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August 23, 2019

Marion County Planning Division
5155 Silverton Rd., NE
Salem, OR 97305

RE: CU19-024 (Bell) - Additional Testimony - Request For Denial

To Marion County Planning Division:

Friends of Marion County is an independent 501(c) (3) farmland protection organization founded in 1998. Our mission is to protect farm and forestland, parks, and open space in Marion County.

We oppose and request denial for a conditional use to establish a hemp processing facility as a commercial activity in conjunction with farm use on two parcels containing 37.61 acres in an EFU zone located at 8710 Parrish Gap Rd., SE, Salem (T8S; R2W; (Section 31; tax lot 900) and (Section 31CB; tax lot 900)).

We have reviewed the application submitted to Marion County on July 15, 2019. We submitted testimony on July 23rd and additional testimony at the hearing on August 14th. We now offer additional comments in reference to Applicant's statements made at the hearing. We are going to refer to the audio recording and we will do the best to identify the location on the disk according to the time shown on a disk player. The times shown by reference will start from the beginning of the disk and continue forward, perhaps with some overlap considering the Applicant and Applicant's attorney sometimes jumped back to an issue that had been discussed at an earlier time.

1. Proposal Will Affect 2 Neighboring Parcels InThe Drainageway

Time: 1 hr. 5 min.

Michael Winter (MW), representative of Jupiter Pharma, LLC, a Delaware Company, spoke about the height of the buildings proposed for the development. The Hearings Officer (HO) mentioned the height of the buildings as shown on the map describing the ground elevation. At the site compared to the elevation at Parrish Gap Rd. at the western border of the property, the elevation is described as 320 ft. at the plant site and 376 ft. at the road. The HO pointed out that would show the building height at 376 ft. minus 320 ft. to be equal to the difference, or a 56 ft. building height. MW clarified that the property drops in elevation at the eastern direction approximately 15 ft. from the road to the building site.

MW stated that the building height will be 35 ft. A 15 ft. elevation drop that coincides with the placement of the buildings coincides with the drainageway identified in the LDEP report and the map and letter submitted by Mr. Hein (tax lot # 082W3101000), the neighbor adjacent to the south. Mr. Hein's letter referenced this same location and testified to the adverse impacts this proposal would have on his farming practice[1].

2. Applicant's Description Of The Processing System Is Erroneous

Time: 1 hr. 7 min.

MW revealed the supplier of the drying equipment that will be placed on an outdoor concrete pad. The supplier, Baker-Rullman (1329 West Main Street, P.O. Box 67, Watertown, WI 53094), advertising web pages are attached [2,3].Also Deutsche Process (3630 TRYCLAN DRIVE | CHARLOTTE, NORTH CAROLINA 28217)[4] is identified as the supplier of the extraction equipment.

PHASE 1: Drying Pad (size undefined) and Storage Facility (30,000 sq. ft.)

MW emphasized several times that the entire system is "closed loop" and that there would be no effluent, noise, or odorous gases emitted. The diagram does not depict where or how the material will be introduced into the dryer so we believe the system must have an entryway. Most importantly, the moisture and associated gaseous and odorous vapors will exit the system at the upper exit of the "induced draft fan". Even if there is a particle filter added at the end of the system, the moisture and gases cannot remain inside the system – that would be contrary to all principles of physics. MW's statements are incorrect and, even if he is not an engineer, he should have studied the manufacturer's materials and at least been somewhat informed after he contacted the supplier, if presumably he had done so before the hearing.

3. Further Processing Of By-Products Beyond CBD Extraction and Pelletizing

Time: 1 hr. 13 min.

PHASE 2: Extraction of CBD and THC and Pelletizing (22,000 sq. ft.)

MW revealed there will be further treatment to create a pelletized product suitable for other uses. He initially regarded this treatment as not considered a process for the purpose of the application. After questioning by the HO, MW decided to remove this step altogether however he did not explain how this material would be disposed. Presumably this material would be saturated with the extraction solvent, later explained to be alcohol. Ethanol [alcohol] is considered a flammable liquid (Class 3 Hazardous Material) in concentrations above 2.35% by mass (3.0% by volume; 6 proof)[5] and is regulated by the Alcohol Tax & Trade Bureau of the United States Treasury[6]. MW continued to explain that the processing of the waste was not a "process" to be considered in the application. However if this material is not recovered it must be disposed of in some form. MW explained they "could throw it away." Disposal of manufacturing waste is regulated by the EPA unless it can be shown that the waste product meets certain non-hazardous characteristics. Disposal of a contaminated waste is part of the process and must be addressed in the application.

MW went on to further explain the recovery of Tetrahydrocannabinol[7] (THC), commonly known as Marijuana. MW continued to explain the recovery of THC from the plant material which contains no more than 0.3%, as permitted by Federal and State Law. However, in the November 8, 2016 general election, the voters of Marion County did not pass Measure 24-405 to allow recreation business in unincorporated Marion County (outside city limits). At the same election the citizens of Marion County passed Measure 24-404 to allow medical marijuana businesses in unincorporated Marion County. Medical marijuana growers, processors and dispensaries must be licensed by the State of Oregon Health Authority (OHA) and comply with any State regulations.[8] Therefore, the process described by MW cannot include the recovery of THC unless a license to do so for medical THC is first obtained from the OHA.

Time: 1 hr. 15 min.

4. Phase 1 and Phase 2 Noise – Drying, Extraction and Ancillary Processing Equipment

Applicant's attorney Michael Robinson (MR) stated no more noise would emanate from the site than would be experienced from normal agricultural practices. The March 1974 U.S EPA report offered guidelines for levels of noise to protect public health and welfare [9]. These standards may have been updated since first published in1974, however the same principles and calculations outlined in the report are still in effect today. The Applicant must consider both the noise level emanating from the outdoor drying facility pad and the other parts of the processing scheme together because the Phase 1 and Phase 2 portions of the processing scheme may be operating at the same time. Of course it is not sufficient to accept the specifications from the equipment manufacturers alone. A full study must include other background noise, environmental factors such as terrain and architectural artifacts which may cause sound amplification or sound reduction. In addition there are a number of residences in close proximity, including those of Mr. Richard Hein (8785 Parrish Gap Rd.), Mr. Erik Fast (8675 Parrish Gap Rd.), Ms. Zohreh Zarnegar (8685 Parrish Gap Rd.), Mrs. Dorothy Leedy (8775 Parrish Gap Rd.), Mr. & Mrs. Riffle(8621 Wipper Rd.), Mr. Van Dam (8513 Wipper Rd.) and others that must be protected from excessive noise impact. A qualified and registered sound engineer must make this analysis and provide a report before the HO can make a recommendation in the case.

In light of our earlier comments and the issues raised here Friends of Marion County opposes this application and requests a denial.

Sincerely,

Roger Kaye, President
rkaye2@gmail.com
(503)743-4567

Attachments:

1. Richard Hein Letter and Map, August 14, 2019, Drainageway Effect on Farm Business
2. Baker-Rulllman Manufacturing, Industrial Hