Buyers and Sellers of Marijuana Recognize the Differences

Though more or less illicit, marijuana is nonetheless easy for almost anyone to obtain. Therefore, there are no marijuana users desperate enough to try to obtain a high from industrial hemp.

Consumers of marijuana are demanding, and the illicit (at least from a federal standpoint) marijuana industry is supplying higher THC varieties. Consumers of marijuana for intoxicating purposes are not demanding low-THC/high-CBD varieties of *Cannabis*, industrial hemp.

Because consumers seeking intoxication favor THC and disfavor CBD—even if they might not know it—THC levels in marijuana have been increasing over the years. Scientists at the University of Mississippi found that consumers are demanding, and growers are supplying, higher-THC strains of marijuana. They evaluated 46,211 confiscated samples and found:

The data showed an upward trend in the mean Δ^9 -tetrahydrocannabinol (Δ^9 -THC) content of all confiscated cannabis preparations, which increased from 3.4% in 1993 to 8.8% in 2008.⁵⁵

⁵³ Zlatko Mehmedic, et al.. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. Forensic Sci, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x (emphasis added; references in original omitted).

⁵⁴ Zlatko Mehmedic, et al.. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. Forensic Sci, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x.

⁵⁵ Zlatko Mehmedic, et al. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. Forensic Sci, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x (emphasis added; references in original omitted).

Cannabis cultivators are simply responding to consumer demand.

With the goal of achieving better, more intense highs, cannabis cultivators have crossed and re-crossed diverse strains with the result that an average THC content of 2% in 1980 became 4.5% in 1997 and 8.55% by 2006.⁵⁶

Other Governments—Both Foreign and Domestic—Recognize the Differences

Current laws regulating industrial 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.⁵⁷

*Industrial hemp is a phrase that has become common to designate hemp used for commercial non-intoxicant purposes. Small and Cronquist (1976) split *C. sativa* into two subspecies: *C. sativa* subsp. *sativa*, with less than 0.3% (dry weight) of THC in the upper (reproductive) part of the plant, and *C. sativa* subsp. *indica* (Lam.) E. Small & Cronq. with more than 0.3% THC. **This classification has since been adopted in the European Community and Canada, and most areas of Australia, as a dividing line between cultivars that can be legally cultivated under licence and forms that are considered to have too high a drug potential.**⁵⁸*

A summary of industrial hemp in Canada by Agriculture and Agri-Food Canada may be found in Appendix N. Canada fully relegalized industrial hemp in 1998, after banning it in 1938. To date, the experience has been generally positive and industrial hemp has not complicated marijuana control efforts.⁵⁹ In fact, Health Canada has confirmed that to date, there have been no reported violations of licensed industrial hemp producers cultivating marijuana.⁶⁰

See within “Legal Status in the United States” and Appendix D: “International Production.”

THC:CBD Ratio Determines Intoxication

It’s not just the quantity of THC that makes *Cannabis* marijuana, but—more importantly—the ratio of THC to CBD in the plant. If the amount of CBD in a plant (or any part of a plant)

⁵⁶ J. Michael Bostwick. “Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana.” Mayo Clinic Proceedings. February 2012;87(2):172-186. doi:10.1016/j.mayocp.2011.10.003

⁵⁷ 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.

⁵⁸ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: (emphasis added).

⁵⁹ Emmanuel Anum Laate. 2012. Industrial Hemp Production in Canada. Ministry of Agriculture and Rural Development. Government of Alberta.

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/econ9631/\\$file/Final%20-%20Industrial%20Hemp%20Production%20in%20Canada%20-%20June%2025%202012.pdf?OpenElement](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/econ9631/$file/Final%20-%20Industrial%20Hemp%20Production%20in%20Canada%20-%20June%2025%202012.pdf?OpenElement)

⁶⁰ Telephone Interview with Rebecca Ng, Health Canada, Industrial Hemp Section Officer, Sept. 30, 2014, 613-954-8766.

exceeds the amount of THC, no intoxication is possible. (See CBD is the Antidote to THC below). Therefore, scientists do not consider such *Cannabis* taxon or cultivars marijuana:

*The amounts of CBD and THC in an individual Cannabis plant can be characterized both qualitatively and quantitatively (Hemphill et al., 1980; Hillig, 2002; Mandolino et al., 2003). **Qualitative characterization involves determining a plant's THC/CBD ratio** (the inverse ratio is sometimes used) and assigning it to a discrete chemical phenotype (chemotype). Fetterman et al. (1971) recognized two chemotypes: a THC/CBD ratio >1.0 characteristic of “drug-type” plants, and a THC/ CBD ratio <1.0 characteristic of “fiber-type” plants. Small and Beckstead (1973a, b) also recognized an intermediate chemotype. According to their system of classification (that is used herein), **chemotype I plants have a high THC/CBD ratio (>>1.0), chemotype II plants have an intermediate ratio (close to 1.0), and chemotype III plants have a low THC/CBD ratio(<<1.0).***⁶¹

THC:CBD ratio is stable for the life of the plant:

*The **THC/CBD chemotype** of a plant is **determined at a young age and is stable** beyond the seedling stage **throughout the life of the plant** (Barni-Comparini et al., 1984; Vogelmann et al., 1988).*⁶²

Consumers of recreational marijuana demand very high amounts of THC (and correspondingly very low amounts of CBD):

*Marijuana cultivars are known to have THC levels exceeding 2–24% of inflorescence dry weight whereas [industrial] hemp cultivars produce substantially less THC but rather high levels of CBD (Hillig and Mahlberg, 2004).*⁶³

The THC and CBD levels are genetically determined:

*THCA and CBDA share the same biosynthetic pathway except for the last step in which THCA synthase and CBDA synthase produce THCA or CBDA, respectively (Taura et al., 2007). Recent evidence suggests that the genes encoding the two synthases are allelic (de Meijer et al., 2003; Pacifico et al., 2006). CBD and THC are enantiomers, but **only THC elicits psychotropic [intoxicating] effects, whereas CBD may mediate [“bring about”] anti-psychotropic [anti-intoxicating] effects** (Long et al., 2006; Zuardi et al., 2006), a difference highlighting the stereo-*

⁶¹ Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). American Journal of Botany 91(6): 966-975.

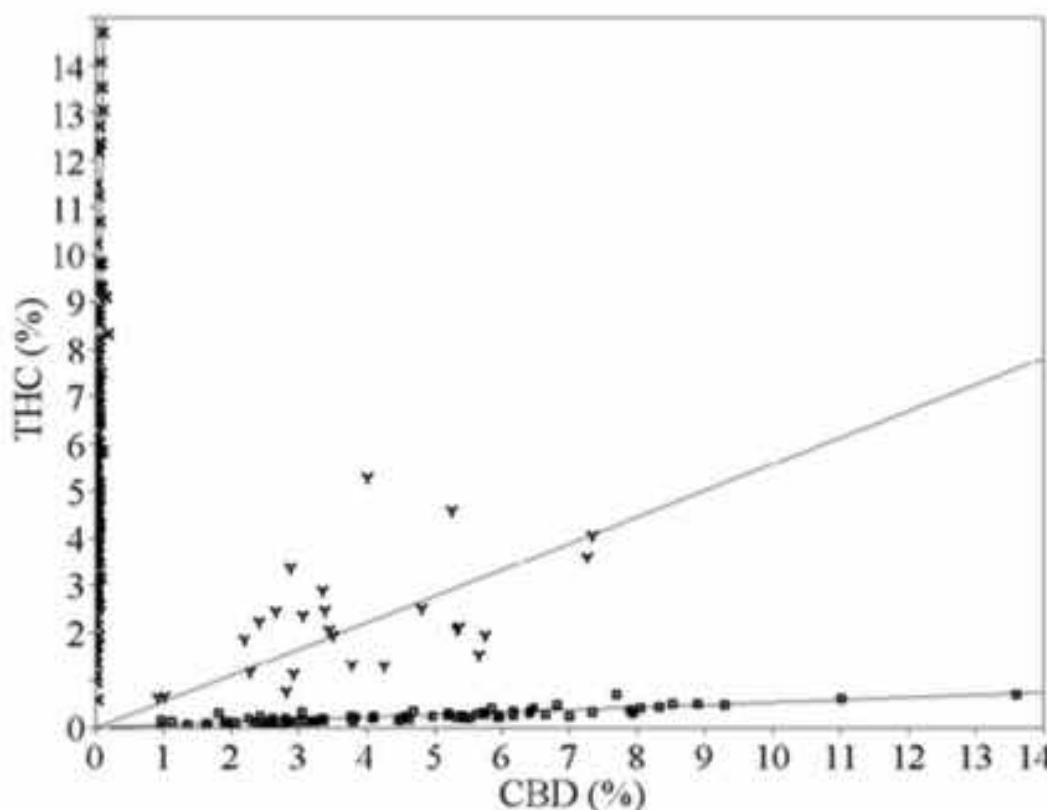
⁶² Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). American Journal of Botany 91(6): 966-975 (emphasis added).

⁶³ M. David Marks, Li Tian, Jonathan P. Wenger, Stephanie N. Omburo, Wilfredo Soto-Fuentes, Ji He, David R. Gang, George D. Weiblen and Richard A. Dixon. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. Journal of Experimental Botany, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210.

*selectivity of receptors in the human body that bind these compounds.*⁶⁴

Figure 1 is a graph of 253 varieties of *Cannabis* assayed for both their THC (vertical axis) and CBD content (horizontal axis). Those with high-THC:CBD ratios ($\gg 1.0$; Chemotype I) are high-grade marijuana, while those with low THC:CBD ratios ($\ll 1.0$; Chemotype III) are high-grade industrial hemp. The interlopers (ratios ~ 1 , Chemotype II) in between represent varieties with intermediate quantities and ratios of these two major cannabinoids. Most of those on the graph scattered between the two major groupings are not marijuana because their CBD content exceeds their THC content.

Figure 1
Plot of THC Versus CBD



Plot of Δ^9 -tetrahydrocannabinol (THC) % vs. cannabidiol (CBD) % for 253 *Cannabis* plants. Chemotype I, II, and III plants are marked with X, Y, and square, respectively. Linear regression lines (forced through the origin) are drawn for each chemotype.
Source: Hillig and Mahlberg 2004.

As a matter of science, “marijuana” is plant material with more THC than CBD:

Marijuana consists of the dried female inflorescences in which the quantity of

⁶⁴ M. David Marks, et al. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. *Journal of Experimental Botany*, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210 (emphasis added).

THC exceeds that of cannabidiol (CBD), produced initially as cannabidiolic acid (CBDA)), and potency varies among cultivars by several orders of magnitude (ElSohly et al., 2000).⁶⁵

Even if the THC amount exceeds the CBD amount in some intermediate strains, while it scientifically may be “marijuana,” recreational users seeking intoxication would not consider it “good” marijuana.

See “CBD is the Antidote to THC” discussion below.

Seventeen states have either partially or fully legalized medical “marijuana” with high amounts of CBD and low amounts of THC (Table 2). As these forms are not intoxicating, it is more accurate to refer to the product as medical *Cannabis*. Given the THC:CBD ratios generally specified, it would be accurate to label these products as industrial hemp or having come from industrial hemp.

Table 2 States that Have Approved Non-Intoxicating Forms of Medical Marijuana			
State	Specific Conditions	Definition of Products Allowed	Intoxication Potential
Alabama	Debilitating epileptic conditions.	Low THC= below 3% THC	3% THC can intoxicate if not offset by as much or more CBD. However, only the University of Alabama Birmingham is allowed to dispense.
Florida	Cancer, medical condition or seizure disorders that chronically produces symptoms that can be alleviated by low-THC products.	Low THC= below .8% THC and above 10% CBD by weight	THC below 1% threshold and offset by CBD by at least 10 times.
Georgia	End stage cancer, ALS, MS, seizure disorders, Crohn's, mitochondrial disease, Parkinson's, Sickle Cell disease.	Low THC= below 5% THC and at least an equal amount of CBD.	The requirement for an equal amount of CBD means a THC:CBD ratio of <1 and is therefor not intoxicating, despite 5% THC level, which is only intoxicating if the CBD level were far less.
Idaho (though vetoed by the Governor)	Cancer, amyotrophic lateral sclerosis, seizure disorders, multiple sclerosis, Crohn's disease, mitochondrial disease, fibromyalgia, Parkinson's disease or sickle cell disease.	Low THC= below 0.3% THC by weight and at least 15 times more CBD than THC by weight and not containing any other psychoactive [intoxicating] substance.	The THC:CBD ratio of legal product must be at least both <0.3% THC and with a THC:CBD ratio of 0.067. To be considered potentially intoxicating, the THC:CBD ratio must be >1.
Iowa	Intractable epilepsy.	Low THC = below 3% THC, no more than 32 oz.	3% THC can intoxicate, if not offset by as much or more CBD. Marinol® (dronabinol), a synthetic form of THC, is approved by the Food and Drug Administration to increase appetite and

⁶⁵ M. David Marks, et al. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. Journal of Experimental Botany, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210 (emphasis added).

			reduce nausea in cancer and AIDs patients. As Marinol® is contraindicated for “patients with existing seizure disorders” as it may cause seizures, which are a symptom of epilepsy (http://www.fda.gov/ohrms/dockets/dockets/05n0479/05N-0479-emc0004-04.pdf) one can assume those with “intractable epilepsy” are interested only in low-THC/high-CBD product.
Kentucky	Intractable seizure disorders.	No	According to NCSL, “SB 124 (2014) Clara Madeline Gilliam Act: Exempt cannabidiol from the definition of marijuana and allows it to be administered by a public university or school of medicine in Kentucky for clinical trial or expanded access program approved by the FDA.” [emphasis added]
Louisiana	Glaucoma, symptoms resulting from the administration of chemotherapy cancer treatment, and spastic quadriplegia.	THC shall be reduced to the lowest acceptable therapeutic levels available through scientifically acceptable methods.	The intent of the law is to facilitate the use of CBD for medical purposes. The law recognizes that THC can be detected in very low amounts—far below an intoxicating threshold.
Mississippi	Debilitating epileptic condition or related illness.	Processed cannabis plant extract, oil or resin that contains more than 15% cannabidiol, or a dilution of the resin that contains at least 50 milligrams of cannabidiol (CBD) per milliliter, but not more than 0.5% of tetrahydrocannabinol (THC).	Doing the arithmetic, the THC:CBD ratio of legal product must be at least 0.03. To be considered potentially intoxicating, the THC:CBD ratio must be >1.
Missouri	Intractable epilepsy that has not responded to three or more other treatment options.	Equal or less than .3% THC and at least 5% CBD by weight.	Doing the arithmetic, the THC:CBD ratio of legal product must be at least 0.06. To be considered potentially intoxicating, the THC:CBD ratio must be >1.
North Carolina	Intractable epilepsy.	Less than nine-tenths of one percent (0.3%) tetrahydrocannabinol (THC) by weight. Is composed of at least five percent (10%) cannabidiol by weight and contains no other psychoactive [intoxicating] substance.	The THC:CBD ratio of legal “hemp extract” product must be at least 0.03. To be considered potentially intoxicating, the THC:CBD ratio must be >1.
Oklahoma	People under 18 (minors) Minors with Lennox-Gastaut Syndrome, Dravet Syndrome, or other severe epilepsy that is	Preparation of cannabis with no more than .3% THC in liquid form.	None as the THC level requirements mirror the federal farm bill and many state laws defining industrial hemp.

	not adequately treated by traditional medical therapies.		
South Carolina	Lennox-Gastaut Syndrome, Dravet Syndrome, also known as severe myoclonic epilepsy of infancy, or any other form of refractory epilepsy that is not adequately treated by traditional medical therapies.	Cannabidiol or derivative of marijuana that contains 0.9% THC and over 15% CBD, or at least 98 percent cannabidiol (CBD) and not more than 0.90 percent (0.9 %) tetrahydrocannabinol (THC) by volume that has been extracted from marijuana or synthesized in a laboratory.	Doing the arithmetic, the THC:CBD ratio of legal product must be at least 0.0009. To be considered potentially intoxicating, the THC:CBD ratio must be >1.
Tennessee	Yes, intractable seizure conditions.	Less than 0.9% THC as part of a clinical research study	0.9% THC is below the 1% threshold of potential intoxication (assuming the amount of CBD is less). While no CBD minimum is specified, the clinical research study is targeted at epilepsy (see above "Intoxication Potential" for Iowa) and the product is to be controlled by Tennessee Tech University.
Texas	Intractable epilepsy.	"Low-THC Cannabis" with not more than 0.5 percent by weight of tetrahydrocannabinols; and not less than 10 percent by weight of cannabidiol	Not intoxicating, as this rule translates to a THC:CBD ratio of <0.05), well below the scientific-consensus break between industrial hemp and marijuana of 1:1.
Utah	Intractable epilepsy that hasn't responded to three or more treatment options suggested by neurologist.	Less than 0.3% THC by weight and at least 15% CBD by weight and contains no other psychoactive [intoxicating] substances.	Doing the arithmetic, the THC:CBD ratio of legal product must be at least 0.02. To be considered potentially intoxicating, the THC:CBD ratio must be >1.
Virginia	Intractable epilepsy.	Cannabis oils with at least 15% CBD or THC-A and no more than 5% THC.	Not intoxicating, as this rule translates to a THC:CBD ratio of a maximum of 0.34 well below the scientific-consensus break between industrial hemp and marijuana of 1:1.
Wisconsin	Seizure disorders.	"Cannabidiol in a form without a psychoactive effect."	The THC:CBD ratio would have to be <1. As the clinical research study is targeted at seizure disorders one can reasonably expect very low-THC/very high-CBD product to be used (see above "Intoxication Potential" for Iowa)
Wyoming	Intractable epilepsy or seizure disorders.	Less than 0.3% THC and at least 5% CBD by weight	No intoxicating, as this rule translates to a THC: CBD ratio of a maximum of 0.6, well below the scientific-consensus break between industrial hemp and marijuana of 1:1.
Columns 1, 2 and 3 adapted from: State Marijuana Laws, Table 2, Limited Access Marijuana Product Laws (Low THC/High CBD- Cannabidiol), National Conference of State Legislatures, http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx .			

The 1 Percent THC Threshold to Intoxication

A level of about 1% THC is considered the threshold for cannabis to have a psychotropic effect or an intoxicating potential.⁶⁶

While the THC:CBD ratio qualitatively distinguishes marijuana and industrial hemp, quantitatively, it takes at least 1 percent THC concentration for marijuana *Cannabis* to intoxicate—assuming the corresponding ratio of CBD is less than 1 (and the lower the “better” if intoxication is the goal). The intoxicating cultivars are far greater than 1:1 THC:CBD.

A level of about 1% THC is considered the threshold for marijuana to have intoxicating potential (Grotenhermen and Karus 1998), so the 0.3% level is conservative, and some countries (rarely in Australia, commonly in Switzerland) have permitted the cultivation of cultivars with higher levels.⁶⁷

The 0.3 percent threshold, while arbitrary, is also quite conservative. Numerous governments around the world, including several U.S. states, as well as the United States Congress in the 2014 Farm Bill (tied to other necessary conditions) have adopted 0.3 percent THC concentraion.⁶⁸ The number arose in the scientific literature:

It will be noted that we arbitrarily adapt a concentration of 0.3% Δ^9 -THC (dry weight basis) in young, vigorous leaves of relatively mature plants as a guide to discriminating two classes of plants. This is based on standard-grown material in Ottawa in gardens, greenhouses and growth chambers, and of course on our analytical techniques. Dr. C. E. Turner, who has conducted extensive chemical analysis of Cannabis at the University of Mississippi, has agreed (pers. com.).⁶⁹

The authors (Small and Cronquist) adopted the 0.3 percent cut-off for “young, vigorous leaves of relatively mature plants.” Later the lead author (Small) and another author noted that the highest THC levels in a plant are in the flowering parts, with less in the leaves:

It should be appreciated that there is considerable variation in THC content in different parts of the plant (THC content increases in the following order: achenes (excluding bracts), roots, large stems, smaller stems, older and larger leaves, younger and smaller leaves, flowers, perigonal bracts covering the female flowers and fruits), and that it is well known in the illicit trade how to screen off the more potent fractions of the plant in order to increase THC levels in resultant drug products.⁷⁰

⁶⁶ 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, <http://www.hort.purdue.edu/newcrop/ncnu02/v5-284.html>.

⁶⁷ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: (emphasis added).

⁶⁸ See Agricultural Act of 2014. Public Law 133-79. February 7, 2014. 7 U.S. Code § 5940.

⁶⁹ Ernest Small and Arthur Cronquist. 1976. A Practical and Natural Taxonomy for Cannabis. *Taxon* 25(4): 405-435. August.

⁷⁰ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: (emphasis added).

Any part of the *Cannabis* plant, if it has <0.3 percent THC is not capable of intoxicating a user.

*Nevertheless, a level of 0.3% THC in the flowering parts of the plant is reflective of material that is too low in intoxicant potential to actually be used practically for illicit production of marijuana or other types of cannabis drugs.*⁷¹

In some countries, the amount of allowable THC in human food products made of *Cannabis* seed and/or oil is set at the very low level of 10 parts per million (0.001% THC). This low allowable THC level in human food products is not to prevent intoxication but rather to avoid a false-positive drug test.

*A much lower level of THC is allowed in human food products manufactured from the seeds—currently 10 ppm [0.001%] in seeds and oil products used for food purposes in Canada and in much of the European Community. This is because of alleged toxicity and conjectured interference with drug tests....*⁷²

By congressional definition in the 2014 Farm Bill, industrial hemp has “not more than 0.3 percent” THC⁷³ —far lower than the minimum percentage (1%) to achieve intoxication (assuming significantly lower amounts of the antagonizing CBD). See “CBD is the Antidote to THC” below.

Science Makes Current Federal Legal Definition of “Marihuana” Obsolete

The CSA defines “marihuana” as “all parts of the plant *Cannabis sativa* L.”⁷⁴ Courts have interpreted this definition to apply to all species and subspecies in the *Cannabis* genus.⁷⁵ This definition of marihuana, which originated in the Marijuana Tax Act of 1937, was codified by Congress in 1970. Even though the authors of the definition did not know about cannabinoids, knew that there were parts of the *Cannabis* plant, if not also varieties of it, that were not intoxicating.

*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.*⁷⁶

⁷¹ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: (emphasis added).

⁷² Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: (emphasis added).

⁷³ Agricultural Act of 2014. Public Law 133-79. February 7, 2014. 7 U.S. Code § 5940.

⁷⁴ 21 U.S.C. 802(16).

⁷⁵ See, for example: *People v Van Alstyne* (1975). Court of Appeals of California Second Appellate District, Division 3. <http://online.ceb.com/calcases/CA3/46CA3d900.htm>.

⁷⁶ 21 U.S.C. 801(16) (emphasis added).

The Marijuana Tax Act of 1937 definition of “marihuana” is effectively identical:

*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- but shall 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.*⁷⁷

The CSA of 1970 and the Marijuana Tax Act of 1937 both attempted to distinguish between what now is commonly accepted as marijuana and industrial hemp. The state of the science did not allow Congress in 1937 or 1970 to distinguish the two based on genetics, chemotype, etc. as is the case in 2016.

Table 3			
Who Currently Calls Various Cannabis Cultivars With Different Amounts of THC What			
Government/Expertise/ Interest Group ⁷⁸	Δ9-Tetrahydrocannabinol Content		
	≤0.3%	>0.3% to ≤1.0%	>1%
Botanical Scientists	Fiber Cannabis	Intermediate Cannabis	Drug Cannabis
Health Scientists	(Non-Intoxicating) Cannabis		(Intoxicating) Marijuana
Law Enforcement Researchers	Ditchweed		Marijuana
Marijuana Users	Hippie’s Disappointment		Marijuana
US Department of Agriculture	Industrial Hemp		Marijuana
Nat’l Ass’n of State Dept’s of Ag. ⁷⁹	Industrial Hemp	Marijuana	
Switzerland	Industrial Hemp		Marijuana
European Union ⁸⁰	Industrial Hemp	Marijuana	
Canada	Industrial Hemp	Marijuana	
West Virginia	Industrial Hemp		Marijuana
23 U.S. States	Industrial Hemp	Marijuana	
Congress (2014 Farm Bill)	Industrial Hemp	Marijuana	
USDOJ DEA	Marijuana		

⁷⁷ Pub. 238, 75th Congress, 50 Stat. 551 (Aug. 2, 1937).

⁷⁸ Sources for the positions of the various entities described in this table are found elsewhere in the text or in footnotes.

⁷⁹ Nat'l Assoc. of State Dep'ts. of Agric. *NASDA Policy Statements*, Sec 11.9, 128-129 (February 8, 2016) (updated), available at <http://www.nasda.org/Policy/policystatements/4901.aspx>. "NASDA supports revisions to the federal rules and regulations authorizing commercial production of industrial hemp." NASDA urges the US Department of Agriculture, US Drug Enforcement Administration and the White House 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 [industrial] hemp**.” (emphasis added). To be conservative in representing NASDA's position, the table shows NASDA as favoring 0.3% THC content, yet if USDA, DEA and the ONDCP agree to 1% it would comport with NASDA policy.

⁸⁰ Since 1971, for the purpose of defining industrial hemp varieties that qualified for farm subsidies, the original EU demarcation was 0.3% THC by dry weight. In 2001, the demarcation for subsidized industrial hemp crops changed to 0.2% THC. See J. C. Callaway, *A More Reliable Evaluation of Hemp THC Levels is Necessary and Possible*, *Journal of Industrial Hemp*, Vol. 13(2) (2008).

It's time to update the definition of marihuana to reflect modern science and emerging public policy. Law enforcement researchers distinguish ditchweed from marijuana. Biological scientists distinguish high THC:CBD ratio *Cannabis* (aka marijuana) and low THC:CBD ratio *Cannabis* (aka industrial hemp). Most major industrial democracies, the amjority of American states, and most of the American public distinguish industrial hemp and marijuana. (See Table 3).

Petitioners urge the DEA to give nuance to taxon in the *Cannabis* genus that have a THC:CBD ratio of <1 and no more than 1% THC. Distinguishing industrial hemp from marijuana based on the 1% THC concentration threshold for intoxication is supported by botanical science, health science and law enforcement research, is the position of the U.S. Department of Agriculture, and is government policy in Switzerland, certain Australian states and territories and the State of West Virginia. If DEA were to redefine marijuana to exclude industrial hemp in the manner preferred by petitioners, the last line of the above would look like this:

USDOJ DEA	Industrial Hemp	Marijuana
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Petitioners alternatively request DEA to go as far as other industrial democracies, Congress, and several U.S. states have gone. If DEA accepts this petition, and defines marihuana as greater than 0.3 percent Δ9-THC by dry weight, the last line of the above would look like this:

USDOJ DEA	Industrial Hemp	Marijuana
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The 75th Congress (1937-1938) knew that not all cannbis was “marihuana” but science could not tell them what those differences were. The 91st Congress (1969 and 1970) still saw a difference, but did not know what it was. By the time the 113th Congress (2013-2014) enacted the Farm Bill, the science was clear and unambiguous: though in the same botanical genus, industrial hemp and marijuana are different. The 114th Congress has renewed and strengthened its instructions to DEA to leave industiral hemp alone as long as it is grown pursuant to the 2014 Farm Bill. Today, DEA has the science readily available to it which makes clear that industrial hemp is not marijuana, and should not be defined as such.

One Person's Meat is Another Person's Poison

Throughout this petition, it is important to interpret the scientific literature in the proper context. As noted in the Mayo Clinic Proceedings:

Cohen sums it up thus: “Can the recreational use of marijuana cause cognitive impairment? The most obvious answer is ‘yes’—after all, this is the basic reason for its recreational use.... The irony, of course, is that the “high” for one class of users is the “acute toxic effect” for another.”⁸¹

Some descriptions in the literature speak of ill effects, but those effects are precisely those wanted by recreational marijuana users. This is important when the literature notes that CBD antagonizes THC.

⁸¹ J. Michael Bostwick. “Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana.” Mayo Clinic Proceedings. February 2012;87(2):172-186. doi:10.1016/j.mayocp.2011.10.003 (references in original omitted).

As a matter of fact, industrial hemp is *Cannabis* that has a THC:CBD ratio <1. As a matter of law in many jurisdictions across the nation and around the world, industrial hemp is *Cannabis* that has a THC content of <0.3 percent. 0.3% THC is far less than the 1% THC necessary to intoxicate (assuming the THC is not countered by a larger percentage of CBD).

U.S. Federal Law needs to accurately define marijuana and industrial hemp as distinct varieties of the genus *Cannabis* and not incorrectly define all *C. sativa* as only "marihuana".

2. CBD Is the Antidote to THC

The main intoxicating component found in marijuana is THC. Marijuana increasingly contains very high amounts of THC and very low amounts of CBD. A *Mayo Clinic Proceedings* editorial notes:

*Its main active ingredient, Δ-9-tetrahydrocannabinol [THC], was not isolated until 1964, and not until the 1990s were the far-reaching modulatory activities of the endocannabinoid system in the human body appreciated.*⁸²

*[CBD] antagonizes the psychotropic [intoxicating] effects of THC.*⁸³

An article in the *Mayo Clinic Proceedings* notes:

*Cannabidiol modifies the effects of THC. Thus, CBD blocks anxiety provoked by THC; cannabis with high CBD content is associated with fewer psychotic experiences than cannabis with low CBD content, and CBD attenuates the memory-impairing effects produced by THC.*⁸⁴

CBD Counteracts THC

The discussion under “Industrial Hemp is, in Fact, Not Marijuana” (within) proves that ***Cannabis* material with a THC:CBD ratio of <1 is not marijuana**. This is because the **CBD counters the intoxicating effects of the THC**. The more CBD in marijuana, the less desirable the marijuana is to recreational users. CBD counters THC in at least three important ways:

CBD possesses sedative properties, and a clinical trial showed that it reduces the anxiety and other unpleasant psychological side effects provoked by pure THC. CBD modulates the pharmacokinetics of THC by three mechanisms: (1) it has a slight affinity for cannabinoid receptors (K_i at CB1 = 4350 nM, compared to THC = 41 nM;), and it signals receptors as an antagonist or reverse agonist;

⁸² J. Michael Bostwick. “Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana.” *Mayo Clinic Proceedings*. February2012;87(2):172-186. doi:10.1016/j.mayocp.2011.10.003.

⁸³ Franjo Grotenhermen. Effects of Cannabis and the Cannabinoids. *in* Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York.

⁸⁴ Raphael Mechoulam. “Cannabis—A Valuable Drug That Deserves Better Treatment.” *Mayo Clinic Proceedings* February2012;87(2):107-109. doi:10.1016/j.mayocp.2011.12.002 (references in original omitted).

(2) CBD may modulate signal transduction by perturbing the fluidity of neuronal membranes, or by remodeling G proteins that carry intracellular signals downstream from cannabinoid receptors; and (3) **CBD is a potent inhibitor of cytochrome P450-3A11 metabolism, thus it blocks the hydroxylation of THC to its 11-hydroxy metabolite. The 11-hydroxy metabolite is four times more psychoactive than unmetabolized THC and four times more immunosuppressive.**⁸⁵

Medical scientists have successfully used CBD as a “pretreatment” to counteract the effects of THC:

Δ-9-tetrahydrocannabinol (Δ-9-THC) and Cannabidiol (CBD), the two main ingredients of the Cannabis sativa plant have distinct symptomatic and behavioral effects. We used functional magnetic resonance imaging (fMRI) in healthy volunteers to examine whether Δ-9-THC and CBD had opposite effects on regional brain function. We then assessed whether pretreatment with CBD can prevent the acute psychotic symptoms induced by Δ-9-THC. Fifteen healthy men with minimal earlier exposure to cannabis were scanned while performing a verbal memory task, a response inhibition task, a sensory processing task, and when viewing fearful faces. Subjects were scanned on three occasions, each preceded by oral administration of Δ-9-THC, CBD, or placebo. BOLD responses were measured using fMRI. In a second experiment, six healthy volunteers were administered Δ-9-THC intravenously on two occasions, after placebo or CBD pretreatment to examine whether CBD could block the psychotic symptoms induced by Δ-9-THC. Δ-9-THC and CBD had opposite effects on activation relative to placebo in the striatum during verbal recall, in the hippocampus during the response inhibition task, in the amygdala when subjects viewed fearful faces, in the superior temporal cortex when subjects listened to speech, and in the occipital cortex during visual processing. In the second experiment, pretreatment with CBD prevented the acute induction of psychotic systems by Δ-9-tetrahydrocannabinol. Δ-9-THC and CBD can have opposite effects on regional brain function, which may underlie their different symptomatic and behavioral effects, and CBD’s ability to block the psychotogenic effects of Δ-9-THC.⁸⁶

CBD impedes the effects of THC on schizophrenia patients:

In patients with schizophrenia, Δ-9-THC may exacerbate existing psychotic symptoms, anxiety and memory impairments, and Δ-9-THC is thought to be the ingredient responsible for the increased risk of developing schizophrenia following regular cannabis use. In contrast, Cannabidiol (CBD), the other major

⁸⁵ John M. McPartland and Ethan B. Russo. Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts? in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. Handbook of Cannabis Therapeutics: From Bench to Bedside. The Hayworth Press (emphasis added, references in original omitted).

⁸⁶ Sagnik Bhattacharyya, et al. “Opposite Effects of Δ-9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology.” Neuropsychopharmacology (2010) 35, 764–774. Doi:10.1038/npp2002.184 (emphasis added).

*psychoactive constituent of C. sativa, has anxiolytic and possibly antipsychotic properties, does not impair memory or other cognitive functions.*⁸⁷

If CBD Exceeds THC, There is No Possible “Abuse” (aka “High”)

THC affects pulse rate, time production tasks and psychological reactions. CBD does not. When administered together, CBD countered the effects of THC

*In a double blind procedure, 40 healthy male volunteers were assigned to 1 of 8 experimental groups, receiving per oral route, placebo, 30 mg Δ9-THC, 15, 30 or 60 mg of CBD, and mixtures of 30 mg of Δ9-THC plus either 15, 30 or 60 mg of CBD respectively. **Pulse rate, time production tasks and psychological reactions were measured at several time intervals after drug ingestion. 30 mg Δ9-THC alone increased pulse rate, disturbed time tasks and induced strong psychological reactions in the subjects. 15-60 mg of CBD alone provoked no effects. On the other hand, CBD was efficient in blocking most of the effects of Δ9-THC when both drugs were given together. CBD also decreased the anxiety component of Δ9-THC effects, in such a way that the subjects reported more pleasurable effects.***⁸⁸

(Note: “more pleasurable effects” in this case notes the reduction of the anxiety resulting from the ingestion of a large dose of pure THC). Eight distinct combinations of THC, CBD and/or placebo were used in this study, some of which were clearly marijuana, clearly industrial hemp and some intermediate. Table 4 compares and contrasts THC and CBD levels by both percentages and ratios.

<i>Table 4</i>					
Experimental Doses in Bhattacharyya, et al.					
<i>Group</i>	<i>THC</i>	<i>CBD</i>	<i>Placebo</i>	<i>Percentage THC & CBD</i>	<i>THC:CBD Ratio</i>
1	0 mg	0 mg	Yes	0%/0%	--
2	30 mg	0 mg	No	100% THC	--
3	0 mg	15 mg	No	100% CBD	--
4	0 mg	30 mg	No	100% CBD	--
5	0 mg	60 mg	No	100% CBD	--
6	30 mg	15 mg	No	67%THC/33% CBD	2:1
7	30 mg	30 mg		50% THC/50% CBD	1:1
8	30 mg	60 mg		33% THC/67% CBD	1:2

More specifically in terms of pulse rate:

⁸⁷ Sagnik Bhattacharyya, et al.. “Opposite Effects of Δ-9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology.” Neuropsychopharmacology (2010) 35, 764–774. Doi:10.1038/npp2002.184 (emphasis added, references in original omitted).

⁸⁸ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. “Cannabidiol Interferes with the Effects of Δ⁹-Tetrahydrocannabinol in Man.” European Journal of Pharmacology 28 (1974) 172-177 (emphasis added).

*All 5 subjects under 30 mg Δ 9-THC alone showed an accentuated acceleration of pulse rate averaging 35% increase, as compared to the pre-drug levels, 50 min after drug administration. At this time, Δ 9-THC ingested together with 15 mg of CBD increased pulse rate by 53%. However, 30 and 60 mg of CBD reduced the acceleration of pulse rate induced by Δ 9-THC. For example, **the volunteers under 30 mg of Δ 9-THC plus 60 mg of CBD averaged at most 6.2% increase of pulse rate, which contrasts with the result obtained with Δ 9-THC alone. On the other hand, the doses of CBD alone did not significantly change pulse rate.**⁸⁹*

More specifically in terms of time production tasks:

*On the other hand, **CBD blocked the effects of Δ 9-THC.** Thus, even 15 mg of CBD significantly reduced the underproduction induced by Δ 9-THC. The larger doses of CBD were also efficient in blocking the effects of Δ 9-THC.*⁹⁰

More specifically in terms of time psychological effects:

*When CBD was given together with Δ 9-THC the latter drug induced weaker effects; even 15 mg of the former drug was able to considerably mitigate the psychological reactions induced by 30mg of Δ 9-THC. Furthermore, **when 60 mg of CBD was given mixed with the 30 mg dose of Δ 9-THC, none of the subjects presented reaction classified as grade 4.***⁹¹

It is important to consider THC and CBD and not merely THC alone:

***The observed blockade of Δ 9-THC effects by CBD further suggests that if only the Δ 9-THC content of marihuana plants or their extracts is taken into consideration, experiments performed with these materials may lead to erroneous conclusions.** Since CBD content varies widely according to the origin of the plant used (Doorenbos et al., 1971), it is possible that the discrepancies in potency commonly found by the authors are due to the CBD content, despite previous calibration of the Δ 9-THC amounts delivered to the subjects. In this respect Doorenbos et al. (1971) and Fetterman et al. (1971) state that marihuana cultivated as intoxicant has low CBD content and high Δ 9-THC, whereas plant cultivated for fiber production yields little Δ 9-THC and more CBD.*⁹²

Medical researchers have noted:

⁸⁹ Isac G Karniol, et al.. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." European Journal of Pharmacology 28 (1974) 172-177(emphasis added).

⁹⁰ Isac G Karniol, et al.. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." European Journal of Pharmacology 28 (1974) 172-177(emphasis added).

⁹¹ Isac G Karniol, et al.. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." European Journal of Pharmacology 28 (1974) 172-177 (emphasis added). Note: "Grade 4" is the maximum of a scale of subjective systems previously described (Karniol and Carlini, 1973; Carlini et al., 1974).

⁹² Isac G Karniol, et al.. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." European Journal of Pharmacology 28 (1974) 172-177(emphasis added).

CBD is demonstrated to antagonise some undesirable effects of THC including intoxication, sedation and tachycardia, while contributing analgesic, anti-emetic, and anti-carcinogenic properties in its own right.... To summarise, CBD blocked certain effects of THC: catatonia in mice, corneal areflexia [absence of reflexes] in rabbits, increased defaecation and decreased ambulation in rats in the open field after chronic administration, and aggressiveness in rats after REM-sleep deprivation.⁹³

To mitigate the effects of THC, the more CBD the better:

In subsequent related rat experiments, a 20-fold CBD:THC ratio antagonised THC effects on variable-interval performance, while fivefold ratios seemed to potentiate THC effects.⁹⁴

DEA, in a notice of denial of petition to reschedule marijuana (Gettman Petition) in 2001,⁹⁵ mischaracterized the effects of CBD on THC. As two premier *Cannabis* researchers noted:

In Brazil in 1974, effects of THC up to 30 mg and CBD up to 60 mg orally were studied in varying ratios in blinded fashion in 40 male subjects [33]. CBD at doses 15–60 mg evidenced few effects of its own, but effectively countered effects of 30 mg of THC including tachycardia, disturbed time tasks and strong psychological reactions. Interestingly, with higher doses of THC (p. 175), ‘symptoms appeared in ‘waves’ during which the subjects reported strong feelings of anxiety reaching sometime a near panic state’. (These complaints are similar to those voiced by Marinol® patients currently when the dosage is not tolerated; perhaps enterohepatic circulation is operative.) With addition of CBD, the authors observed (p. 176), ‘‘CBD also changed the symptoms in such a way that the subjects receiving the mixtures showed less anxiety and panic but reported more pleasurable effects’’. Unfortunately, this statement was interpreted in context by the anonymous author(s) of a US Federal Register article [34] (p. 20065) as follows, ‘‘Most importantly, CBD appears to potentiate the euphorigenic and reinforcing effects of THC which suggests that the interaction between THC and CBD is synergistic and may actually contribute to the abuse of marijuana’’. This contention is unsupported by any of the cited literature. Furthermore, as the context of the discussion pertains to smoked cannabis in the USA, it is impertinent, as North American drug strains of cannabis are virtually devoid of CBD-content. No epidemiological data are evident in any of the world’s literature that supports the allegation that the presence of CBD contributes or promotes cannabis abuse. In fact, the neutral antagonism of CB1receptors by CBD should actually reduce risk of

⁹³ Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” *Medical Hypotheses* (2006) 66, 234–246 (emphasis added).

⁹⁴ Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” *Medical Hypotheses* (2006) 66, 234–246(emphasis added, references in original omitted).

⁹⁵ Drug Enforcement Administration. Notice of Denial of [Gettman] Petition. April 18, 2001, *Federal Register*, Vol. 66, No. 75. 20038-20076.

*development of tolerance (vide infra).*⁹⁶

These researchers conclude that CBD “may well reduce addiction potential”:

*A simple perusal of the medical literature will confirm that considerable concern continues in context as to the drug abuse liability of THC preparations. However, that substance in isolation has proven to pose little risk. To the extent that rapidly rising serum levels promote reward and addictive potential of a given pharmaceutical, **it is certainly arguable that the addition of CBD to THC would reduce psychoactive attraction**, and that an oromucosal delivery eliminates the steep slope pharmacokinetic profile of cannabis smoking [54]. **Additionally, cannabinoid receptor blockade by CBD may well reduce addiction potential**, and support its usage as an ‘anti-addictive’ compound.*⁹⁷

3. Cultivation Techniques Further Distinguish Industrial Hemp from Marijuana

Growers of Marijuana and Farmers of Industrial Hemp Recognize the Differences

Farmers of industrial hemp and growers of marijuana use different cultivation and harvesting techniques because the products from the plant desired by each are different.

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 “Industrial 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.⁹⁸

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.

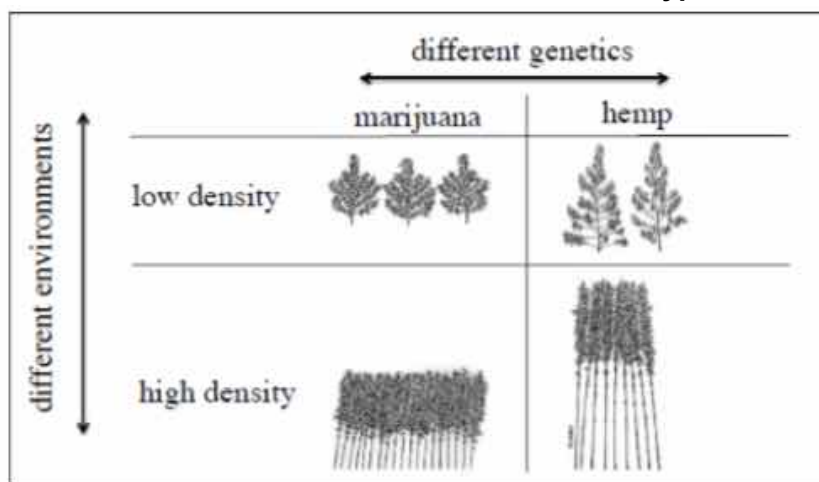
⁹⁶ Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” *Medical Hypotheses* (2006) 66, 234–246(emphasis added, references in original omitted).

⁹⁷ Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” *Medical Hypotheses* (2006) 66, 234–246(emphasis added, references in original omitted).

⁹⁸ CRS communication with Anndrea Hermann, Hemp Oil Canada Inc., December 2009. Pollen is present at a very early plant development stage.

Because of these differences, many claim that drug varieties of cannabis cannot easily be grown with oilseed or fiber varieties without being easily detected.⁹⁹ As discussed below (and illustrated in Figure 2), among the visual plant differences are plant height ([industrial] hemp is encouraged to grow tall, whereas marijuana is selected to grow short and tightly clustered); cultivation ([industrial] 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 ([industrial] hemp is densely planted to discourage branching and flowering, whereas marijuana plants are well-spaced).

Figure 2
Trait Variation in Cannabis Phenotype



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 Cannabis," http://www.votehemp.com/different_varieties.html).

Industrial Hemp

To maximize production of industrial 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. Industrial [h]emp plants grown for fiber or oilseed are planted densely (about 35-50 plants per square foot)¹⁰⁰ 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. 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 industrial 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.¹⁰¹ 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.¹⁰²

⁹⁹ 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.

¹⁰⁰ Innvista, "Hemp Biology" (no date), <http://www.innvista.com/health/foods/hemp/hempbiol.htm>.

¹⁰¹ Agriculture and Agri-Food Canada, "Industrial Hemp" (no date), <http://www4.agr.gc.ca/>

¹⁰² Ibid.

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.¹⁰³ 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 industrial hemp would pollinate the female marijuana plant. Marijuana growers would not want to plant near an industrial 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.¹⁰⁴ The flower and leaves are the harvested products.

4. Cross-Pollination: Widespread Industrial Hemp Cultivation Will Make Marijuana More Costly

Marijuana growers seek to protect the purity of their strains. The higher the THC, the higher the price received. Marijuana growers don't want industrial hemp grown anywhere near their drug plants. The conflict between the cultivation of industrial hemp is coming to a head in states that have legalized both industrial hemp and medical, if not also, recreational marijuana. The following excerpts are from an article entitled "Southern Oregon medical marijuana growers fear industrial hemp could ruin their crops":

Southern Oregon marijuana growers want to ban industrial hemp production from the region out of fear that [industrial] hemp may pollinate their crops and render them worthless.

Compared to Oregon's marijuana legalization movement, the effort to launch an industrial hemp industry in Oregon has been an understated one propelled by a small but passionate group of advocates. When one of them, Edgar Winters, of Eagle Point, got a permit this month to grow industrial hemp on 25 acres in the heart of the state's outdoor marijuana growing region, his neighbors were alarmed.

Allowing industrial hemp in an area known for churning out high-grade marijuana could undermine the industry, growers argue.

"You don't come into the middle of cannabis growing country and try to put up a[n industrial] hemp farm unless you don't know about it, unless you really don't know how far [industrial] hemp pollen can travel," said Casey

¹⁰³ H. van Bakel et al., "The draft genome and transcriptome of *Cannabis sativa*," *Genome Biology*, Vol. 12, Issue 10, 2011, <http://genomebiology.com/2011/12/10/R102>. In botany, dioecious is a term describing plant varieties that possess male and female flowers or other reproductive organs on separate, individual plants.

¹⁰⁴ Innvista, "Hemp Biology" (no date), <http://www.innvista.com/health/foods/hemp/hempbiol.htm>.

Branham, a Jackson County medical marijuana grower who supports industrial hemp but wants it grown elsewhere in the state.

"It basically makes the medicine worthless," he said.

Branham and his neighbors worry [industrial] hemp pollen will find its way to their unpollinated female cannabis flowers, known as sinsemilla, slowing their growth and leading to seeds. The result: weak, seedy marijuana.

"No one will buy seeded flowers, period," said Cedar Grey, a Williams medical marijuana grower. "The flower market is so competitive these days. You have to have world-class flowers. Anything that is seeded is reminiscent of the 1960s or pot from Mexico. No one is interested in that at all."

And it's not just southern Oregon's outdoor marijuana growers who are worried about [industrial] hemp's implications. Portland's indoor marijuana growers worry about [industrial] hemp pollen drifting into their warehouses through ventilation systems or being tracked into their operations on workers' shoes.

Shane McKee, a medical marijuana grower who owns two Portland dispensaries, said the potential complications posed by industrial hemp have caught cannabis growers by surprise.

"Nobody really saw the repercussions," said McKee....

[Winters] said he's received strong criticism from marijuana growers and even personal threats since word of his plan spread.

"It's a viable crop," he said. "There is no way we are going to be forced out of the county. I can tell you that. We are here to stay."¹⁰⁵

Plants within the genus *Cannabis* are wind-pollinated plants.¹⁰⁶ *Cannabis* produces one of the lightest of pollens, which can be carried long distances by the wind.¹⁰⁷ Pollen from marijuana grown in Morocco has been detected in Spain, a distance of at least 80 miles.¹⁰⁸ The potential for cross-pollination creates a risk that the marijuana grower's crop's THC concentration will be reduced.¹⁰⁹ Similarly, industrial hemp producers would also risk cross-pollination, which could result in increased THC concentration of the industrial hemp crop, in violation of the allowable THC limit of an industrial hemp crop. Both marijuana growers and industrial hemp cultivators

¹⁰⁵ Noelle Crombie. February 17, 2015. "Southern Oregon medical marijuana growers fear industrial hemp could ruin their crops." The Oregonian, Portland, OR.

http://www.oregonlive.com/marijuana/index.ssf/2015/02/southern_oregon_medical_mariju.html

¹⁰⁶ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 1, <http://www.fas.org/sfp/crs/misc/RL32725.pdf>.

¹⁰⁷ For pedigreed seed crop production, Canada has detailed guidance on industrial hemp cultivation, including "Minimum Isolation Distances Required Between Inspected Industrial Hemp Crops and Other Crops." See Canadian Seed Growers' Assoc., *Table 10.4.2: Minimum Isolation Distances Required Between Inspected Industrial Hemp Crops and Other Crops*, CIRCULAR 6 / Rev.01.3-2008, 10-3 (Feb. 1, 2015), available at http://seedgrowers.ca/wp-content/uploads/Circ6_COMPLETE_Rev01.10-2015_ENGLISH2.pdf.

¹⁰⁸ Cabezudo, Baltasar, et al.. 1997. Atmospheric transportation of marijuana pollen from North Africa too the Southwest of Europe. *Atmospheric Environment*. October. Vol. 31, Issue 20, pages 3323-3328.

¹⁰⁹ See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 4, <http://www.fas.org/sfp/crs/misc/RL32725.pdf>.

are at risk of cross-pollination and neither wants the cousin plant near their cultivation location.¹¹⁰ Marijuana growers are about the last people who want industrial hemp.¹¹¹

It would be extremely foolish for anyone to grow marijuana in a licensed industrial hemp field—fields potentially subject to frequent USDA or state Department of Agriculture monitoring and testing. Were they inclined to break the law and cultivate marijuana, licensed industrial hemp growers would surely be safer producing marijuana in a corn field or a greenhouse than in the one location subject to regular government review, and one that would most certainly result in cross-pollination, with a risk of a reduced THC content in the marijuana crop.

The clear visual differences between industrial hemp and marijuana would ensure detection—from the ground or overhead—if the two plants were grown in the same field. Industrial hemp, when planted to produce fiber, is a tall slender plant—growing to heights of ten to fifteen feet—with few branches. Plants are grown in close proximity—about four inches apart—in order to minimize branching. By contrast, marijuana plants grown to produce buds—the smokable component of the plants—are full, bushy, and shorter (three to five feet) and require more space to grow. Industrial hemp plants tend to be yellow to light green, whereas marijuana plants are darker. Licensed industrial hemp growers would also be deterred from growing marijuana in industrial hemp fields by the possibility of USDA or the state Department of Agriculture testing the industrial hemp crops for THC content.

If any licensed industrial hemp grower was foolish enough to ignore the high risk of detection and grow marijuana in an industrial hemp field, the grower would face a second obstacle: the incompatibility of these two distinct varieties of the *C. sativa* plant. Industrial hemp grown for fiber matures for harvesting in about 90 days, while marijuana generally requires 150 days. Marijuana harvested along with the industrial hemp would be removed from the soil before it had produced its smokable buds. Moreover, the industrial hemp, with its low THC levels, could cross-pollinate the higher THC marijuana, substantially increasing the likelihood of a seeded crop, while also reducing the potency of the crop and subsequent generations. And in turn, reducing the value of the marijuana. Pollen from male industrial hemp plants destroys the potency of female marijuana plants.

A marijuana grower will want to and have to take extra precaution to prevent cross-pollination with any nearby industrial hemp cultivation. This will require additional filtration and ventilation systems. Additional infrastructure costs money, and therefore marijuana prices will likely increase to maintain the same "quality" of marijuana on the market (licit and illicit) today.

The following exchange is from the “Ask the Cannabist” column in *The Cannabist*, an edition of the *Denver Post*.

¹¹⁰ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 4, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

¹¹¹ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 4, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

Hey, Cannabist!

If I was a grower, I would be very upset about anyone growing [industrial] hemp on large fields, because of pollen drifting onto my sinsemilla plants and ruining my seedless strain. Is there any concern out there? –Gary Ganja Grower

Hey, Gary!

Yes, [industrial] hemp is now a licensed agriculture crop in Colorado and marijuana growers have a real concern with pollen from industrial hemp plants cross-pollinating marijuana. Marijuana flowers, as you know, are unpollinated female plants, and cross pollination will essentially ruin the marijuana by making seeds.

I asked Canada-based international [industrial] hemp agriculture consultant Anndrea Hermann for more information. “According to pedigree[industrial] hemp production regulation in Canada, a range up to 5,000 meters (3 miles) are required for isolation between different pedigree and different cultivars,” Hermann said.

[Industrial h]emp is pollinated primarily by wind. Hermann said most pollen travels about 100 yards. But depending on the weight and size of pollen and other natural conditions, wind-borne pollen can travel for miles, up to 2,000 miles away from the source. Hermann states, if the wind blow towards the marijuana plants, the [industrial] hemp pollen will find the plants because the male pollen wants to pollinate the females. This is Cannabis Sex 101.

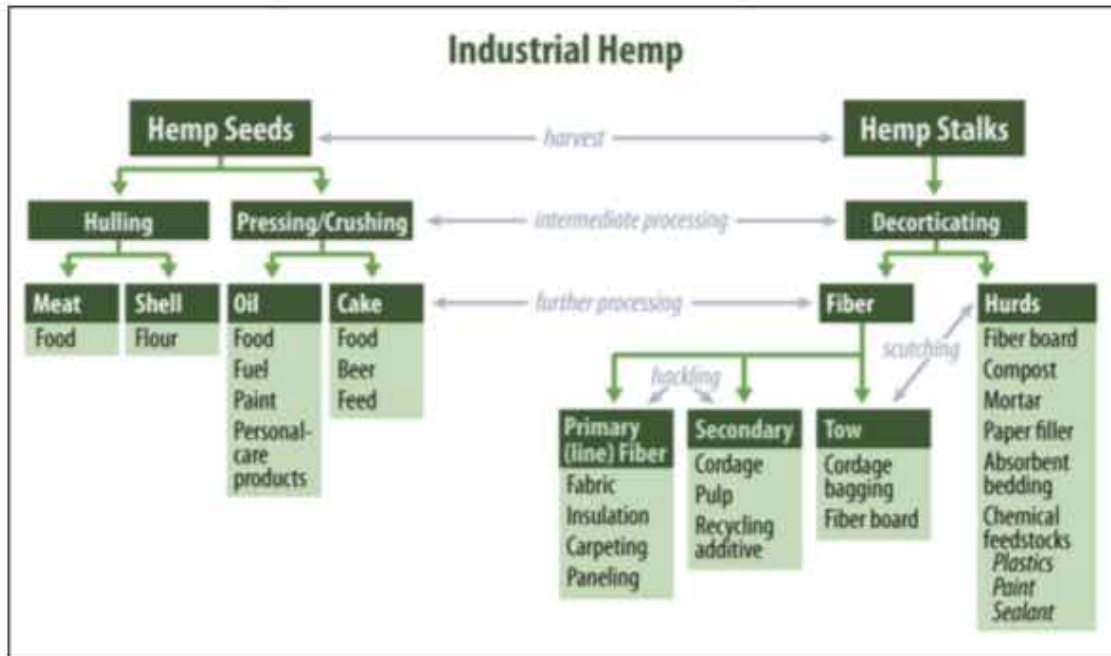
Bees can also pollinate [industrial] hemp. Bees travel up to 3 miles from the hive.

Another factor is the [industrial] hemp plants’ growing season. Hermann says “[industrial] hemp has an indeterminate growth, some plants will be in full seed set while others are just flowering. Other nearby crops may be finished pollinating and the [industrial] hemp crop still had pollen. If bees are hungry they will find both cannabis plants.”

What is the solution to what Hermann calls a “natural cannabis cultural clash”? Basically, grow marijuana 10 miles or more away from [industrial] hemp. Hermann clarifies, indoor grows with air filters and environmental controls can be effective, and pretty high tech to protect from pollination. Ultimately there remains a risk, this is cannabis plant sex we’re talking about! XO¹¹²

¹¹² Susan Squibb. 1 May 2014. Cannabist Q&A: Pollen Worries, Shopping Advice, Warning Labels. *The Cannabist*, an edition of the *Denver Post*. <http://www.thecannabist.co/2014/05/01/cannabis-q-a-marijuana-questions-pollen-seeds-pain-management-warning-labels/10289/>(emphasis added).

Figure 3
Flowchart of Potential Industrial 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.

While we presume that the questioner is not using his real name, we equally presume the question to be a legitimate one, as did the newspaper it appeared in. The columnist consulted with Anndrea Hermann, a noted authority on the cultivation of *Cannabis*.¹¹³ Given DEA's position on marijuana, it would seem that allowing the widespread cultivation of industrial hemp would aid the agency in its goal of making the domestic cultivation of marijuana ever more difficult and expensive. At the least, DEA and local law enforcement would not have to worry as much about illicit marijuana cultivation in proximity to licit industrial hemp cultivation.

¹¹³ Anndrea Hermann, M.Sc., B.GS, P.Ag. an internationally renowned public speaker who possesses a Master's of Science in Industrial Hemp Agronomy from the University of Manitoba (2008). She is the former President of the National Hemp Industries Association, the President of Hemp Technologies Canada, owner of The Ridge Consulting, and host of iHempRadio. Since 2005, Ms. Hermann has advised Health Canada, Canada's industrial hemp regulatory agency, on a wide spectrum of hemp projects. Ms. Hermann is the instructor of the Oregon State University Ecampus course WSE 266 Industrial Hemp. She is currently administering a DEA-permitted 12 hemp variety trial in conjunction with North Dakota State University. Most notably, Ms. Hermann has assisted with creating and reviewing hemp regulations in Canada, the European Union, South Africa, Uruguay, Australia, New Zealand, India, Vermont, Virginia, Tennessee, North Dakota, Missouri, Colorado, California, Oregon, and Michigan.

5. Commercial Uses of Industrial Hemp

Industrial hemp can be grown as a fiber, seed, or dual-purpose crop.¹¹⁴ The interior of the stalk has short woody fibers called hurds; the outer portion has long bast fibers. [Industrial h]emp seed/grains are smooth and about one-eighth to one-fourth of an inch long.¹¹⁵

Although [industrial] hemp is not grown in the United States, except for limited research purposes in certain states under controlled conditions pursuant to the 2014 Farm Bill, both finished [industrial] hemp products and raw material inputs are imported and sold for use in manufacturing for a wide range of product categories (Figure 3). [Industrial h]emp fibers are used in a wide range of products, including fabrics and textiles, yarns 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. [Industrial h]emp seed and oilcake are used in a range of foods and beverages, and can be an alternative food protein source. Oil from the crushed [industrial]hemp seed is used as an ingredient in a range of body-care products and nutritional supplements.¹¹⁶ [Industrial h]emp seed is also used for industrial oils, cosmetics and personal care products, and pharmaceuticals, among other composites.

Some estimate that the global market for [industrial] 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 [industrial] hemp hurds and lime products), [industrial] hemp is used as a lightweight insulating material.¹¹⁷ [Industrial h]emp has also been promoted as a potential biodiesel feedstock,¹¹⁸ although some analysts suggest that competing demands for other products might make it too costly to use as a feedstock.¹¹⁹

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 CRS report] Appendix.)

See below "U.S. Universities Conducting Industrial Hemp Research Pursuant to the Agricultural Act of 2014."

¹¹⁴ Different varieties have been developed may be better suited for one use or the other. Cultivation practices also differ depending upon the variety planted.

¹¹⁵ 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.

¹¹⁶ Some have suggested similarities between industrial hempseed oil and hash oil. However, there is evidence suggesting differences regarding initial feedstock or input ingredients (hash oil requires high THC marijuana whereas industrial hempseed oil uses low THC industrial hemp); how they are produced (hash oil is extracted often using a flammable solvent whereas industrial 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 industrial hempseed oil is used as an ingredient in hemp-based foods, supplements, and body care products).

¹¹⁷ Hemp Homes are Cutting Edge of Green Building," *USA Today*, September 12, 2010; and "Construction Plant," *Financial Times*, January 22, 2010.

¹¹⁸ 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: When the Smoke Clears," *Biodiesel Magazine*, February 2007.

¹¹⁹ North Dakota State University (NSDU), "Biofuel Economics: Biocomposites—New Uses for North Dakota Agricultural Fibers and Oils" (no date).

Current Rule

21 C.F.R. § 1308.11(d)(23)

Below is the present administrative rule at 21 C.F.R. § 1308.11(d)(23) in the list of Schedule I drugs:

(23) Marihuana

DEA has not defined “marihuana” in its regulations. Therefore, DEA relies on the statutory definition as, “[a]ny term contained in this part shall have the definition set forth in the [Controlled Substances] Act or part 1300 of this chapter.”¹²⁰

21 U.S.C. § 802(16)

The statutory definition of marihuana in the CSA 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, 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.*¹²¹

21 U.S.C. § 812(c)(10)

“Marihuana” is statutorily listed as a Schedule I controlled substance at 21 U.S.C. § 812(c)(10) in the CSA.

¹²⁰ 21 C.F.R. § 1305.02.

¹²¹ 21 U.S.C. § 802(16). Congress has provided exceptions in the definition for portions of the plant, noting that 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” are excluded from the definition of “marihuana”. *Id.* However, DEA has controlled all *C. sativa* in such a manner that any cultivation of *C. sativa*—even if for industrial use of these excluded parts—has been prohibited pending registration. DEA has also made registration requirements so onerous as to be cost-ineffective to those farmers who wish to cultivate industrial hemp. DEA’s interpretation of the current definition of “marihuana” as including all *C. sativa*, requiring registration with DEA, despite the clear exclusion of the above listed portions of the plant, has been upheld by the 1st and 8th Circuits. See *N.H. Hemp Council Inc. v. U.S.A. Drug Enforcement*, 203 F.3d 1 (1st Cir. 1999); *Monson v. Drug Enforcement Admin.*, 589 F.3d 952 (8th Cir. 2009). To date, only a very limited number of registrations have been issued for cultivation. This petition makes clear that the current definition of “marihuana” as including, “all parts of the plant Cannabis sativa L” is not based on science or the available evidence, and is therefore arbitrary and capricious. This petition makes the case that industrial hemp should be removed from the definition of marihuana under 21 U.S.C. § 802(16), and therefore removed from the schedule of Controlled Substances.

21 C.F.R. § 1308.11(d)(31)

21 C.F.R. § 1308.11(d)(31) currently says:

(31) Tetrahydrocannabinols

Meaning tetrahydrocannabinols naturally contained in a plant of the genus Cannabis (cannabis plant), as well as synthetic equivalents of the substances contained in the cannabis plant, or in the resinous extractives of such plant, and/or synthetic substances, derivatives, and their isomers with similar chemical structure and pharmacological activity to those substances contained in the plant, such as the following:

1 cis or trans tetrahydrocannabinol, and their optical isomers

6 cis or trans tetrahydrocannabinol, and their optical isomers

3, 4 cis or trans tetrahydrocannabinol, and its optical isomers

(Since nomenclature of these substances is not internationally standardized, compounds of these structures, regardless of numerical designation of atomic positions covered.)

While DEA regulates, controls, and classifies all *C. sativa* as "marihuana", DEA has recognized that bulk marijuana cultivated at the University of Mississippi is generally available in 12 categories, three of which are classified as "low-THC varieties" all containing less than 1% THC.¹²²

See within "The 1 Percent THC Threshold to Intoxication."

DEA's practice of making available for research from the University of Mississippi marijuana cigarettes with a lowest concentration of THC at 2.0%, reflects that there is a minimum THC threshold for intoxication (i.e. 1% THC as provided in "Low-THC varieties", and above 1% THC as provided in "Medium THC varieties").¹²³

Proposed Rule

Petitioners' Preferred Proposed Rule

Michael Botticelli, Director of the Office of National Drug Control Policy presented at the United Nations General Assembly Special Summit on the World Drug Problem on April 21, 2016, that it is time to enact and implement scientific and evidenced-based policy and regulation.¹²⁴

¹²² Chuck Rosenberg, Acting Adm'r., Drug Enforcement Admin., Sylvia M. Burwell, Sec'y, U.S. Dep't Health and Human Services, Michael Botticelli, Dir., Office of Nat'l. Drug Control Policy, *Letter in Response to U.S. Senators December 21, 2015 letter*, 1-3 (April 4, 2016), available at <http://big.assets.huffingtonpost.com/dearesponse.pdf>.

¹²³ *Id.* at 2.

¹²⁴ UNGASS Special Event: Supporting Public Health and Public Safety through Evidenced-Based Policies, Conference Room 2, 1:15pm-2:30pm (April 21, 2016).

Therefore, Petitioners formally request DEA to make the following scientifically based revision to 21 C.F.R. § 1308.11(d)(23) in the list of Schedule I drugs (additional wording in **bold**):

(23) Marihuana, **but not including “industrial hemp,” which is the plant Cannabis sativa L. and any part of such plant, whether growing or not, with a THC:CBD ratio of less than 1, and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis.**

Petitioners note that in DEA's 2000 response to the 1998 Halfon Petition, DEA commented,

*"Congress neither intended nor equipped DEA or HHS to undertake, on their own, the clinical studies that would be required if they had to make scheduling determinations each time a member of the public invented a hypothetical controlled substance formation and petitioned DEA for a scheduling action."*¹²⁵

The proposed rule of "(23) Marihuana, not including 'industrial hemp,' which is the plant Cannabis sativa L. and any part of such plant, whether growing or not, with a THC:CBD ratio of less than 1, and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis" is not a hypothetical controlled substance formulation, but is a definition that is evidence- and science-based.

See within "THC:CBD Ratio Determines Intoxication" and "The 1 Percent THC Threshold to Intoxication."

Petitioners propose that DEA adopt a modified version of the “West Virginia definition” for industrial hemp in the United States (“no greater than one percent tetrahydrocannabinol”), modified with the additional restriction of having a THC:CBD ratio of <1. See “U.S. State Legislation Defining Industrial Hemp with 1% THC Concentration Limit.”

Petitioners’ Alternative Proposed Rule

Petitioners also propose an alternative rule, consistent with the definition Congress provided for industrial hemp in the Agricultural Act of 2014, Section 7606¹²⁶ as well as that of numerous U.S. states and Canada. In the alternative¹²⁷, this formal rulemaking petition requests DEA to revise 21 C.F.R. § 1308.11(d)(23), to include the phrase,

(23) Marihuana, **but not including “industrial hemp,” which is the plant Cannabis sativa L. and any part of such plant, whether growing or not, with**

¹²⁵ Julio F. Mercado, Deputy Administrator, Drug Enforcement Admin., *Letter to Jay Halfon*, December 19, 2000, 4 (on file with author).

¹²⁶ 7 U.S.C. § 5940 (2014).

¹²⁷ The alternative proposed revision to 21 C.F.R. § 1308.11(d)(23) is taken verbatim from the definition of industrial hemp, specified by Congress, in the Agricultural Act of 2014 (Farm Bill):

(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.

Agricultural Act of 2014. Public Law 113-79. February 7, 2014. 7 U.S.C. § 5940.

a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis.

Additionally, Petitioners request that 21 C.F.R. § 1308.11(d)(31) also be revised to comport with the proposed revision to § 1308.11(d)(23) (additional wording in **bold**, deleted wording in *italics*):

(31) Tetrahydrocannabinols

Meaning tetrahydrocannabinols naturally contained in *a plant of the genus Cannabis (cannabis plant)* **marihuana as defined in subparagraph (23)**, as well as synthetic equivalents of the substances contained **in a plant of the genus Cannabis in the cannabis plant**, or in the resinous extractives of such plant, and/or synthetic substances, derivatives, and their isomers with similar chemical structure and pharmacological activity to those substances contained in the plant, such as the following:

1 cis or trans tetrahydrocannabinol, and their optical isomers

6 cis or trans tetrahydrocannabinol, and their optical isomers

3, 4 cis or trans tetrahydrocannabinol, and its optical isomers

(Since nomenclature of these substances is not internationally standardized, compounds of these structures, regardless of numerical designation of atomic positions covered.)

As stated above and provided for reference in footnote, this alternative proposed rule is taken verbatim from the definition of industrial hemp provided in the Agricultural Act of 2014, Section 7606.¹²⁸

While 0.3% THC is not a scientifically based threshold between *C. sativa* that is marijuana and *C. sativa* that is industrial hemp, 0.3% THC is the widely accepted and practiced threshold THC limit distinguishing industrial hemp from marijuana.

Explanation of Petitioners' Preferred Proposed Rule

Acceptance of Petitioners preferred proposed rules would apply the scientific-consensus definition of industrial hemp to all U.S. states and territories, which would redefine marijuana in the drug schedules as the plant *Cannabis sativa* with a THC concentration greater than 1.0% on a dry weight basis and with a THC:CBD ratio of >1. Any other *C. sativa* would be industrial hemp. Any regulation of the cultivation of industrial hemp would devolve to the states. Any regulation of the manufacture of products containing industrial hemp would be assumed by the appropriate federal and/or state agency. For example, ingesting products with industrial hemp would be likely regulated by the Food and Drug Administration.

¹²⁸ 7 U.S.C. § 5940(b)(2) (2014).

Explanation of Petitioners' Alternative Proposed Rule

Acceptance of Petitioners alternative requested proposed rules would apply Congress' definition of industrial hemp to all U.S. states and territories. The alternative proposed rule would redefine marijuana in the drug schedules as the plant *Cannabis sativa* with a THC concentration greater than 0.3% on a dry weight basis. Therefore, any *C. sativa* with a THC content of 0.3% or less would be industrial hemp. Any regulation of the cultivation of industrial hemp would devolve to the states. Any regulation of the manufacture of products containing industrial hemp would be assumed by the appropriate federal and/or state agency. For example, ingesting products with industrial hemp would be likely regulated by the Food and Drug Administration.

DEA Authority to Revise Drug Schedules and Apply Proposed Rules

"Recognizing that scientific information concerning controlled substances would change, Congress empowered the Attorney General to hear petitions for the reclassification or removal of drugs from the schedules."¹²⁹ Congress delegated to the Attorney General, through the DEA,¹³⁰ the authority to revise the drug schedules in 21 U.S.C. § 811(a):

(a) Rules and regulations of Attorney General; hearing
The Attorney General shall apply the provisions of this subchapter to the controlled substances listed in the schedules established by section 812 of this title and to any other drug or other substance added to such schedules under this subchapter. Except as provided in subsections (d) and (e) of this section, the Attorney General may by rule—
(1) add to such a schedule or transfer between such schedules any drug or other substance if he—
(A) finds that such drug or other substance has a potential for abuse, and
(B) makes with respect to such drug or other substance the findings prescribed by subsection (b) of section 812 of this title for the schedule in which such drug is to be placed; or
*(2) remove any drug or other substance from the schedules if he finds that the drug or other substance does not meet the requirements for inclusion in any schedule.*¹³¹

Congress made no exception to the authority it delegated to the Attorney General for “marihuana,” even though it expressly defined “marihuana” in the CSA. Industrial hemp is not a drug, but it is an “other substance” that does not meet the requirements for inclusion in any schedule.

Pursuant to 21 U.S.C. § 811(a) DEA has the authority to adopt either the petitioners' preferred or alternative proposed rule.

¹²⁹ *Nat. Org. for Reform of Marijuana Laws v. Bell*, 488 F. Supp. 123, 127 (D.C. Cir., 1980).

¹³⁰ 28 C.F.R. § 0.100(b).

¹³¹ 21 U.S.C. § 811(a) (emphasis added).

U.S. State Legislation Defining Industrial Hemp with 0.3% THC Concentration Limit

The following 23 U.S. states have defined industrial hemp as *Cannabis* with not more than 0.3% THC concentration:¹³²

North Dakota: "*Industrial hemp (cannabis sativa l.), having no more than three-tenths of one percent tetrahydrocannabinol, is recognized as an oilseed. Upon meeting the requirements of section 4-41-02, any person in this state may plant, grow, harvest, possess, process, sell, and buy industrial hemp (cannabis sativa l.) having no more than three-tenths of one percent tetrahydrocannabinol.*"¹³³

Montana: "*Industrial hemp' means all parts and varieties of the plant Cannabis sativa L. containing no greater than 0.3% tetrahydrocannabinol.*"¹³⁴

Vermont: "*[Industrial] Hemp' means the plant Cannabis sativa L. and any part of the plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis.*"¹³⁵

Maine: "*As used in this chapter, unless the context otherwise indicates, "industrial hemp" means any variety of Cannabis sativa L. with a delta-9-tetrahydrocannabinol concentration that does not exceed 0.3% on a dry weight basis and that is grown or possessed by a licensed grower in compliance with this chapter.*"¹³⁶

Oregon: "*Industrial hemp: (a) Means all nonseed parts and varieties of the Cannabis plant, whether growing or not, that contain an average tetrahydrocannabinol concentration that does not exceed 0.3 percent on a dry weight basis.*"¹³⁷

Colorado: "*Industrial hemp' means 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 three-tenths percent on a dry weight basis.*"¹³⁸

¹³² The states marked with an asterisk (*), indicate that the state enacted the definition of industrial hemp as *Cannabis* with not more than 0.3% THC concentration after passage of the Agricultural Act of 2014, Section 7606, in which Congress first defined industrial hemp as "*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.*" See 7 U.S.C. § 5940(b)(2).

Petitioners note that Kentucky and South Carolina have adopted the following definition for industrial hemp: "*Industrial hemp" means all parts and varieties of the plant cannabis sativa, cultivated or possessed by a licensed grower, whether growing or not, that contain a tetrahydrocannabinol concentration of no more than that adopted by federal law in the Controlled Substances Act, 21 U.S.C. secs. 801 et seq.* KY Rev Stat § 260.850 (6)(a) (2013). S. 0839, State Leg., 2013-2014 Sess. (S.C. 2014), available at https://legiscan.com/SC/text/S0839/id/999120/South_Carolina-2013-S0839-Comm_Sub.html.

¹³³ An Act to Authorize the Production of Industrial Hemp, N.D. CENT. CODE, §§ 4-41-01 (1999).

¹³⁴ An Act Authorizing the Production of Industrial Hemp as an Agricultural Crop, MONT. CODE ANN. §§ 80-18-101-111 (2001).

¹³⁵ An Act Relating to Industrial Hemp, VT. STAT. ANN. tit. 6, §§ 562 (2008).

¹³⁶ An Act to Promote Industrial Hemp, ME. REV. STAT. ANN. tit. 7, § 2231 (2009).

¹³⁷ An Act Relating to Industrial Hemp, OR. REV. STAT. § 571.300(5)(a) (2016).

¹³⁸ COLO. CONST. art. 18 § 16 (2)(d) (2014).

California: *"Industrial hemp' means a fiber or oilseed crop, or both, that is limited to nonpsychoactive types of the plant Cannabis sativa L. and the seed produced therefrom, having no more than three-tenths of 1 percent tetrahydrocannabinol (THC) contained in the dried flowering tops, and that is cultivated and processed exclusively for the purpose of producing the mature stalks of the plant, fiber produced from the stalks, oil or cake made from the seeds of the plant, or any other compound, manufacture, salt, derivative, mixture, or preparation of the mature stalks, except the resin or flowering tops extracted therefrom, fiber, oil, or cake, or the sterilized seed, or any component of the seed, of the plant that is incapable of germination."*¹³⁹

***Utah:** *" 'Industrial hemp' means any part of a cannabis plant, whether growing or not, with a concentration of less than 0.3% tetrahydrocannabinol by weight."*¹⁴⁰

***Indiana:** *"Industrial hemp' means:(1) all nonseed parts and varieties of the Cannabis sativa plant, whether growing or not, that contain a crop wide average tetrahydrocannabinol (THC) concentration that does not exceed the lesser of:(A) three-tenths of one percent (0.3%) on a dry weight basis; or(B) the percent based on a dry weight basis determined by the federal Controlled Substances Act (21 U.S.C. 801 et seq.)."*¹⁴¹

***Nebraska:** *"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 three-tenths percent on a dry weight basis."*¹⁴²

***Hawaii:** *"Industrial hemp' means the plant Cannabis 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."*¹⁴³

***Tennessee:** *"Industrial hemp' means the plants and plant parts of the genera cannabis that do not contain a delta-9 tetrahydrocannabinol (THC) concentration more than three tenths of one percent (0.3%) on a dry mass basis, grown from seed certified by a certifying agency, as defined by § 43-10-1 03."*¹⁴⁴

***Delaware:** *"Industrial hemp" means the plan Cannabis sativa L. and any part of such plan, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis."*¹⁴⁵

¹³⁹ Cal. Health and Safety Code. § 11018.5 (2013).

¹⁴⁰ H.B. 105, State Leg., 2014 Gen. Sess. (Utah 2014), available at <http://le.utah.gov/~2014/bills/static/HB0105.html>.

¹⁴¹ S.B. 357, 118th Gen. Assem., 2014 Sess. (Ind. 2014), available at <http://iga.in.gov/legislative/2014/bills/senate/357/#>.

¹⁴² Legis. B. 1001, Section 1(4)(b), 103rd Leg., (Neb. 2014), available at http://nebraskalegislature.gov/bills/view_bill.php?DocumentID=22180.

¹⁴³ S.B. 2175, Section 2(e), 27th Leg. (Haw. 2014), available at http://www.capitol.hawaii.gov/session2014/bills/SB2175_HD2_.pdf.

¹⁴⁴ H.B. 2445, Section 4, 108th Gen. Assem. (Tenn. 2014), available at <http://wapp.capitol.tn.gov/apps/BillInfo/Default.aspx?BillNumber=%20HB2445& GA=108>.

¹⁴⁵ H.B. 385, Section 1(1), 147th Gen Assem. (Del. 2014), available at <http://www.legis.delaware.gov/LIS/LIS147.NSF/vwLegislation/HB+385>.

***Illinois:** *"'Industrial hemp' means cannabis sativa L. having no more than 0.3% total THC available, upon heating, or maximum delta-9 tetrahydrocannabinol content possible."*¹⁴⁶

***New York:** *"'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."*¹⁴⁷

***Michigan:** *"'Industrial hemp' means the plant Cannabis sativa L. and any part of the plant, whether growing or not, with a delta-9-tetrahydrocannabinol concentration of not more than 0.3% on a dry weight basis."*¹⁴⁸

***Virginia:** *"'Industrial hemp' means all parts and varieties of the plant Cannabis sativa, cultivated or possessed by a licensed grower, whether growing or not, that contain a concentration of THC that is no greater than that allowed by federal law."*¹⁴⁹

***Maryland:** *"'industrial hemp' means the plant Cannabis sativa L. 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."*¹⁵⁰

***Nevada:** *"'Industrial hemp' means the plant Cannabis sativa L. and any part of such plant, whether growing or not, with a THC concentration of not more than 0.3 percent on a dry weight basis."*¹⁵¹

***Minnesota:** *"'Industrial hemp' means the plant Cannabis sativa L. and any part of the plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis."*¹⁵²

***Connecticut:** *"industrial hemp, as defined in 7 USC 5940."*¹⁵³

¹⁴⁶ 720 Ill. Comp. Stat. §550/15.2(e) (2016).

¹⁴⁷ N.Y. U.C.C. Law § 29-505 (1) (2014), available at http://assembly.state.ny.us/leg/?default_fld=&leg_video=&bn=A09140&term=2013&Summary=Y&Text=Y.

¹⁴⁸ Mich. Comp. Laws 286.842(c) (2015).

¹⁴⁹ Va. Code Ann. §3.2-4112 (2015). Currently federal law defines industrial hemp in the Agricultural Act of 2014 (Farm Bill):

(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.

Agricultural Act of 2014. Public Law 113-79. February 7, 2014. 7 U.S.C. § 5940.

¹⁵⁰ MD Code Agric. 14-101(a) (2015).

¹⁵¹ S.B. 305, 78th Leg. (Nev. 2015), available at https://www.leg.state.nv.us/Session/78th2015/Bills/SB/SB305_EN.pdf.

¹⁵² S.F. 5, 89th Leg. (Minn. 2015), available at https://www.revisor.mn.gov/bills/text.php?number=SF5&version=2&session=ls89&session_year=2015&session_number=1.

¹⁵³ H.B. 5780, Gen. Assem., 2015 Sess. (Conn. 2015), available at https://www.cga.ct.gov/asp/cgabillstatus/cgabillstatus.asp?selBillType=Bill&which_year=2015&bill_num=5780.

***North Carolina:** *"Industrial hemp. All parts and varieties of the plant Cannabis sativa (L.), cultivated or possessed by a grower licensed by the Commission, whether growing or not, that contain a delta-9 tetrahydrocannabinol concentration of not more than three-tenths of one percent (0.3%) on a dry weight basis."*¹⁵⁴

***Washington:** *"'Industrial hemp' means all parts and varieties of the genera Cannabis, cultivated or possessed by a grower, whether growing or not, that contain a THC concentration of 0.3 percent or less by dry weight."*¹⁵⁵

The following four states have defined "hemp extracts" as *Cannabis* with no more than 0.3% THC concentration:¹⁵⁶

***Missouri:** *"The term 'hemp extract' shall mean an extract from a cannabis plant or a mixture or preparation containing cannabis plant material that:*

- (1) Is composed of no more than three-tenths percent tetrahydrocannabinol by weight;*
- (2) Is composed of at least five percent cannabidiol by weight; and*
- (3) Contains no other psychoactive substance."*¹⁵⁷

***Oklahoma:** *"the plant Cannabis sativa L. or any other preparation thereof, that has a tetrahydrocannabinol concentration of not more than three-tenths of one percent (0.3%)."*¹⁵⁸

***Utah:** *"'hemp extract' means an extract from a cannabis plant, or a mixture or preparation containing cannabis plant material, that:*

- (a) is composed of less than 0.3% tetrahydrocannabinol by weight;*
- (b) is composed of at least 15% cannabidiol by weight; and*
- (c) contains no other psychoactive substance."*¹⁵⁹

***Wyoming:** *"Hemp extract' means an extract from a cannabis plant or a mixture or preparation containing cannabis plant material that:*

- (A) Is composed of less than three-tenths of a percent (0.3%) tetrahydrocannabinol by weight;*
- (B) Is composed of at least five percent (5%) cannabidiol by weight;*
- (C) Contains no other psychoactive substance; and*
- (D) Complies with federal definitions of industrial hemp, including the definition under section 7606 of the federal Agricultural Act of 2014, which shall apply to all samples, products, derivatives and oils."*¹⁶⁰

¹⁵⁴ S.B. 313, Gen. Assem., 2015 Sess. (N.C. 2015), available at <https://legiscan.com/NC/text/S313/2015>.

¹⁵⁵ SB 6206, Wash. State Legis., 2016 Session (Wash. 2016) available at <http://lawfilesexternal.wa.gov/biennium/2015-16/Pdf/Bills/Senate%20Passed%20Legislature/6206-S.PL.pdf>.

¹⁵⁶ The states marked with an asterisk (*), indicate that the state enacted the definition of hemp extract as a preparation or extract of *Cannabis* with not more than 0.3% THC concentration after passage of the Agricultural Act of 2014, Section 7606, in which Congress first defined industrial hemp as "*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.*" See 7 U.S.C. § 5940(b)(2).

¹⁵⁷ MO Rev. Stat. 195.207 (2015).

¹⁵⁸ H.B. 2154, 55th Leg., First Sess. (Okla. 2015), available at http://webserver1.lsb.state.ok.us/cf_pdf/2015-16%20ENR/hB/HB2154%20ENR.PDF.

¹⁵⁹ Utah Code § 58-37-4.3(1) (2014).

¹⁶⁰ H.B. 0032, 63rd Leg. (Wyo. 2015), available at <http://legisweb.state.wy.us/2015/Enroll/HB0032.pdf>.

Other Countries Define Industrial Hemp as 0.3% THC

European Union: Nations in the EU have authorized and subsidized industrial hemp cultivation for cultivars with <0.3% THC by dry weight since 1971. Since 2001, cultivars applicable for subsidies are limited to 0.2% THC. Due to differences in sampling protocols, there is effectively no difference between the EU's 0.2% limit and Canada's 0.3% limit.¹⁶¹

Canada: *"Industrial hemp includes Cannabis plants and plant parts, of any variety, that contains 0.3% tetrahydrocannabinol (THC) or less in the leaves and flowering heads."*¹⁶²

See also "Other Governments—Both Foreign and Domestic—Recognize the Differences" and Appendix D: "International Production."

U.S. State Legislation Defining Industrial Hemp with 1% THC Concentration Limit

West Virginia: *"Industrial hemp' means all parts and varieties of the plant cannabis sativa L. containing no greater than one percent tetrahydrocannabinol."*¹⁶³

U.S. State Legislation Defining Hemp Extract Above 0.3% THC

See above "Table 2: States that Have Approved Non-Intoxicating Forms of Medical Marijuana."

Other Countries Define Industrial Hemp as Above 0.3% THC

Australia: Industrial hemp varieties in Australian States and Territories range from 0.35% THC to 1% THC.¹⁶⁴

¹⁶¹ J. C. Callaway, *A More Reliable Evaluation of Hemp THC Levels is Necessary and Possible*, Journal of Industrial Hemp, Vol. 13(2) (2008). J. C. Callaway is Adjunct Professor in the Departments of Pharmaceutical Chemistry and Neurobiology at the University of Kuopio, Finland. Due to different applications of sampling and testing protocols, despite requirements in EU Regulations, variations in reported test results and suspected economic interests that "favor monoecious fiber varieties from western Europe and disfavor dioecious oilseed varieties from eastern and northern Europe" are reported for the arbitrary change in the varieties that are approved for subsidies. See *id.* at 117, 120. "Compared to Canada, the sampling time for hemp in the EU is earlier, because in Canada the time is determined by seed formation, which naturally follows the end of flowering. In consideration of this fact, the Canadian THC limit for hemp is also higher (0.3%) than in the EU (0.2%), and not actually more liberal." *Id.* at 125. The author notes, "It is absurd to believe that anything below 1% THC would be used as drug-Cannabis (Grotenhermen and Karus, 1998), especially when higher levels are readily available to consumers of drug-Cannabis." *Id.* at 132. "In addition to low levels of THC, hemp varieties produce more CBD than THC, while drug varieties produce more THC than CBD (Hillig and Mahlberg, 2004; Mechtler et al, 2004). As CBD can effectively attenuate the psychoactive effects of THC, by binding the CB1 receptors in the brain (Pertwee, 2008), it would follow that higher levels of CBD in hemp should also be monitored along with THC in hemp as a precondition, if the general idea is in fact to reduce the unlikely possibility of using this crop as an illegal drug." *Id.* at 141-142.

¹⁶² About Hemp and Canada's Hemp Industry, Frequently Asked Questions, HEALTH CANADA, <http://www.hc-sc.gc.ca/hc-ps/substancontrol/hemp-chanvre/about-apropos/faq/index-eng.php> (last updated Apr. 27, 2016).

¹⁶³ Industrial Hemp Development Act, W.VA. CODE §§ 19-12E-3 (2002).

¹⁶⁴ Australian Industrial Hemp Alliance, *Submission To Productivity Commission Inquiry Into Regulation Of Australian Agriculture*, 2, available at http://www.pc.gov.au/_data/assets/pdf_file/0003/196482/sub069-agriculture.pdf. See Food Standards, *Supporting Document 5: Australian, New Zealand and international hemp*

New Zealand: *"Industrial hemp is defined as hemp in the form of: (a) plants with a THC content that is (i) generally below 0.35%; and (ii) is not above 0.5%."*¹⁶⁵

Switzerland: The following definition provides that "cannabis" above 1% THC is included in the Switzerland Narcotics Tables. Therefore, "cannabis" below 1% is considered industrial hemp: *"cannabis": hemp plant or hemp plant parts with a total average THC content of at least 1.0% and all objects and preparations with a total THC content of at least 1.0 % or manufactured from hemp with a total THC content of at least 1.0 %."*¹⁶⁶

The above listed state definitions demonstrates the broad application of the Congressional definition of industrial hemp as, *"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"* as provided in 7 U.S.C. § 5940(b)(2).

Arguments

Petitioners formally make this administrative rulemaking petition pursuant to the Administrative Procedure Act of 1946 (5 U.S.C. § 553) and DEA regulations (21 C.F.R. § 1308.43).

1. Maintaining the Current Definition of "Marihuana" Under the CSA Is Arbitrary and Capricious and Not Supported by Substantial Evidence¹⁶⁷

The Administrative Procedure Act, 5 U.S.C. § 706(2), authorizes a court to "hold unlawful and set aside agency action, findings, and conclusions found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law or unsupported by substantial evidence."¹⁶⁸ Although this is a formal administrative rulemaking petition and action by DEA is requested, if this petition is denied, Petitioners will seek review by a court of appeals.¹⁶⁹ Under the arbitrary and capricious standard, a court must "find a 'rational connection between the facts found and the choice made'" and "decide whether the agency considered the relevant factors and whether there has been a clear error of judgment."¹⁷⁰

regulations (at Approval) – Application A1039, 1-3 available at
http://www.foodstandards.gov.au/code/applications/documents/A1039_SD5.pdf.

¹⁶⁵ Food Standards, *Supporting Document 5: Australian, New Zealand and international hemp regulations (at Approval) – Application A1039, 3 available at*

http://www.foodstandards.gov.au/code/applications/documents/A1039_SD5.pdf.

¹⁶⁶ Translated from Federal Dep't. of Interior, *Narcotics tables, psychotropic substances, precursors and chemical additives* (May 30, 2011) available at <https://www.admin.ch/opc/fr/official-compilation/2011/2595.pdf>. Le Département fédéral de l'intérieur (DFI), *Ordonnance du DFI sur les tableaux des stupéfiants, des substances psychotropes, des précurseurs et des adjuvants chimiques* (30 mai 2011): *"cannabis Plante de chanvre ou parties de plante de chanvre présentant une teneur totale moyenne en THC de 1,0 % au moins et tous les objets et préparations présentant une teneur totale en THC de 1,0 % au moins ou fabriqués à partir de chanvre présentant une teneur totale en THC de 1,0 % au moins."*

¹⁶⁷ 5 U.S.C. § 706(2)(A),(E).

¹⁶⁸ 5 U.S.C. § 706(2)(A),(E).

¹⁶⁹ 21 U.S.C. § 877. See also, *Olsen v. Holder*, 610 F.Supp.2d 985, 993 (S.D. Iowa, 2009).

¹⁷⁰ *Natural Resources Defense Council, Inc. v. U.S. E.P.A.*, 966 F.2d 1292, 1297 (9th Cir., 1992).

Under the Administrative Procedure Act, a court may set aside an agency's final decision only if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). "We will not disturb the decision of an agency that has 'examine[d] the relevant data and articulate[d] a satisfactory explanation for its action including a rational connection between the facts found and the choice made.'" MD Pharm. Inc. v. DEA, 133 F.3d 8, 16 (D.C. Cir. 1998) (quoting Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983)). Furthermore, the agency's interpretation of its own regulations "must be given controlling weight unless it is plainly erroneous or inconsistent with the regulation." Thomas Jefferson Univ. v. Shalala, 512 U.S. 504, 512 (1994). The CSA also directs this court to review the agency's findings of fact for substantial evidence. See 21 U.S.C. § 877. Under this standard, we must "ask whether a reasonable mind might accept a particular evidentiary record as adequate to support a conclusion." Dickinson v. Zurko, 527 U.S. 150, 162 (1999).¹⁷¹

Currently, marihuana is listed as a Schedule I Controlled Substance under the CSA.¹⁷² Schedule I controlled substances are defined as "drugs with no currently accepted medical use and a high potential for abuse."¹⁷³ The CSA defines marihuana as follows:

*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.*¹⁷⁴

Maintaining the current definition of marihuana under the CSA as "*all parts of the plant Cannabis sativa L., whether growing or not*" is arbitrary and capricious. There is no rational connection between the science and facts about industrial hemp and the current classification as a Schedule I drug. The classification of industrial hemp as "marihuana" in Schedule 1 is not supported by substantial evidence. Industrial hemp is not marijuana, is not a drug, is not intoxicating and therefore does not have any potential for abuse, and does not have a currently accepted medical use. Pursuant to 21 U.S.C. § 811(a)(2), DEA should distinguish industrial hemp from the statutory definition of "marihuana" and from DEA regulation.

A. Industrial Hemp is an Other Substance, Not a Drug

Industrial hemp, a member of the *Cannabis* genus, is an agricultural commodity grown to process into a variety of commercial products.

¹⁷¹ *Ams. for Safe Access v. Drug Enforcement Admin.*, 706 F.3d 438, 449-450 (D.C. Cir., 2013).

¹⁷² Schedule I, 21 C.F.R. § 1308.11(d)(23).

¹⁷³ Drug Enforcement Agency, *Drug Schedules-Schedule I*, <http://www.justice.gov/dea/druginfo/ds.shtml> (last visited Feb. 2, 2015).

¹⁷⁴ 21 U.S.C. § 802 (16) (emphasis added).

i. Industrial Hemp is Not Marijuana or "Marihuana" and is Not Intoxicating

Industrial hemp is distinguishable from marijuana based on genetics, production differences, ability to intoxicate, and use. (See "Industrial Hemp is, in Fact, Not Marijuana" within).

*Cannabis can be separated into psychoactive [intoxicating] and nonpsychoactive [non-intoxicating] cultivars according to the ratio of Δ 9-tetrahydrocannabinol (THC), the primary psychoactive [intoxicating] agent, and cannabidiol (CBD).*¹⁷⁵

THC and CBD are the main cannabinoids found in *Cannabis*.¹⁷⁶ THC is the main cannabinoid that has a psychotropic or intoxicating effect.¹⁷⁷ CBD, another main cannabinoid, is not psychoactive, and therefore is not intoxicating.¹⁷⁸

One percent (1 %) THC concentration is the intoxicating threshold for *Cannabis*.¹⁷⁹ *Cannabis* with more than one percent (1%) THC can properly be classified as marijuana (or "marihuana").¹⁸⁰ Consumers of recreational marijuana demand very high amounts of THC (and correspondingly very low amounts of CBD).¹⁸¹ Some marijuana varieties are reported to contain 30 percent (30%) THC or higher.¹⁸² *Cannabis* with less than one percent (1%) THC is properly classified as industrial hemp.¹⁸³

¹⁷⁵ Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. *J Forensic Sci*, March 2006, Vol. 51, No. 2 doi:10.1111/j1556-4029.2006.00061.x (references in original omitted).

¹⁷⁶ See Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. *Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential*. Haworth Press. New York.

¹⁷⁷ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>.

¹⁷⁸ See Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. *J Forensic Sci*, March 2006, Vol. 51, No. 2 doi:10.1111/j1556-4029.2006.00061.x. See also M. David Marks, Li Tian, Jonathan P. Wenger, Stephanie N. Omburo, Wilfredo Soto-Fuentes, Ji He, David R. Gang, George D. Weiblen and Richard A. Dixon. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. *Journal of Experimental Botany*, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210.

¹⁷⁹ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:

¹⁸⁰ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: See also, Harm van Bakel, Jake M Stout, Atina G Cote, Carling M Tallon, Andrew G. Sharpe, Timothy R Hughes and Jonathan E Page. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02. See also, Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. *Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential*. Haworth Press. New York.

¹⁸¹ M. David Marks, Li Tian, Jonathan P. Wenger, Stephanie N. Omburo, Wilfredo Soto-Fuentes, Ji He, David R. Gang, George D. Weiblen and Richard A. Dixon. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. *Journal of Experimental Botany*, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210

¹⁸² Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 2, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>. See also, J. Michael Bostwick. "Blurred Boundaries: The Therapeutics and Politics of Medical Marijuana." *Mayo Clinic Proceedings*. February 2012; 87(2):172-186. doi:10.1016/j.mayocp.2011.10.003.

¹⁸³ See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>. See also, Harm van Bakel, Jake M Stout,

TABLE 1. Chemotypes of Cannabis

Chemotype	Products	Leading cannabinoids	THC content	Psychoactivity
Drug type	marijuana, hashish	Δ^9 -THC	1-20%	yes
Intermediate type		Δ^9 -THC, CBD	0.3-1.0%	possible
Fiber type	fiber, edible oil	CBD (cannabidiol)	<0.3%	no

Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York. Note: "Psychoactivity" in the above table actually means "intoxicating."

Petitioners urge DEA to give nuance to taxon in the *Cannabis* genus. Petitioners request DEA to redefine marihuana to comport with the scientific findings of botanical scientists, health scientists, and law enforcement researchers that have determined that one percent (1%) THC is the intoxicating threshold level between industrial hemp and marijuana. Alternatively, Petitioners request DEA to only go as far Congress (in limited circumstances), numerous U.S. states and Canada, have gone and define marihuana under the CSA as greater than 0.3 percent Δ^9 -THC by dry weight.

ii. THC:CBD Ratio

The quantity of THC in a plant is not the only factor that determines whether *Cannabis* is marijuana and is intoxicating.¹⁸⁴ Rather, it is the ratio of THC to CBD (THC:CBD) in the plant that determines whether a plant is intoxicating.¹⁸⁵ If the amount of CBD in a plant (or any part of a plant) exceeds the amount of THC, no intoxication is possible.¹⁸⁶ (See "CBD is the Antidote to THC" within).

Atina G Cote, Carling M Tallon, Andrew G. Sharpe, Timothy R Hughes and Jonathan E Page. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02. See also, Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York.

¹⁸⁴ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177.

¹⁸⁵ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177. See also, Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234-246.

¹⁸⁶ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177. See also, Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234-246.

Marijuana is *Cannabis* plant material with a concentration of THC that exceeds the concentration of CBD (THC > CBD).¹⁸⁷ Industrial hemp is *Cannabis* plant material in which the overall THC concentration is less than one percent and the quantity of CBD exceeds the quantity of THC (CBD > THC).¹⁸⁸ Again, if the amount of CBD exceeds the amount of THC in a plant, intoxication is not possible.¹⁸⁹ Industrial hemp is not intoxicating.

A plant's THC:CBD ratio is stable for the life of the plant.¹⁹⁰ *Cannabis* varieties with high-THC:CBD ratios (>>1.0) are high-grade marijuana, while those with low THC:CBD ratios (<<1.0) are high-grade industrial hemp.¹⁹¹ There are also intermediate varieties that have THC:CBD ratios close to 1.0.¹⁹²

CBD actually antagonizes the effects of THC. The more CBD, the more that the effects of THC are mitigated.¹⁹³

*CBD possesses sedative properties, and a clinical trial showed that it reduces the anxiety and other unpleasant psychological side effects provoked by pure THC.*¹⁹⁴

Δ-9-tetrahydrocannabinol (Δ-9-THC) and Cannabidiol (CBD), the two main ingredients of the Cannabis sativa plant have distinct symptomatic and behavioral effects.. pretreatment with CBD prevented the acute induction of psychotic

¹⁸⁷ M. David Marks, Li Tian, Jonathan P. Wenger, Stephanie N. Omburo, Wilfredo Soto-Fuentes, Ji He, David R. Gang, George D. Weiblen and Richard A. Dixon. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. *Journal of Experimental Botany*, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210.

¹⁸⁸ Zlatko Mehmedic, Suman Chandra, Desmond Slade, Heather Denham, Susan Foster, Amit S. Patel, Samir A. Ross, Ikhlas A. Khan, and Mahmoud A. ElSohly. 2010. Potency Trends of Δ⁹-THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. *Forensic Sci*, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x. See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>. See also Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:.

¹⁸⁹ See John M. McPartland and Ethan B. Russo. Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts? in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. *Handbook of Cannabis Therapeutics: From Bench to Bedside*. The Hayworth Press. See also, Sagnik Bhattacharyya, et al. “Opposite Effects of Δ-9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology.” *Neuropsychopharmacology* (2010) 35, 764–774. Doi:10.1038/npp2002.184. See also, Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. “Cannabidiol Interferes with the Effects of Δ⁹-Tetrahydrocannabinol in Man.” *European Journal of Pharmacology* 28 (1974) 172-177.

¹⁹⁰ Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

¹⁹¹ Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

¹⁹² Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

¹⁹³ Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” *Medical Hypotheses* (2006) 66, 234–246.

¹⁹⁴ John M. McPartland and Ethan B. Russo. Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts? in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. *Handbook of Cannabis Therapeutics: From Bench to Bedside*. The Hayworth Press (references in original omitted).

*systems by Δ -9-tetrahydrocannabinol. Δ -9-THC and CBD can have opposite effects on regional brain function, which may underlie their different symptomatic and behavioral effects, and CBD's ability to block the psychotogenic effects of Δ -9-THC.*¹⁹⁵

*Cannabidiol (CBD), the other major psychoactive constituent of *C. sativa*, has anxiolytic and possibly antipsychotic properties, does not impair memory or other cognitive functions.*¹⁹⁶

CBD blocks the effects of Δ 9-THC.¹⁹⁷ Industrial hemp is *Cannabis* with a low THC:CBD ratio ($<<1.0$) in which the quantity of CBD exceeds the quantity of THC.¹⁹⁸ Industrial hemp is not intoxicating.¹⁹⁹

Congress defined industrial hemp as "not more than 0.3 percent" THC in the Agricultural Act of 2014, far lower than the minimum 1 percent THC concentration that is required to achieve intoxication (assuming significantly lower amounts of antagonizing CBD).²⁰⁰ Petitioners request DEA to at least go as far as Congress, numerous U.S. states and Canada have gone and conservatively define marihuana under the CSA as greater than 0.3 percent Δ 9-THC by dry weight. There is no risk of abuse or potential for intoxication with *Cannabis* that contains no more than 0.3 percent THC.²⁰¹

¹⁹⁵ Sagnik Bhattacharyya, Paul D Morrison, Paolo Fusar-Poli, Rocio Martin-Santos, Stefan Borgwardt, Toby Winton-Brown, Chiara Nosarti, Colin M O'Carroll, Marc Seal, Paul Allen, Mitul A Mehta, James M Stone, Nigel Tunstall, Vincent Giampietro, Shitij Kapur, Robin M Murray, Antonio W Zuardi, José A Crippa, Zerrin Atakan and Philip K. McGuire. "Opposite Effects of Δ -9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology." *Neuropsychopharmacology* (2010) 35, 764–774. Doi:10.1038/npp2002.184 (emphasis added).

¹⁹⁶ Sagnik Bhattacharyya, Paul D Morrison, Paolo Fusar-Poli, Rocio Martin-Santos, Stefan Borgwardt, Toby Winton-Brown, Chiara Nosarti, Colin M O'Carroll, Marc Seal, Paul Allen, Mitul A Mehta, James M Stone, Nigel Tunstall, Vincent Giampietro, Shitij Kapur, Robin M Murray, Antonio W Zuardi, José A Crippa, Zerrin Atakan and Philip K. McGuire. "Opposite Effects of Δ -9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology." *Neuropsychopharmacology* (2010) 35, 764–774. Doi:10.1038/npp2002.184 (emphasis added, references in original omitted).

¹⁹⁷ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pifererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ ⁹-Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172–177.

¹⁹⁸ Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966–975.

¹⁹⁹ See John M. McPartland and Ethan B. Russo. *Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts?* in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. *Handbook of Cannabis Therapeutics: From Bench to Bedside*. The Hayworth Press. See also Sagnik Bhattacharyya, Paul D Morrison, Paolo Fusar-Poli, Rocio Martin-Santos, Stefan Borgwardt, Toby Winton-Brown, Chiara Nosarti, Colin M O'Carroll, Marc Seal, Paul Allen, Mitul A Mehta, James M Stone, Nigel Tunstall, Vincent Giampietro, Shitij Kapur, Robin M Murray, Antonio W Zuardi, José A Crippa, Zerrin Atakan and Philip K. McGuire. "Opposite Effects of Δ -9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology." *Neuropsychopharmacology* (2010) 35, 764–774. Doi:10.1038/npp2002.184. See also, Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234–246.

²⁰⁰ Agricultural Act of 2014. Public Law 133-79. February 7, 2014. 7 U.S. Code § 5940.

²⁰¹ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545–558:.

B. Industrial Hemp Does Not Meet the Requirements For Scheduling Controlled Substances and is not Properly Classifiable in Any of the Five CSA Schedules

Under the CSA, Congress delegated to the Attorney General, through the DEA, the authority to revise the drug schedules and authority to remove "*any . . . other substance from the schedules if he finds that the . . . other substance does not meet the requirements for inclusion in any schedule.*"²⁰² Industrial hemp is an "other substance" that does not meet the requirements for inclusion in any schedule.

The CSA

*establishes five schedules for classifying controlled substances according to specified criteria. Two criteria — the potential for abuse and the medical applications of a drug — are the major bases for classification, along with certain social and medical information. 21 U.S.C. §§ 811(c), 812(b).*²⁰³

The following are the criteria required for each of the five schedule classifications:

(1) *Schedule I.—*

- (A) *The drug or **other substance has a high potential for abuse.***
- (B) *The drug or **other substance has no currently accepted medical use in treatment in the United States.***
- (C) *There is a lack of accepted safety for use of the drug or other substance under medical supervision.*

(2) *Schedule II.—*

- (A) *The drug or other substance has **a high potential for abuse.***
- (B) *The drug or other substance **has a currently accepted medical use in treatment in the United States or a currently accepted medical use with severe restrictions.***
- (C) *Abuse of the drug or other substances may lead to severe psychological or physical dependence.*

(3) *Schedule III.—*

- (A) *The drug or other substance **has a potential for abuse less than the drugs or other substances in schedules I and II.***
- (B) *The drug or other substance **has a currently accepted medical use in treatment in the United States.***
- (C) *Abuse of the drug or other substance may lead to moderate or low physical dependence or high psychological dependence.*

(4) *Schedule IV.—*

²⁰² 21 U.S.C. § 811(a)(2). 28 C.F.R. § 0.100(b).

²⁰³ *Nat. Org. for Reform of Marijuana Laws v. Bell*, 488 F. Supp. 123, 126-127 (D.C. Cir., 1980) (references in original omitted).

- (A) The drug or other substance **has a low potential for abuse** relative to the drugs or other substances in schedule III.
- (B) The drug or other substance **has a currently accepted medical use in treatment in the United States.**
- (C) Abuse of the drug or other substance may lead to limited physical dependence or psychological dependence relative to the drugs or other substances in schedule III.

(5) Schedule V.—

- (A) The drug or other substance has **a low potential for abuse** relative to the drugs or other substances in schedule IV.
- (B) The drug or other substance **has a currently accepted medical use in treatment in the United States.**
- (C) Abuse of the drug or other substance may lead to limited physical dependence or psychological dependence relative to the drugs or other substances in schedule IV.²⁰⁴

For an easier view to compare the requirements for classification in the five schedules, the following table is provided:

Table 5					
Controlled Substances Act Schedules Requirements					
Schedule:	I	II	III	IV	V
<i>Potential for Abuse</i>	High	High	Less Than Schedules I or II	Low Relative to Schedule III	Low Relative to Schedule IV
<i>Currently Accepted Medical Use in the US</i>	No	Yes	Yes	Yes	Yes
<i>May Lead To Abuse</i>	(Not Sanctioned to Use Under Any Conditions)	Severe Psychological or Physical Dependence	Moderate or Low Physical Dependence or High Psychological Dependence	Limited Physical Dependence or Psychological Dependence Relative to Schedule III	Limited Physical Dependence or Psychological Dependence Relative to Schedule IV

Looking at the legislative history of the CSA,

indicates the statutory criteria are not intended to be exclusive. The House report states that 'aside from the criterion of actual or relative potential for abuse, subsection (c) of section 201 (21 U.S.C. § 811(c)) lists seven other criteria . . . which must be considered in determining whether a substance meets the specific requirements specified in section 202(b) 21 U.S.C. § 812(b) for inclusion in particular schedules . . .' 1970 House Report, reprinted in 1970 U.S. Code Cong. & Admin. News at 4602.²⁰⁵

²⁰⁴ 21 U.S.C. § 812(b) (emphasis added).

²⁰⁵ *Nat. Org. for Reform of Marijuana Laws v. Bell*, 488 F. Supp. 123, 140-141 (D.C. Cir., 1980).

Currently, marihuana is listed as a Schedule I Controlled Substance under the CSA and is defined as "*all parts of the plant Cannabis sativa L., whether growing or not*".²⁰⁶ Schedule I controlled substances are defined as "drugs with no currently accepted medical use and a high potential for abuse."²⁰⁷

*Congress placed marijuana in Schedule I. The clear meaning of section 812(c) is that Congress intended **marijuana to remain in Schedule I until such time as it might be reclassified by the Attorney General on the basis of more complete scientific information** about the drug. In such a reclassification hearing, the statutory criteria would be the guides to determining the most appropriate schedule for marijuana. By providing for periodic review and constant revision of drug classifications, Congress enacted a sensible mechanism for scrutinizing the classification of marijuana. As Judge Feinberg stated in *United States v. Kiffer*:*

*The very existence of the statutory scheme indicates that, in dealing with the "drug" problem, **Congress intended flexibility and receptivity to the latest scientific information** to be the hallmarks of its approach.*
477 F.2d 349 at 357.²⁰⁸

Today, there is scientific evidence that concludes that industrial hemp is not marijuana, is not a drug, is not intoxicating and therefore has no potential of abuse, and does not have a currently accepted medical use. Industrial hemp does not belong under the definition of marihuana or in any Schedule under the CSA.²⁰⁹

The additional criteria the Attorney General, or here DEA, is to consider in determining whether to remove an other substance from the Schedules are:

- (1) *Its actual or relative potential for abuse.*
- (2) *Scientific evidence of its pharmacological effect, if known.*
- (3) *The state of current scientific knowledge regarding the drug or other substance.*
- (4) *Its history and current pattern of abuse.*
- (5) *The scope, duration, and significance of abuse.*
- (6) *What, if any, risk there is to the public health.*
- (7) *Its psychic or physiological dependence liability.*
- (8) *Whether the substance is an immediate precursor of a substance already controlled under [title 21 of the U.S. Code].*²¹⁰

An analysis of industrial hemp in regards to the eight criteria concludes that industrial hemp does not have any potential for abuse. Industrial hemp does not meet the requirements for

²⁰⁶ Schedule I, 21 C.F.R. § 1308.11(d)(23). 21 U.S.C. § 802(16).

²⁰⁷ Drug Enforcement Agency, *Drug Schedules-Schedule I*, <http://www.justice.gov/dea/druginfo/ds.shtml> (last visited Feb. 2, 2015).

²⁰⁸ *Nat. Org. for Reform of Marijuana Laws v. Bell*, 488 F. Supp. 123, 141 (D.C. Cir., 1980) (emphasis added).

²⁰⁹ See 21 U.S.C. § 811(c).

²¹⁰ 21 U.S.C. § 811(c).

classification in any Schedule under the CSA as it has no currently accepted medical use and has no potential for abuse.

i. Industrial Hemp Does Not Have A Currently Accepted Medical Use

Schedules II - V require that the drug or other substance "*has a currently accepted medical use in treatment in the United States.*"²¹¹

A criterion for Schedule III, IV, and V drugs is the existence of "a currently accepted medical use in treatment in the United States." 21 U.S.C. § 812(b)(3)-(5). To assess whether there is a "currently accepted medical use," the DEA looks for five necessary elements: "(1) The drug's chemistry must be known and reproducible; (2) There must be adequate safety studies; (3) There must be adequate and well-controlled studies proving efficacy; (4) The drug must be accepted by qualified experts; and (5) The scientific evidence must be widely available." See Denial, 76 Fed. Reg. [40,552,] 40,579. Unlike Schedule I drugs, federal law permits individuals to obtain Schedule II, III, IV, or V drugs for personal medical use with a valid prescription. See 21 U.S.C. § 829(a)-(c).

*Under the CSA, "any interested party" may petition the DEA to reschedule a drug. 21 U.S.C. § 811(a). In reaching a final scheduling decision, the DEA must request from the Department of Health & Human Services ("DHHS") a "scientific and medical evaluation," as well as a recommendation for the drug's appropriate schedule. 21 U.S.C. § 811(b). These recommendations are binding on the DEA insofar as they rest on scientific and medical determinations. Id.*²¹²

*"[A] drug will be deemed to have a currently accepted medical use for CSA purposes only if all five of the foregoing elements are demonstrated." Denial, 76 Fed. Reg. at 40,579.*²¹³

Despite the fact that several U.S. states have authorized the use of low-THC/high-CBD *Cannabis* for medical uses, the Food and Drug Administration has not approved industrial hemp or CBD to have a currently accepted medical use in treatment in the United States.²¹⁴ (See, "Table 2" within). A scientific and medical evaluation by the Secretary of Health and Human Services will demonstrate that industrial hemp does not meet the five elements that are necessary for a determination that a drug or other substance has a currently accepted medical use.²¹⁵ Industrial hemp does not meet the requirements for classification as a Schedule II-V drug.²¹⁶

²¹¹ 21 U.S.C. § 812(b) (2)-(5).

²¹² *Ams. for Safe Access v. Drug Enforcement Admin.*, 706 F.3d 438, 441 (D.C. Cir., 2013)

²¹³ *Ams. for Safe Access v. Drug Enforcement Admin.*, 706 F.3d at 450.

²¹⁴ See National Conference of State Legislatures, State Marijuana Laws, Table 2, *Limited Access Marijuana Product Laws (Low THC/High CBD- Cannabidiol)*, <http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>.

²¹⁵ See 21 U.S.C. § 812(b) (2)-(5).

²¹⁶ See 21 U.S.C. § 812(b) (2)-(5).

Even if the Secretary of Health and Human Services does find that industrial hemp has a currently accepted medical use, industrial hemp does not meet the requirements for classification in any schedule because industrial hemp has no potential for abuse.

ii. Industrial Hemp Has No Potential For Abuse

Again, marihuana is currently listed as a Schedule I Controlled Substance under the CSA.²¹⁷ Drugs or other substances are classified in Schedule I because they have a high potential for abuse.²¹⁸ However, industrial hemp does not have any potential for abuse.²¹⁹ (See, "CBD is the Antidote to THC" within). Therefore, industrial hemp does not meet the requirements for classification in Schedule I, nor does industrial hemp meet the requirements for classification in Schedule II-V.²²⁰ Industrial hemp does not belong in any Schedule under the CSA.

There are eight main criteria that DEA and the Secretary of Health and Human Services must consider in determining whether to remove an "other substance" from the Schedules, each of which are addressed in order.²²¹

The Attorney General shall, before initiating proceedings... to remove a drug or other substance entirely from the schedules, and after gathering the necessary data, request from the Secretary a scientific and medical evaluation, and his recommendations, as to whether such drug or other substance should be... removed as a controlled substance. In making such evaluation and recommendations, the Secretary shall consider the factors listed in paragraphs (2), (3), (6), (7), and (8) of subsection (c) of this section and any scientific or medical considerations involved in paragraphs (1), (4), and (5) of such subsection . . . The recommendations of the Secretary to the Attorney General shall be binding on the Attorney General as to such scientific and medical matters, and if the Secretary recommends that a drug or other substance not be controlled, the Attorney General shall not control the drug or other substance . . . If the Attorney General determines that these facts and all other relevant data constitute . . . substantial evidence that the drug or other substance should be removed entirely from the schedules, he shall initiate proceedings for . . . removal.²²²

²¹⁷ Schedule I, 21 C.F.R. § 1308.11(d)(23).

²¹⁸ 21 U.S.C. § 812(b) (1)(A).

²¹⁹ See John M. McPartland and Ethan B. Russo. Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts? in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. Handbook of Cannabis Therapeutics: From Bench to Bedside. The Hayworth Press. See also Sagnik Bhattacharyya, Paul D Morrison, Paolo Fusar-Poli, Rocio Martin-Santos, Stefan Borgwardt, Toby Winton-Brown, Chiara Nosarti, Colin M O'Carroll, Marc Seal, Paul Allen, Mitul A Mehta, James M Stone, Nigel Tunstall, Vincent Giampietro, Shitij Kapur, Robin M Murray, Antonio W Zuardi, José A Crippa, Zerrin Atakan and Philip K. McGuire. "Opposite Effects of Δ-9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology." Neuropsychopharmacology (2010) 35, 764–774. Doi:10.1038/npp2002.184 . See also, Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." Medical Hypotheses (2006) 66, 234–246.

²²⁰ See 21 U.S.C. § 812(b).

²²¹ 21 U.S.C. § 811(c).

²²² 21 USC § 811(b).

(1) Its actual or relative potential for abuse.²²³

Industrial hemp does not have any potential for abuse. As discussed within, the main cannabinoids found in *Cannabis* are THC and CBD.²²⁴ THC is the main cannabinoid that has a psychotropic or intoxicating effect.²²⁵ CBD is not psychoactive, and therefore is not intoxicating.²²⁶

One percent (1%) THC is the intoxication threshold for *Cannabis*. *Cannabis* with more than one percent (1%) THC is properly classified as marijuana (or "marihuana") and has a potential for intoxication, assuming significantly lower amounts of antagonizing CBD.²²⁷ *Cannabis* with less than one percent (1%) THC can properly be classified as industrial hemp and does not have any potential for intoxication, assuming higher amounts of CBD.²²⁸

Along with overall THC content, the cannabinoid profile, or ratio of THC to CBD determines whether *Cannabis* is industrial hemp or marijuana.²²⁹ The ratio of THC to CBD (THC:CBD) determines whether a *Cannabis* plant is intoxicating.²³⁰ No intoxication is possible if the amount

²²³ 21 U.S.C. § 811(c)(1).

²²⁴ See Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York.

²²⁵ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>.

²²⁶ See Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. J Forensic Sci, March 2006, Vol. 51, No. 2 doi:10.1111/j1556-4029.2006.00061.x. See also M. David Marks I, Li Tian, Jonathan P. Wenger, Stephanie N. Omburo, Wilfredo Soto-Fuentes, Ji He, David R. Gang, George D. Weiblen and Richard A. Dixon. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. Journal of Experimental Botany, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210.

²²⁷ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558. See also, Harm van Bakel, Jake M Stout, Atina G Cote, Carling M Tallon, Andrew G. Sharpe, Timothy R Hughes and Jonathan E Page. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02. See also, Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York.

²²⁸ See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>. See also, Harm van Bakel, Jake M Stout, Atina G Cote, Carling M Tallon, Andrew G. Sharpe, Timothy R Hughes and Jonathan E Page. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02. See also, Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York.

²²⁹ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177. See Shannon L. Datwyler & George D. Weiblen, *Genetic Variation in Hemp and Marijuana (Cannabis sativa L.) According to Amplified Fragment Length Polymorphisms*, J. Forensic Sci. Vol. 51 No. 2, 371, 371 (March 2006), available at <http://geo.cbs.umn.edu/Datwyler&Weiblen2006.pdf>.

²³⁰ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177. See also, Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234–246.

of CBD in any part of the plant exceeds the amount of THC in any part of the plant.²³¹ The THC:CBD ratio is stable for the life of the plant.²³² *Cannabis* with a high-THC:CBD ratio (>1) is marijuana (or "marihuana"), while *Cannabis* with a low THC:CBD ratio (< 1) is industrial hemp.²³³

CBD actually blocks the effects of THC.²³⁴

*[A] clinical trial showed that [CBD] reduces the anxiety and other unpleasant psychological side effects provoked by pure THC.*²³⁵

In redefining marihuana by removing industrial hemp from the definition of marihuana, Petitioners request DEA to comport with the scientific findings of botanical scientists, health scientists, and law enforcement researchers that have determined that one percent (1%) THC is the intoxicating threshold level between industrial hemp and marijuana and that intoxication is determined by the THC:CBD ratio. (See within, "Industrial Hemp is, in Fact, Not Marijuana", "The 1 Percent THC Threshold to Intoxication", " THC:CBD Ratio Determines Intoxication" and "CBD is the Antidote to THC" within). Petitioners alternatively request DEA to define marihuana under the CSA as greater than 0.3 percent Δ^9 -THC by dry weight.

*[A] level of 0.3% THC in the flowering parts of the plant is reflective of material that is too low in intoxicant potential to actually be used practically for illicit production of marijuana or other types of cannabis drugs.*²³⁶

(2) Scientific evidence of its pharmacological effect, if known.²³⁷

Industrial hemp is *Cannabis* with a THC:CBD ratio of less than one (<1), meaning there is a higher concentration of CBD in the plant than of THC.²³⁸ CBD actually antagonizes or mitigates the effects of THC.²³⁹

²³¹ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177. See also, Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234–246.

²³² Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

²³³ Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

²³⁴ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177.

²³⁵ John M. McPartland and Ethan B. Russo. *Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts?* in Ethan B. Russo and Franjo Grotenhermen, editors. 2006. *Handbook of Cannabis Therapeutics: From Bench to Bedside*. The Hayworth Press (emphasis added, references in original omitted).

²³⁶ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: (emphasis added).

²³⁷ 21 U.S.C. § 811(c)(2).

²³⁸ See Zlatko Mehmedic, Suman Chandra, Desmond Slade, Heather Denham, Susan Foster, Amit S. Patel, Samir A. Ross, Ikhlas A. Khan, and Mahmoud A. ElSohly. 2010. Potency Trends of Δ^9 -THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. *Forensic Sci*, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x. See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural*

*Δ-9-tetrahydrocannabinol (Δ-9-THC) and Cannabidiol (CBD), the two main ingredients of the Cannabis sativa plant have distinct symptomatic and behavioral effects.. pretreatment with CBD prevented the acute induction of psychotic systems by Δ-9-tetrahydrocannabinol. Δ-9-THC and CBD can have opposite effects on regional brain function, which may underlie their different symptomatic and behavioral effects, and CBD's ability to block the psychotogenic effects of Δ-9-THC.*²⁴⁰

*In fact, the neutral antagonism of CB1receptors by CBD should actually reduce risk of development of tolerance.*²⁴¹

(3) The state of current scientific knowledge regarding the drug or other substance.²⁴²

Industrial hemp is *Cannabis* plant material in which the overall THC concentration is less than one percent and the quantity of CBD exceeds the quantity of THC (CBD > THC).²⁴³

As discussed within, scientific studies conclude that one percent (1%) THC is the intoxication threshold for *Cannabis*.²⁴⁴ If the THC concentration is more than one percent (>1%), *Cannabis* has the potential for intoxication, assuming significantly lower amounts of antagonizing CBD.²⁴⁵ If the THC concentration is less than one percent (<1%), there is no potential for intoxication, assuming higher amounts of antagonizing CBD.²⁴⁶ There is no potential for intoxication with a *Cannabis* plant that has a concentration of 0.3 percent (0.3%) THC.²⁴⁷

Commodity, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>. See also Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558;. Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

²³⁹ Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234–246.

²⁴⁰ Sagnik Bhattacharyya, et al. "Opposite Effects of Δ-9-Tetrahydrocannabinol and Cannabidiol on Human Brain Function and Psychopathology." *Neuropsychopharmacology* (2010) 35, 764–774. Doi:10.1038/npp2002.184 (emphasis added).

²⁴¹ Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234–246(emphasis added, references in original omitted).

²⁴² 21 U.S.C. § 811(c)(3).

²⁴³ Zlatko Mehmedic, Suman Chandra, Desmond Slade, Heather Denham, Susan Foster, Amit S. Patel, Samir A. Ross, Ikhlas A. Khan, and Mahmoud A. ElSohly. 2010. Potency Trends of Δ⁹-THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008. *Forensic Sci*, September 2010, Vol. 55, No. 5 doi: 10.1111/j.1556-4029.2010.01441.x

²⁴⁴ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:.

²⁴⁵ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:. See also, Harm van Bakel, Jake M Stout, Atina G Cote, Carling M Tallon, Andrew G. Sharpe, Timothy R Hughes and Jonathan E Page. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02. See also, Robert C. Clarke and David Paul Watson. Botany of Natural Cannabis Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York.

²⁴⁶ See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>. See also, Harm van Bakel, Jake M Stout,

Again, the THC:CBD ratio is stable for the life of the plant.²⁴⁸ If the amount of CBD in a plant (or any part of a plant) exceeds the amount of THC, no intoxication is possible.²⁴⁹ *Cannabis* with a low THC:CBD ratio (< 1) is industrial hemp. *Cannabis* with a high-THC:CBD ratio (>1) is marijuana (or "marihuana").²⁵⁰

*Doorenbos et al. (1971) and Fetterman et al. (1971) state that marihuana cultivated as intoxicant has low CBD content and high Δ9-THC, whereas plant cultivated for fiber production yields little Δ9-THC and more CBD.*²⁵¹

Again, while Petitioners request DEA to comport with the scientific findings that have concluded that one percent (1%) THC is the intoxicating threshold level between industrial hemp and marijuana and that intoxication is determined by the THC:CBD ratio, **Petitioners alternatively request DEA to remove industrial hemp from the definition of marihuana and to redefine marihuana under the CSA as greater than 0.3 percent Δ9-THC by dry weight.**

(4) Its history and current pattern of abuse.²⁵²

Industrial hemp has been used as an agricultural crop and commodity around the world for thousands of years. More than 30 industrialized nations currently allow the cultivation of industrial hemp.²⁵³ Industrial hemp was grown and used throughout the U.S. from its beginning until the 1950s.²⁵⁴ (See Appendix: "Historical U.S. Production"). Despite the current restrictions on the cultivation of industrial hemp, the U.S. is the largest importer

Atina G Cote, Carling M Tallon, Andrew G. Sharpe, Timothy R Hughes and Jonathan E Page. 2011. The Draft Genome and Transcriptome of *Cannabis Sativa*. *Genome Biology* 12:R02. See also, Robert C. Clarke and David Paul Watson. Botany of Natural *Cannabis* Medicines. In Franjo Grotenhermen and Ethan Russo, editors. 2002. *Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential*. Haworth Press. New York. See also, Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558.

²⁴⁷ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558: (emphasis added).

²⁴⁸ Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

²⁴⁹ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ⁹-Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177. See also, Ethan Russo and Geoffrey W. Guy. "A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol." *Medical Hypotheses* (2006) 66, 234-246.

²⁵⁰ Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975. See also, Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ⁹-Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177.

²⁵¹ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. "Cannabidiol Interferes with the Effects of Δ⁹-Tetrahydrocannabinol in Man." *European Journal of Pharmacology* 28 (1974) 172-177(emphasis added).

²⁵² 21 U.S.C. § 811(c)(4).

²⁵³ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 1, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>.

²⁵⁴ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 11-12, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>.

of industrial hemp and industrial hemp products in the world.²⁵⁵ There has never been any history of abuse, nor will there ever be because there is no potential for intoxication or abuse with industrial hemp, an agricultural commodity.²⁵⁶

United Nations Single Convention on Narcotic Drugs, 1961- Article 28.2

Petitioners note that the U.S. is a signatory to the United Nations Single Convention on Narcotic Drugs, 1961 (as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, 1961).²⁵⁷ 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.”²⁵⁸ 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.”**²⁵⁹ The convention [does] not present an impediment to the development of a regulated [industrial] hemp farming sector in the United States. **The current classification of industrial hemp as marihuana and as a Schedule I Controlled Substance is inconsistent with United Nations Single Convention on Narcotic Drugs.**

(5) The scope, duration, and significance of abuse.²⁶⁰

There is no history of abuse of industrial hemp, as industrial hemp does not have any potential to intoxicate. Industrial hemp has a low THC:CBD ratio (<1), which means that the amount of CBD in the plant actually exceeds the amount of THC in the plant.²⁶¹ When a plant's CBD concentration exceeds the concentration of THC, there is no potential for intoxication.²⁶² CBD mitigates the effects of THC.²⁶³ A THC:CBD ratio of

²⁵⁵ Linda Booker, *Hemp Farming in America: Bringing It Home* (Mixbook, 2014).

²⁵⁶ See Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. *J Forensic Sci*, March 2006, Vol. 51, No. 2 doi:10.1111/j1556-4029.2006.00061.x . See also M. David Marks I, Li Tian, Jonathan P. Wenger, Stephanie N. Omburo, Wilfredo Soto-Fuentes, Ji He, David R. Gang, George D. Weiblen and Richard A. Dixon. 2009. Identification of candidate genes affecting D9-tetrahydrocannabinol biosynthesis in *Cannabis sativa*. *Journal of Experimental Botany*, Vol. 60, No. 13, pp. 3715–3726, 2009 doi:10.1093/jxb/erp210.

²⁵⁷ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 14, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>, citing United Nations Single Convention on Narcotic Drugs, 1961 (as amended by the 1972 Protocol Amending the Single Convention on Narcotic Drugs, 1961), Article 28.

²⁵⁸ Information posted on International Narcotics Control Board (INCB) website.

²⁵⁹ United Nations, Single Convention on Narcotic Drugs, 1961, As amended by the 1972 Protocol amending the Single Convention on Narcotic Drugs, 1961, *Article 28 Control of Cannabis*, 14, available at http://www.unodc.org/pdf/convention_1961_en.pdf (last visited February 11, 2015). See also, Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 14, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>.

²⁶⁰ 21 U.S.C. § 811(c)(5).

²⁶¹ See Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:.

²⁶² Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. “Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man.” *European Journal of Pharmacology* 28 (1974) 172-

less than 1 (<1) means that there is no psychotropic or intoxicating effects.²⁶⁴ Since there are no intoxicating effects of industrial hemp, there is no potential for abuse.²⁶⁵

Petitioners note that at the conservatively low level of 0.3percent (0.3%) THC concentration, there is no potential for abuse.²⁶⁶

(6) What, if any, risk there is to the public health.²⁶⁷

Industrial hemp is an agricultural commodity that is grown to process the seeds, fiber, and stalk into a variety of commercial products.²⁶⁸ Industrial hemp is not a drug. At the conservatively low level of 0.3 percent (0.3%) THC concentration, there is no potential for intoxication with industrial hemp.²⁶⁹ Industrial hemp does not pose any risk to the public health.

(7) Its psychic or physiological dependence liability.²⁷⁰

CBD antagonizes and mitigates the effects of THC.²⁷¹ CBD may actually reduce addiction potential of THC:

A simple perusal of the medical literature will confirm that considerable concern continues in context as to the drug abuse liability of THC preparations. However, that substance in isolation has proven to pose little risk. To the extent that rapidly rising serum levels promote reward and addictive potential of a given pharmaceutical, it is certainly arguable that the addition of CBD to THC would reduce psychoactive attraction, and that an oromucosal delivery eliminates the steep slope pharmacokinetic profile of cannabis smoking. Additionally,

177. See also, Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” Medical Hypotheses (2006) 66, 234–246.

²⁶³ Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” Medical Hypotheses (2006) 66, 234–246.

²⁶⁴ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. “Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man.” European Journal of Pharmacology 28 (1974) 172-177. See also, Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” Medical Hypotheses (2006) 66, 234–246.

²⁶⁵ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:.

²⁶⁶ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:.

²⁶⁷ 21 U.S.C. § 811(c)(6).

²⁶⁸ Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Envtl. L. Rev. 383 (May 2015), citing Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 1, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

²⁶⁹ Ernest Small and David Marcus. 2003. Tetrahydrocannabinol Levels in Hemp (*Cannabis Sativa*) Germplasm Resources. *Economic Botany* 57(4) pp. 545-558:.

²⁷⁰ 21 U.S.C. § 811(c)(7).

²⁷¹ Isac G Karniol, Itiro Shirakawa, Nelson Kasinski, Abraham Pfererman and Elisaldo A Carini. “Cannabidiol Interferes with the Effects of Δ^9 -Tetrahydrocannabinol in Man.” European Journal of Pharmacology 28 (1974) 172-177. See also, Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” Medical Hypotheses (2006) 66, 234–246.

*cannabinoid receptor blockade by CBD may well reduce addiction potential, and support its usage as an ‘anti-addictive’ compound.*²⁷²

(8) Whether the substance is an immediate precursor of a substance already controlled under [title 21 of the U.S. Code].²⁷³

Industrial hemp is not a precursor of any substance controlled under the CSA. In fact, THC and CBD have a common precursor, cannabigerol (CBG).

*[Industrial h]emp plants have a relatively low THC:CBD ratio compared with marijuana. Recent studies suggest that THC and CBD are derived from a common precursor, cannabigerol, and that the THC:CBD ratio might be controlled by a single gene affecting cannabinoid biosynthesis.*²⁷⁴

*Some heritable factor seems to affect the balance between CBD and THC synthase in their competition to convert the CBG precursor.*²⁷⁵

*Fournier et al. (1987) stated that the cannabinoid profile of each plant—and therefore its CBD/THC ratio—is chiefly dependent on its genetic background and that each individual plant invariably belongs to its distinct chemical group throughout its life cycle.*²⁷⁶

Following the biosynthetic pathway of cannabinoids, CBG is the precursor that converts into either THC or CBD.²⁷⁷ The plant's genetics determines whether CBG will convert into THC or into CBD (Figure 4).²⁷⁸ The THC:CBD ratio remains fixed for the life of the plant.²⁷⁹

²⁷² Ethan Russo and Geoffrey W. Guy. “A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol.” *Medical Hypotheses* (2006) 66, 234–246

²⁷³ 21 U.S.C. § 811(c)(8).

²⁷⁴ Shannon L. Datwyler and George D. Weiblen. 2006. Genetic Variation in Hemp and Marijuana (*Cannabis sativa* L.) According to Amplified Fragment Length Polymorphisms. *J Forensic Sci*, March 2006, Vol. 51, No. 2 doi:10.1111/j1556-4029.2006.00061.x (emphasis added; references in original omitted)

²⁷⁵ Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 *Fordham Env'tl. L. Rev.* 383 (May 2015), citing Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa* L., 163 *Genetics* 335, 344 (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>.

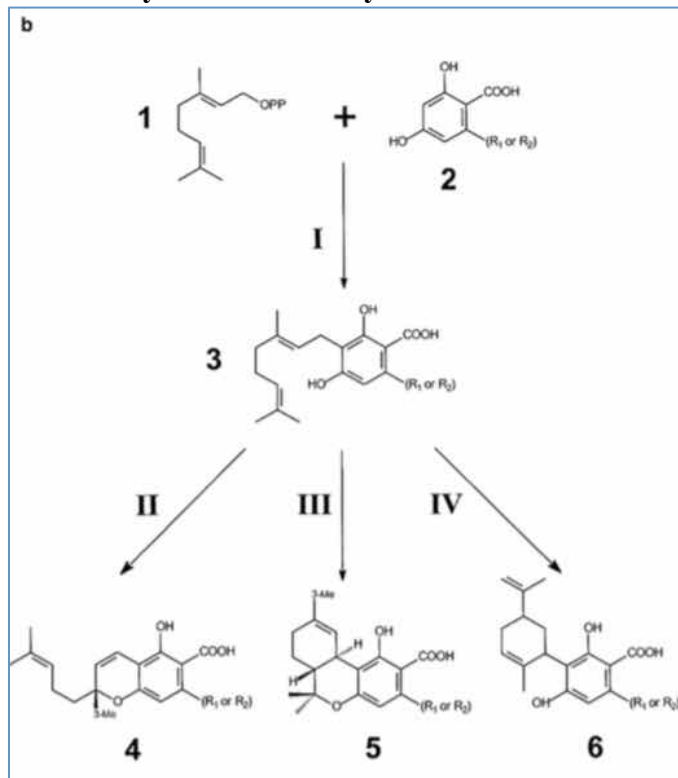
²⁷⁶ Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa* L., 163 *Genetics* 335, 336 (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>.

²⁷⁷ Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa* L., 163 *Genetics* 335, 335-336, 338 (Figure 1) (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>.

²⁷⁸ See Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa* L., 163 *Genetics* 335, 335-336, 338 (Figure 1) (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>.

²⁷⁹ See Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa* L., 163 *Genetics* 335, 336 (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>. See also, Karl W. Hillig and Paul G. Mahlberg. 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

Figure 4
Biosynthetic Pathway of Cannabinoids



b) The biosynthetic pathway of cannabinoids is shown (modified after FELLERMEIER *et al.* 2001). 1, geranylpyrophosphate; 2, olivetolic acid; 3, CBG(V); 4, CBC(V); 5, THC(V); 6, CBD(V); I, geranylpyrophosphate:olivetolate geranyltransferase (GOT); II, CBC(V) synthase; III, THC(V) synthase; IV, CBD(V) synthase. R₁ (= -C₃H₇) and R₂ (= -C₅H₁₁) indicate the propyl and pentyl forms of the different metabolites.

Source: Etienne P. M. de Meijer, et. al., *The Inheritance of Chemical Phenotype in Cannabis sativa L.*, 163 Genetics 335, 338 (Figure 1b) (Jan. 1, 2003), available at <http://www.genetics.org/content/163/1/335.full.pdf+html>.

Industrial hemp has no potential for abuse. Industrial hemp does not meet the requirements for classification in any of the five schedules. The DEA should remove industrial hemp from the definition of marihuana and DEA regulation. Again, maintaining the current definition of marihuana under the CSA as "*all parts of the plant Cannabis sativa L., whether growing or not*" is arbitrary and capricious and not supported by substantial evidence.

2. DEA Must Disregard Any Views of the Office of National Drug Control Policy in This Matter

Congress has statutorily instructed that the Director of the White House Office of National Drug Control Policy ("ONDCP") (aka "Drug Czar"),

shall ensure that no Federal funds appropriated to the Office of National Drug Control Policy shall be expended for any study or contract relating to the legalization (for a medical use or any other use) of a substance listed in schedule

*I of section 812 of this title and take such actions as necessary to oppose any attempt to legalize the use of a substance (in any form) that—
(A) is listed in schedule I of section 812 of this title; and
(B) has not been approved for use for medical purposes by the Food and Drug Administration.*²⁸⁰

“Marihuana” is one of the “drugs” listed under “Schedule 1” of the Schedules of Controlled Substances.²⁸¹ The Food and Drug Administration has not approved industrial hemp for medical purposes.

Given this congressional muzzling of the Drug Czar, irrespective of any and all facts to the contrary and/or irrespective of the professional opinion of the drug czar based on his or her actual experience, expertise and/or judgment—statutorily, the Drug Czar can, by law, spend no funds, or even utter any statement—that would do anything less than oppose the de-schedulization of industrial hemp.

The position of the White House on this administrative rulemaking petition—if expressed through the Director of the ONDCP—must, as a matter of law—be in opposition. To honestly assess the position of The White House, if it chooses to do so, DEA must inquire at a level above the Drug Czar. Only then can DEA be assured it is getting an answer that truly reflects what The White House believes to be the best public policy. While it may be that the White House comes out in opposition, if the position is expressed by the Drug Czar, because of the statutory muzzling, it is suspect.

While Congress has muzzled the Drug Czar in terms of the reclassification of industrial hemp to no longer be lumped in with marijuana, Congress has also said with the same statutory force:

[T]he Attorney General may by rule... remove any drug or other substance from the schedules if he finds that the drug or other substance does not meet the requirements for inclusion in any schedule.”²⁸²

The Obama Administration encourages citizens to create and sign petitions to the White House. If a threshold number of signatures is met, the White House official responds. This petition regarding industrial hemp was made to The White House in 2011:

Allow Industrial Hemp to be Grown in the U.S. Once Again

Lost opportunities for farmers and businesses have real consequences. With over \$419 million in estimated U.S. retail sales, American companies making [industrial] hemp products have no choice but to import their raw materials because American farmers continue to fear they will be prosecuted due to an outdated federal policy which confuses non-drug industrial hemp with drug varieties of Cannabis.

²⁸⁰ 21 U.S.C 1703(b)(12) (emphasis added).

²⁸¹ 21 U.S.C. §812(c)(10).

²⁸² 21 U.S.C. §811(a)(2).

Sustainable [industrial] hemp seed, fiber and oil are already used in nutritious food, textiles, body care and even auto-parts. Many American companies are using imported [industrial] hemp in their products today.

*We urge you to allow U.S. farmers to follow in the footsteps of George Washington, Thomas Jefferson and John Adams, all who were [industrial] hemp farmers, and once again grow this sustainable and profitable non-drug crop.*²⁸³

In response to the petition, then Director of the ONDCP (aka “White House Drug Czar”), Gil Kerlikowske made this official response to the petition:

*America’s farmers deserve our Nation’s help and support to ensure rural America’s prosperity and vitality. Federal law prohibits human consumption, distribution, and possession of Schedule I controlled substances. [Industrial h]emp and marijuana are part of the same species of cannabis plant. While most of the THC in cannabis plants is concentrated in the marijuana, all parts of the plant, including [industrial] hemp, can contain THC, a Schedule I controlled substance. The Administration will continue looking for innovative ways to support farmers across the country while balancing the need to protect public health and safety.*²⁸⁴

Did Director Kerlikowske really mean what he said? Perhaps he did, but one can’t be sure because it is the only response he is allowed by law to give. The Director of the ONDCP is statutorily muzzled as to what can be said about “marijuana.” To say anything else would be a violation of the law. Given these circumstances, one cannot rely that the ONDCP Director is honestly expressing his view. He may be, but one cannot be sure.

Citizens of the United States, including Petitioners, want to see industrial hemp commercially grown and produced within the U.S, as it was throughout the history of the U.S. until the early twentieth century.

Supporting Evidence

Legal Status in the United States

Federal Drug Law

Controlled Substances Act

²⁸³ T.M. *Allow Industrial Hemp to Be Grown in the U.S. Once Again*. We the People, Petition to The White House (September 22, 2011.), <https://petitions.whitehouse.gov/petition/allow-industrial-hemp-be-grown-us-once-again/V2gV7rWy>; available at <https://petitions.whitehouse.gov/response/what-we-have-say-about-marijuana-and-hemp-production> (accessed July 24, 2014).

²⁸⁴ The White House. Official White House Response to Allow Industrial Hemp to be Grown in the U.S. Once Again. <https://petitions.whitehouse.gov/response/what-we-have-say-about-marijuana-and-hemp-production> (accessed July 24, 2014).

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 [industrial] 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 [industrial] 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 [industrial] hemp illegal; rather, it places strict controls on the production of [industrial] 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 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.²⁸⁵ DEA refutes this interpretation.²⁸⁶

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 [industrial] hemp or faces the possibility of federal charges or property confiscation, regardless of whether the grower has a state-issued permit.²⁸⁷

Most reports indicate that the DEA has not granted any current licenses to grow [industrial] hemp commercially. To date, all commercial [industrial] hemp products sold in the United States are imported or manufactured from imported [industrial] hemp materials. In May 2013, it was reported that [industrial] hemp [was] cultivated in Colorado, following changes to that state’s laws in November 2012.²⁸⁸

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 [industrial] 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.²⁸⁹ DEA application requirements also include a nonrefundable fee, FBI background checks, and extensive documentation. It could also be argued that, because of the

²⁸⁵ See, for example, *Hemp Industries Association v. Drug Enforcement Administration*, 357 F.2d (9th Circuit 2004).

²⁸⁶ 66 *Federal Register* 51530.

²⁸⁷ Registration requirements are at 21 CFR 823. See also DEA’s registration procedures and applications at <http://www.deaiversion.usdoj.gov/drugreg/process.htm> and http://www.deaiversion.usdoj.gov/drugreg/reg_apps/onlineforms_new.htm.

²⁸⁸ S. Raabe, “First major Hemp Crop in 60 Years is Planted in Southeast Colorado,” *Denverpost.com*, May 13, 2013.

²⁸⁹ University of Kentucky Cooperative Extension Service, “Industrial Hemp—Legal Issues, September 2012, <http://www.uky.edu/Ag/NewCrops/introsheets/hemp.pdf>.

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.

DEA's 2003 Rules Regarding Industrial Hemp

In March 2003, DEA issued two final rules addressing the legal status of [industrial] hemp products derived from the cannabis plant. The DEA found that [industrial] hemp products "often contain the hallucinogenic substance tetrahydrocannabinols (THC) ... the primary psychoactive chemical found in the cannabis (marijuana) plant."²⁹⁰ 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 [industrial] "hemp" and also prohibit "cannabis products containing THC that are intended or used for human consumption (foods and beverages)."²⁹¹ Development of the 2003 rule sparked a fierce battle over the permissibility of imported [industrial] hemp-based food products that lasted from 1999 until 2004.

Dispute over [Industrial] Hemp Food Imports (1999-2004)

[Hemp Industries Association v. Drug Enforcement Administration, 357 F.2d (9th Circuit 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 [industrial] hemp, and [industrial] 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.²⁹² 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 [industrial] hemp foods a date after which the DEA could seize all such products remaining on shelves. On both rules, [industrial] hemp trade associations requested and received court-ordered stays blocking enforcement of that provision. The DEA's interpretation made [industrial] hemp with any THC content subject to enforcement as a controlled substance.

[Industrial h]emp 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.²⁹³ 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

²⁹⁰ DEA, "DEA History in Depth," 1999-2003, and other DEA published resources.

²⁹¹ *Ibid.*

²⁹² 66 *Federal Register* 51530.

²⁹³ 21 U.S.C. §802 (19) and (20).

or close to zero. U.S. and Canadian [industrial] hemp seed and food manufacturers have in place a voluntary program for certifying low, industry-determined standards in [industrial] 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 [industrial] 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.²⁹⁴ The court stated that “the DEA’s definition of ‘THC’ contravenes the unambiguously expressed intent of Congress in the CSA and cannot be upheld.”²⁹⁵ The Ninth Circuit court noted, “[w]e find unambiguous Congress’ intent with regard to the regulation of non-psychoactive hemp.”²⁹⁶ The Ninth Circuit concluded that the DEA “cannot regulate *naturally -occurring* THC not contained within or derived from marijuana-i.e., non-psychoactive hemp products-because non-psychoactive hemp is not included in Schedule I.”²⁹⁷ In late September 2004 the Bush Administration let the final deadline pass without filing an appeal.

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.”²⁹⁸ 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:²⁹⁹

- 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;

²⁹⁴ 68 *Federal Register* 14113.

²⁹⁵ *Hemp Industries Association v. Drug Enforcement Administration*, 357 F.2d (9th Circuit 2004).

²⁹⁶ *Hemp Industries Ass’n. v. Drug Enforcement Admin.*, 357 F.3d 1012, 1018 (9th Cir. 2004). See Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 *Fordham Env’tl. L. Rev.* 383 (May 2015).

²⁹⁷ *Hemp Industries Ass’n. v. Drug Enforcement Admin.*, 357 F.3d 1012, 1018 (9th Cir. 2004). See Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 *Fordham Env’tl. L. Rev.* 383 (May 2015) (emphasis in original).

²⁹⁸ 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>.

²⁹⁹ *Ibid.*

- 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.

The Cole Memo further provides:

*In jurisdictions that have enacted laws legalizing marijuana in some form and that have also implemented strong and effective regulatory and enforcement systems to control the cultivation, distribution, sale, and possession of marijuana, conduct in compliance with those laws and regulations is less likely to threaten the federal priorities set forth above.*³⁰⁰

Although the Cole Memo provides that the USDOJ won't likely bother "marijuana" users and growers in those states that have legalized "marijuana" (medical marijuana and/or recreational marijuana and industrial hemp), it reserves its right to do so:

*As with the Department's previous statements on this subject, this memorandum is intended solely as a guide to the exercise of investigative and prosecutorial discretion. This memorandum does not alter in any way the Department's authority to enforce federal law, including federal laws relating to marijuana, regardless of state law. Neither the guidance herein nor any state or local law provides a legal defense to a violation of federal law, including any civil or criminal violation of the CSA. Even in jurisdictions with strong and effective regulatory systems, evidence that particular conduct threatens federal priorities will subject that person or entity to federal enforcement action, based on the circumstances. This memorandum is not intended to, does not, and may not be relied upon to create any rights, substantive or procedural, enforceable at law by any party in any matter civil or criminal. It applies prospectively to the exercise of prosecutorial discretion in future cases and does not provide defendants or subjects of enforcement action with a basis for reconsideration of any pending civil action or criminal prosecution. Finally, nothing herein precludes investigation or prosecution, even in the absence of any one of the factors listed above, in particular circumstances where investigation and prosecution otherwise serves an important federal interest.*³⁰¹

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 [industrial] hemp.³⁰²

³⁰⁰ James M. Cole. August 29, 2013. Guidance Regarding Marijuana Enforcement: Memorandum for All United States Attorneys. J.S. Deputy Attorney General, US Department of Justice, Washington, DC.

³⁰¹ James M. Cole. August 29, 2013. Guidance Regarding Marijuana Enforcement: Memorandum for All United States Attorneys. J.S. Deputy Attorney General, US Department of Justice, Washington, DC.

³⁰² Letter to interested parties from Joe Sandler, Counsel for Vote Hemp, November 13, 2013.

Marshall Memo

In November 2013, in response to a letter to Representative Earl Blumenauer, DOJ officials in Oregon [(U.S. Attorney Amanda Marshall)] clarified that since “ ‘industrial hemp’ is marijuana, under the CSA, these eight enforcement priorities apply to [industrial] hemp just as they do for all forms of cannabis” and that “federal prosecutors will remain aggressive” when it comes to protecting these eight priorities.³⁰³

[(U.S. Attorney Marshall)] indicated that [the Oregon DOJ does] not intend to interfere with their state’s [industrial] hemp production as long as it is well-regulated and subject to enforcement.³⁰⁴ 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 [industrial] hemp.³⁰⁵

State Laws

As a matter of law in the majority of U.S. states, industrial hemp is not marijuana.

Since the mid-1990s, there has been 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 [industrial] hemp’s potential as a high-value alternative crop, although the economic studies conducted so far paint a mixed profitability picture. Following passage of the 2014 farm bill provision allowing for growing [industrial] hemp under certain circumstances (see “2014 Farm Bill”), several states have quickly been adopting new state laws to allow for cultivation. These include California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Indiana, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New York, Nevada, North Carolina, North Dakota, Oregon, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and West Virginia. The status of state actions regarding [industrial] hemp is changing rapidly; resources for updated information include the National Conference of State Legislatures (NCSL) and the advocacy group Vote Hemp.³⁰⁶

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 [industrial] hemp, even for state-authorized experimental purposes, remains regulated by the DEA under the Controlled Substances Act.

Among the types of current state policies are the following:³⁰⁷ defining industrial hemp based on the percentage of tetrahydrocannabinol it contains; authorizing the growing and possessing of

³⁰³ Letter to Representative Earl Blumenauer, from S. Amanda Marshall, U.S. Attorney, District of Oregon, November 7, 2013.

³⁰⁴ Letter to Representative Earl Blumenauer, from S. Amanda Marshall, U.S. Attorney, District of Oregon, November 7, 2013. See also N. Crombie, “U.S. Rep. Earl Blumenauer urges Oregon to implement industrial hemp law,” *The Oregonian*, September 18, 2013.

³⁰⁵ CRS communication with representatives of Vote Hemp, Inc., January 2014.

³⁰⁶ NCSL, *State Industrial Hemp Statutes* (<http://www.ncsl.org/research/agriculture-and-rural-development/state-industrial-hemp-statutes.aspx>); Vote Hemp (<http://www.votehemp.com/state.html#2014>).

³⁰⁷ NCSL, *State Industrial Hemp Statutes* (<http://www.ncsl.org/research/agriculture-and-rural-development/state->

industrial hemp; requiring state licensing of industrial hemp growers; promoting research and development of markets for industrial hemp; excluding industrial hemp from the definition of controlled substances under state law; and establishing a defense to criminal prosecution under drug possession or cultivation.

Many states have established programs under which a farmer may be able to grow industrial hemp under certain circumstances, however, despite some state laws, a grower would still need to obtain a DEA permit and abide by the DEA's strict production controls. For example, changes to Colorado's state laws in November 2012 now allow for industrial hemp cultivation. Industrial hemp was reported as being grown in Colorado in 2013.³⁰⁸ However, growers and state authorities continue to face a number of challenges implementing Colorado's law, including sampling, registration and inspection, seed availability and sourcing, disposition of non-complying plants, and law enforcement concerns, as well as production issues such as [industrial] hemp agronomics, costly equipment, and limited manufacturing capacity, among other grower and processor concerns.³⁰⁹ It also remains unclear how federal authorities will respond to production in states where state laws permit growing and cultivating [industrial] hemp.

In the past there has been ongoing tension between federal and state authorities over state [industrial] hemp policies. After passing its own state law authorizing industrial hemp production in 1999,³¹⁰ researchers in North Dakota repeatedly applied for, but did not receive, a DEA permit to cultivate [industrial] hemp for research purposes in the state.³¹¹ Also in 2007, two North Dakota farmers were granted state [industrial] 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."³¹² The case was dismissed in November 2007.³¹³ The case was appealed to the U.S. Court of Appeals (Eighth Circuit), but was again dismissed in December 2009.³¹⁴ They filed an appeal in May 2010.³¹⁵

Similarly, Montana passed its state law authorizing [industrial] 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. 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 [industrial] hemp production in the state, as well as a test of state's rights.³¹⁶

industrial-hemp-statutes.aspx).

³⁰⁸ 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).

³⁰⁹ 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).

³¹⁰ 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>.

³¹¹ See, for example, letter from North Dakota State University to the DEA, July 27, 2007.

³¹² 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.

³¹³ Monson v. DEA, 522 F. Supp. 2d 1188 (D.N.D. 2007).

³¹⁴ Monson v. DEA, 589 F.3d 952 (8th Cir. 2009).

³¹⁵ S. Roesler, "ND farmers file another industrial hemp appeal in district court," *Farm & Ranch Guide*, June 4, 2010.

³¹⁶ M. Brown, "First license issued to Montana hemp grower," *Missoulia*, October 27, 2009.

State Action

Since 1999, at least 27 states have taken action and have passed bills and measures relating to industrial hemp. North Dakota,³¹⁷ Montana,³¹⁸ West Virginia,³¹⁹ Vermont,³²⁰ Maine,³²¹ Oregon,³²² Colorado,³²³ Kentucky,³²⁴ California,³²⁵ Indiana,³²⁶ Tennessee,³²⁷ South Carolina,³²⁸ Virginia,³²⁹ Minnesota,³³⁰ and Connecticut,³³¹ have legalized the full cultivation of industrial hemp.³³² Utah,³³³ Nebraska,³³⁴ Hawaii,³³⁵ Missouri,³³⁶ Delaware,³³⁷ Illinois,³³⁸ New York,³³⁹

³¹⁷ N.D. CENT. CODE, §§ 4-41-01 to -03 (1999) (1999-HB 1428, "An Act to Authorize the Production of Industrial Hemp...").

³¹⁸ MONT. CODE ANN. §§ 80-18-101 to -111(2001). (2002-SB 261, "An Act Authorizing the Production of Industrial Hemp as an Agricultural Crop...").

³¹⁹ W. VA. CODE §§ 19-12E-1 to -9 (2002) (2002-S.B. 447, "Industrial Hemp Development Act"); W. VA. CODE § 19-12E-5 (W. Va. 2014) (2014- H.B. 3011, "Removing the provision that requires an applicant to meet federal requirements concerning the production, distribution and sale of industrial hemp prior to being licensed").

³²⁰ VT. STAT. ANN. 6, §§ 561-566 (2008) (2008- H 267, "An Act Relating To Industrial Hemp").

³²¹ ME. REV. STAT. ANN. tit. 7, § 2231 (2009) (2009-LD 1159, "An Act to Promote Industrial Hemp").

³²² OR. REV. STAT. §§ 571.300-571.315 (2011) (2009-SB 676, "Industrial Hemp Growers and Handlers").

³²³ Office of Legis. Legal Serv., COLO CONST. art. 18 § 16, http://tornado.state.co.us/gov_dir/leg_dir/olls/constitution.htm#ARTICLE_XVIII_Section_16, (last visited June 9, 2014).

³²⁴ KY. REV. STAT. ANN. §§ 260.850-260.869 (2013) (2013-SB 50, "An Act Relating To Industrial Hemp"). Kentucky Legislature, "SB 50", <http://www.lrc.ky.gov/record/13rs/sb50.htm> (last visited April 10, 2013).

³²⁵ CA CODE §§ 81000-81010 (2013) (2013- SB-566, "Industrial Hemp"). See California Legislative Information, "SB-566 Industrial Hemp", http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB566 (last visited Dec. 20, 2013).

³²⁶ S.B. 357, 2014 Gen. Assem. (Ind. 2014), <http://iga.in.gov/legislative/2014/bills/senate/357/#> (last visited May 30, 2014) (2014-SB 357, "Industrial Hemp").

³²⁷ HB 2445, 2014 Gen. Assem. (Tenn. 2014), <http://wapp.capitol.tn.gov/apps/BillInfo/Default.aspx?BillNumber=%20HB2445&GA=108> (last visited May 30, 2014) (2014- HB 2445, "AN ACT...relative to industrial hemp").

³²⁸ S 0839, Gen. Assem., 120th Sess. (S.C. 2014), http://www.scstatehouse.gov/sess120_2013-2014/bills/839.htm (last visited June 3, 2014) (2014- S0839, "Industrial Hemp").

³²⁹ HB 699, Gen. Assem. 2016 Session (VA. 2016) *available at*, <http://lis.virginia.gov/cgi-bin/legp604.exe?161+sum+HB699>.

³³⁰ S.F. 5, 89th Leg. (Minn. 2015), *available at* https://www.revisor.mn.gov/bills/text.php?number=SF5&version=2&session=ls89&session_year=2015&session_number=1.

³³¹ H.B. 5780, Gen. Assem., 2015 Sess. (Conn. 2015), *available at* https://www.cga.ct.gov/asp/cgabillstatus/cgabillstatus.asp?selBillType=Bill&which_year=2015&bill_num=5780.

³³² See Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Envtl. L. Rev. 383 (May 2015).

³³³ H.B. 105, State Leg., 2014 Gen. Sess. (Utah 2014), <http://le.utah.gov/~2014/bills/static/HB0105.html> (last visited May 30, 2014) (2014- H.B. 105, "Industrial Hemp Research Act").

³³⁴ LB 1001, 103rd Leg., (Neb. 2014), http://nebraskalegislature.gov/bills/view_bill.php?DocumentID=22180 (last visited May 30, 2014) (2014- LB1001, "A BILL FOR AN ACT relating to industrial hemp").

³³⁵ S.B. 2175, 27th State Leg. (Haw. 2014), http://www.capitol.hawaii.gov/session2014/bills/SB2175_HD2_.pdf (last visited May 13, 2014) (2014-S.B. 2175, "Relating to Industrial Hemp").

³³⁶ HB 2238, 2014 Miss. H.R., (Miss. 2014), <http://www.house.mo.gov/billssummary.aspx?bill=HB2238&year=2014> (last visited July 23, 2014) (2014-HB, 2238- " Allows the Department of Agriculture to grow industrial hemp for research purposes and allows the use of hemp extract to treat certain individuals with epilepsy").

³³⁷ HB 385, 147th Gen Assem. (Del. 2014), <http://www.legis.delaware.gov/LIS/LIS147.NSF/vwLegislation/HB+385?Opendocument> (last visited August 27,

Michigan,³⁴⁰ Nevada,³⁴¹ Maryland,³⁴² North Carolina,³⁴³ and Washington³⁴⁴ have legalized the cultivation of industrial hemp for purposes of research.³⁴⁵ States continue to see the agricultural, environmental and economic potential of industrial hemp. DEA should take note of the actions of more than fifty percent of the states.

Table 6 Status of Various Forms of Cannabis by U.S. State* (Current as of June 2016)			
Federal	Industrial Hemp	Medical Marijuana**	Recreational Marijuana
USDOJ DEA	Illegal	All Strains Illegal	Illegal
Congress (CSA 1970)	Illegal	All Strains Illegal	Illegal
Congress (Farm Bill)	Leave It to States	Not Applicable	Not Applicable
Congress (Consolidated and Further Continuing Appropriations Act of 2015, Public Law No:113-235)	Leave It to States	Leave It to States	Not Applicable
State			
Alabama	Illegal	CBD-Intense Strains Legal	Illegal
Alaska	Illegal	All Strains Legal	Manufacture, Sale and Possession Regulated
Arizona	Illegal	All Strains Legal	Illegal
Arkansas	Authority to Study	All Strains Illegal	Illegal
California	Fully Legalized	All Strains Legal	Possession Decriminalized
Colorado	Fully Legalized	All Strains Legal	Manufacture, Sale and Possession Regulated

2014) (2014-HB 385-"AN ACT TO AMEND TITLE 3 OF THE DELAWARE CODE RELATING TO INDUSTRIAL HEMP").

³³⁸ HB 5085, 98th Gen. Assem. (Ill. 2014),

<http://www.ilga.gov/legislation/billstatus.asp?DocNum=5085&GAID=12&GA=98&DocTypeID=HB&LegID=79824&SessionID=85> (last visited August 27, 2014) (2014- HB 5085, "AN ACT concerning agriculture").

³³⁹ A09140, 2013-2014 N.Y. State Assem. (N.Y. 2014),

http://assembly.state.ny.us/leg/?default_fld=&bn=A09140&term=2013&Summary=Y&Actions=Y&Text=Y (last visited Jan. 19, 2015) (2014- A09140- "AN ACT to amend the agriculture and markets law, in relation to authorizing the growing of industrial hemp as part of an agricultural pilot program").

³⁴⁰ HB 5439, 97th State Leg. (Mich. 2014),

[http://www.legislature.mi.gov/\(S\(wkmo1i45afzrdn550xjhuc45\)\)/mileg.aspx?page=GetObject&objectname=2014-HB-5439](http://www.legislature.mi.gov/(S(wkmo1i45afzrdn550xjhuc45))/mileg.aspx?page=GetObject&objectname=2014-HB-5439) (last visited Jan. 19, 2015) (2014- HB 5439- " AN ACT to authorize the growing and cultivating of industrial hemp for research purposes; to authorize the receipt and expenditure of funding for research related to industrial hemp; and to prescribe the powers and duties of certain state agencies and officials and colleges and universities in this state"). *See also*, HB 5438, 97th State Leg. (Mich. 2014), <http://www.legislature.mi.gov/documents/2013-2014/billenrolled/House/pdf/2014-HNB-5439.pdf> (last visited Jan. 19, 2015).

³⁴¹ S.B. 305, 78th Leg. (Nev. 2015) , *available at*

https://www.leg.state.nv.us/Session/78th2015/Bills/SB/SB305_EN.pdf.

³⁴² H.B. 806, Gen. Assem., 2015 Sess. (M.D. 2015), *available at*

<http://mgaleg.maryland.gov/webmga/frmMain.aspx?id=hb0803&stab=01&pid=billpage&tab=subject3&ys=2015R>. *Note: This Act is contingent on the taking effect of the federal Industrial Hemp Farming Act of 2015 or another federal law that delegates authority over industrial hemp to the states or authorizes a person to plant, grow, harvest, possess, process, sell, and buy industrial hemp.*

³⁴³ S.B. 313, Gen. Assem., 2015 Sess. (N.C. 2015), *available at* <https://legiscan.com/NC/text/S313/2015>.

³⁴⁴ SB 6206, Wash. State Legis., 2016 Session (Wash. 2016) *available at*,

<http://app.leg.wa.gov/billinfo/summary.aspx?bill=6206&>.

³⁴⁵ *See* Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Env'tl. L. Rev. 383 (May 2015).

Connecticut	Authority to Study	All Strains Legal	Possession Decriminalized
Delaware	Authority to Study	All Strains Legal	Illegal
District of Columbia	Illegal	All Strains Legal	Manufacture and Possession Regulated
Florida	Illegal	All Strains Legal	Illegal
Georgia	Illegal	CBD-Intense Strains Legal	Illegal
Hawaii	Study Authority	All Strains Legal	Illegal
Idaho	Illegal	All Strains Illegal	Illegal
Illinois	Authority to Study	All Strains Legal	Illegal
Indiana	Fully Legalized	All Strains Illegal	Illegal
Iowa	Illegal	CBD-Intense Strains Legal	Illegal
Kansas	Illegal	All Strains Illegal	Illegal
Kentucky	Fully Legalized	CBD-Intense Strains Legal	Illegal
Louisiana	Illegal	CBD-Intense Strains Legal	Illegal
Maine	Fully Legalized	All Strains Legal	Possession Decriminalized
Maryland	Study Authority	All Strains Legal	Possession Decriminalized
Massachusetts	Illegal	All Strains Legal	Possession Decriminalized
Michigan	Authority to Study	All Strains Legal	Illegal
Minnesota	Fully Legalized	All Strains Legal	Possession Decriminalized
Mississippi	Illegal	CBD-Intense Strains Legal	Possession Decriminalized
Missouri	Limited Research	CBD-Intense Strains Legal	Illegal
Montana	Fully Legalized	All Strains Legal	Illegal
Nebraska	Study Authority	All Strains Illegal	Possession Decriminalized
Nevada	Authority to Study	All Strains Legal	Possession Decriminalized
New Hampshire	Authority to Study	All Strains Legal	Illegal
New Jersey	Illegal	All Strains Legal	Illegal
New Mexico	Authority to Study	All Strains Legal	Illegal
New York	Authority to Study	All Strains Legal	Possession Decriminalized
North Carolina	Authority to Study	CBD-Intense Strains Legal	Possession Decriminalized
North Dakota	Fully Legalized	All Strains Illegal	Illegal
Ohio	Illegal	All Strains Illegal	Possession Decriminalized
Oklahoma	Illegal	CBD-Intense Strains Legal	Illegal
Oregon	Fully Legalized	All Strains Legal	Manufacture, Sale and Possession Regulated
Pennsylvania	Illegal	All Strains Legal	Illegal
Rhode Island	Illegal	All Strains Legal	Possession Decriminalized
South Carolina	Fully Legalized	CBD-Intense Strains Legal	Illegal
South Dakota	Illegal	All Strains Illegal	Illegal
Tennessee	Fully Legalized	CBD-Intense Strains Legal	Illegal
Texas	Illegal	CBD-Intense Strains Legal	Illegal
Utah	Study Authority	CBD-Intense Strains Legal	Illegal
Vermont	Fully Legalized	All Strains Legal	Possession Decriminalized
Virginia	Fully Legalized	CBD-Intense Strains Legal	Illegal
Washington	Authority to Study	All Strains Legal	Manufacture, Sale and Possession Regulated
West Virginia	Fully Legalized	All Strains Illegal	Illegal
Wisconsin	Illegal	CBD-Intense Strains Legal	Illegal
Wyoming	Illegal	CBD-Intense Strains Legal	Illegal
* Though showing the status of marijuana (medical or recreational), this petition takes no position on the status of marijuana on the federal drug schedules. The information is shown to make the case that only three states (ID, KS, SD V) continue to support the DEA arbitrary all-<i>Cannabis</i>-is-marijuana position. 47 states and DC somehow distinguish <i>Cannabis</i> along the THC:CBD continuum and/or take a position contrary to DEA in terms of the criminality of possession.			
** Recently several, generally conservative states, have legalized for medical use—with conditions—the use low-THC/high-CBD <i>Cannabis</i>, showing that they distinguish <i>Cannabis</i> along the THC-CBD continuum.			
Caveat: Given that a “state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country” (Associate Justice Louis Brandeis in <i>New State Ice Company v. Liebmann</i>, 285 U.S. 262), the categorizations above are generally accurate. A state’s laws and regulations often contain important nuance (amount, THC and/or CBD content, etc.) that this simple chart does not capture.			
Sources: VoteHemp.org (http://www.votehemp.com/state.html#Tablemed), ProCon.org (http://medicalmarijuana.procon.org/view.resource.php?resourceID=000881), Reason.com (http://reason.com/archives/2014/02/08/legal-pot-coming-soon-50-state-marijuana), National Conference of State Legislatures (http://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx); New York Times, July 24, 2014 map based on information from National Organization for the Reform of Marijuana Laws, National Conference of State Legislatures and new reports.			

Congressional Interest in the Reclassification of Industrial Hemp

Agriculture Act of 2014 ("Farm Bill")

The 113th Congress considered various changes to U.S. policies regarding industrial hemp during the omnibus farm bill debate.³⁴⁶ [On February 7, 2014, President Obama signed into law the Agricultural Act of 2014, becoming Public Law No: 113-79.] The Agricultural Act of 2014 ("farm bill", P.L. 113-79, §7606) provides that certain research institutions and state departments of agriculture may grow industrial hemp, as part of an agricultural pilot program, if allowed under state laws where the institution or state department of agriculture is located. The farm bill also established 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."³⁴⁷ The provision was included as part of the research title of the law.

This provision was adopted when 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) was to allow institutions of higher education to grow or cultivate industrial hemp for the purpose of agricultural or academic research, and applied to states that already permit industrial hemp growth and cultivation under state law. The amendment was adopted by the House of Representatives. Although 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.

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.

During conference on the House and Senate bills, the House provision was adopted with additional changes. The enacted law 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 department of agriculture is located.

Following is the full text of the industrial hemp research provision included in the 2014 Farm Bill:

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—

³⁴⁶ For information on the farm bill, see CRS Report R43076, The 2014 Farm Bill (P.L. 113-79): Summary and Side-by-Side.

³⁴⁷ P.L. 113-79 (§7606).

(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.³⁴⁸

Section 7606 authorizes research of industrial hemp by state Departments of Agriculture and institutions of higher education in states that have legalized research or the cultivation of industrial hemp. Congress defined 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.³⁴⁹

While Petitioners are appreciative of the herculean efforts by several members of the Senate and House of Representatives to ensure this provision was included into the final legislation, the language is limited to “agricultural pilot program” or other academic and/or agency research. Hence, the necessity of this administrative rulemaking petition.

Petitioners alternatively request DEA adopt the same definition for industrial hemp as Congress provided in the Agricultural Act of 2014, and therefore define marihuana under the CSA as greater than 0.3 percent Δ 9-THC by dry weight.

³⁴⁸ Agricultural Act of 2014. Public Law 113-79. February 7, 2014. 7 U.S. Code § 5940.

³⁴⁹ 7 U.S.C. § 5940(b)(2).

DEA's Blocking of Imported Viable [Industrial] Hemp Seeds

As the farm bill did not include an effective date distinct from the date of enactment, several states responded by making immediate plans to initiate new [industrial] hemp pilot projects.

The state of Kentucky, for example, announced plans for several pilot projects through the Kentucky Department of Agriculture.³⁵⁰ However, in May 2014, the Department's shipment of 250 pounds of imported [industrial] hemp seed from Italy was blocked by U.S. Customs officials at Louisville International Airport. DEA officials contend the action was warranted since the "importation of cannabis seeds continues to be subject to the Controlled Substances Imports and Export Act (CSIEA)"³⁵¹ and to the implementing regulations, which restrict persons from importing viable cannabis seed unless the person is registered with DEA and has obtained the necessary Schedule I research permit, among other requirements.

To facilitate release of the [industrial] hemp seeds, the Kentucky Department of Agriculture filed a lawsuit in U.S. District Court against the DEA, the Justice Department, U.S. Customs and Border Protection (CBP), and the U.S. Attorney General.³⁵² In the lawsuit, the Department contends that its efforts to grow industrial hemp are authorized under both state and federal law, and that the DEA should not seek to impose "additional requirements, restrictions, and prohibitions" on [industrial] hemp production beyond requirements in the 2014 farm bill, or otherwise interfere with its delivery of [industrial] hemp seeds.

Although Kentucky's seeds were eventually released and planted,³⁵³ these circumstances have resulted in uncertainty for U.S. [industrial] hemp growers. In response, Congress enacted additional legislation to stop DEA from taking similar actions in the future. (See discussion in "FY2015 Commerce-Justice-Science (C-J-S) Appropriations." [and "Consolidated Appropriations Act, 2016, Public Law No. 114-113"]).

Consolidated and Further Continuing Appropriations Act of 2015, Public Law No:113-235 FY2015 Commerce-Justice-Science (C-J-S) Appropriations

In response to actions taken by DEA to block seeds imported by some states in order to grow industrial hemp, and to avoid future similar actions by DEA to stall full implementation of the [industrial] hemp provision of the farm bill, Congress acted swiftly. Both the House and Senate FY2015 Commerce-Justice-Science (CJS) appropriations bills contain provisions to block federal law enforcement authorities from interfering with state agencies and [industrial] hemp growers, as well as to counter efforts to obstruct agricultural research. Both the House-passed and Senate committee-reported bills (H.R. 4660; S. 2437) contain a provision that "none of the funds made available" to the U.S. Department of Justice (DOJ) and the Drug Enforcement Agency (DEA) are to "be used in contravention" of the 2014 farm bill provision regarding

³⁵⁰ See, for example, Kentucky Department of Agriculture, "Industrial Hemp Program," <http://www.kyagr.com/marketing/hemp-pilot.html>.

³⁵¹ Letter from Joseph T. Rannazzisi, Deputy Assistant Administrator, DEA, to Luke Morgan, Counsel for Kentucky Department of Agriculture, May 13, 2014.

³⁵² Kentucky Department of Agriculture v. U.S. Drug Enforcement Agency, U.S. Customs and Border Protection, U.S. Justice Department, and Eric Holder (Western District of Kentucky, Louisville Division), May 2014, <http://media.kentucky.com/smedia/2014/05/14/16/44/X9Fs3.S0.79.pdf>.

³⁵³ Patton, "Hemp seeds planted in Central Kentucky for first time in decades," Lexington Herald-Ledger, May 27, 2014.

industrial hemp.³⁵⁴ The House bill further provides that no funds may be used to prevent a state from implementing its own state laws that “authorize the use, distribution, possession, or cultivation of industrial hemp” as defined in the 2014 farm bill provision, but this provision was not adopted.³⁵⁵

As further evidence of a this marked shift of congressional support of industrial hemp, it is worth examining closely the amendments offered and the votes on them in the 2014 CJS appropriations bill. Two amendments directly addressed industrial hemp, one amendment with medical marijuana (which we note here for it being a surrogate for industrial hemp support) and one amendment having to do with banking and recreational marijuana, the latter two offered here as implied evidence of congressional support for industrial hemp.

After DEA delayed the importation of industrial hemp seed from overseas by the Kentucky Department of Agriculture as allowed by Section 7606 of the Agricultural Act of 2014,³⁵⁶ the House of Representatives responded by passing two amendments to the Commerce, Justice, Science and Related Agencies Appropriations Act of 2015.³⁵⁷

Rep. Suzanne Bonamici (D-1st-OR) offered this amendment, which was accepted:

*SEC. 557. None of the funds made available in this Act to the Department of Justice may be used to prevent a State from implementing its own State laws that authorize the use, distribution, possession, or cultivation of industrial hemp, as defined in section 7606 of the Agricultural Act of 2014 (Public Law 113–79).*³⁵⁸

The recorded vote was 237 ayes (66 Republicans and 171 Democrats) and 170 noes (154 Republicans and 16 Democrats).³⁵⁹

Rep. Thomas Massie (R.-4th-KY) offered this amendment (Massie Amendment), which was accepted:

*SEC. 560. None of the funds made available by this Act may be used in contravention of section 7606 (“Legitimacy of Industrial Hemp Research”) of the Agricultural Act of 2014 (Public Law 113–79) by the Department of Justice or the Drug Enforcement Administration.*³⁶⁰

³⁵⁴ H.R. 4660, §560; S. 2437 §220.

³⁵⁵ H.R. 4660, §557.

³⁵⁶ Public Law 113-79, Agricultural Act of 2014, Sec. 7606, “Legitimacy of Industrial Hemp Research.” 7 U.S. Code § 5940.

³⁵⁷ Commerce, Justice, Science and Related Agencies Appropriations Act of 2015 H.R.4660.EH, Enrolled House, May 30, 2014.

³⁵⁸ H.Amdt.745 to H.R.4660, Voted on 05/30/2014. <http://beta.congress.gov/amendment/113th-congress/house-amendment/745/actions>.

³⁵⁹ Final Vote Results for Roll Call 257, Clerk of the House, U.S. House of Representatives. May 30, 2014. <http://clerk.house.gov/evs/2014/roll257.xml>.

³⁶⁰ H.Amdt.754 to H.R.4660, Voted on 05/30/2014. <http://beta.congress.gov/amendment/113th-congress/house-amendment/754/actions>.

The recorded vote was 246 ayes (75 Republicans and 146 Democrats) and 170 noes (171 Republicans and 16 Democrats).³⁶¹

While not pertaining to industrial hemp, Petitioners note here, Rep. Dana Rohrabacher (R-46th-CA) offered this amendment (Rohrabacher Amendment), which was accepted:

*SEC. 558. None of the funds made available in this Act to the Department of Justice may be used, with respect to the States of Alabama, Alaska, Arizona, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Hawaii, Illinois, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Vermont, Washington, and Wisconsin, to prevent such States from implementing their own State laws that authorize the use, distribution, possession, or cultivation of medical marijuana.*³⁶²

The recorded vote was 219 ayes (49 Republicans and 172 Democrats) and 189 noes (170 Republicans and 17 Democrats).³⁶³

The U.S. House of Representatives of the 113th Congress was generally considered to be quite polarized (most members voting with their party's position was the norm) and overall quite conservative (Republicans were in the majority, there was a large block of "Tea Party" Republicans and almost no "liberal" or very few "moderate" Republicans). In the case of the three amendments noted within, it was significant numbers of Republican members that joined with most Democratic members that created the majority vote.

DEA's present position on industrial hemp is clearly in contrast with Congress.

On June 5, 2014, the Senate Committee on Appropriations voted to include a similar amendment pertaining to industrial hemp, by a margin of 22-8.³⁶⁴ There were 16 Democrats and 14 Republicans on that committee. Though the Ranking Member Sen. Richard Shelby (R-AL) opposed the amendment, several members of his party did not follow his lead.

In early 2014, the Department of the Treasury's Financial Crimes Enforcement Network issued guidance entitled "BSA [Bank Secrecy Act] Expectations Regarding Marijuana-Related Businesses."³⁶⁵ The guidance was based on earlier guidance from the U.S. Department of Justice,

³⁶¹ Final Vote Results for Roll Call 260, Clerk of the House, U.S. House of Representatives. May 30, 2014. <http://clerk.house.gov/evs/2014/roll260.xml>.

³⁶² H.Amdt.748 to H.R.4660, Voted on 05/30/2014. <http://beta.congress.gov/amendment/113th-congress/house-amendment/748/actions>.

³⁶³ Final Vote Results for Roll Call 258, Clerk of the House, U.S. House of Representatives. May 30, 2014. <http://clerk.house.gov/evs/2014/roll258.xml>.

³⁶⁴ Rob Hotakainen. "Hemp proponents, DEA at odds over Senate plan." June 8, 2014, McClatchy Washington Bureau. Published in Seattle Times (http://seattletimes.com/html/nationworld/2023794558_hempvotexml.html)

³⁶⁵ U.S. Department of the Treasury. February 14, 2014. Guidance: BSA Expectations Regarding marijuana-Related Business. http://www.fincen.gov/statutes_regs/guidance/pdf/FIN-2014-G001.pdf.

the Cole Memo, regarding how U.S. attorneys will enforce the federal marijuana laws in states that have legalized medical and/or recreational marijuana.³⁶⁶

On July 16, 2014, the House of Representatives expressly rejected an amendment that would “prohibit the use of funds to implement [that] guidance.”³⁶⁷ The amendment failed on a record vote with 186 votes (179 Republicans and 7 Democrats) in favor and 236 (46 Republicans and 190 Democrats) in opposition.³⁶⁸

On July 18, 2014, the House of Representatives approved an amendment to the Financial Services and General Government Appropriations Act of 2014:

*Sec. __. None of the funds made available in this Act may be used, with respect to the States of Alabama, Alaska, Arizona, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Illinois, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Vermont, Washington, or Wisconsin or the District of Columbia, to prohibit or penalize a financial institution from providing financial services to an entity solely because the entity is a manufacturer, producer, or person that participates in any business or organized activity that involves handling marijuana or marijuana products and engages in such activity pursuant to a law established by a State or a unit of local government.*³⁶⁹

The vote was 231 (45 Republicans and 186 Democrats) in favor and 180 (180 Republicans and 12 Democrats) opposed.

The final version of the CJS appropriations bill (H.R. 83), the Consolidated and Further Continuing Appropriations Act, 2015, was signed into law by President Obama on December 16, 2014, becoming Public Law No: 113-235.³⁷⁰ The enacted law includes both the Massie Amendment, Section 539, and the Rohrabacher Amendment, Section 538.³⁷¹

Section 539, which addresses industrial hemp research provides:

³⁶⁶ James M. Cole, Deputy Attorney General, U.S. Department of Justice, *Memorandum for All United States Attorneys: Guidance Regarding Marijuana Enforcement* (August 29, 2013), available at <http://www.justice.gov/iso/opa/resources/3052013829132756857467.pdf>.

³⁶⁷ Congress.gov. H.Amdt.1078 to H.R.5016. 113th Congress. <https://beta.congress.gov/amendment/113th-congress/house-amendment/1078>.

³⁶⁸ U.S. House of Representatives. Final Vote Results for Roll Call 418. <http://clerk.house.gov/evs/2014/roll418.xml>.

³⁶⁹ Congress.gov. H.Amdt.1086 to H.R.5016. <https://beta.congress.gov/amendment/113th-congress/house-amendment/1086/text>.

³⁷⁰ The Library of Congress, "H.R. 83", <https://www.congress.gov/bill/113th-congress/house-bill/83> (last visited Jan. 30, 2015).

³⁷¹ The Library of Congress, "H.R. 83", <https://www.congress.gov/bill/113th-congress/house-bill/83/text> (last visited Jan. 30, 2015).

*None of the funds made available by this Act may be used in contravention of section 7606 ("Legitimacy of Industrial Hemp Research") of the Agricultural Act of 2014 (Public Law 113-79) by the Department of Justice or the Drug Enforcement Administration.*³⁷²

Petitioners offer the results of these votes into evidence in this petition for administrative rulemaking only insofar as it is indirectly indicative of congressional attitudes toward industrial hemp. Since industrial hemp is not marijuana of any kind and cannot be used for the purposes for which marijuana is used, it is safe to infer that Congress is even more disposed toward industrial hemp than it is toward marijuana.

Petitioners request DEA to acknowledge the legislation enacted by Congress that has restricted DEA's authority in regulating industrial hemp. Again, Petitioners formally request DEA to revise the definition of a "marihuana" to not include "industrial hemp," which is the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a THC:CBD ratio of less than 1, and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis. Alternatively, Petitioners request DEA to define marihuana as the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of more than 0.3 percent on a dry weight basis.

Consolidated Appropriations Act, 2016, Public Law No. 114-113³⁷³

President Obama signed into law the Consolidated Appropriations Act, 2016 on December 18, 2015 which contained the following two sections, restricting not only DOJ and DEA interference with industrial hemp, but removing all funding from all federal agencies used to "prohibit the transportation, processing, sale, or use of industrial hemp that is grown or cultivated in accordance with subsection section 7606 of the Agricultural Act of 2014, within or outside the State in which the industrial hemp is grown or cultivated."³⁷⁴

SEC. 543.

None of the funds made available by this Act may be used in contravention of section 7606 ("Legitimacy of Industrial Hemp Research") of the Agricultural Act of 2014 (Public Law 113-79) by the Department of Justice or the Drug Enforcement Administration.

This division may be cited as the "Commerce, Justice, Science, and Related Agencies Appropriations Act, 2016".

SEC. 763.

None of the funds made available by this Act or any other Act may be used—

³⁷² The Library of Congress, "H.R. 83", <https://www.congress.gov/bill/113th-congress/house-bill/83/text> (last visited Jan. 19, 2015).

³⁷³ Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, <https://www.congress.gov/bill/114th-congress/house-bill/2029/text>.

³⁷⁴ Consolidated Appropriations Act, 2016, Pub. L. No. 114-113, <https://www.congress.gov/bill/114th-congress/house-bill/2029/text>.

(1) in contravention of section 7606 of the Agricultural Act of 2014 (7 U.S.C. 5940); or
(2) to prohibit the transportation, processing, sale, or use of industrial hemp that is grown or cultivated in accordance with subsection section 7606 of the Agricultural Act of 2014, within or outside the State in which the industrial hemp is grown or cultivated.

U.S. State Cultivation of Industrial Hemp

In 2013, Colorado became the first state to cultivate industrial hemp since 1957.³⁷⁵

In 2014, industrial hemp research took place in Colorado, Kentucky, and Vermont.³⁷⁶ Research conducted in Colorado and Kentucky was pursuant to Section 7606 of the Agricultural Act of 2014 (Farm Bill).³⁷⁷ DEA authorized the Kentucky Department of Agriculture and the Colorado Department of Agriculture to import viable industrial hemp seed for use in pilot programs and for industrial hemp research pursuant to Section 7606.³⁷⁸ During 2014, the Kentucky Department of Agriculture imported viable industrial hemp seed and distributed the seed to state-licensed growers and researchers.³⁷⁹

In 2015 industrial hemp research took place in Colorado, Kentucky, Vermont, Tennessee, Indiana, Hawaii, Oregon, and North Dakota. The Tennessee Department of Agriculture also imported viable industrial hemp seeds and distributed the seeds to state-licensed researchers.³⁸⁰ Select universities throughout the country have also imported viable industrial hemp seeds to conduct research. (See below, "U.S. Universities Conducting Industrial Hemp Research Pursuant to the Agricultural Act of 2014").

U.S. Universities Conducting Industrial Hemp Research Pursuant to the Agricultural Act of 2014

³⁷⁵ Steve Raabe, Colorado Farmer Harvests First U.S. Commercial Hemp Crop in 56 Years, THE DENVER POST, Oct. 7, 2013, http://www.denverpost.com/breakingnews/ci_24259474/colorado-farmer-harvestsfirst-u-s-commercial-hemp, archived at <http://perma.cc/A8GE-SCPC>.

³⁷⁶ See Luke Runyon, Harvest Public Media, *Now Appearing: Hemp, For First Time In Decades*, netnebraska.org, June 16, 2014, available at <http://netnebraska.org/article/news/921662/now-appearing-hemp-first-time-decades>. Phone interview with Tim Schmalz, Vt. Agency of Agric., Plant Industry Section, August 21, 2014, 802-279-2090. See Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Envtl. L. Rev. 383 (May 2015).

³⁷⁷ Telephone Interview with Duane Sinning, Colo. Dep't of Agric., Oct. 22, 2014, 303-869-9068. Telephone Interview with Adam Watson, Ky. Dep't of Agric., Oct. 23, 2014, 502-782-4133. See Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Envtl. L. Rev. 383 (May 2015).

³⁷⁸ *Id.*

³⁷⁹ Telephone Interview with Adam Watson, Ky. Dep't of Agric., Oct. 23, 2014, 502-782-4133. See Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Envtl. L. Rev. 383 (May 2015).

³⁸⁰ See Shelley Kimel, Knoxville News Sentinel, *Industrial hemp seed inches closer to TN farmers' hands*, knoxnews.com, April 24, 2015, available at <http://www.knoxnews.com/business/industrial-hemp-seed-inches-closer-to-tn-farmers-hands-ep-1053525587-362300691.html>. See Nathan Baker, Johnson City Press, *Hemp farmers waiting for delivery of seeds*, johnsoncitypress.com (May 19, 2015) available at <http://www.johnsoncitypress.com/Local/2015/05/18/Hemp-farmers-waiting-for-delivery-of-seeds>.

The following is a list of U.S. universities engaged in the cultivation and/or research of industrial hemp:

- i. University of Kentucky³⁸¹
- ii. Murray State University³⁸²
- iii. Eastern Kentucky University³⁸³
- iv. Western Kentucky University³⁸⁴
- v. Morehead State University³⁸⁵
- vi. St. Catharine College³⁸⁶
- vii. University of Pikeville³⁸⁷
- viii. Kentucky State University³⁸⁸
- ix. University of Hawaii³⁸⁹
- x. Colorado State University³⁹⁰
- xi. University of Colorado³⁹¹
- xii. Adams State University³⁹²
- xiii. University of Vermont³⁹³
- xiv. Purdue University³⁹⁴
- xv. Middle Tennessee State University³⁹⁵
- xvi. North Dakota State University³⁹⁶
- xvii. University of Minnesota³⁹⁷
- xviii. West Virginia University³⁹⁸
- xix. Unity College
- xx. Oregon State University³⁹⁹

³⁸¹ David Williams, Ph.D., david.williams@uky.edu, 859-257-2715.

³⁸² Tony Brannon, Ph.D., tbrannon@murraystate.edu, 270-809-6923.

³⁸³ Bruce Pratt, Ph.D., bruce.pratt@eku.edu, 859-622-7316.

³⁸⁴ Paul Woosley, Ph.D., paul.woosley@wku.edu, 270-745-5967.

³⁸⁵ Flint Harrelson, Ph.D., f.harrelson@moreheadstate.edu, 606-783-2671.

³⁸⁶ Shawn Lucas, Ph.D., shawnlucas@sccky.edu, 859-336-5082, ext. 1249.

³⁸⁷ Thomas Hess, Ph.D., thomashess@upike.edu, 606-218-5475.

³⁸⁸ Teferi Tsegaye Ph.D., teferi.tsegaye@kysu.edu, 502-597-6311.

³⁸⁹ Harry Ako, Ph.D., hako@hawaii.edu, 808-956-2012.

³⁹⁰ John McKay, Ph.D., John.McKay@ColoState.edu, 970-491-5730.

³⁹¹ Nolan Kane, Ph.D., Nolan.Kane@Colorado.edu, 303-492-3726.

³⁹² Kristy Duran, Ph.D., klduran@adams.edu, 719-587-7767.

³⁹³ Heather Darby, Ph.D., heather.darby@uvm.edu, 802-524-6501.

³⁹⁴ Ron Turco, Ph.D., rturco@purdue.edu, 765-494-8077; Janna Beckerman, jbeckerm@purdue.edu, 765-494-4628.

³⁹⁵ Song Cui, Ph.D., Song.Cui@mtsu.edu, 615-898-5833; Clint Palmer.

³⁹⁶ Burton Johnson, Ph.D., burton.johnson@ndsu.edu, 701-231-8895.

³⁹⁷ George Weiblen, Ph.D., gweiblen@umn.edu, 612-624-3461.

³⁹⁸ Louis McDonald, Ph.D., lmmcdonald@mail.wvu.edu, 304-293-2842.

³⁹⁹ Jay Noller, Ph.D., jay.noller@oregonstate.edu, 541-737-2821. On Thursday, November 5, 2015 OSU formally announced that the Crop and Soil Science Department within the College of Agricultural Sciences filed for a DEA Registration to conduct industrial hemp research.³⁹⁹ The OSU press release explains that "[t]he research likely would focus on learning more about the crop's productivity, yield and growing conditions in western Oregon." OR. STATE. UNIV., News and Research Communications, *OSU Applying to Feds For Permission to Conduct Industrial Hemp Research*, (Nov. 5, 2015) available at <http://oregonstate.edu/ua/ncs/archives/2015/nov/osu-applying-feds-permission-conduct-industrial-hemp-research>.

These universities are lawfully conducting research on industrial hemp, pursuant to Section 7606 of the Agricultural Act of 2014. In 2016, it is likely that many more universities will be developing industrial hemp research programs.

Request for a Hearing

Pursuant to 21 C.F.R. § 1308.42, Petitioners hereby request a hearing with respect to this petition. Petitioners specifically request a hearing allowing for cross-examination of the designee of the Secretary of Health and Human Services who prepares any report(s) and provides any recommendation(s) on any such proposed change to the drug Schedules (21 U.S.C. §811(b)).

Conclusions

[Industrial h]emp 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 [industrial] 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 [industrial] hemp—as well as those to legalize medical marijuana—are a front for individuals and organizations whose real aim is to see marijuana decriminalized.⁴⁰⁰

[Industrial h]emp production in the United States also faces competition from other global suppliers. The world market for [industrial] hemp products remains relatively small, and China, as the world's largest [industrial] 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.⁴⁰¹ Canada's head start in the North American market for [industrial] hemp seed and oil also would likely affect the profitability of a start-up industry in the United States.

Nevertheless, the U.S. market for [industrial] hemp-based products has a highly dedicated and growing demand base, as indicated by recent U.S. market and import data for [industrial] 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 [industrial] hemp industry in the United States could provide opportunities as an economically viable alternative crop for some U.S. growers.

⁴⁰⁰ 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 RL33211, *Medical Marijuana: Review and Analysis of Federal and State Policies*.

⁴⁰¹ 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.

Industrial hemp has incorrectly been classified as "marihuana", a Schedule I controlled substance, and therefore its production has been prohibited under the CSA.⁴⁰² Industrial hemp is not marijuana.⁴⁰³ Industrial hemp is a distinct variety within the genus *Cannabis*, as is marijuana, and the two are distinguishable. While marijuana typically contains more than 3 percent THC concentration, industrial hemp contains less than 1 percent THC concentration.⁴⁰⁴

Petitioners formally request DEA to revise the definition of a "marihuana" to not include "industrial hemp," which is the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a THC:CBD ratio of less than 1, and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis.

Petitioners alternatively request that the definition of "marihuana" exclude *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, well below the "intoxication threshold" of 1 percent.

Industrial hemp cultivation will not result in the "covert production of high-THC marijuana".⁴⁰⁵ Due to concerns of cross-pollination anyone who cultivates industrial hemp would not want marijuana anywhere near their industrial hemp field for risk that the marijuana would cross-pollinate with the industrial hemp and increase overall THC concentration in the next generation's crop above the currently allowable 0.3% THC concentration limit. Marijuana growers share the reciprocal concern of having overall THC concentration lowered in the next crop.⁴⁰⁶ Marijuana growers have the additional concern of having male industrial hemp plants fertilizing female marijuana plants causing them to seed, reducing the marijuana's value.⁴⁰⁷

Industrial hemp and marijuana are distinguishable in many ways. Industrial hemp has a THC:CBD ratio of less than 1, while marijuana has a THC:CBD ratio of greater than 1.⁴⁰⁸ Industrial hemp is produced for its fiber, seed, and oil to manufacture into a variety of commercial products.⁴⁰⁹ Marijuana is produced for its flowers or buds and its high-THC

⁴⁰² See 21 U.S.C. 801(16).

⁴⁰³ See 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).

⁴⁰⁴ See Raphael Mechoulam, "Cannabis—A Valuable Drug That Deserves Better Treatment," Mayo Clinic Proceedings February 2012; 87(2):107-109. doi:10.1016/j.mayocp.2011.12.002. See also Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 1, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

⁴⁰⁵ See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 26, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>. See also J. C. Callaway, *A More Reliable Evaluation of Hemp THC Levels is Necessary and Possible*, *Journal of Industrial Hemp*, Vol. 13(2) (2008).

⁴⁰⁶ See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 4, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

⁴⁰⁷ See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 4, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

⁴⁰⁸ See Karl W. Hillig and Paul G. Mahlberg, 2004. A Chemotaxonomic Analysis of Cannabinoid Variation in *Cannabis* (Cannabaceae). *American Journal of Botany* 91(6): 966-975.

⁴⁰⁹ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 3, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

concentration.⁴¹⁰ Industrial hemp plants are planted densely, and grow between 6 and 15 feet in height.⁴¹¹ Marijuana plants, on the other hand, are encouraged to branch and flower, often growing between 1 to 5 feet in height.⁴¹² Industrial hemp plants are encouraged to and are grown long enough to go to seed, unlike marijuana that is starved from fertilization to prevent the plant from seeding.⁴¹³ Industrial hemp is not marijuana or "marihuana".

Industrial hemp does not meet the criteria to fit within any of the Schedules of controlled substances, especially not Schedule I. Schedule I drugs are listed as such for their "high potential for abuse" and lack of "accepted medical use".⁴¹⁴ Evaluating industrial hemp under the eight main criteria that DEA and the Secretary of Health and Human Services must consider in determining whether to remove an "other substance" from the Schedules, concludes that industrial hemp has no potential for abuse.⁴¹⁵ Industrial hemp contains less than 1 percent THC.

This rulemaking petition requests DEA to revise the definition of a "marihuana" to not include "industrial hemp," which is the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a THC:CBD ratio of less than 1, and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis.

This rulemaking petition alternatively requests that the definition of "marihuana" be amended to exclude *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, well below the "intoxication threshold" of 1 percent THC.

In addition to its low THC level, industrial hemp has a low THC:CBD ratio (< 1). Industrial hemp contains relatively high levels of cannabidiol (CBD), which effectively acts as an antidote to THC.⁴¹⁶ Industrial hemp is not intoxicating. There is no potential for abuse. Therefore, industrial hemp does not fit within the classification for Schedule I or any Schedule. Industrial hemp does not have an accepted medical use in the United States. Therefore, industrial hemp does not fit within the classification for Schedules II-V. Industrial hemp does not fit within the CSA drug schedule.

⁴¹⁰ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 4, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

⁴¹¹ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 3, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

⁴¹² See also Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 3, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

⁴¹³ Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 3, <http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

⁴¹⁴ Drug Enforcement Agency, *Drug Schedules-Schedule I*, <http://www.justice.gov/dea/druginfo/ds.shtml> (last visited Dec. 4, 2013).

⁴¹⁵ 21 U.S.C. § 811(c).

⁴¹⁶ See Franjo Grotenhermen. Effects of Cannabis and the Cannabinoids. in Franjo Grotenhermen and Ethan Russo, editors. 2002. Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential. Haworth Press. New York.

Petitioners therefore make this formal rulemaking petition request to DEA to make the following revision to 21 C.F.R. § 1308.11(d)(23) in the list of Schedule I drugs (additional wording in **bold**):

(23) Marihuana, **but not including “industrial hemp,” which is the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a THC:CBD ratio of less than 1, and a delta-9 tetrahydrocannabinol concentration of not more than 1 percent on a dry weight basis.**

In the alternative⁴¹⁷, this formal rulemaking petition requests DEA to revise 21 C.F.R. § 1308.11(d)(23), to include the phrase,

(23) Marihuana, **but not including “industrial hemp,” which is 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.**

Additionally, Petitioners request that 21 C.F.R. § 1308.11(d)(31) also be revised to comport with the proposed revision to § 1308.11(d)(23) (additional wording in **bold**, deleted wording in *italics*):

(31) Tetrahydrocannabinols

Meaning tetrahydrocannabinols naturally contained in *a plant of the genus *Cannabis* (cannabis plant)* **marihuana as defined in subparagraph (23)**, as well as synthetic equivalents of the substances contained **in a plant of the genus *Cannabis* in the cannabis plant**, or in the resinous extractives of such plant, and/or synthetic substances, derivatives, and their isomers with similar chemical structure and pharmacological activity to those substances contained in the plant, such as the following:

1 cis or trans tetrahydrocannabinol, and their optical isomers

6 cis or trans tetrahydrocannabinol, and their optical isomers

3, 4 cis or trans tetrahydrocannabinol, and its optical isomers

(Since nomenclature of these substances is not internationally standardized, compounds of these structures, regardless of numerical designation of atomic positions covered.)

Petitioners request a hearing allowing for cross-examination of the designee of the Secretary of Health and Human Services who prepares any report(s) and provides any recommendation(s) on any such proposed change to the drug Schedules (21 U.S.C. §811(b)).

⁴¹⁷ The alternative proposed revision to 21 C.F.R. § 1308.11(d)(23) is taken verbatim from the definition of industrial hemp, specified by Congress, in the Agricultural Act of 2014 (Farm Bill):

(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.

Agricultural Act of 2014. Public Law 113-79. February 7, 2014. 7 U.S.C. § 5940.

Though DEA is limited by law to making a decision on this petition based on whether or not it continues to contend that industrial hemp and marijuana are one in the same, petitioners want to include in the record other evidence that can contribute to the political debate.

Most “marijuana” confiscated by law enforcement in the United States is, in fact, industrial hemp (Appendix A).

The vast majority of Americans favor the relegalization of industrial hemp (Appendix B).

Historical production in the United States was significant (Appendix C).

International production is significant (Appendix D) and much of it is imported to the United States (Appendix E), which has a significant retail market (Appendix F). The market potential for industrial hemp products, if the source material could be freely grown domestically, is significant (Appendix G).

Whether or not industrial hemp cultivation and manufacture will be profitable and sustainable is of no concern to DEA (Appendix H).

The environmental benefits of industrial hemp cultivation and manufacture are significant (Appendix I).

The US Government, through other agencies than DEA, behave differently—sometimes more and sometimes less rationally—than DEA (Appendix J).

The current USDOJ policy of announced forbearance of prosecution for “marijuana” crimes is not something that can be relied upon to foster an industrial hemp industry (Appendix K).

The authors of this petition would like to acknowledge with appreciation the financial contributions of supporters of this petition made through the Relegalizing Industrial Hemp Project Indiegogo Campaign (Appendix L). **THANK YOU!**

Congress could amend the Controlled Substances Act to deschedule industrial hemp and there are bills in Congress to do so (Appendix M). Although Congress is considering legislating what petitioners are requesting in this rulemaking petition, DEA is nonetheless required by law to rule in favor of petitioners, as Congress has delegated the authority (Controlled Substances Act) and the requirement to do so (Administrative Procedure Act).

On April 4, 2016 DEA provided public notice in response to a December 21, 2015 letter from U.S. Senators that DEA is reviewing HHS scientific and medical evaluations and a scheduling recommendation to make a scheduling determination in accordance with the CSA, "and hopes to release its determination in the first half of 2016."⁴¹⁸

⁴¹⁸ Chuck Rosenberg, Acting Adm'r., Drug Enforcement Admin., Sylvia M. Burwell, Sec'y, U.S. Dep't Health and Human Services, Michael Botticelli, Dir., Office of Nat'l. Drug Control Policy, *Letter in Response to U.S. Senators December 21, 2015 letter*, 1-3 (April 4, 2016), available at <http://big.assets.huffingtonpost.com/dearesponse.pdf>.

It is useful to look to our neighbors to the North who have long had a more rational policy toward industrial hemp than the United States (Appendix N).

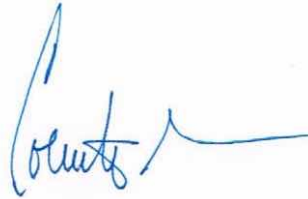
Whether or not DEA plans to reschedule real (intoxicating) marijuana, now is the time for DEA to take action, and remove industrial hemp from the definition of marihuana under the CSA consistent with the conclusive scientific evidence that industrial hemp is not marijuana.

The evidence is clear and convincing and the law requires it.

Respectfully Submitted,



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APPENDICES

- A. Law Enforcement Resources Misallocated to Address A Problem That Doesn't Exist: Industrial Hemp Is Distinguishable from Marijuana
- B. The Vast Majority of Americans Favor Relegalization of Industrial Hemp
- C. Historical U.S. Production
- D. International Production
- E. U.S. Industrial Hemp Imports
- F. Estimated U.S. Retail Market
- G. U.S. Market Potential
- H. DEA Has No Role in Judging Economic Viability of Industrial Hemp
- I. Environmental Benefits of Industrial Hemp
- J. U.S. Government Behaves Inconsistently in Regard to Industrial Hemp
- K. Any Voluntary Forbearance Policy of Federal Government Neither Adequate or Just
- L. Public Supporters of the Relegalizing Industrial Hemp Project Indiegogo Campaign
- M. *Industrial Hemp Production in Canada*
- N. Pending Congressional Legislation Pertaining to Industrial Hemp
- O. Petitioner Statements

Appendix A

Law Enforcement Resources Misallocated to Address A Problem That Doesn't Exist: Industrial Hemp Is Distinguishable from Marijuana

An increasingly prevalent source of funding for local law enforcement is federal anti-drug money. Most of the "marijuana" plants seized by law enforcement in the United States are nothing more than industrial hemp.

A 1998 examination by the Vermont State Auditor found:

*Overall, the national total of ditchweed eradicated compared to the total number of plants seized is 99.28% resulting in a less than 1% cultivated indoor and outdoor plant eradication percentage at the national level.*⁴¹⁹

A 1995 audit by the USDOJ's Office of Inspector General disputed the number of *Cannabis* plants qualified for reporting under DEA's Domestic Cannabis Eradication/Suppression Program, but not the total number of plants seized. Tables were presented for two states showing that "ditchweed" (defined in the report as "Scattered marijuana plants which are naturally wild growing and are not normally tended to by any individuals") were 99.9% of the "marijuana" seized in State A and 93.7% of the "marijuana" seized in State B.⁴²⁰ Given the plants were both scattered and unattended it is reasonable to conclude that the "ditchweed" did not contain enough THC to be intoxicating.

Because law enforcement essentially gets compensated for seizing any kind of "marijuana," local law enforcement has an incentive to inflate the body count by seizing "ditchweed" — feral industrial hemp growing along the edge of farm fields left over from the time when it was intentionally grown. Any Midwestern kid knows the difference between ditchweed and dope. Actually most Midwestern cops do too, so it's all the more ironic to see the annual news stories of law enforcement seizing (actually "harvesting" their own cash crop) huge amounts of "marijuana".⁴²¹

Over 30 industrialized democracies distinguish industrial hemp from marijuana, including Canada, which relegalized the cultivation of industrial hemp in 1998.⁴²² International treaties — ratified by the United States — regarding marijuana make exceptions for industrial hemp. Two U.S. presidential executive orders define industrial hemp as an "essential natural resource" and Congressional legislation authorizes the cultivation of industrial hemp for research purposes.

⁴¹⁹ State Auditor of Vermont. 1998. State Auditor's Report On The Domestic Cannabis Eradication Suppression Program And The Edward Byrne Memorial Formula Grant.
<http://auditor.vermont.gov/sites/auditor/files/cannibis.pdf>

⁴²⁰ USDOJ Office of Inspector General. April 1995. The Drug Enforcement Administration's Domestic Cannabis Eradication/Suppression Program. April 1995. Audit Report 95-20.
<http://www.justice.gov/oig/reports/DEA/a9520.htm>

⁴²¹ Sholts, Erwin A. ("Bud") Sholts. January 2, 2015. Attached.

⁴²² Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, July 24, 2013, 1, 9-10,
<http://www.fas.org/sgp/crs/misc/RL32725.pdf>.

R. James Woolsey, former CIA Director and member of North American Industrial Hemp Council, commented at the Senate Bill 50 hearing in Kentucky,

*There are 35 industrial western countries that permit the growing of [industrial] hemp. We have taken a careful look at this in the North American Industrial Hemp Council. We cannot find one that has had a problem in distinguishing industrial hemp from marijuana. Canada, our next door neighbor, with this policy now for a decade plus, doesn't have a problem distinguishing industrial hemp from marijuana.*⁴²³

If Canadian Mounties, British Bobbies and French Gendarmes can distinguish between different varieties of *C. sativa*, then why can't American cops? They can. It's time to remove industrial hemp from the definition of "marihuana" under the CSA and allow U.S. farmers to cultivate industrial hemp for commercial purposes.

⁴²³ R. James Woolsey, Kentucky Senate Bill 50 Hearing before Senate Agriculture Committee, February 11, 2013, http://www.youtube.com/watch?v=0pL3gdWW04A&list=PLgGfXJrJK_-YsakAMxEWNdgxZ6LJ0Kxf5 (last visited April 14, 2013).

Appendix B

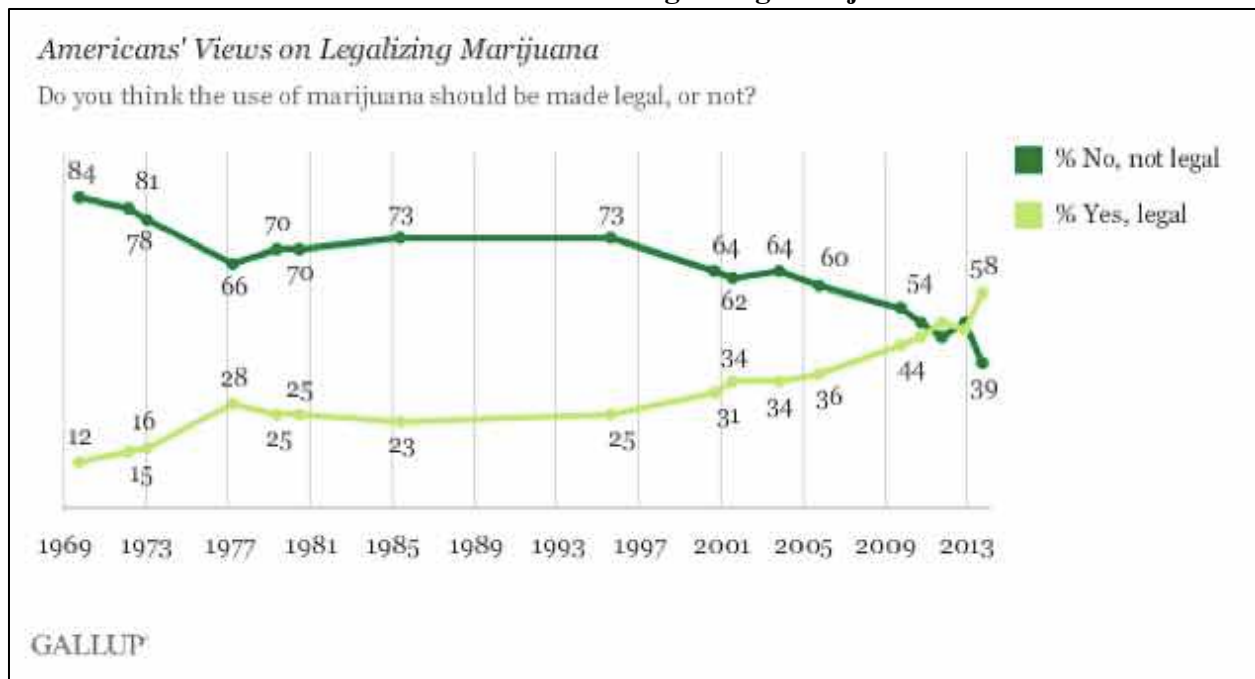
The Vast Majority of Americans Favor Relegalization of Industrial Hemp

Gallup, one of the nation's premier polling organizations, has been asking this question to a representative sample of Americans since 1969: "Do you think that the use of marijuana should be made legal or not?"⁴²⁴

In 1969, the year before the enactment of the CSA of 1970, 84% of Americans were opposed to the legalization of marijuana, while only 12% were in favor. In 2013, 58% are in favor, while 39% are opposed (Figure B-1).

While the Gallup question only addressed real marijuana and not industrial hemp, given that most Americans know the difference between industrial hemp and marijuana, it is reasonable to assume an even greater majority would favor industrial hemp legalization, hence this evidence is included in this petition.

Figure B-1
Americans' Views on Legalizing Marijuana



Source: Gallup

Gallup noted in reporting their poll results:

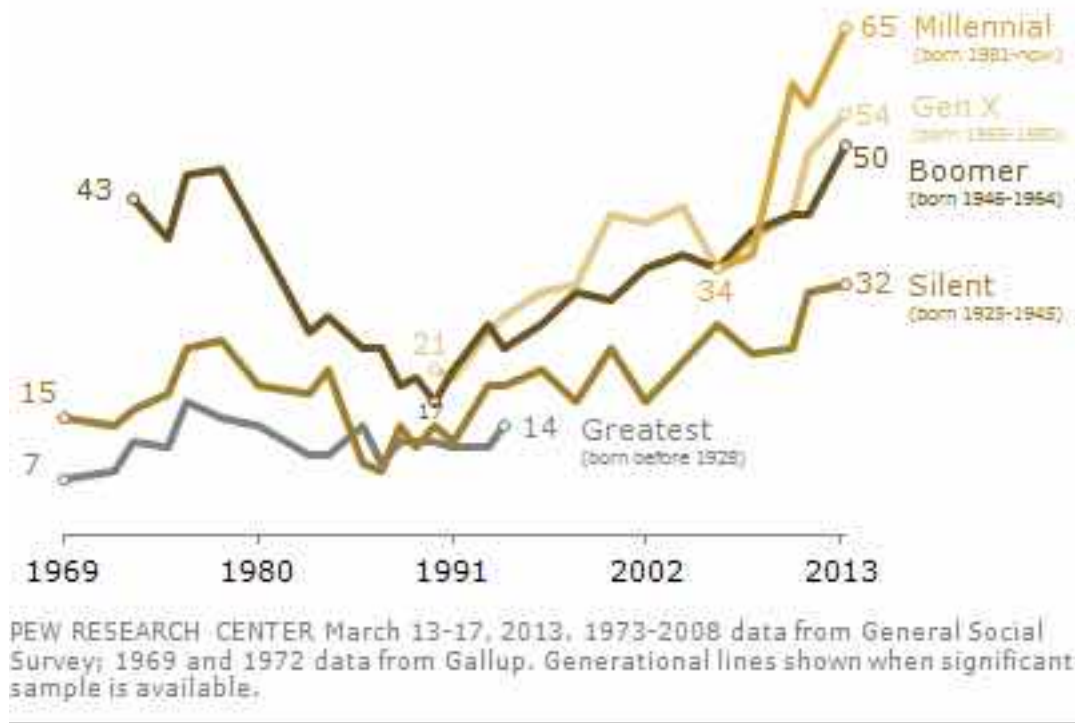
⁴²⁴ Art Swift. "For the First Time, Americans Favor Legalizing Marijuana: Support Surges 10 Percentages Points in Past Year, to 58%" Gallup Politics. <http://www.gallup.com/poll/165539/first-time-americans-favor-legalizing-marijuana.aspx>.

Americans 65 and older are the only age group that still opposes legalizing marijuana. Still, support among this group has jumped 14 percentage points since 2011.

In contrast, 67% of Americans aged 18 to 29 back legalization. Clear majorities of Americans aged 30 to 64 also favor legalization.

As the generations inevitably continue to age, it is reasonable to project that political support reasonably inferred for legalization of industrial hemp will continue to increase (Figure B-2).

Figure B-2
Marijuana Legalization Support By Voter Cohort



Other reputable polling yield consistent results with similar polls from Quinnipiac University,⁴²⁵ Pew Research Center,⁴²⁶ YouGov/Huffington Post,⁴²⁷ CNN/ORC Poll,⁴²⁸ • CBS News,⁴²⁹ and NBC News/Wall Street Journal.⁴³⁰

⁴²⁵ “American Voters Back Legalized Marijuana Quinnipiac University National Poll Finds” Dec. 5, 2012. Quinnipiac University. <http://www.quinnipiac.edu/news-and-events/quinnipiac-university-poll/national/release-detail?ReleaseID=1820>.

⁴²⁶ “Majority Now Supports Legalizing Marijuana.” 4 April 2013. Pew Research Center for the People and the Press. <http://www.people-press.org/2013/04/04/majority-now-supports-legalizing-marijuana/>

⁴²⁷ Poll Results: Marijuana. Nov. 4, 2013. YouGov. <http://today.yougov.com/news/2013/11/04/poll-results-marijuana/> and Omnibus Poll. April 6-17, 2013, YouGov, http://big.assets.huffingtonpost.com/toplines_Marijuana_0416172013.pdf.

⁴²⁸ CNN/ORC Poll; January 6, 2014. <http://i2.cdn.turner.com/cnn/2014/images/01/06/cnn.orc.poll.marijuana.pdf>.

Appendix C

Historical U.S. Production

[Industrial h]emp was widely grown in the United States from the colonial period into the mid-1800s; fine and coarse fabrics, twine, and paper from [industrial] hemp were in common use.

The USS Constitution (aka “Old Ironsides”), the “world’s oldest commissioned naval vessel afloat,”⁴³¹ first set sail in 1797 and was originally rigged with 60 tons of canvas and rope (including the 25-inch-circumference anchor cable) made of industrial hemp.⁴³²

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,⁴³³ and provided assistance to farmers promoting production and distribution.⁴³⁴ In the early 1900s, [industrial] hemp continued to be grown and researchers at USDA continued to publish information related to [industrial] hemp production and also reported on [industrial] hemp’s potential for use in textiles and in paper manufacturing.⁴³⁵ Several [industrial] 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.⁴³⁶

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.⁴³⁷ The 1937 Marihuana Tax Act defined [industrial] hemp as a narcotic drug, requiring that farmers growing [industrial] hemp hold a federal registration and special tax stamp, effectively limiting further production expansion.

[Industrial h]emp was briefly brought back into large-scale production during World War II, at the urging of USDA, to provide for “products spun from American-grown hemp” including “twine of various kinds for tying and upholsters work; rope for marine rigging and towing; for hay forks,

⁴²⁹ Majority of Americans Now Support Legal Pot, Poll Says. January 23, 2014. CBS News. <http://www.cbsnews.com/news/majority-of-americans-now-support-legal-pot-poll-says/>.

⁴³⁰ Michael O’Brien. Poll: Majority of Americans Support Efforts to Legalize Marijuana. January 27, 2014. NBC News. http://nbcpolitics.nbcnews.com/_news/2014/01/27/22470647-poll-majority-of-americans-support-efforts-to-legalize-marijuana?lite.

⁴³¹ Wikipedia. USS Constitution. http://en.wikipedia.org/wiki/USS_Constitution. (accessed July 24, 2014)

⁴³² Brittain B. Robinson (author) and Raymond Evans (director). 1942. *Hemp for Victory!* (film) U.S. Department of Agriculture.

https://ia600504.us.archive.org/13/items/Hemp_for_victory_1942_FIXED/Hemp_for_victory_1942_FIXED.mpg

⁴³³ 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>.

⁴³⁴ 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.

⁴³⁵ 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>.

⁴³⁶ See links at <http://www.thehia.org/history.html> and <http://www.hemphistoryweek.com/timeline.html>.

⁴³⁷ 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.

derricks, and heavy duty tackle; light duty fire hose; thread for shoes for millions of American soldiers; and parachute webbing for our paratroopers,” as well as “hemp for mooring ships; hemp for tow lines; hemp for tackle and gear; hemp for countless naval uses both on ship and shore.”⁴³⁸⁴³⁹

In 1943, U.S. [industrial] hemp production reached more than 150 million pounds (140.7 million pounds [industrial] hemp fiber; 10.7 million pounds [industrial] 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.⁴⁴⁰

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

⁴³⁸ Text from a short film produced by USDA in 1942, “Hemp for Victory,” to promote the cultivation of hemp during WWII. Text from this film, as reported by HIA, is available at <http://www.hempology.org/ALLARTICLES.html>. See Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014,

⁴³⁹ This paragraph about the industrial hemp production in World War II is not in the June 25, 2014 version of CRS’s *Hemp as An Agricultural Commodity*. This paragraph is lifted from the July 24, 2013 version. It was also in versions in 2010 and 2012.

⁴⁴⁰ 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.”

Appendix D

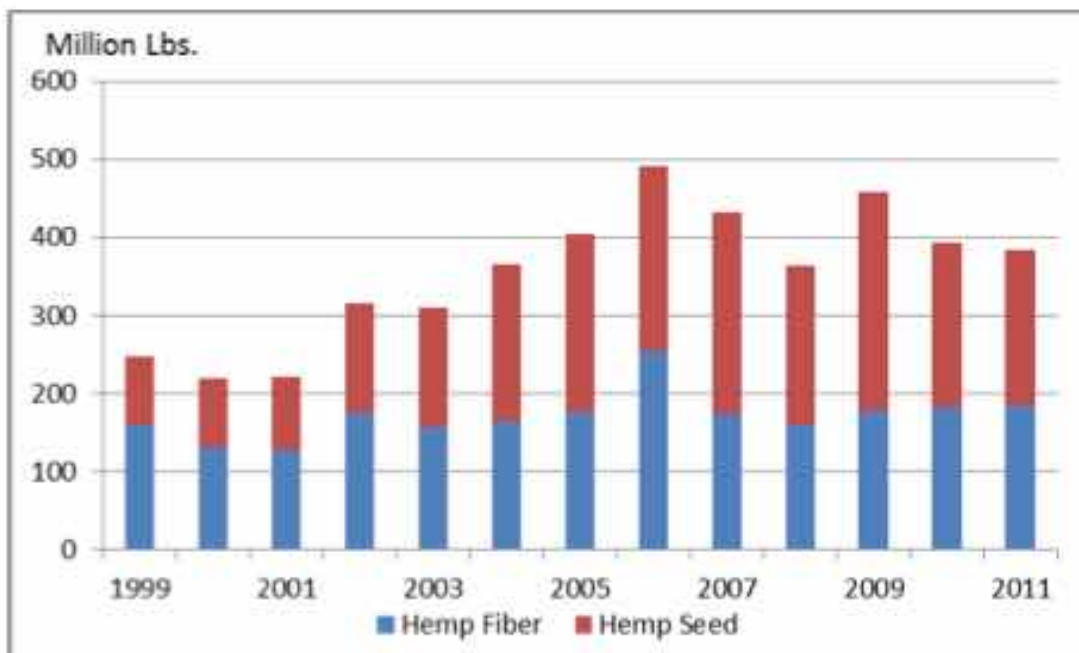
International Production

As a matter of law in most industrial democracies, industrial hemp is not marijuana.

Approximately 30 countries in Europe, Asia, and North and South America currently permit farmers to grow [industrial] hemp. Some of these countries never outlawed production, while some countries banned production for certain periods in the past. China is among the largest producing and exporting countries of [industrial] 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 [industrial] hemp market, with production in most member nations. Production is centered in France, the United Kingdom, Romania, and Hungary.⁴⁴¹

Acreage in industrial hemp cultivation worldwide has been mostly flat to decreasing, reported at about 200,000 acres globally in 2011.⁴⁴² 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 [industrial] hemp seed (Figure D-1). Upward trends in global [industrial] hemp seed production roughly track similar upward trends in U.S. imports of [industrial] hemp seed and oil, mostly for use in [industrial] hemp-based foods, supplements, and body care products (Table E-1 (Table I in original)).

Figure D-1
Industrial Hemp Fiber and Seed, Global Production (1999-2011)



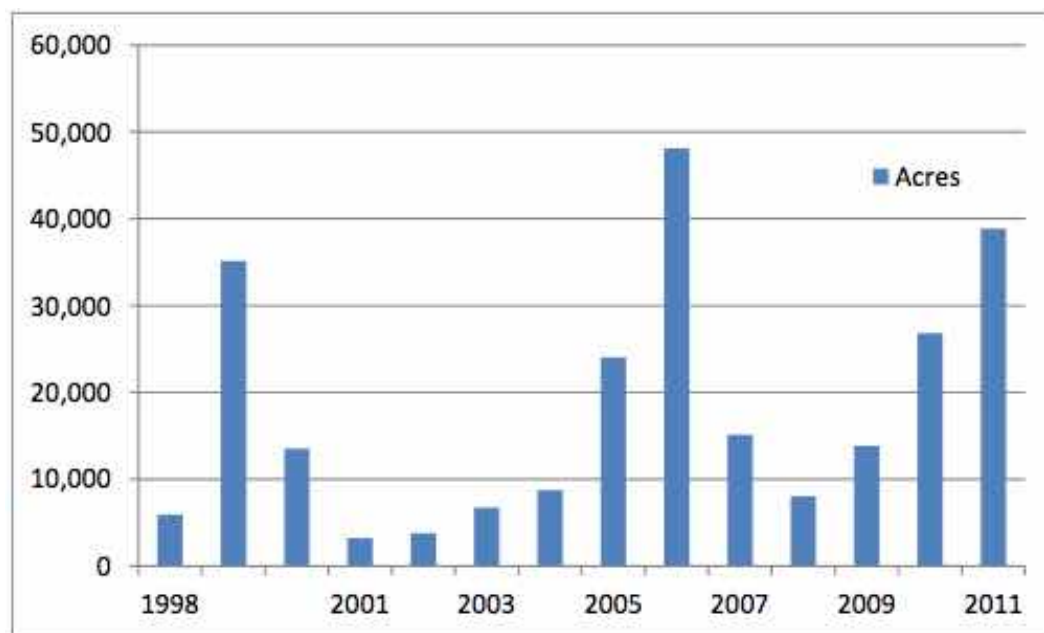
Source: FAOSTAT, <http://faostat.fao.org/site/567/default.aspx#ancor>.

⁴⁴¹ Other EU producing countries include Austria, Denmark, Finland, Germany, Italy, Netherlands, Poland, Portugal, Slovenia, and Spain.

⁴⁴² Food and Agriculture Organization (FAO) of the United Nations, FAOSTAT crop production data, <http://faostat.fao.org/site/567/default.aspx#ancor>.

Many EU countries lifted their bans on [industrial] hemp production in the 1990s and, until recently, also subsidized the production of “flax and hemp” under the EU’s Common Agricultural Policy.⁴⁴³ EU [industrial] hemp acreage was reported at about 26,000 acres in 2010, which was below previous years, when more than 50,000 acres of [industrial] hemp were under production.⁴⁴⁴ Most EU production is of hurds, seeds, and fibers. Other non-EU European countries with reported [industrial] hemp production include Russia, Ukraine, and Switzerland. Other countries with active [industrial] hemp grower and/or consumer markets are Australia, New Zealand, India, Japan, Korea, Turkey, Egypt, Chile, and Thailand.⁴⁴⁵

Figure D-2
Canadian Industrial 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 [industrial] 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).

Canada is another major supplier of U.S. imports, particularly of [industrial] hemp-based foods and related imported products. Canada’s commercial [industrial] hemp industry is fairly new:

⁴⁴³ For information regarding 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); also see “Health Check of the CAP,” May 2008, http://ec.europa.eu/agriculture/healthcheck/guide_en.pdf.

⁴⁴⁴ 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.

⁴⁴⁵ Additional country information is available at Hemp Industries Association, <http://www.thehia.org/facts.html>.

Canada began to issue licenses for research crops in 1994, followed by commercial licenses starting in 1998.

The development of Canada's [industrial] hemp market followed a 60-year prohibition and is strictly regulated.⁴⁴⁶ Its program is administered by the Office of Controlled Substances of Health Canada, which issues licenses for all activities involving [industrial] 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) [0.001%] for THC residues in products derived from [industrial] hemp grain, such as flour and oil.⁴⁴⁷ To obtain a license to grow [industrial] 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 [industrial] hemp seeds and approved cultivars; and they must allow government testing of their crop for THC levels.⁴⁴⁸ Since [industrial] hemp cultivation was legalized in Canada, production has been variable year-to-year (Figure D-2), 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 [industrial] 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).⁴⁴⁹

⁴⁴⁶ Industrial Hemp Regulations (SOR/98-156), as part of the Controlled Drugs and Substances Act (<http://laws.justice.gc.ca/en/C-38.8/SOR-98-156/index.html>).

⁴⁴⁷ Agriculture Canada, "Canada's Industrial Hemp Industry," March 2007, <http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1174595656066&lang=eng>.

⁴⁴⁸ See Health Canada's FAQs on its industrial hemp regulations (<http://www.hc-sc.gc.ca/hc-ps/substancontrol/hemp-chanvre/about-apropos/faq/index-eng.php#a3>) and its application for obtaining permits (http://www.hc-sc.gc.ca/hc-ps/pubs/precurs/hemp-indus-chanvre/guide/app-demande/hemp-chanvre/guid_append_1-annexe-eng.php). Other information is at the Canadian Food Inspection Agency website (<http://www.inspection.gc.ca/english/plaveg/seeem/indust/hemchae.shtml>).

⁴⁴⁹ Health Canada, Industrial Hemp Section, "Cultivation Licenses," October 25, 2011.

Appendix E

U.S. Industrial Hemp Imports

The import value of [industrial] 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 [industrial] 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 [industrial] hemp from Canada do not consistently match reported U.S. import data for the same products (especially for [industrial] hemp seeds).

Table E-1									
Value and Quantity of U.S. Imports of Selected Industrial Hemp Products, 1966-2013									
	Units	1996	2000	2005	2009	2010	2011	2012	2013
Hemp Seeds (HS 1207990220) ^a	\$1,000	--	--	271	3,320	5,154	6,054	13,057	26,710
Hemp Oil and Fractions (HS 1515908010)	\$1,000	--	--	3,027	1,042	1,833	1,146	1,098	2,264
Hemp Seed Oilcake and Other Solids (HS 2306900130)	\$1,000	--	--	--	1,811	2,369	2,947	4,388	6,279
True Hemp, raw/unprocessed not spun (HS 5302)	\$1,000	100	577	228	114	94	181	157	78
True Hemp Yarn (HS 5308200000)	\$1,000	25	640	904	568	296	580	496	478
True Hemp Woven Fabrics (HS (5311004010)	\$1,000	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/unprocessed 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)	m(2) (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.

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 [industrial] hemp products for use as inputs and ingredients has increased more than sixfold. However, import volumes for other products such as [industrial] hemp oil and fabrics are lower (Table E-1 [Table I in original]). Trade data are not available for finished products, such as [industrial] hemp-based clothing or other products including construction materials, carpets, or [industrial] hemp-based paper products.

The single largest supplier of U.S. imports of raw and processed [industrial] 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 [industrial] hemp seed and oilcake is Canada. The total value of Canada's exports of [industrial] 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 [industrial] hemp foods in late 2004 (see "Dispute over Industrial Hemp Food Imports (1999-2004)"). European countries such as the United Kingdom and Switzerland also have supplied [industrial] hemp seed and oilcake to the United States.

Appendix F

Estimated U.S. Retail Market

There is no official estimate of the value of U.S. sales of [industrial] hemp-based products. The Hemp Industries Association (HIA) estimates that the total U.S. retail value of [industrial] hemp products in 2013 was \$581 million, which includes food and body products, clothing, auto parts, building materials and other products.⁴⁵⁰ Of this, HIA reports that the value of [industrial] hemp-based food, supplements, and body care sales in the United States totaled \$184 million. Previous reports about the size of the U.S. market for [industrial] hemp clothing and textiles are estimated at about \$100 million annually.⁴⁵¹

The reported retail value of the U.S. [industrial] hemp market is an estimate and is difficult to verify. Underlying data for this estimate are from SPINS survey data;⁴⁵² however, because the data reportedly do not track retail sales for The Body Shop and Whole Foods Market—two major markets for [industrial] hemp-based products—as well as for restaurants, [industrial] hemp industry analysts have adjusted these upward to account for this gap in the reported survey data.⁴⁵³

Available industry information indicates that sales of some [industrial] hemp-based products, such as foods and body care products, is growing.⁴⁵⁴ Growth in [industrial] hemp specialty food products is driven, in part, by sales of [industrial] hemp milk and related dairy alternatives, among other [industrial] hemp-based foods.⁴⁵⁵

Information is not available on other potential U.S. [industrial] 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.

⁴⁵⁰ HIA, “2013 Annual Retail Sales for Hemp Products Exceeds \$581 Million,” February 28, 2014.

⁴⁵¹ HIA, “Hemp Fabric goes High Fashion,” February 11, 2008. Estimate reflects best available current information based on personal communication between CRS and HIA.

⁴⁵² SPINS tracks data and market trends on the Natural Product Industry sales (<http://www.spins.com/>).

⁴⁵³ 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.

⁴⁵⁴ 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.

⁴⁵⁵ HIA, “Hemp Milk Products Boosted Growth of Hemp Food Market in 2007,” March 14, 2008.

Appendix G

U.S. Market Potential

Petitioners offer the information within exclusively as evidence of current and potential commerce in industrial hemp. This petition only surveys the potential for commerce in industrial hemp superficially; not because it is not important or significant, but because such is irrelevant and immaterial to the administrative rulemaking request in this petition (*See below DEA Has No Role in Judging Economic Viability of Industrial Hemp*).

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 CRS Report Appendix A).

Studies by researchers in Canada and various state agencies provide a mostly positive market outlook for growing [industrial] hemp, citing rising consumer demand and the potential range of product uses for i[industrial] hemp. Some state reports claim that if current restrictions on growing [industrial] 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.”⁴⁵⁶ Most studies generally note that “[industrial] hemp ... has such a diversity of possible uses, [and] is being promoted by extremely enthusiastic market developers.”⁴⁵⁷ Other studies highlight certain production advantages associated with [industrial] hemp or acknowledge [industrial] hemp’s benefits as a rotational crop⁴⁵⁸ or further claim that hemp may be less environmentally degrading than other agricultural crops.⁴⁵⁹ Some studies also claim certain production advantages to [industrial] hemp growers, such as relatively low input and management requirements for the crop.⁴⁶⁰

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 [industrial] hemp growers in the United States. Two studies, conducted by researchers at USDA and University of Wisconsin-Madison (UW-Madison), highlight some of the continued challenges facing U.S. hemp producers.

For example, USDA’s study projected that U.S. [industrial] hemp markets “are, and will likely remain, small, thin markets” and also cited “uncertainty about long-run demand for hemp

⁴⁵⁶ Manitoba Agriculture, *National Industrial Hemp Strategy*, March 2008. A study prepared for Food and Rural Initiative Agriculture and Agri-Food Canada.

⁴⁵⁷ E. Small and D. Marcus, “Hemp: A New Crop with New Uses for North America,” In: *Trends in New Crops and New Uses*, 2002, p. 321.

⁴⁵⁸ See, for example, D. G. Kraenzel et al. “Industrial Hemp as an Alternative Crop in North Dakota,” AER 402, North Dakota State University, Fargo, July 1998; J. B. Kahn, “Hemp: Why Not?” Berkeley Electronic Press (bepress) Legal Series, Paper 1930, 2007.

⁴⁵⁹ See, for example, N. Cherrett et al., “Ecological Footprint and Water Analysis of Cotton, Hemp and Polyester,” Stockholm Environment Institute, 2005; and Reason Foundation, “Illegally Green: Environmental Costs of Hemp Prohibition,” Policy Study 367, March 2008.

⁴⁶⁰ See, for example, D. T. Ehrensing, *Feasibility of Industrial Hemp Production in the United States Pacific Northwest*, SB 681, Oregon State University, May 1998.

products and the potential for oversupply” among possible downsides of potential future [industrial] hemp production.⁴⁶¹

Similarly, the UW-Madison study concluded that [industrial] hemp production “is not likely to generate sizeable profits” and although [industrial] 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.”⁴⁶² The study highlights that U.S. [industrial] 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 [industrial] hemp. The study further claims that most estimates of profitability from [industrial] hemp production are highly speculative, and often do not include additional costs of growing [industrial] hemp in a regulated market, such as the cost associated with “licensing, monitoring, and verification of commercial hemp.”⁴⁶³

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 [industrial] 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 [industrial] hemp industry appear limited (perhaps dozens of new jobs, not 100s),” because of continued uncertainty in the industry.⁴⁶⁴ 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 [industrial] 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. [industrial] 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.⁴⁶⁵

⁴⁶¹ U.S. Department of Agriculture, Economic Research Service, *Industrial Hemp in the United States: Status and Market Potential*, ERS Report AGES001E, January 2000.

⁴⁶² T. R. Fortenbery and M. Bennett, “Opportunities for Commercial Hemp Production,” *Review of Agricultural Economics*, 26(1): 97-117, 2004.

⁴⁶³ *Ibid.*

⁴⁶⁴ University of Kentucky, Department of Agricultural Economics, *Economic Considerations for Growing Industrial Hemp: Implications for Kentucky’s Farmers and Agricultural Economy*, July 2013.

⁴⁶⁵ 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).

Appendix H

DEA Has No Role in Judging Economic Viability of Industrial Hemp

The industrial hemp industry in North America is still very much in its infancy ... and is likely to continue experiencing the risks inherent in a small niche market for some time. [However,] industrial hemp ... has such a diversity of possible uses, is being promoted by extremely enthusiastic market developers, and attracts so much attention that it is likely to carve out a much larger share of the North American marketplace than its detractors are willing to concede.⁴⁶⁶

Whether the potential economic value of industrial hemp is a million, billion⁴⁶⁷ or trillion dollars per year is not a relevant factor for DEA to consider in its decision on this petition. It is not the role of government to ban the cultivation and use of a useful raw material because of a similarity with a drug.

⁴⁶⁶ Ernest Small and David Marcus, "Hemp: A New Crop with New Uses for North America," in J. Jonick and A. Whiskey, eds., *Trends in New Crops and New Uses* (Alexandria, VA: Amer. Soc. of Hort. Sci. Press, 2002 p. 321. (<http://www.hort.purdue.edu/newcrop/ncnu02/v5-284.html>).

⁴⁶⁷ See: A New Billion Dollar Crop. Popular Mechanics. Hearst Magazines. (February 1938) http://books.google.com/books/about/Popular_Mechanics.html?id=e9sDAAAAMBAJ Today, a billion dollars in 1938 is the equivalent of \$17 billion. (www.westegg.com/inflation/infl.cgi).

Appendix I

Environmental Benefits of Industrial Hemp

One of the reasons for commercial interest in industrial hemp is the potential for products or ingredients in products to have a lower negative—if not a positive—environmental impact (including, but not limited to, pollution, soil loss, energy consumption, ecological footprint, carbon footprint).

The literature on the subject is often “gray” (not published peer-reviewed scientific or professional journals), but nonetheless is sometimes intriguing.

The libertarian Reason Foundation has noted:

Assessments of industrial hemp as compared to hydrocarbon or other traditional industrial feedstocks show that, generally, [industrial] hemp requires substantially lower energy demands for manufacturing, is often suited to less-toxic means of processing, provides competitive product performance (especially in terms of durability, light weight, and strength), greater recyclability and/or biodegradability, and a number of value-added applications for byproducts and waste materials at either end of the product life cycle. Unlike petrochemical feedstocks, industrial hemp production offsets carbon dioxide emissions, helping to close the carbon cycle.

The positive aspects of industrial hemp as a crop are considered in the context of countervailing attributes. Performance areas where industrial hemp may have higher average environmental costs than comparable raw materials result from the use of water and fertilizer during the growth stage, greater frequency of soil disturbance (erosion) during cultivation compared to forests and some field crops, and relatively high water use during the manufacturing stage of [industrial] hemp products.

Overall, social pressure and government mandates for lower dioxin production, lower greenhouse gas emissions, greater bio-based product procurement, and a number of other environmental regulations, seem to directly contradict the wisdom of prohibiting an evidently useful and unique crop like [industrial] hemp.⁴⁶⁸

Comparing energy inputs for various methods of cotton, industrial hemp, and polyester production, industrial hemp:

- is far more energy efficient than polyester and, comparable with that of traditional cotton production in the U.S.;
- has significantly less CO₂ emissions than polyester and less than traditional cotton grown in the U.S.;

⁴⁶⁸ Skaidra Smith-Heisters. 2008. Illegally Green: Environmental Costs of Hemp Prohibition. Reason Foundation.

- has the lowest ecological footprint (measured in global hectares per tonne of spun fiber).⁴⁶⁹

Industrial hemp can successfully be cultivated without resorting to the use of pesticides and often with less fertilizer inputs.⁴⁷⁰

Industrial hemp cultivation also does not require the use of herbicides because industrial hemp quickly overshadows the soil after its short initial growth phase and thereby suppresses weed growth.⁴⁷¹

Industrial hemp fiber can substitute for wood fiber for the production of paper.⁴⁷²

Industrial hemp can be utilized quite effectively in paper manufacture. Industrial hemp has several technical characteristics that make it useful and desirable for paper manufacture. The incorporation of industrial hemp into the production of paper in the United States would have significant environmental benefits, including reducing demand on forests for raw material and less chemicals needed in pulp and paper manufacture.

Depending on how it is grown and manufactured, natural fibers, including industrial hemp, can be better for the environment than fibers made from hydrocarbons.⁴⁷³

Natural fiber, including industrial hemp, composites are “likely to be environmentally superior to glass fiber composites in most cases” because:

*(1) natural fiber production has lower environmental impacts compared to glass fiber production; (2) natural fiber composites have higher fiber content for equivalent performance, reducing more polluting base polymer content; (3) the light-weight natural fiber composites improve fuel efficiency and reduce emissions in the use phase of the component, especially in auto applications; and (4) end of life incineration of natural fibers results in recovered energy and carbon credits.*⁴⁷⁴

⁴⁶⁹ Nia Cherrett, John Barrett, Alexandra Clemiett, Matthew Chadwick and J.J. Chadwick. 2005. Ecological Footprint and Water Analysis of Cotton, Hemp and Polyester. Stockholm Environmental Institute.

⁴⁷⁰ Hayo M.G. van der Werf. 2004. Life Cycle Analysis of Field Production of Fiber Hemp, the Effect of Production Practices on Environmental Impacts. *Euphytica* 140: 13-23. Kluwer Academic Publishers, The Netherlands.

⁴⁷¹ Thomas Prade, *Industrial Hemp (Cannabis sativa L.)- a High-Yielding Energy Crop*, 24 (2011) (unpublished Ph.D. thesis, Swedish University of Agricultural Sciences-Alnarp) (on file with author).

⁴⁷² Jim L. Bowyer. 2001. Industrial Hemp (*Cannabis sativa* L.) as a Papermaking Raw Material in Minnesota: Technical, Economic, and Environmental Considerations. Forest Products Management Development Institute, Department of Wood & Paper Science, University of Minnesota, St. Paul, MN.

⁴⁷³ Jan E. G. van Dam. “Environmental Benefits of natural fibre production and use” in Proceedings of the Symposium on Natural Fibres. Common Fund for Commodities and UN Food and Agricultural Organization, Rome. <ftp://ftp.fao.org/docrep/fao/011/i0709e/i0709e03.pdf/>.

⁴⁷⁴ S.V. Joshi, L.T. Drzal, A.K. Mohanty, S. Arora. Are natural fiber composites environmentally superior to glass fiber reinforced composites? *Composites: Part A* 35 (2004) 371–376.

Industrial hemp has phytoremediation proprieties.⁴⁷⁵ Phytoremediation is a process where plants clean up toxins in contaminated soils.⁴⁷⁶

It is technically feasible to make a biodiesel from industrial hemp oil that meets the quality standards of “traditional” diesel made from petroleum.⁴⁷⁷

Industrial hemp could aid the nation in meeting renewable fuel standard goals.⁴⁷⁸

⁴⁷⁵ Courtney N. Moran, *Poor Old Dirt Farmer, He's Lost All His Corn: How Industrial Hemp Biofuel Can Achieve Renewable Fuel Standard Goals* (Dec. 2013) (unpublished LL. M. thesis, Lewis & Clark Law School) (on file with author). See also, The McGraw Hill Companies, Botany, *Phytoremediation: Using Plants to Clean Soil*, Chernobyl (Ukraine), February 2000, available at http://www.mhhe.com/biosci/pae/botany/botany_map/articles/article_10.html (last visited February 11, 2015).

⁴⁷⁶ Courtney N. Moran, *Poor Old Dirt Farmer, He's Lost All His Corn: How Industrial Hemp Biofuel Can Achieve Renewable Fuel Standard Goals* (Dec. 2013) (unpublished LL. M. thesis, Lewis & Clark Law School) (on file with author). See also, The McGraw Hill Companies, Botany, *Phytoremediation: Using Plants to Clean Soil*, Chernobyl (Ukraine), February 2000, available at http://www.mhhe.com/biosci/pae/botany/botany_map/articles/article_10.html (last visited February 11, 2015).

⁴⁷⁷ Si-Yu Li, James D. Stuart, Yi Li and Richard S. Parnas. The feasibility of converting *Cannabis sativa* L. oil into biodiesel. *Bioresource Technology* 101 (2010) 8457–8460.

⁴⁷⁸ Courtney N. Moran. *Poor Old Dirt Farmer, He's Lost All His Corn: How Industrial Hemp Biofuel Can Achieve Renewable Fuel Standard Goals* (Dec. 2013) (unpublished LL. M. thesis, Lewis & Clark Law School) (on file with author).

Appendix J

U.S. Government Behaves Inconsistently in Regard to Industrial Hemp

As a matter of some—but not all—federal law, industrial hemp is *not* marijuana:

Executive Order 12919: National Defense Industrial Resources Preparedness

On June 3, 1994, President Clinton issued Executive Order 12919, entitled “National Defense Industrial Resources Preparedness,” which addressed national defense industrial resource policies and programs under the Defense Production Act of 1950.⁴⁷⁹ Executive Order 12919... was intended to strengthen the U.S. industrial and technology base for meeting national defense requirements. Section, 901(e), specifically states, “[f]ood resources’ also means . . . hemp . . . but does not mean any such material after it loses its identity as an agricultural commodity or agricultural product.”⁴⁸⁰ Industrial hemp is among the essential agricultural products that should be stocked for defense preparedness purposes.⁴⁸¹

Executive Order 13603, National Defense Resources Preparedness

On March 16, 2012, President Obama issued Executive Order 13603, entitled “National Defense Resources Preparedness,” which amended part of President Clinton’s Executive Order 12919 and also developed policies on national defense resources.⁴⁸² Again, industrial hemp was listed as an agricultural, food resource that should be stocked for defense preparedness purposes.⁴⁸³

Although these executive orders do not affect the federal status of industrial hemp, Presidents Clinton and Obama have recognized the use of industrial hemp as a food source and agricultural commodity.⁴⁸⁴

Presidential Direction on Preemption

Early in his first term, President Obama issued a memorandum to executive department and agency heads entitled “Preemption.” It begins:

From our Nation's founding, the American constitutional order has been a Federal system, ensuring a strong role for both the national Government and the States. The Federal Government's role in promoting the general welfare and guarding individual liberties is critical, but State law and national law often

⁴⁷⁹ Exec. Order No. 12919, National Defense Industrial Resources Preparedness, 59 Fed. Reg. 29525 (June 3, 1994). See also, Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Envtl. L. Rev. 383 (May 2015).

⁴⁸⁰ National Defense Industrial Resources Preparedness, 59 Fed. Reg. at 29525 (901)(e).

⁴⁸¹ National Defense Industrial Resources Preparedness, 59 Fed. Reg. at 29525 (901)(e). See also, Renée Johnson, Congressional Research Service, *Hemp as an Agricultural Commodity*, June 25, 2014, 19-20, <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32725.pdf>.

⁴⁸² Exec. Order No. 13603, National Defense Resources Preparedness, 77 Fed. Reg. 16651 (March 16, 2012).

⁴⁸³ Exec. Order No. 13603, National Defense Resources Preparedness, 77 Fed. Reg. 16651 (March 16, 2012).

⁴⁸⁴ Courtney N. Moran, LL.M., *Industrial Hemp: Canada Exports, United States Imports*, 26 Fordham Envtl. L. Rev. 383 (May 2015).

operate concurrently to provide independent safeguards for the public. Throughout our history, State and local governments have frequently protected health, safety, and the environment more aggressively than has the national Government.

An understanding of the important role of State governments in our Federal system is reflected in longstanding practices by executive departments and agencies, which have shown respect for the traditional prerogatives of the States. In recent years, however, notwithstanding Executive Order 13132 of August 4, 1999 (Federalism), executive departments and agencies have sometimes announced that their regulations preempt State law, including State common law, without explicit preemption by the Congress or an otherwise sufficient basis under applicable legal principles.

The purpose of this memorandum is to state the general policy of my Administration that preemption of State law by executive departments and agencies should be undertaken only with full consideration of the legitimate prerogatives of the States and with a sufficient legal basis for preemption. Executive departments and agencies should be mindful that in our Federal system, the citizens of the several States have distinctive circumstances and values, and that in many instances it is appropriate for them to apply to themselves rules and principles that reflect these circumstances and values. As Justice Brandeis explained more than 70 years ago, "[i]t is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."⁴⁸⁵

This petition does not dispute the federal government's role in controlling drugs. However, since industrial hemp is not a drug, DEA has no business controlling it. It is a matter for the states. DEA should remove industrial hemp from the definition of "marihuana" under the CSA.

⁴⁸⁵ Barak Obama. May 20, 2009. Preemption: Memorandum for the Heads of Executive Departments and Agencies, http://www.whitehouse.gov/the_press_office/Presidential-Memorandum-Regarding-Preemption/ (emphasis added).

Appendix K

Any Voluntary Forbearance Policy of Federal Government Neither Adequate or Just

In response to legalization of medical, if not also recreational marijuana and/or industrial hemp by several states, the Department of Justice (USDOJ) and the Department of the Treasury (Treasury) have issued guidance regarding how those respective departments will, or will not, enforce the federal laws against “marijuana” (which presently includes industrial hemp). Of interest to farmers who desire to cultivate industrial hemp are also the policies of the Department of Agriculture (USDA).

What follows is a summary of the positions of the various departments of the federal government.

Bank Secrecy Act of 1970

In February 2014, the USDOJ issued “guidance” regarding enforcement of the Bank Secrecy Act of 1970 (“Cole BSA Memo”).⁴⁸⁶ That guidance restated the essence of the Cole Memo and directed U.S. Attorneys in states that have legalized industrial hemp, medical marijuana and/or recreational marijuana to similarly enforce BSA as CSA.

Concurrently, the Financial Crimes Enforcement Network (FinCEN), a bureau of the Treasury Department, issued similar guidance regarding enforcement of BSA.⁴⁸⁷ In essence, FinCEN, like USDOJ, for now doesn’t plan to go after banks that provide banking services to “marijuana” (including industrial hemp) businesses.

In response, the president/CEO of the Colorado Banking Association (CBA), a trade association of banks in the first state to legalize recreational marijuana, said:

*People don't like their bank taking risk with their deposits or financial transactions. Banking isn't designed to take risk, and bankers don't like it. Before any prudent bank would venture into providing services to pot businesses, it would require numerous “green lights,” including from its own legal counsel. To date, banking has seen only “red lights” (Controlled Substances Act, AG & US Attorney interpretations of such, Bank Secrecy Act, Anti-Money Laundering Act, USA Patriot Act, and directives from bank regulatory agencies (Fed, FDIC, OCC)...). AG Holder’s recent statement at best indicates a forthcoming “yellow light” from Treasury. No lawyer I know would conclude that gives the bank a green light in light of related obstacles.*⁴⁸⁸

CBA’s reaction to the USDOJ and U.S. Treasury guidance:

⁴⁸⁶ James M. Cole. February 14, 2014. Guidance Regarding Marijuana Related Financial Crimes: Memorandum for all United States Attorneys. Deputy Attorney General, US Department of Justice, Washington, DC.

⁴⁸⁷ U.S. Department of the Treasury, Financial Crimes Enforcement Network, Washington, DC. *BSA Expectations Regarding Marijuana-Related Businesses* (February 14, 2014).

⁴⁸⁸ Don A. Childears. Undated. Banking Marijuana Requires Act of Congress. Colorado Banking Association. <http://www.coloradobankers.org/associations/14079/files/MJ%20Summary%20Reasons%20020714.pdf>.

The guidance issued today by the Department of Justice and the U.S. Treasury only reinforces and reiterates that banks can be prosecuted for providing accounts to marijuana related businesses.

“In fact, it is even stronger than original guidance issued by the Department of Justice and the Treasury,” said Don Childears, president and CEO of the Colorado Bankers Association. “After a series of red lights, we expected this guidance to be a yellow one. This isn’t close to that. At best, this amounts to ‘serve these customers at your own risk’ and it emphasizes all of the risks. This light is red.”

Bankers had expected the guidance to relieve them of the threat of prosecution should they open accounts for marijuana businesses, but the guidance does not do that. Instead, it reiterates reasons for prosecution and is simply a modified reporting system for banks to use. It imposes a heavy burden on them to know and control their customers’ activities, and those of their customers. No bank can comply.⁴⁸⁹

To protect banks who provide banking services to marijuana businesses, CBA said.

Solution – *So despite our desire to promote public safety, facilitate the state’s ability to tax and regulate these businesses and be able to serve marijuana customers and businesses, we believe it literally takes “an Act of Congress” to attract banks to this business in light of complex issues, risks and obstacles. One bill to accomplish this is H.R. 2652 by U.S. Representatives Perlmutter, Coffman, DeGette, Polis and others. In states that have legalized pot it prohibits federal bank regulators from terminating or limiting FDIC insurance (which would put the bank out of business), punishing any bank doing business with pot businesses, discouraging bank business with an MJ entity, or taking any action on a loan or lease because it is a pot business.⁴⁹⁰*

To address the needs of banks that now provide banking services to farmers who want to grow industrial hemp, no Act of Congress is needed. All that is needed is for DEA to reclassify industrial hemp as no longer being “marihuana.”

Internal Revenue Code

Farmers who desire to grow industrial hemp also would suffer from a provision of the federal tax code that treats industrial hemp as “marijuana.”

⁴⁸⁹ Colorado Bankers Association. CBA Media Advisory: *Statement regarding DOJ and Treasury Guidance on Marijuana and Banking* (February 2014).

⁴⁹⁰ Don A. Childears. Undated. *Banking Marijuana Requires Act of Congress*. Colorado Banking Association. <http://www.coloradobankers.org/associations/14079/files/MJ%20Summary%20Reasons%20020714.pdf>.

A section of the federal tax code known as 280E was meant to prevent tax write-offs for illegal drug activity. It was enacted in 1982, before medical marijuana was legalized in any state.

The Internal Revenue Service applies 280E to pot shops operating legally under state law.

The IRS says it follows the law in not allowing these deductions. Any changes to 280E would require Congress to amend either the Internal Revenue Code or the Controlled Substances Act, according to a 2010 letter from the IRS to members of Congress....

Because of 280E, the effective tax rate for many marijuana businesses is 50% or more, according to Taylor West, deputy director of the National Cannabis Industry Association, and Henry Wykowski, a lawyer representing marijuana businesses....

The inability for marijuana businesses to write off the cost of payroll, rent and other expenses creates "extremely thin profit margins," West said.

The only cost that dispensaries can write off is the marijuana itself.⁴⁹¹

Section 280(e) says:

No deduction or credit shall be allowed for any amount paid or incurred during the taxable year in carrying on any trade or business if such trade or business (or the activities which comprise such trade or business) consists of trafficking in controlled substances (within the meaning of schedule I and II of the Controlled Substances Act) which is prohibited by Federal law or the law of any State in which such trade or business is conducted.⁴⁹²

The margins for farmers growing industrial hemp will be far less than those for marijuana shops, but the effective tax rate would be the same. If DEA were to reschedule industrial hemp out of the drug schedules, Section 280E would not apply to the cultivation of industrial hemp.

U.S. Department of Agriculture

A farmer cultivating industrial hemp, if prosecuted for growing “marijuana” would lose any access to any support programs of the U.S. Department of Agriculture:

*§ 718.6 Controlled substance.
(a) The following terms apply to this section:*

⁴⁹¹ Jolie Lee. March 17, 2014. “Medical Marijuana Stores Blocked From Tax Breaks. USA Today. <http://www.usatoday.com/story/news/nation-now/2014/03/17/marijuana-tax-breaks-irs/6367137/>.

⁴⁹² 26 U.S.C. § 208E.

(1) USDA benefit means the issuance of any grant, contract, loan, or payment by appropriated funds of the United States.

(2) Person means an individual.

(b) Notwithstanding any other provision of law, any person convicted under Federal or State law of:

(1) Planting, cultivating, growing, producing, harvesting, or storing a controlled substance in any crop year is ineligible during the crop year of conviction and the four succeeding crop years, for any of the following USDA benefits:

(i) Any payments or benefits under the Direct and Counter Cyclical Program (DCP) in accordance with part 1412 of this title;

(ii) Any payments or benefits for losses to trees, crops, or livestock covered under disaster programs administered by FSA;

(iii) Any price support loan available in accordance with part 1421 of this title;

(iv) Any price support or payment made under the Commodity Credit Corporation Charter Act;

(v) A farm storage facility loan made under section 4(h) of the Commodity Credit Corporation Charter Act or any other Act;

(vi) Crop Insurance under the Federal Crop Insurance Act;

(vii) A loan made or guaranteed under the Consolidated Farm and Rural Development Act or any other law administered by FSA's Farm Loan Programs.

(2) Possession or trafficking of a controlled substance, is ineligible for any or all USDA benefits:

(i) At the discretion of the court,

(ii) To the extent and for a period of time the court determines.

(c) If a person denied benefits under this section is a shareholder, beneficiary, or member of an entity or joint operation, benefits for which the entity or joint operation is eligible will be reduced, for the appropriate period, by a percentage equal to the total interest of the shareholder, beneficiary, or member.⁴⁹³

No rational farmer, who farms a variety of crops, would take the risk of being “convicted” of growing industrial hemp.

Other Federal Actions Involving USDA

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 [industrial] 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

⁴⁹³ 7 C.F.R. § 718.6 (emphasis added).

laboratories. In 2010, USDA recommended \$1.083 million for programs under the act.⁴⁹⁴ 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.⁴⁹⁵ In 2010, USDA recommended \$835,000 for the program.⁴⁹⁶ To date, these authorities have not been used to develop [industrial] hemp cultivation and use.

⁴⁹⁴ USDA's 2011 Explanatory Notes, <http://www.obpa.usda.gov/17nifa2011notes.pdf>.

⁴⁹⁵ For information, see USDA, http://www.csrees.usda.gov/funding/rfas/pdfs/10_alt_crops.pdf.

⁴⁹⁶ See USDA's 2011 Explanatory Notes, <http://www.obpa.usda.gov/17nifa2011notes.pdf>.

Appendix L

Public Supporters of the Relegalizing Industrial Hemp Project Indiegogo Campaign

Thirty-six people made contributions through the campaign and the authors thank them all. Those who wished to be recognized are listed below. The size and various emphases of the font reflect contribution size.

Willard Chase
Mora Dewey

Jim Baker

Lauren Berlekamp

Ben Droz

Sam Chapman

Earthraven Handcrafts

Donald W. Ehrich

Ty Frank

Kathy Ging

Megan Graham

Lisa Grove

Allen King

Harold K. Lonsdale

Juanita Kirkham
Vanessa Martinez
Paddy McGuire
Thatcher Michelsen

Jerry Norton

Jamie Campbell Petty

Annie Rouse

Rebecca Clare Ryder Naber

Annie Rouse

David Seber

Michael Stoltz

Appendix M

Major Pending Congressional Legislation Pertaining to Industrial Hemp

The 114th (2015-2016) Congress has enacted, and is considering other, legislation pertaining to industrial hemp. The “Industrial Hemp Farming Act” has been introduced into both the Senate and House of Representatives with strong bipartisan support. The annual appropriations bill funding the Drug Enforcement Administration was enacted into law with two provisions prohibiting DEA from interfering with the experimental cultivation of industrial hemp provided for by the 2014 farm bill.

H.R. 525 Industrial Hemp Farming Act of 2015

Summary: Amends the Controlled Substances Act to exclude industrial hemp from the definition of "marihuana." Defines "industrial hemp" to mean the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-nine tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis. Deems *Cannabis sativa* L. to meet that concentration limit if a person grows or processes it for purposes of making industrial hemp in accordance with state law.

Sponsor: Rep. Massie, Thomas (R-KY-4)

Cosponsors: Rep. Polis, Jared (D-CO-2)*, Rep. Hanna, Richard L. (R-NY-22)*, Rep. Blumenauer, Earl (OR-3)*, Rep. Schrader, Kurt (D-OR-5)*, Rep. Rohrabacher, Dana (R-CA-48)*, Rep. Bonamici, Suzanne (D-OR-1)*, Rep. Amash, Justin (R-MI-3)*, Rep. Cohen, Steve (D-TN-9)*, Rep. DeFazio, Peter A. (D-OR-4)*, Rep. DeGette, Diana (D-CO-1)*, Rep. DelBene, Suzan K. (D-WA-1)*, Rep. Ellison, Keith (D-MN-5)*, Rep. Farr, Sam (D-CA-20)*, Rep. Gabbard, Tulsi (D-HI-2)*, Rep. Norton, Eleanor Holmes (D-DC-At Large)*, Rep. Honda, Michael M. (D-CA-17)*, Rep. Clay, Wm. Lacy (D-MO-1)* Rep. Lee, Barbara (D-CA-13)*, Rep. McClintock, Tom (R-CA-4)*, Rep. McCollum, Betty (D-MN-4)*, Rep. O'Rourke, Beto (D-TX-16)*, Rep. Peterson, Collin C. (D-MN-7)*, Rep. Pingree, Chellie (D-ME-1)*, Rep. Pocan, Mark (D-WI-2)*, Rep. Cartwright, Matt (D-PA-17)*, Rep. Schakowsky, Janice D. (D-IL-9)*, Rep. Ryan, Tim (D-OH-13)*, Rep. Yarmuth, John A. (D-KY-3)*, Rep. DeLauro, Rosa L. (D-CT-3)*, Rep. Welch, Peter (D-VT-At Large)*, Rep. Buck, Ken (R-CO-4)*, Rep. Labrador, Raul R. (R-ID-1)*, Rep. Cramer, Kevin (R-ND-At Large)*, Rep. Grijalva, Raul M. (D-AZ-3)*, Rep. Barr, Andy (R-KY-6)*, Rep. Zinke, Ryan K. (R-MT-At Large)*, Rep. Young, Don (R-AK-At Large)*, Rep. Walz, Timothy J. (D-MN-1)*, Rep. Young, Todd C. (R-IN-9)*, Rep. Stivers, Steve (R-OH-15)*, Rep. Nadler, Jerrold (D-NY-10)*, Rep. McDermott, Jim (D-WA-7)*, Rep. Lofgren, Zoe (D-CA-19)*, Rep. Perry, Scott (R-PA-4)*, Rep. Yoho, Ted S. (R-FL-3)*, Rep. Mulvaney, Mick (R-SC-5)*, Rep. Jones, Walter B., Jr. (R-NC-3)*, Rep. Titus, Dina (D-NV-1), Rep. Huffman, Jared (D-CA-2), Rep. Swalwell, Eric (D-CA-15), Rep. Sanford, Mark (R-SC-1), Rep. Whitfield, Ed (R-KY-1), Rep. Benishek, Dan (R-MI-1), Rep. Connolly, Gerald E. (D-VA-11), Rep. Perlmutter, Ed (D-CO-7), Rep. Speier, Jackie (D-CA-14), Rep. Walden, Greg (R-OR-2), Rep. Courtney, Joe (D-CT-2), Rep. Lowey, Nita M. (D-NY-17), Rep. Coffman, Mike (R-CO-6), Rep. Ellmers, Renee L. (R-NC-2), Rep. Tipton, Scott R. (R-CO-3), Rep. Davis, Rodney (R-IL-13), Rep. Hurt, Robert (R-VA-5), Rep. Scott, Robert C. "Bobby" (D-VA-3), Rep. Takai,

Mark (D-HI-1), Rep. Cardenas, Tony (D-CA-29), Rep. Tonko, Paul (D-NY-20), Rep. Nolan, Richard M. (D-MN-8)

Actions: Referred to Energy and Commerce Committee and Judiciary Committee.

S. 134 Industrial Hemp Farming Act of 2015

Summary: Amends the Controlled Substances Act to exclude industrial hemp from the definition of "marihuana." Defines "industrial hemp" to mean the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-nine tetrahydrocannabinol concentration of not more than 0.3 percent on a dry weight basis. Deems *Cannabis sativa* L. to meet that concentration limit if a person grows or processes it for purposes of making industrial hemp in accordance with state law, unless the Attorney General determines that the state law is not reasonably calculated to comply with such definition.

Sponsor: Sen. Wyden, Ron (D-OR)

Cosponsors: Sen. Merkley, Jeff (D-OR)*, Sen. McConnell, Mitch (R-KY)*, Sen. Paul, Rand (R-KY)*, Sen. Gardner, Cory (R-CO), Sen. Daines, Steve (R-MT), Sen. Franken, Al (D-MN), Sen. Bennet, Michael F. (D-CO), Sen. Tester, Jon (D-MT), Sen. Baldwin, Tammy (D-WI), Sen. Sanders, Bernard (I-VT), Sen. Schatz, Brian (D-HI), Sen. Gillibrand, Kirsten E. (D-NY), Sen. Murphy, Christopher S. (D-CT), Sen. Hirono, Mazie K. (D-HI).

Actions: Introduced in Senate.

S. 1333 Therapeutic Hemp Medical Access Act of 2015.

Summary: Amends the Controlled Substances Act to exclude cannabidiol and cannabidiol-rich plants: (1) from the definition of "marihuana," and (2) from treatment as a controlled substance under such Act.

Defines: (1) "cannabidiol-rich plant" to mean the plant *Cannabis sativa* L. and any part of such plant with a tetrahydrocannabinol concentration of not more than 0.3% on a dry weight basis; (2) "cannabidiol" to mean the substance cannabidiol, as derived from a cannabidiol-rich plant; and (3) "tetrahydrocannabinol concentration" to mean the percent of the delta-9 tetrahydrocannabinol content per dry weight of any part of the plant *Cannabis sativa* L. or per volume of weight of marihuana product, or the combined percent of the delta-9 tetrahydrocannabinol and tetrahydrocannabinolic acid in any part of the plant *Cannabis sativa* L., regardless of moisture content.

Declares that nothing in this Act shall be construed to restrict any activities related to the use, production, or distribution of marihuana in a state in which such activities are legal under state law.

Sponsor: Sen. Gardner, Cory (R-CO)

Cosponsors: Sen. Wyden, Ron (D-OR)*, Sen. Hatch, Orrin G. (R-UT)*, Sen. Isakson, Johnny (R-GA)*, Sen. Merkley, Jeff (D-OR)*, Sen. Bennet, Michael F. (D-CO)*, Sen. Alexander, Lamar (R-TN), Sen. Johnson, Ron (R-WI), Sen. Baldwin, Tammy (D-WI), Sen. Tillis, Thom (R-NC), Sen. Blunt, Roy (R-MO), Sen. Lee, Mike (R-UT), Sen. Graham, Lindsey (R-SC), Sen. Warner, Mark R. (D-VA).

Actions: Introduced in Senate.

H.R. 2029 Consolidated Appropriations Act, 2016

Summary: The legislation appropriated money for military purposes as well as for Commerce, Justice, Science and Related Agencies, including the USDOJ Drug Enforcement Administration.

Two provisions addressed industrial hemp:

Sec. 543. None of the funds made available by this Act may be used in contravention of section 7606 ("Legitimacy of Industrial Hemp Research") of the Agricultural Act of 2014 (Public Law 113-79) by the Department of Justice or the Drug Enforcement Administration.

Sec. 763. None of the funds made available by this Act or any other Act may be used--

(1) in contravention of section 7606 of the Agricultural Act of 2014 (7 U.S.C. 5940); or

(2) to prohibit the transportation, processing, sale, or use of industrial hemp that is grown or cultivated in accordance with subsection section 7606 of the Agricultural Act of 2014, within or outside the State in which the industrial hemp is grown or cultivated.

Sponsor: Rep. Dent, Charles W. (R-PA-15) (Chairman, United States House Appropriations Subcommittee on Military Construction, Veterans Affairs and Related Agencies.

Cosponsors: (It is not traditional for cosponsors on final appropriations bills.)

Actions: Enacted into law.

* Indicates original cosponsorship.

Sources: www.congress.gov (last accessed 6 June 2016).

Appendix N

Industrial Hemp Production in Canada

Industrial Hemp Production in Canada

Background

This report provides an update on industrial hemp production area licensed by Health Canada and processing industry development prospects in Alberta and Canada. Industrial hemp (*Cannabis sativa*) is one of the oldest cultivated plants in the world (Figure 1). It can be grown as a fibre, seed or dual purpose crop. The species was banned in North America in the late 1930s because its leaves and flowers contained a psychoactive drug known as delta-9 tetrahydrocannabinol (THC). It was banned internationally in 1961 under the United Nations' Single Convention on Narcotic Drugs.



Figure 1: Picture of Industrial Hemp

In 1994, Canada began to issue research licenses to grow industrial hemp on experimental basis. Effective March 12, 1998 the commercial production (including cultivation) of industrial hemp was legalized in Canada, under licenses and authorization, issued by Health Canada. This action was prompted by results from field research as well as lobbying by the agricultural and business community. License to grow industrial hemp for grain or fibre are issued for one calendar year for crops of 4 hectares (10 acres) or more, and if cultivating for seed not less than 1 hectare. There is no minimum plot size for plant breeding. Applicants for any commercial hemp license must submit a current police criminal record check and a map showing the location of the cultivation site in terms of its legal description along with the necessary GPS coordinates.

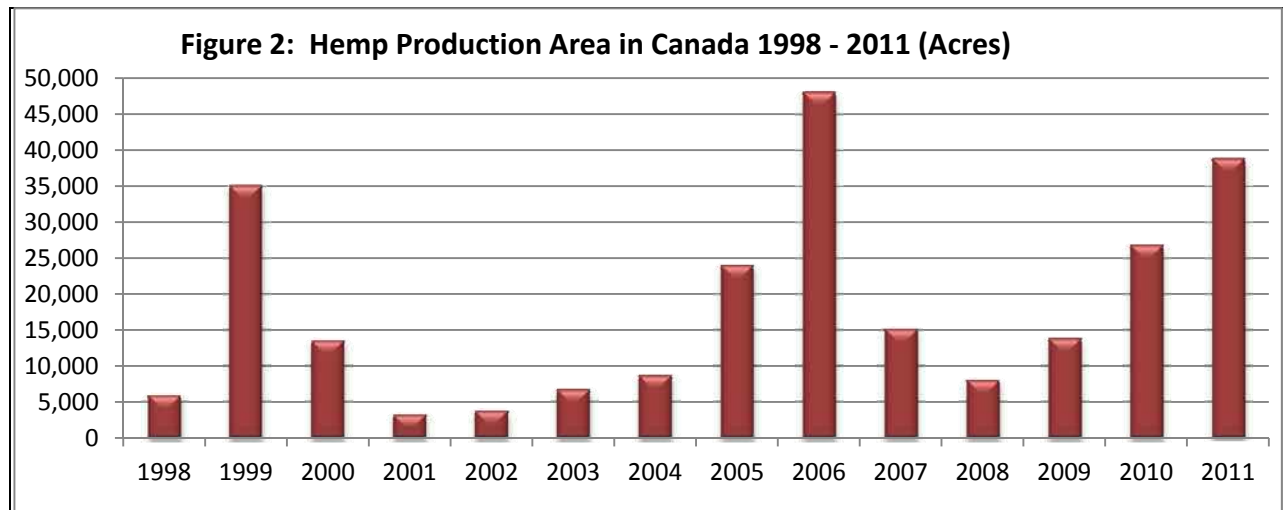
Health Canada controls the importation, production, processing, possession, sale, transportation, delivery and offering for sale of industrial hemp. All industrial hemp grown, processed, and sold in Canada must contain 0.3 percent THC or less in the leaves and flowering parts. In addition a maximum level of 10 parts per million (ppm) for THC residues in products derived from hemp grain, such as flour and oil has been set under the regulation. The 0.3 percent THC concentration level serves as the major dividing line between industrial hemp and cannabis plants with intoxicating levels of THC commonly referred to as “marijuana”.

All commercial industrial hemp crops are planted using only certified seed from varieties listed in Health Canada's list of approved cultivars. Seed saving and the use of common seed are currently not allowed under the regulation. The hemp industry initially grew varieties that were imported and of European origin. In recent years, Canadian plant breeding programs have developed a number of high yielding cultivars that are suitable to a wide range of growing conditions. The most common varieties that are presently being contracted and grown in Canada are Alyssa, Anka, CRS-1, CFX-1, CFX-2, Delores and Finola.

Seeded Acreage in Canada

As with many new crops, there has been considerable fluctuation in hemp production area. Figure 2 shows the variation in seeded acres in Canada from 1998 to 2011. In 1998, the first year of Health Canada opening up the licensing process, about 241 licenses were issued. These licenses grew almost 5,927 acres (2,400 hectares) of hemp for industrial use. In 1999, the number of applications to grow hemp jumped dramatically to 545 with the area of hemp production increasing six-fold to nearly 35,086 acres (14,205 hectares). Much of this production was driven

by the promise of the development of large scale industrial fibre plants in Manitoba, which encouraged farmers to plant substantial hemp area in anticipation of the processing needs of these plants. None of the plants materialized, leaving farmers with large inventories of hemp straw. This led to a decline in production area in 2000 and 2001 respectively.

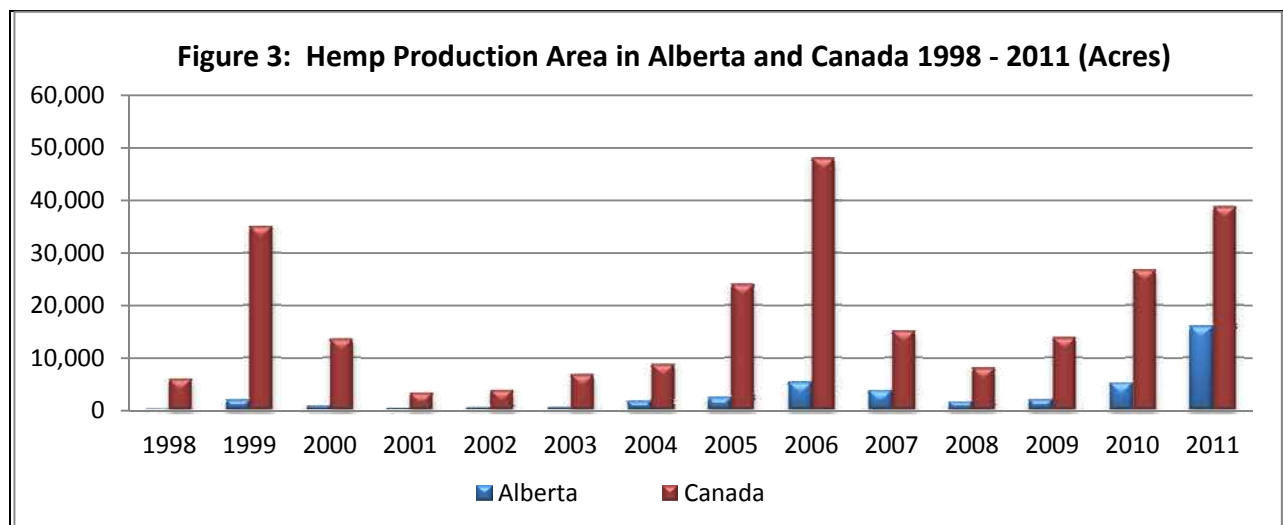


Source: Health Canada

As shown in Figure 2, area under hemp production started to increase from 2002 and reached its highest level in 2006 at 48,060 acres (19,458 hectares). This increase was due to increased contracting, high yields, economics and non contracted production. In 2007, hemp production area decreased by about 68 percent due to increased inventory of hemp seed, positive economics of producing other crops as well the lack of processing facilities for hemp fiber and stock. In 2008, production area further decreased by almost 47 percent to 8,050 acres (3,259 hectares). Since 2009, seeded acres in Canada have increased consistently. Hemp grain production is forecast by the Canadian Hemp Trade Alliance to reach 100,000 acres by 2014 (Canada Hemp Trade Alliance website).

Provincial Seeded Acreage

Figure 3 shows the area of hemp production for Alberta and Canada from 1998 to 2011.



Source: Health Canada

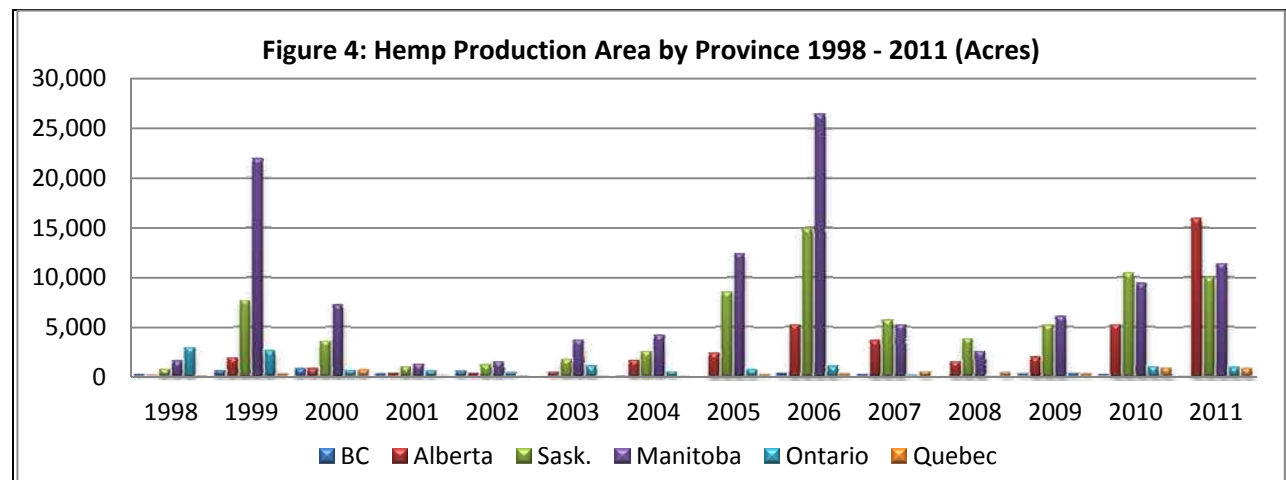
Overall production acreage in Alberta trended upwards with a total of 15,892 acres being registered in 2011. As shown in Table 1 below, Alberta's share of total Canadian hemp production area ranged from approximately 2 percent in 1998 to approximately 41 percent in 2011.

Table 1 Hemp Seeded Acreage in Alberta and Canada, 1998 - 2011

Year	Alberta		Canada		% Alberta
	Hectares	Acres	Hectares	Acres	
1998	38	94	2,400	5,927	1.58
1999	754	1,862	14,205	35,086	5.31
2000	306	756	5,485	13,549	5.58
2001	113	279	1,316	3,251	8.59
2002	123	304	1,530	3,779	8.04
2003	153	379	2,733	6,750	5.61
2004	639	1,578	3,531	8,722	18.10
2005	916	2,263	9,725	24,021	9.42
2006	2,103	5,194	19,458	48,060	10.81
2007	1,455	3,594	6,132	15,146	23.73
2008	582	1,438	3,259	8,050	17.86
2009	782	1,932	5,602	13,837	13.96
2010	2,086	5,152	10,856	26,814	19.22
2011	6,434	15,892	15,720	38,828	40.93

Source: Health Canada

Figure 4 shows the area of hemp production for selected Canadian provinces from 1998 to 2011.



Source: Health Canada

Ontario topped the nation in hemp production area in 1998, followed by Manitoba from 1999 to 2009 then Saskatchewan in 2010 and Alberta in 2011. Overall, the Prairie Provinces (Alberta, Saskatchewan and Manitoba) led the nation in hemp production area. Tables 2 and 3 below provide data on hemp production area for various Provinces and Territories in Canada. No hemp was grown in New Brunswick, Nova Scotia, Prince Edward Island and Yukon Territories in 2010. In 2011, no hemp was grown in Nova Scotia and Yukon Territories (Tables 2 and 3).

Table 2 Hemp Seeded Acreage in Canada by Province, 1998 - 2011 (Hectares)

Year	BC	Alberta	Sask.	Man.	Ontario	Quebec	NB	NS	PEI	Yukon	Canada
1998	72	38	263	606	1,163	24	214	19	0	0	2,400
1999	225	754	3,096	8,889	1,021	86	4	126	4	0	14,205
2000	291	306	1,426	2,902	217	239	1	102	2	0	5,485
2001	96	113	392	472	209	30	0	0	0	4	1,316
2002	200	123	449	597	142	19	0	0	0	0	1,530
2003	7	153	672	1,468	397	13	4	18	0	0	2,733
2004	18	639	1,004	1,655	183	10	4	18	0	0	3,531
2005	0	916	3,429	5,018	251	74	19	18	0	0	9,725
2006	111	2,103	6,025	10,705	398	91	8	18	0	0	19,458
2007	70	1,455	2,293	2,088	40	182	4	0	0	0	6,132
2008	5	582	1,537	993	8	134	0	0	0	0	3,259
2009	84	782	2,061	2,435	132	92	0	0	16	0	5,602
2010	64	2,086	4,214	3,799	372	321	0	0	0	0	10,856
2011	8	6,434	4,026	4,596	354	290	8	0	4	0	15,720

Source: Health Canada

Table 3 Hemp Seeded Acreage in Canada by Province, 1998 - 2011 (Acres)

Year	BC	Alberta	Sask.	Man.	Ontario	Quebec	NB	NS	PEI	Yukon	Canada
1998	178	94	650	1,497	2,873	59	529	47	0	0	5,927
1999	556	1,862	7,647	21,956	2,522	212	10	311	10	0	35,086
2000	719	756	3,522	7,169	535	590	2	252	4	0	13,549
2001	237	279	968	1,166	516	74	0	0	0	10	3,251
2002	494	304	1,109	1,475	351	47	0	0	0	0	3,779
2003	18	379	1,661	3,625	981	32	10	44	0	0	6,750
2004	44	1,578	2,480	4,088	452	25	10	44	0	0	8,722
2005	0	2,263	8,470	12,394	620	183	47	44	0	0	24,021
2006	273	5,194	14,882	26,442	982	224	20	44	0	0	48,060
2007	173	3,594	5,664	5,157	99	450	10	0	0	0	15,146
2008	12	1,438	3,796	2,453	20	331	0	0	0	0	8,050
2009	207	1,932	5,091	6,014	326	227	0	0	40	0	13,837
2010	158	5,152	10,409	9,384	919	793	0	0	0	0	26,814
2011	20	15,892	9,944	11,352	874	716	20	0	10	0	38,828

Source: Health Canada

Production

Production is estimated using information on yield and acres harvested. Industrial hemp yield (grain or fibre) varies with variety, plant population, soil conditions, timing of harvest, and annual climatic conditions. The highest seed yield recorded to date in Canada has topped 2,000 lbs per acre; an average yield is between 600 to 800 lbs per acre, but rising (Canadian Hemp Trade

Alliance). An acre will also produce an average of 5,300 lbs of straw, which can be transformed into about 1,300 lbs of fibre.

In Manitoba, hemp grain yields range from 100 to 1,200 lbs per acre while yield for crops grown and managed solely as fibre crops, range from 1 to 6 tonnes per acre (Manitoba Agriculture, Food and Rural Initiatives online report¹). Typical grain yields in Saskatchewan vary from 660 to 1,071 lbs per acre (740 to 1,200 kg per hectare²). In Alberta, hemp grain yield from research plots have been found to vary from 196 lbs per acre (220 kg per hectare), to about 1,607 lbs per acre (1,800 kg per hectare)³. The expected yield would likely average nearly 759 lbs per acre (850 kg per hectare). Hemp straw yield under dryland conditions have an average of between 2.4 to 4.8 tonnes per acre (6 to 12 tonnes per hectare) for the higher yielding varieties like Crag (Alberta Agricultural Research Institute, 2008).

Detailed market information for hemp seed is not directly available. Based on discussion with some producers in Alberta, the cash sales price of hemp seed in 2011 was approximately 90 cents to \$1.00. As shown in Table 3, Canada had 38,828 licensed acres in 2011. Over 80 percent of this was for seed production. Even though average yield vary, a reasonable yield estimate is approximately 1,100 lbs per acre (500 kg per acre). Based on this price and yield estimate, Canadian hemp seed production is estimated at approximately 15,513 tonnes assuming all acres cultivated to seed were harvested. This translates to estimated gross revenue of between \$30.75 million to \$34.17 million (\$990 to \$1,100 per acre).

Key Developments

Canadian industrial hemp production received a lot of attention in the early years. Advocates of hemp production painted a rather rosy picture for growth potential. However, the sudden demise of Consolidated Growers and Processors (CGP) Inc. of California left a large number of hemp growers in Manitoba sitting with a huge crop and nowhere to market it. This company was largely responsible for the rapid increase in acres in 1999 and the fallout in 2000.

The company created a lot of interest and hype for hemp among producers, particularly in Manitoba. The CGP contracted an estimated 40 percent of the total industrial hemp area licensed in Canada in 1999. However, the company went into receivership after failing to meet contractual obligations. This left the hemp producers with a huge surplus of hemp seed and fiber. This surplus was stored in warehouses and farmers' bins, awaiting bankruptcy settlement. A considerable portion of the hemp crop did not get sold and producers had to absorb the losses. Thus, the negative events of 1999 brought a lot of skepticism and fear for the future growth potential of hemp industry in Canada.

Another interesting development in 2007 was the collaboration between National Research Council Canada (NRC) and Naturally Advanced Technologies (NAT) previously called Hemptown Clothing Inc. NAT has been working with the NRC Institute for Biological Sciences (NRC-IBS) to commercialize NRC developed enzyme technology for processing hemp fabric (enzymes are used widely in industrial applications for everything from pulp bleaching to meat

¹ The link to the report is as follows: <http://www.gov.mb.ca/agriculture/crops/hemp/bko02s00.html>

² Hemp Production in Saskatchewan

³ Alberta Agricultural Research Institute, 2008

tenderizers). The technology promises dramatically improved fiber quality (softer, whiter fabric) using environmentally friendly methods.

Since 2008 hemp cultivation in Canada has been increasing. This is buoyed by a steady increase in the processing of hemp, and the development of many small businesses engaged in developing new products and marketing these products. In Alberta, work is well underway at Alberta Research Council (ARC) and Alberta Agriculture and Rural Development to evaluate hemp as a potential source of pulp and fiber. For example, a pilot decortication plant has been established through the Alberta Biomaterials Development Centre (ABDC) BioIndustrial Initiative. The pilot plant uses European equipment. It has the largest biomass processing pilot plant fractionalization capacity in North America.

Currently, there are many Canadian companies – including Hemp Oil Canada Inc., Hempola Valley Farms, Fresh Hemp Foods Ltd., Ruths Hemp Foods, Cool Hemp, and Natures Path, etc. working to develop and market hemp seed products. These companies are all involved in the hemp seed market and are producing a wide range of products. These products are snack foods, hemp meal and flour, edible oil, shampoo and conditioners, moisturizers, commercial oil paints, beer and aromatherapy and cosmetic products. Most of the companies are reporting good growth.

Another trend worth noting is that the hemp food industry has switched to certified organic production because of strong demand. A few industry experts estimate that approximately one-third of Canadian hemp seed production is certified organic.

In April 2010, the Province of Manitoba through the Rural Economic Development Initiative provided \$500,000 to Plains Hemp Processing in support of a new, innovative project design to process hemp. This hemp processing project is a first of its kind located in Gilbert Plains, Manitoba. Plains Industrial Hemp Processing currently manufactures several hemp based products such as hemp pellets, animal bedding and insulation. The newly built hemp processing plant will have the capacity to process up to 18,000 tonnes of hemp per year.

On December 13, 2010, the federal government announced an investment of \$728,000 to help the hemp industry increase production capacity and make new inroads into the U.S. market. “Canadian farmers and processors are finding tremendous success with hemp thanks to its many nutritional benefits and wide range of uses in pasta, salad dressings and frozen desserts,” said Minister Toews. “This Government is proud to invest in this growing industry so that farmers can continue to expand their markets and develop more products.” The Government of Canada investment will support three groups:

- A \$410,000 repayable contribution through the AgriProcessing Initiative for Fresh Hemp Foods to purchase and install new dehulling, oil pressing, and packaging equipment in its new 20,000 square foot state-of-the-art facility.
- A \$300,000 repayable contribution through the AgriProcessing Initiative for Hemp Oil Canada to purchase and install new air classification milling and cold press oil expeller technology.
- An \$18,625 investment through the AgriMarketing program for the Canadian Hemp Trade Alliance to enhance its website, hold a strategic planning meeting of its board of directors and take the first steps toward achieving Generally Regarded as Safe status in the U.S.

Canada exports industrial hemp in the form of hemp seeds, fibre, oil and oil-cake. In 2010, exports of hemp seed and hemp products were valued at more than \$10 million, with most exports going to the U.S.

In November 2011, the Canadian government through the AgriMarketing Program announced an investment of more than \$55,000 to the Canadian Hemp Trade Alliance (CHTA) to promote the high quality of Canadian hemp to international markets. This will include placing the Canada Brand and new CHTA logo on promotional materials as well as a trade show booth.

On April 1, 2012 Hemp Oil Canada Inc. based in Manitoba announced that it is first in the world to gain international food safety accreditation for hemp food⁴. This is good news for Hemp Oil Canada and the Canadian hemp industry as a whole because this may create more opportunities for food developers to market their hemp food products to international markets.

Prepared by:

Emmanuel Anum Laate

Senior Crop Economist

Economics Branch

Alberta Agriculture and Rural Development

Phone: 780-422-4054

Email: emmanuel.laate@gov.ab.ca

⁴ <http://www.mysteinbach.ca/newsblog/14830.html>

Appendix O

Petitioners Statements

Ray Berard

Ben Droz

Tyler Frank

Jeff Gain

Gale Glenn

Barry Grissom

Anndrea Hermann

William Holmberg

Colleen Sauv   Keahey

Andy Kerr

Alan Kimbell

Ed Lehrburger

Joyce Beckerman Mayer

Paul Mahlberg

David Monson

Courtney N. Moran

George Obernagel

Eric Pollitt

Floyd Prozanski

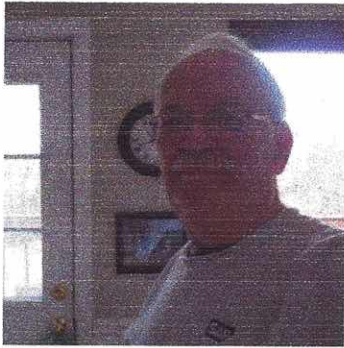
Dave Seber

Gerry Shapiro

Erwin A. (“Bud”) Sholts

Cynthia Thielen

Carl Wilson



AFFIDAVIT OF RAY BERARD

I, Ray Berard, swear or affirm:

1. From 1994 until 2003, I was Senior Vice President of Technology for Interface Research Corporation, based in Kennesaw, Georgia. I now live in Portsmouth RI.

2. Interface Research Corporation is an arm of Interface, the worldwide leader in design, production and sales of environmentally-responsible modular carpet for the commercial, institutional, and residential markets. Interface has a market

capitalization of approximately \$1 billion.

3. Research has proved that carpet made from industrial hemp is both biodegradable and recyclable, making it a superior source material for floor coverings. Industrial hemp fiber is one of the best fibers from natural product for commercial markets.

4. The limitation to the incorporation of industrial hemp into floor coverings is that of supply. It would need to be grown in large quantities; something that is presently not possible in the United States as long as industrial hemp cultivation is encumbered by it's misclassification as "marijuana."

5. My interest in the plant species *Cannabis sativa* is solely limited to industrial hemp.

I SWEAR THAT THE ABOVE IS TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

Date

(sign name)

Raymond A Berard
(print name)

STATE OF _____

COUNTY OF _____

Subscribed and sworn to (or affirmed) before me this _____ day of _____, 2016 at _____, _____ (city and state)

Signature of Notary Public

Name of Notary Public (print your name)

SEAL

Notary Public, State of _____

My commission expires: _____



DECLARATION OF BEN DROZ

I, Ben Droz, declare the following:

1. I am a professional photographer living and working in Washington, DC. I regularly photograph high profile events, and my work is printed monthly in *Washington Life Magazine*. In addition to this work, I also have worked and volunteered for over 8 years for the non-profit Vote Hemp, which has been leading the fight to allow for American production of industrial hemp.
2. Over the years, I have been instrumental in persuading numerous Members of Congress and United States Senators to sponsor the Industrial Hemp Farming Act (H.R. 525 and S.134, 114th Congress).
3. H.R. 525, sponsored by Rep. Thomas Massie (R-KY-4th) presently has 69 cosponsors, including 26 Republicans.
4. S.134, sponsored by Sen. Ron Wyden (D-OR) presently has 14 cosponsors. It is worth noting that cosponsors include the Senate Majority Leader Sen. Mitch McConnell (R-KY), former Republican presidential candidate Sen. Rand Paul (R-KY), and current Democratic presidential candidate Bernie Sanders (I-VT).
5. H.R. 1635 and S. 1333 are similar pieces of legislation that would allow American hemp production, among other things. H.R. 1635 has 63 cosponsors, including 33 Republicans. S. 1333 has 13 cosponsors, including 8 Republicans. It is worth noting that cosponsors of this legislation include House Speaker Paul Ryan and Senate Pro-Tempore Orrin Hatch.
6. Multiple laws have included hemp language that have passed since 2014, and overwhelming bipartisan support has continued to grow, as evident from several roll call votes. With support from the most powerful members of Congress, I strongly urge any action to be taken that would support the burgeoning hemp industry in the United States.


Ben Droz

DECLARATION OF TYLER FRANK



I, Tyler Frank, declare:

1. I am the owner of Hemptopia (www.hemptopia.com), based in Solvang, California.
2. Hemptopia was formed in 2005 to create hemp apparel designed around comfort, functionality, durability and sustainability. We focus on the beneficial properties of hemp and design our products to hold a higher level of serviceability for our customers and our mother "Earth".
3. Our hemp-based products include clothing, bags, body care products, books, cord, dog toys, DVDs, fabrics, fibers, lotions, Papers, protein powders, rope, seeds, soaps, scales, towels, twine, webbing, wick and yarn.
4. Hemptopia also specializes in hemp promotional material including hemp t-shirts, hemp hats, and hemp tote bags to have your logo printed on or embroidered on.
5. Hemptopia also offers private label solutions, raw hemp material, and fulfills custom manufacturing needs.
6. Hemptopia's knowledge and hemp industry connections enable us to provide customers, storefronts & entrepreneurs the direct connection to develop, manufacture & order a wide range of hemp materials & products.
7. Hemptopia produces under safe, fair, legal and humane working conditions throughout our supply chain.
9. The unencumbered farming of industrial hemp in the United States would help grow our business.

Tyler Frank

6/3/16

Tyler Frank



AFFIDAVIT OF Jeffrey W. Gain

I, Jeffrey W. Gain, swear or affirm:

1. I live on and manage my farm near the town of Hardin in Calhoun County, Illinois. I am a native of Rushville, Illinois and have a B.S. degree in management from University of Illinois. After graduation, I served as Public Information Officer and as an admiral's aide in the U.S. Coast Guard.
2. I served for 10 years as the Chief Executive Officer of the National Corn Growers Association, retiring October 1, 1994.
3. I was Executive Director of the American Soybean Association from 1977 to 1984.
4. In 1995 I was appointed to the Board of Directors of the US Department of Agriculture's Alternative Agricultural Research and Commercialization Corporation (AARC) and served as Chairman of the Board until its termination in May 2000. The AARC made equity investments in small, rural-based companies to commercialize industrial uses for agricultural materials.
5. I was is one of the original founders of the New Uses Council, formed in 1990 to serve as an advocate for commercializing new industrial uses for agricultural raw materials and to help coordinate public and private sector activities in that regard. I served as its Chairman from 1991 to 1993.
6. I was one of the founders of the St. Louis Agri-Business Club and served as its first President. I was named the Agri-Business Leader of the Year by the Club in 1985. I also served as a member of USDA's New Farm and Forest Products Task Force which resulted in the new industrial uses initiatives for U.S. agriculture. The Task Force recommendations in 1987 led to the creation of the AARC Corporation in the 1990 Farm Bill.
7. For my work in promoting the development of industrial products from agricultural materials, I received an Outstanding Leadership award from the American Crop Protection Association. I was awarded the prestigious Wheeler McMillan award from the New Uses Council and have traveled extensively on marketing missions to Europe, South America, the Middle East and Asia, including the People's Republic of China.
8. I am now engaged in agricultural policy, marketing and management consulting. I serve on the board of the McCulley Heritage Project, and am also member of the board of Omni Ventures, Inc.
9. I am a founding board member of the North American Industrial Hemp Council (www.naihc.org).
10. As a farmer and as the retired chief executive of the two of the largest agricultural trade organizations in the United States, I have a strong interest in industrial hemp because American farmers are too dependent upon two few commodity crops.
11. Industrial hemp could successfully be grown in profitable rotation with both corn and soybeans in ways that require less intensive agricultural inputs such as fertilizers and pesticides.
12. Industrial hemp fiber, seed and oil also make excellent feedstocks to manufacture bio-based

products that are comparable or superior to products made from petrochemicals.

13. It is not fair that farmers in Canada can grow industrial hemp that is imported into the United States and used as a feedstock for industrial products manufactured in the United States.

14. I have two daughters and one son and I want to leave to them an America and American agriculture that is more sustainable, both economically and environmentally.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

May 9, 2016
Date

Jeffrey W. Gain (sign name)
JEFFREY W. GAIN (print name)

STATE OF Illinois
COUNTY OF Calhoun

Subscribed and sworn to (or affirmed) before me this 9th day of May, 2016, at
HAROLD, ILLINOIS (city and state)



JANE M. BRANGENBERG
OFFICIAL SEAL
Notary Public, State of Illinois
My Commission Expires
December 2, 2017

Jane Brangenberg
Signature of Notary Public

JANE BRANGENBERG
Name of Notary Public (print your name)

SEAL

Notary Public, State of IL
My commission expires: 12/2/2017



AFFIDAVIT OF GALE GLENN

I, Gale Glenn, swear or affirm:

1. I lived in North Carolina for 28 years before returning in 1999 for retirement.
2. I am a graduate of Marymount Manhattan College.
3. For 12 years, I lived in Kentucky and was owner of a 300-acre farm that produced angus/cross beef cattle and produced 50,000 pounds per year of burley tobacco.
4. I saw that big changes were coming to tobacco farming and I was interested in diversifying my agricultural production. I became interested in industrial hemp as an alternative tobacco for several reasons, including that Kentucky was once a major producer of industrial hemp, especially as a seed source to grow industrial hemp elsewhere.
5. In 1994, Kentucky Governor Brereton Jones appointed me to the Task Force on Industrial Hemp and Other Fiber Related Crops. As a member of the task force, I learned much more about industrial hemp and became more convinced as to its importance in diversifying agriculture through the United States.
6. Hemp is a farmer's dream crop: low-labor, a small amount of fertilizer, no herbicide or pesticide to pollute the land and waterways, an ideal rotational crop with a plus: It reduces the soy bean nematode problem by 60 percent.
7. I have long served on the board of directors of the North American Industrial Hemp Council (www.naihc.org). I am interested only in industrial hemp and have no interest in marijuana.
8. While I no longer own my farm, I am still committed to seeing industrial hemp again become an important part of agriculture, industry and commerce in Kentucky, North Carolina and the rest of the United States.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

5-5-16
Date

Gale M. Glenn (sign name)
GALE M. GLENN (print name)

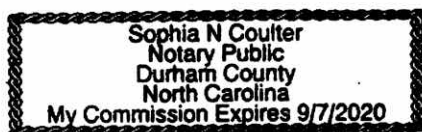
STATE OF North Carolina
COUNTY OF Durham

Subscribed and sworn to (or affirmed) before me this 5th day of May, 2016, at
Durham, North Carolina (city and state)

Sophia N. Coulter
Signature of Notary Public

Sophia N. Coulter
Name of Notary Public (print your name)

SEAL



Notary Public, State of NC
My commission expires: 9-7-2020



DECLARATION OF BARRY GRISSOM

I, Barry Grissom, declare:

1. I was born in Lebanon, Ky., in 1954, graduated from Johnson County Community College in 1974, the University of Kansas in 1977 and Oklahoma City University School of Law in 1981.

2. In 2010, President Obama appointed me to serve as the United States Attorney for the District of Kansas. The appointment was confirmed by the U.S. Senate later that year. I resigned the post in 2016.

3. The mission statement for my office was:

Our mission is to protect the citizens of the district of Kansas from terrorism, crime and unlawful

discrimination, to enforce federal laws and advance the interests of the United States government, to provide federal leadership and serve as a catalyst for improving law enforcement through training and public education, and to perform our duties with integrity, professionalism and respect for the citizens we serve.

4. As U.S. Attorney, I assessed and resolved a wide array of civil and criminal cases, managed three offices and a large legal workforce of 49 Assistant U.S. Attorneys and 53 support staff, while representing the Department of Justice in diverse communities across his district. My law enforcement priorities included national security, violent crime, drug trafficking, financial fraud and crimes against children.

5. As U.S. Attorney, I was selected by Attorney General Eric Holder to serve as one of 15 members on the Attorney's General Advisory Committee (AGAC), which advises the Attorney General on matters of administration and policy. As a member of the AGAC, Grissom contributed to efforts to reform the federal criminal justice system through his Smart on Crime initiative.

6. Prior to my work as U.S. Attorney, I was in private practice law for 27 years in both state and federal court, with involvement at every level of complex government litigation matters. I have experience leading white-collar criminal prosecutions and affirmative civil lawsuits, prosecuting complex white collar crime cases involving financial, securities, health care and related industries, crisis management and regulatory enforcement matters.

7. In 2016, I resigned the office and re-entered private practice.


Barry Grissom
6/6/2016

DECLARATION OF ANNDREA HERMANN



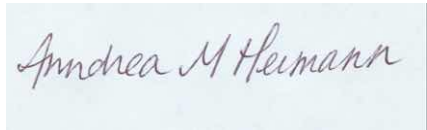
I, Anndrea Hermann, declare:

1. I am the principal of The Ridge International Cannabis Consulting and Hemp Technologies (Canada) based in Manitoba.
2. I have been awarded: B.GS., Hemp Ecolonomics, Missouri Southern State University, 2002; Premasters, University of Manitoba, 2004; and M.Sc., Science of Hemp Agronomy, University of Manitoba, 2008.
3. A am a certified as a Professional Agrologist by the Manitoba / Nova Scotia Institute of Agrology, 2004-Present.
4. I am authorized by Health Canada to Crop sample and prepare for THC, to sample seed for viability and to derivative sample for THC. In addition, I am a licensee permitted to produce hemp derivatives, to Sale and Distribute, Export and Transport industrial hempseed products.
5. I am accredited in industrial hemp construction, since 2011 by the International Hemp Building Association and in 2013/2106 completed training on Good Agriculture and Collection Practices On Farm Food Safety.
6. I have over 16 years' experience in the Canadian and international industrial hemp industry with a wide range of interdisciplinary skills including hemp fibre & seed agronomy, hemp field trials & crop THC sampling, product quality standards & testing, sales, marketing, product development, regulatory affairs, certifications & licensing, client to client connections, hemp building applications, project analysis, bodycare, fashion, food, etc.
7. I was selected by the Government of Canada as a Unique Skilled worker in 2003 and was later named a Champion of the New Rural Economy by the Government of Manitoba in 2011 and an Investment Champion by the Government of Canada in 2010. In 2016 I was a finalist for the most Influential Person in Cannabis in Canada and the PNW.
8. I teach a course on industrial hemp in the Wood Science Engineering Department in the College of Forestry at Oregon State University.
9. I co-authored 2008: *Canada's National Hemp Strategy Document – Agronomy and harvesting section*, 2009/2015: *Canadian Hemp Industry Regulatory Review* and 2010: Chapter 10- *Selected special crops on the Canadian Great Plains in Recent Trends in Soil Science and Agronomy Research in the Northern Great Plains of North American*
10. I am the Sales & Business Development Officer for Hemp Production Services and Advisor for Nutiva Foods. In addition, I sit on the board of the Canadian Hemp Trade Alliance and the Hemp Industries Association and am a Special appointed Committee member to the European Industrial Hemp Association.
11. Industrial hemp cultivation is profitable to Canadian farmers and can be to American

farmers. Increasing farm gate and diversity.

12. Industrial hemp can be a useful feedstock for many products and often has technical qualities superior to existing feedstocks and environmental benefits.

13. A major limitation for American industry to use industrial hemp is that, for some applications, it must be grown near the place of manufacture as to minimize hauling costs.

A handwritten signature in cursive script, reading "Andrea M. Hermann", written in dark ink on a light blue background.



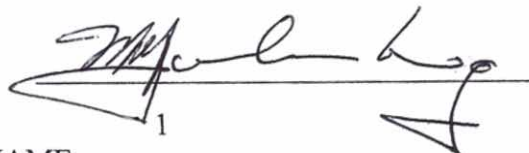
AFFIDAVIT OF WILLIAM HOLMBERG

I, William Holmberg, swear or affirm:

1. I began my military career as an enlisted Marine during the Second World War. I graduated from the U.S. Naval Academy, and holds advanced degrees in Personnel Administration, Soviet Affairs and the Russian Language. While on active duty, I served in the Cold and Korean Wars. I commanded platoons, companies, a battalion landing team and a Marine Barracks. I was an Aide to two Chiefs of Naval Operations and served on the Joint Staff.
2. After my military service, I spent an additional thirteen years of experience in the federal government supporting sustainable agriculture and energy technologies, with a focus on biofuels. While at the Environmental Protection Agency, Federal Energy Office, Federal Energy Agency, and the Department of Energy, I helped to pioneer the ethanol and biodiesel industries, organic farming and integrated pest management.
3. I retired from the federal government at the Senior Executive Service level and spent an additional twenty-one years in the private sector, managing small businesses and associations relating to biofuels, including the New Uses Council and the Biomass Coordinating Council.
4. I am a founding member of the Sustainable Energy Coalition (SEC), which makes major contributions to the Senate and House Renewable and Energy Efficiency (RE & EE) Caucus. I currently focus is on sustainability of biomass feedstocks. I sees a major opportunity to demonstrate the enormous potential of biomass to meet the world's need for food, feed, fuel, fiber, fertilizers and feedstock for chemicals, while enhancing the environment, wildlife habitat, natural systems and reversing the build up of greenhouse gases.
5. Industrial hemp has excellent potential as a biomass energy crop. It grows under difficult conditions, has no hallucinogenic benefits, and can be converted into a wide range of valuable products like car parts, cosmetics, biofuels, and biobased products.
6. Industrial hemp can substitute as feedstocks for many products now made from unsustainable sources, such as petroleum. Products made from industrial hemp could be useful to the United States military, but policy wisely prohibits our military from relying on foreign sources for its materials and fuels. It is an unwise policy that prohibits the cultivation of industrial hemp in the United States. As a matter of economic, environmental, natural and national security, this policy should be changed.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

6/1/16

 (sign name)
1

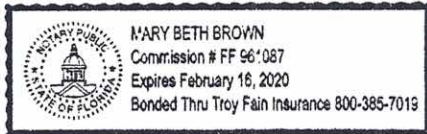
Affidavit of LASTNAME, FIRSTNAME

Date

William C. Holmberg (print name)

STATE OF FL
COUNTY OF Martin

Subscribed and sworn to (or affirmed) before me this 1 day of June, ~~2014~~ ²⁰¹⁶, at
Palm City, Florida (city and state)



Mary B. Brown
Signature of Notary Public

Mary Beth Brown
Name of Notary Public (print your name)

SEAL

Notary Public, State of FL
My commission expires: 02/16/2016



DECLARATION OF Colleen Sauv  Keahey

I, Colleen Sauv  Keahey, declare the following:

1. I am the founder Tennessee Hemp Industries Association (TNHIA), the first state chapter to affiliate with the national Hemp Industries Association.
2. My family owns land in middle Tennessee, and I want farmers in the area to be able to cultivate hemp and diversify from crops that require far too many resources and contaminates to grow. Tennessee's farmers are capable of supplying a demand for hemp's raw materials to make domestic hemp

products, which are legal.

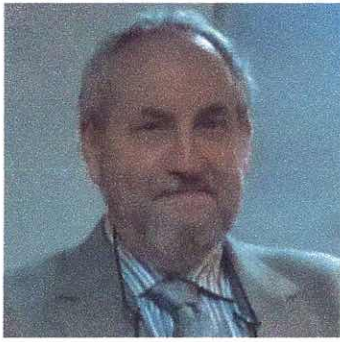
3. In 2014, I worked to educate legislators about industrial hemp and was very involved into the enactment of industrial hemp legislation in Tennessee with nearly unanimous passage resulting in Public Chapter 916.

4. I have served as an advisor to the Tennessee Department of Agriculture and National Hemp Association.

5. I am the National Outreach Coordinator for Vote Hemp, and I have worked with advocates nationwide to help shape workable hemp policy based on the state's long-term vision to reintroduce industrial hemp as a rightful agricultural commodity.

A handwritten signature in blue ink that reads "Colleen J. Keahey". The signature is written in a cursive, flowing style.

Colleen Sauv  Keahey



AFFIDAVIT OF ANDY KERR

I, Andy Kerr, swear or affirm:

1. I am the Czar of The Larch Company (www.andykerr.net), which is dedicated to the conservation and restoration of nature.
2. The Larch Company is a non-membership for-profit organization that represents species that cannot talk and humans not yet born. A deciduous conifer, the western larch has a contrary nature.
3. I primarily consult for public lands conservation organizations to save wilderness, wild and scenic rivers, old-growth forests, sagebrush-steppe, wildlife, watershed, biological diversity and other values of public lands.
4. My interest in forest conservation and restoration led me to become interested in industrial hemp as an alternative to wood in the manufacture of paper and construction products.
5. The logging of forests results in the loss of fish and wildlife habitat, degradation of water quality, the release of carbon into the atmosphere, the marring of the scenery and a loss of recreational opportunities.
6. My research leads me to believe that industrial hemp can be a viable, and more sustainable, alternative to wood as a feedstock for paper and construction products.
7. I am a founder of, and still serve on the board of the North American Industrial Hemp Council (www.naihc.org).
8. I believe that the unencumbered cultivation of industrial hemp can be a positive factor in the conservation and restoration of forests in the United States.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

30 June 2016

Date

Andy Kerr

(sign name)

Andy Kerr

(print name)

STATE OF DISTRICT of COLUMBIA
COUNTY OF _____

Subscribed and sworn to (or affirmed) before me this 3 day of June, 2016, at
District of Columbia (city and state)



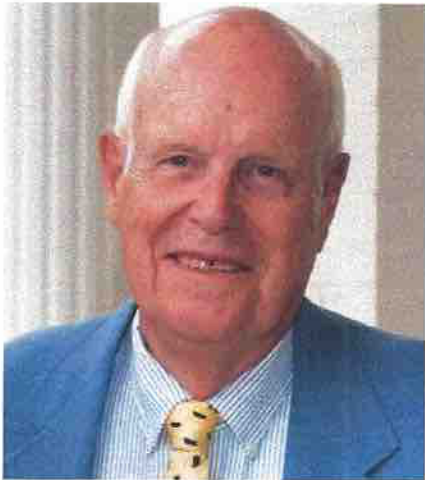
Mary F. Vincent

Signature of Notary Public

MARY F. VINCENT

Name of Notary Public (print your name)

Notary Public, State of District of Columbia
My commission expires: 03-31-2018



AFFIDAVIT OF ALAN KIMBELL

I, Alan Kimbell, swear or affirm:

1. I am a marketing consultant living in Indianapolis, Indiana. I am a graduate of Middlebury College (1953), and in 2004 received a Distinguished Service Award in Food Science from Purdue University.
2. Before I retired, I was Vice President for Marketing, IWC Resources Corporation, Indianapolis, a water utility holding company sold in 1997 to NiSource, Inc. Prior business experience includes industrial sales assignments for A. E. Staley Manufacturing Company, and as an independent marketer of food ingredients, having established Indiana Marketing Associates, Inc., Indianapolis, in 1965.
3. I have held both appointed and elective office in local government. After serving from 1969-1972 as Director of Public Safety for the City of Indianapolis, I was elected to two terms in the Indianapolis City-County Council, 1972-1979.
4. From 1980 to 1988, I served as Deputy Executive Director for Marketing, Indiana Department of Commerce, leading the Divisions of Agriculture, Industrial Development, International Trade, and Tourism. From 1989 to 1993, I was a member of the USDA Agribusiness Promotion Council.
5. I am currently non-executive Chairman of Distribution Management Associates, Inc. Indianapolis, and serve as Vice Chairman and Treasurer of Indians, Inc., Indianapolis' International League Baseball Club.
4. I am on the board of directors of the North American Industrial Hemp Council (www.naihc.org) and serve as its treasurer.
5. My entire interest in *Cannabis sativa* is limited to industrial hemp as a source of new products or new source materials for existing products, as well as diversifying and improving American agriculture.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

4/29/16
Date

Alan D. Kimbell (sign name)
ALAN D. KIMBELL (print name)

STATE OF Indiana
COUNTY OF Marion

Subscribed and sworn to (or affirmed) before me this 29th day of April, 2016, at
Indianapolis, Indiana (city and state)

Lisa K. Mesalam
Signature of Notary Public

Lisa K. Mesalam
Name of Notary Public (print your name)

SEAL



Notary Public, State of Indiana
My commission expires: October 22, 2022



AFFIDAVIT OF ED LEHRBURGER

I, Ed Lehrburger, swear or affirm:

1. I am President and Chief Executive Officer of PureVision Technology, Inc. (www.purevisiontechnology.com), a 23-year old Colorado-based technology firm based in Fort Lupton, Colorado.

2. I graduated from Western State College of Colorado with a business degree in 1978.

3. Prior to co-founding PureVision, I was a majority owner and chief financial officer of a nationwide, commercial finance company based in Livingston, NJ.

4. PureHemp Technology LLC is a subsidiary of PureVision (www.purehemptech.com). PureVision has provided PureHemp with exclusive, global refining technology and marketing rights to produce hemp-based raw materials and products from the patented PureVision continuous countercurrent technology.

5. I currently serve on the Industrial Hemp Advisory Committee for the Colorado State General Assembly.

6. My primary focus is to commercialize the unique and patented continuous countercurrent reactor (CCR) technology along with other in-line equipment that can rapidly convert hemp stalks and other biomass into raw materials to manufacture a wide variety of products.

7. As an alternative to oil refineries, hemp refineries take in whole hemp plants to produce the intermediate products and chemical building blocks comprising of pulp, lignin and sugars used to manufacture thousands of consumer and industrial products, which we believe we will be able to be accomplished in a cost-effective manner.

8. The U.S. trend to legalize the cultivation of industrial hemp is a major driver for the PureHemp opportunity and there are many new business opportunities for farmers, end product manufacturers, entrepreneurs and investors.

9. Perhaps the greatest emerging market driver is the demand for hemp-based products, ranging from nutraceuticals, body care products, food, food supplements, sweeteners, specialty chemicals, paper and tissues, plastics, lightweight composites, just to name a few.

10. PureHemp Technology LLC would benefit from the unencumbered cultivation of industrial hemp in the U.S.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

May 17, 2016
Date

Ed Lehar (sign name)
Ed Leharburger (print name)

STATE OF COLORADO
COUNTY OF WELD

Subscribed and sworn to (or affirmed) before me this 17th day of MAY, 2016, at
FORT LUDLOW, COLORADO (city and state)



SEAL

Susan J. Hintze
Signature of Notary Public
SUSAN J. HINTZE
Name of Notary Public (print your name)

Notary Public, State of CO
My commission expires: DECEMBER 2, 2019

DECLARATION OF JOY BECKERMAN MAHER



I, Joy Beckerman Maher, declare:

1. I am a resident of the State of Washington and the Founder and Principal at Hemp Ace International (www.hempace.com), a Washington Limited Liability Company. I provide industrial hemp consulting and brokering services with over 20 years of experience in the industrial hemp industry and nearly 20 years of experience in compliance and complex civil litigation legal support. I have personal knowledge of the matters set forth herein and am competent to testify thereto.
2. Through my company, Hemp Ace International, I broker all things industrial hemp with the exception of seeds capable of germination. I have international supply chain networks for everything from raw and processed fiber, building materials, bulk hempseed oil (nutritional, cosmetic and industrial), and bulk hemp food ingredients, to textiles, apparel, cordage, paper, certain biocomposites, and a plethora of products beyond that.
3. I provide industrial hemp consulting, paralegal, networking, public speaking and presentation services. My clients are both domestic and foreign and, among many types of entities, include farmers, manufacturers, distributors, investors, builders, landowners, technology developers and retailers. I present at universities, conferences, symposiums, panels and continuing legal education seminars, as well as privately for commercial enterprises.
4. I am the Industrial Hemp Advisor to the Northwest Farmers Union, an advisory board member of the Center for the Study of Cannabis & Social Policy; an advisory board member of the International Cannabis Health & Beauty Aids Producers Alliance, and a member of both the Policy and Regulatory Committees of the Washington Cannabis Alliance, which Alliance is in the process of being legally converted to an agricultural commission to be known as the Washington Cannabis Commission (listed for identification purposes only).
5. In addition to the organizations listed in the paragraph directly above, my professional affiliations include the Canadian Hemp Trade Alliance, International Hemp Building Association, NW EcoBuilding Guild, and Cannabis Women's Alliance (listed for identification purposes only).
6. I have worked with certain of our Washington State Legislators and the Washington State Department of Agriculture ("WSDA") to draft and successfully pass industrial hemp [research] legislation in the State of Washington, and I am currently working with the WSDA in the rulemaking process to develop Washington State's Industrial Hemp [Research] Program. There are Washington municipalities that are expressing a wide spectrum of interest in industrial hemp, ranging from infrastructure development to water and soil remediation.
7. The unencumbered cultivation of industrial hemp in the United States would greatly benefit my business and me. The excessive costs and time required for importation, along with the unnecessary and burdensome controls of the Drug Enforcement Administration, unfairly retard the growth of my business and the businesses of the clients I serve.

I declare under penalty of perjury under the laws of the State of Washington and the United States that the foregoing is true and correct.

DATED this 5th day of June, 2016, in Edmonds, Washington.


Joy Beckerman Maher, Principal
Hemp Ace International LLC
(206) 383-6000
joy@hempace.com
www.hempace.com



AFFIDAVIT OF PAUL MAHLBERG

I, Paul Mahlberg, swear or affirm:

1. I Professor Emeritus of Biology (plant biology) and Senior Fellow of the Institute of Molecular and Cellular Biology, Indiana University.
2. I received a Ph.D. in Botany at the University of California, Berkeley and MS and BS degrees in Botany at the University of Wisconsin, Madison.
3. I have studied Cannabis, for over 30 years and has published over 30 peer-reviewed scientific articles on Cannabis.
4. I served as a consulting editor to Academic Press in the preparation of ten monographs.
5. I collaborated with Dr. Ivan Bocsa, Kompolt, Hungary, an internationally known industrial hemp breeder, in a three-year US Department of Agriculture-sponsored research study on industrial hemp, and with Dr. Eun Soo Kim, Seoul, Korea, on organization and composition of glandular trichomes in Cannabis and related plants.
6. I served as a consultant to United Nations Industrial Organization, Vienna, on industrial processing of raw opiates, to the University of Mississippi, School of Pharmacy in its Cannabis program, and to private companies in studies on secondary products of plants.
7. Δ^9 -tetrahydrocannabinol (THC) is the intoxicating cannabinoid found in large amounts in marijuana. Cannabidiol (CBD), also a cannabinoid—but not intoxicating—is found in large amounts in industrial hemp. Industrial hemp also contains inconsequential amounts of THC and marijuana inconsequential amounts of CBD.
8. CBD counteracts the intoxicating affect of THC, which is why marijuana plants have been bred to select both very large amounts of THC and very low amounts of CBD. Somewhat conversely, industrial hemp plants have been selected for characteristics such as rapid growth, fiber length, seed quantity and quality, etc. Industrial hemp has not been bred for increased THC and, in fact—given the laws in the world pertaining to marijuana—has been bred to have inconsequential amounts of THC.
9. Planting marijuana anywhere near industrial hemp would be ill conceived. When industrial hemp pollinates marijuana it transfers the genes for low drug content (low amounts of THC and high amounts of CBD) to developing seeds of the marijuana. If industrial hemp pollen contaminates nearby marijuana, genetically the next crop of marijuana will have—on average—approximately half the THC content of the original. While some individual plants will have as much THC as the marijuana mother, others will have as little THC (and as much CBD) as the industrial hemp father. The problem for the marijuana grower, seller, and/or consumer is that one cannot tell which seed or plant is which, except by tedious trial and error evaluation (either assaying it or ingesting it). When industrial hemp repeatedly crosses with progeny of the industrial hemp-marijuana plants obtained each year, the THC content is repeatedly reduced in the plants. Thus, the THC content will become so low and uncertain that the derived marijuana will be useless as a drug plant. Growing marijuana anywhere near industrial hemp is no way to stay in the marijuana business.

10. While it is possible that marijuana pollen could also contaminate industrial hemp plants, which would tend to increase the THC content of the industrial hemp plants, it must be kept in mind the relative scale. One industrial hemp field will have thousands of industrial hemp plants. A typical marijuana growing operation will have a very small fraction of that amount. The magnitude of any industrial hemp pollen compared to marijuana pollen means that industrial hemp is far more a problem for marijuana cultivation than marijuana is for industrial hemp cultivation. Even if the THC content of the industrial hemp tended upward, any intoxicating THC would be more than countered by the CBD.

11. My entire professional interest in Cannabis has been and is to further scientific understanding of the species. My personal interest in industrial hemp recommercialization is based on a desire to help farmers cultivate another profitable crop, manufacturers to produce goods that are technically superior, environmentally more friendly and or less expensive. I am a board member of the North American Industrial Hemp Council (www.naihc.org).

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

June 2, 2016
Date

Paul Mahlberg (sign name)
Paul Mahlberg (print name)

STATE OF WI
COUNTY OF Doo

Subscribed and sworn to (or affirmed) before me this 2nd day of June, 2016, at
Sturgeon Bay, WI (city and state)

Christine R. Peterson
Signature of Notary Public

Christine R. Peterson
Name of Notary Public (print your name)

SEAL



Notary Public, State of WI
My commission expires: 11/27/2016



AFFIDAVIT OF DAVID MONSON

I, David Monson, swear or affirm:

1. I am farmer on the family farm in Cavalier County in northeastern North Dakota. I am a retired teacher and school superintendent and owned my own insurance agency.
2. I have been a member of the North Dakota House of Representatives (R-Osnabrock; District 10) since 1992. I have served as Assistant Majority Leader and Speaker of the House. I presently chair the Education and Environment section of the House Appropriations Committee.
3. I am on a number of other boards such as President of Family Mutual Insurance Co., President of Dovre Lutheran Church, board member of Northeast North Dakota Heritage Foundation, North Dakota Atmospheric Resource Board, an adviser to Osnabrock Community Living Center and North Dakota Educational Standards and Practices Board (teach licensure).
4. I have a BS in biology education (taught all sciences, psychology, and government) and a Med degree in Educational Administration from the University of North Dakota.
5. I am a life member of the NRA, National Wildlife Federation and the Knights of Pythias (Past Grand Sec.). Other membership to organizations include the North Dakota Farm Bureau, United Pulse Growers, North Dakota Canola Growers, North Dakota Retired Teachers Association, Fraternal Order of Eagles, and others.
6. My farming involves raising wheat, barley, canola, soybeans, pinto beans, and—someday—industrial hemp. My friend across the Canadian border in Manitoba is making money raising industrial hemp. I am losing money by raising wheat (even with the federal government subsidizing me to do so.)
7. I was instrumental in changing North Dakota laws to again allow for the growing of industrial hemp.
8. I hold a license from the State of North Dakota to grow industrial hemp, but due to Federal restrictions have not been able to grow industrial hemp without fear of Federal prosecution, civil forfeiture and other hassles.
9. I am on the Board of the North American Industrial Hemp Council (www.naihc.org). I have no interest in marijuana.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

4-28-2016

Date

David Monson (sign name)

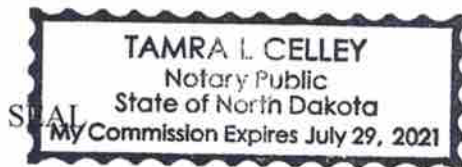
David Monson (print name)

STATE OF North Dakota
COUNTY OF Burleigh

Subscribed and sworn to (or affirmed) before me this 28th day of April, 2016, at
Bismarck, North Dakota (city and state)

Tamra L. Celley
Signature of Notary Public

TAMRA L. Celley
Name of Notary Public (print your name)



Notary Public, State of ND
My commission expires: July 29, 2021



AFFIDAVIT OF COURTNEY N. MORAN, LL.M.

I, Courtney N. Moran, swear or affirm:

1. I am the founding principal of EARTH Law, LLC, the leading national expert on industrial hemp law, driving policy in developing a sustainable *Cannabis* hemp industry.
2. I graduated *magna cum laude* from Lewis and Clark Law School with a Master of Laws in Environmental and Natural Resources Law, with an emphasis in Industrial Hemp Law.
3. I am currently licensed to practice law in Oregon, Wisconsin, and Minnesota.
4. In 2013, I completed the world's first industrial hemp university course, WSE 266, offered at Oregon State University.
5. In the Spring of 2015 my article, *Industrial Hemp: Canada Exports, United States Imports* was published in the Fordham Environmental Law Review.
6. I have presented on industrial hemp law and policy at conferences throughout the U.S.
7. I have testified on proposed industrial hemp legislation before the Oregon Department of Agriculture, Oregon Health Authority, Oregon House of Representatives Committee on Rules, Oregon Joint Committee on Marijuana Legalization, Oregon House Committee on Agriculture and Natural Resources, and the Oregon Senate Committee on Environment and Natural Resources.
8. I am the founder of the non-profit Oregon Hemp Industries Association.
9. I co-founded and lobby on behalf of the Oregon Industrial Hemp Farmers Association.
10. During the 2016 Oregon Legislative Session, I successfully lobbied for the passage of HB 4060, a bill that I helped draft that amends the Oregon industrial hemp statutes in a manner that protects agricultural interests, and which passed the Oregon House with a vote of 54-4 and passed the Oregon Senate unanimously, with a vote of 25-0 and was signed into law by Governor Brown on March 29, 2016.
10. My interest in industrial hemp stems from environmental considerations. Industrial hemp has phytoremediation properties, meaning the ability to clean up toxins in soil. Farmers can clean up toxins out of the soil while providing nitrogen and aeration as industrial hemp grows. Industrial hemp cultivation also requires few inputs. Processors can produce industrial hemp into thousands of renewable, sustainable products.

[SIGNATURE PAGE FOLLOWS]

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

5-31-2016
Date

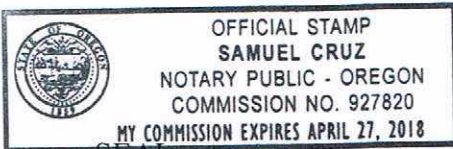
Courtney N. Moran (sign name)
Courtney N. Moran (print name)

STATE OF Oregon
COUNTY OF Multnomah

Subscribed and sworn to (or affirmed) before me this 31 day of May, 2016, at
Portland, OR (city and state)

Samuel Cruz
Signature of Notary Public

Samuel Cruz
Name of Notary Public (print your name)



Notary Public, State of Oregon
My commission expires: April 27, 2018



AFFIDAVIT OF George W. Obernagel

I, George W. Obernagel, swear or affirm:

1. I own a family farm operation with 14,000 acres land located in Nebraska, Arkansas and Illinois and has a herd of purebred Angus.
2. I am part owner of Wm. Nobbe and Co., which has seven John Deere dealerships.
3. I am a retired vice-president, trust officer and farm manager at West Pointe Bank and Trust.

4. I serve on the boards of directors of McKendree University, Red Bud Regional Hospital and Southern Illinois Power Cooperative, First Waterloo Bank, Waterloo Chamber of Commerce and Kaskaskia Port District.

5. I am active in the Monroe County Farm Bureau, Monroe County Fair Association, Illinois Corn Growers Association, Illinois Corn Marketing Board, Illinois Beef Association, Illinois Soybean Association, Monroe County Planning Commission and the St. Paul United Church of Christ.

6. I would very much like to diversify my farm operation by being able to grow industrial hemp unencumbered by inaccurate association with marijuana.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

4-29-2016
Date

George W. Obernagel (sign name)
George W. Obernagel (print name)

STATE OF Illinois
COUNTY OF Monroe

Subscribed and sworn to (or affirmed) before me this 29th day of April, 2016 at Waterloo, Illinois (city and state)



SEAL

Sheri A. Hammel
Signature of Notary Public

Sheri A. Hammel
Name of Notary Public (print your name)

Notary Public, State of IL
My commission expires: 12-15-2018



DECLARATION OF ERIC POLLITT

I, Eric Pollitt, swear or affirm:

1. I founded Global Hemp (www.globalhemp.com) in 1996 in Federal Way, Washington, and opened up the Global Hemp Store in Peoria, Illinois in 2003.
2. The Global Hemp Store sells body care products, clothes, jewelry and crafts, food, twine and yarn sourced from industrial hemp.
3. My business has been successful and I would like to expand my product line to include more that are sourced from industrial hemp grown and manufactured in the

United States.

Eric Pollitt



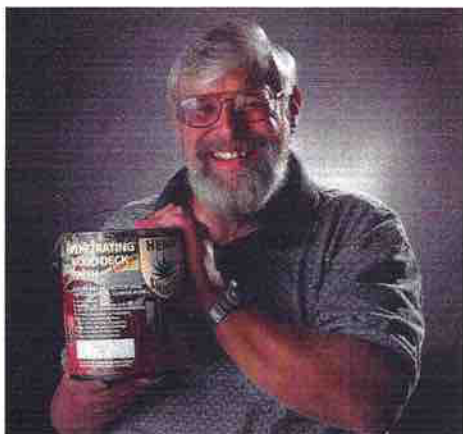
DECLARATION OF FLOYD PROZANSKI

I, Floyd Prozanski, declare the following:

1. I have been a member of the Oregon Senate since 2003. I previously served in the Oregon House of Representatives from 1995 through 2000 and again in 2003.
2. In 2009, I was a co-chief sponsor of SB 676, a bill to permit production and possession of industrial hemp and to trade in industrial hemp commodities and products in the State of Oregon. This bill was passed and signed into law and went into effect on January 1, 2010. Last year, the Oregon Department of Agriculture issued permits allowing for production of Industrial Hemp in the state.
3. When the Oregon Legislative Assembly is not in session, I work as a municipal prosecutor.

A handwritten signature in blue ink, appearing to read 'F. Prozanski'.

Floyd Prozanski



AFFIDAVIT OF DAVE SEBER

I, Dave Seber, swear or affirm:

1. I am the founder and chief executive officer of Fibre Alternatives (www.fibrealternatives.com), based in Eugene, Oregon, a company dedicated to commercializing industrial hemp composite and energy applications.
2. I was in the redwood lumber business. I noticed that companies were taking massive amounts of biomass out of the forest and I wanted to see what I could do to lower that amount. My research led me to conclude that the only plant that could replace the amount of material we were taking from the forest—specifically in temperate climates—is industrial hemp. In 1991, my partner in the redwood lumber business, William Conde and myself—along with Barry Davis and Tim Pate—formed C&S Specialty Builder's supply to develop hemp composites and building materials to replace wood.
3. We realized that sustainability was a big factor in the future of building materials. It doesn't make sense to take a tree—which can take anywhere from 50-3,000 years to mature—to make a product if that product might only last 50-75 years, such as in a house. Instead, we could grow industrial hemp over a three-month span and build that same structure, which could last at least an equivalent amount of time.
4. In order to demonstrate to the building materials industry—and the world—that industrial hemp was as good or better than wood fiber in construction composite applications. Conde and I contracted with Tom Maloney of the Washington State University Wood Materials & Engineering Laboratory—now the [Composite Materials & Engineering Center](#)—to produce the first modern composite panels made with industrial hemp fiber. We succeeded in producing a world-class medium density fiberboard (MDF), the flagship product of the composite industry. It was evident to everyone in the industry that if one could make MDF out of industrial hemp, then all the other major composite applications (e.g. particleboard, oriented strand board, etc.) could also be made from industrial hemp. It would require only minimal changes in the production lines of the composite industry to use industrial hemp fiber.
5. The problem was—and is—one of scale. The average composite plant uses 400-1,400 dry tonnes of fiber per day. All the current hemp being grown in North America, Europe and Russia combined wouldn't be enough to run one composite construction product mill for a few months. Our business plan was stymied because industrial hemp could not be grown in massive quantities in the United States, due to its misclassification as “marijuana.”
6. Therefore, I turned my attention to creating a high-value industrial hemp product that didn't rely on massive quantities grown locally. It is made from industrial hemp oil, imported from Canada.
6. I am the co-creator—along with Steve Nisewander, a world-class chemist formerly at Forrest Paint Company—of Hemp Shield™ Wood Finish and Deck Sealer (www.hempshield.net).
7. Hemp Shield is the first and only penetrating wood finish containing 100% hemp oil that is produced in the United States. Hemp Shield™ is suitable for wooden decks, fences, stairs, siding, shutters, furniture—anything wooden that is exposed to the weather. In extensive tests,

Hemp Shield™ outlasted all comers, including the highest priced deck finish on the national market. Hemp Shield's finish is extremely UV resistant, and the trans-oxide pigments used in shaded varieties of Hemp Shield™ provide long lasting color to your outdoor wood that does not hide the grain. Hemp Shield's unique hemp oil formulation represents a major advance in preservation of outdoor wood — a back-to-the-future choice that, by reviving use of an agriculture based oil feed stock, has created a sustainable, environmentally friendly finish that outlasts the most expensive petroleum based finishes. Hemp Shield™ also resists environmental attacks from mildew, algae, and fungus, yet contains 0% volatile organic compounds such as formaldehyde, and no other hazardous air pollutants. Non-toxic, environmentally friendly Hemp Shield Wood Finish and Deck Sealer™ offers superior performance in a truly 'green' waterproofer and protectant for outdoor wood. Hemp Shield does not contain is THC, the intoxicating substance found in marijuana.

8. My Hemp Shield™ business would benefit from the unencumbered cultivation of industrial hemp, in that I would likely be able to source industrial hemp oil at lower prices and be able to market that my product is "Made in the USA."

9. For industrial hemp to replace wood—which now comes mainly from unsustainable clearcutting forests and replacing them with monoculture plantations that are not real forests—in construction products—industrial hemp will have to be locally available to nearby construction composite production facilities in massive quantities. Such is not possible in the United States as long as industrial hemp is treated as "marijuana" under the federal drug laws.

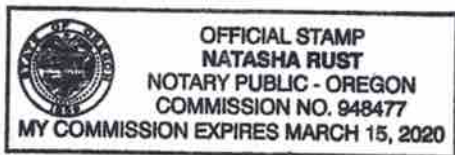
I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

4-26-16
Date

David Seber (sign name)
DAVID SEBER (print name)

STATE OF Oregon
COUNTY OF Lane

Subscribed and sworn to (or affirmed) before me this 26 day of April, 2016, at
Eugene, Oregon (city and state)



Natasha Rust
Signature of Notary Public

Natasha Rust
Name of Notary Public (print your name)

SEAL

Notary Public, State of OR
My commission expires: 3/15/20



AFFIDAVIT OF GERRY SHAPIRO

I, Gerry Shapiro, swear or affirm:

1. I am the founder of The Merry Hempsters, Inc. (merryhempsters.com), based in Eugene, Oregon.
2. The Merry Hempsters are manufacturers of *organic* hemp oil-based cosmetics as well as other hemp oil-based medicinal skin care products, available at thousands of retailers worldwide.
3. My hemp oil is sourced exclusively from Canada.
4. Even though grown under the standards of the US Department of Agriculture's National Organic

Program, industrial hemp cannot be certified as "organic," as long as industrial hemp remains classified as a drug by the Drug Enforcement Administration.

5. My business and the local farmers would benefit from me being able to source *organic* hemp oil locally.

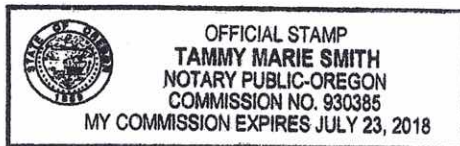
I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

5.19.16
Date

[Signature] (sign name)
Gerry Shapiro (print name)

STATE OF OREGON COUNTY OF LANE

Subscribed and sworn to (or affirmed) before me this 18th day of May, 2016,



[Signature]
Signature of Notary Public

Tammy Marie Smith
Name of Notary Public (print your name)

Notary Public, State of Oregon My commission expires:

July 23, 2018



AFFIDAVIT OF ERWIN A. ("BUD") SHOLTS

I, Erwin A. ("Bud") Sholts, swear or affirm:

1. I was born and raised in Dane County, Wisconsin. After military service in the Army Security Agency. I returned to Wisconsin, I received a B.S. degree in Agricultural Economics from the University of Wisconsin-Madison and a M.S. degree in Agricultural Economics and Finance from the University of Arizona.
2. I later went to work for the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). Before I retired in 2001, after 35 years of state service, I held the position of the Director of Agricultural Development and Diversification, where I focused on agriculture development and diversification, and development of industrial products from crops and commodities.
3. I am a past Director of Dane County Family Support Services, Inc., Senior Market Consultant to the US Biodiesel Systems, and organizing Director of the Southern Wisconsin Agri-Ventures Group. I formerly served as Chairman and Director of the National New Uses Council, Inc.; Director and Chairman of the National Association of State Aquaculture Coordinators, Director of the World Dairy Expo, Director of the World Beef Expo and served as Secretary of the International Chamber of Agriculture.
4. During my time with DATCP, I became very interested in the recommercialization of industrial hemp as a potential crop that could be profitably grown and benefit rotation agriculture in Wisconsin. The standard rotation of corn and soybeans is unsustainable economically and environmentally and needs to be diversified. Industrial hemp could be a profitable rotation crop. Industrial hemp needs one-third the nitrogen fertilizer that corn does. It can be grown without pesticides. Given the untrue, but nonetheless common, misperception that industrial hemp is marijuana, I kept seeking another potential crop with the potential economic and environmental benefits, but without the policy and political difficulties. However, because of its growing potential and technical characteristics of the fiber, seed and oil, I kept coming back to industrial hemp.
5. Industrial hemp may be found in great abundance on the family farm today near, Oregon, Wisconsin. I own 90 acres of what was my father's 168-acre farm. It's feral hemp that lives on from the times my grandfather grew industrial hemp.
6. The feral industrial hemp (aka "ditchweed") is concentrated in low spots near the creek. On several occasions during the fall, members of the Dane County Sheriff's Department have come on my property to harvest my industrial hemp. They always have waited until October, which is after the seeds have fallen to the ground to be next year's crop. I have witnessed them harvesting not only the industrial hemp, but also cutting and carrying away velvet-leaf and burdock, a plant that does not look similar to industrial hemp. I understand the department is compensated for each "marijuana" plant they seize. I have never been arrested for the cultivation or possession of this "marijuana," as the officers knew that I neither planted it, nor harvested it.
7. I have seen the building that once housed Rens' Hemp Company in Waupun, Wisconsin. Rens was the last processor of industrial hemp in the United States. It closed in the 1950s. Today, the roof has fallen in.

8. I am a founder of the North American Industrial Hemp Council (www.naihc.org) and presently serve as its chair. NAIHC's vision is "to reestablish and expand the use of industrial hemp." NAIHC's mission is to (1) form and establish relationships between academia, farmers, agribusiness, manufactures, government, public interest groups, and marketing firms with emphasis on land management, economic and environmental considerations; (2) develop policies to enhance the stewardship of our lands through the sustainable cultivation, product development, manufacturing and marketing of industrial hemp and other comparable annual fiber crops; and (3) promote the development of new products and business based on industrial hemp fibers and seeds.

Cooperatively foster a better understanding of industrial hemp and other annual fiber crops and their implications for the environment and rural economic development.

8. Wisconsin was once a major producer of industrial hemp and could be again. I would like my farm to again legally and intentionally grow industrial hemp. I would like to collect seed from the ditchweed found on the farm, as it has proven year-after-year to be well-suited to grow there.

9. I have no interest in marijuana. I do have an interest in American agriculture, industry and commerce becoming more sustainable for the generations that follow me, including, most especially, my grandson.

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

1/2/15
Date

Erwin A. Skolts (sign name)
ERWIN A. SKOLTS (print name)

STATE OF Wisconsin
COUNTY OF Dane

Subscribed and sworn to (or affirmed) before me this 2 day of January, 2015, at
Oregon, Wisconsin (city and state)

Ashlee Lamers
Signature of Notary Public

Ashlee Lamers
Name of Notary Public (print your name)



SEAL

Notary Public, State of Wisconsin
My commission expires: 10-22-2018



AFFIDAVIT OF CYNTHIA THIELEN

I, Cynthia Thielen, swear or affirm:

1. I have served the 50th District (Kailua, Kaneohe Bay) in the Hawai'i State Legislature since 1990 and am the Assistant Minority (Republican) Floor Leader, and am a ranking member of the Energy & Environmental Protection Committee, Judiciary, and Water & Land Committees and a member of the Ocean, Marine Resources & Hawaiian Affairs Committee.
2. I am a former board member of the North American Industrial Hemp Council (www.naihc.org).
3. I first became interested in industrial hemp 1997 as an environmentally friendly replacement for sugar and pineapple, which have been in long decline in Hawai'i.
4. Industrial hemp cultivation could be a boon to Hawai'i's struggling agriculture industry, particularly since the last sugar plantation is shutting down this year.
5. Industrial hemp's potential as a biofuel feedstock could be a game-changer for Hawaii.
6. I have toured industrial hemp operations in France and found it made no sense for industrial hemp to be outlawed.
7. Construction materials made from industrial hemp, such as Hempcrete, are immune to termites and other pests common in Hawai'i.
8. While I was a leader to re-legalize industrial hemp in Hawai'i, it was the Federal Farm Bill of 2014, which permitted academic institutions in states that have legalized industrial hemp to grow industrial hemp for research purposes, which finally allowed Hawai'i to do actual research.
9. As a result of this tentative step toward the full legalization of industrial hemp, the test plots—overseen by Dr. Harry Ako of the University of Hawai'i at Manoa—have produced very positive results. Dr. Ako told me that, in Hawai'i's climate, three crops of industrial hemp could be grown annually, yielding between 27 and 38 tons of dry weight stalks and two seed crops, producing 2.5 tons per acre.
10. Hawai'i could benefit in many ways if industrial hemp were able to be cultivated unencumbered by a disassociation with "marijuana."

I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

June 1, 2016
Date

Cynthia Thiele (sign name)
Cynthia Thiele (print name)

CITY & STATE OF HAWAII
COUNTY OF HONOLULU

Subscribed and sworn to (or affirmed) before me this 1st day of JUNE, 2016, at
HONOLULU, HAWAII (city and state)



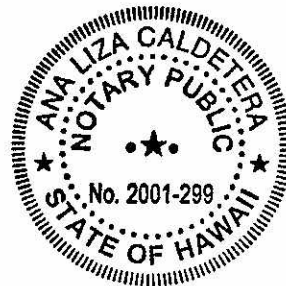
SEAL

[Signature]
Signature of Notary Public

ANA LIZA CALDETERA
Name of Notary Public (print your name)

Notary Public, State of HAWAII
My commission expires: 07/22/2017

NOTARY PUBLIC CERTIFICATION
Ana Liza Caldetera First Judicial Circuit
Doc. Description: AFFIDAVIT OF
CYNTHIA THIELEN
No. of Pages: 2 Date of Doc. JUNE 1, 2016
[Signature] 06/01/16
Notary Signature Date



AFFIDAVIT OF CARL WILSON

I, Carl Wilson, swear or affirm:

1. I am a member of the House of Representatives of the Oregon Legislative Assembly representing the citizens of Oregon House District 3 in Josephine County, Oregon. I took that office in 2015. I previously served as a state representative from 1998 to 2002.
2. After attending schools in Grants Pass, Oregon I joined the United States Navy after graduating from high school.
3. I then returned to Grants Pass to continue my career in radio.
4. I attend the River Valley Church and am an active motorcyclist and RVer.
5. I am a member of the Republican Party and have focused my legislative activities on standing up for jobs and small businesses, cutting government waste and ensuring that the Oregon Legislative Assembly respects rural Oregon as it deserves.
6. I was the chief sponsor of House Bill 4060 that revised Oregon's industrial hemp statute.

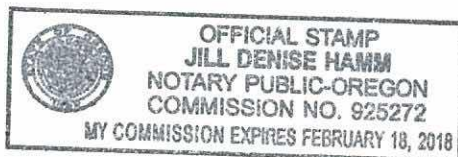
I SWEAR OR AFFIRM THAT THE ABOVE AND FOREGOING REPRESENTATIONS ARE TRUE AND CORRECT TO THE BEST OF MY INFORMATION, KNOWLEDGE, AND BELIEF.

6-1-16
Date

[Signature] (sign name)
Carl Wilson (print name)

STATE OF Oregon
COUNTY OF Josephine

Subscribed and sworn to (or affirmed) before me this 1st day of June, 2016, at
1:25 pm, Grants Pass, OR (city and state)



[Signature]
Signature of Notary Public

Jill Denise Hamm
Name of Notary Public (print your name)

SEAL

Notary Public, State of Oregon
My commission expires: 2/18/18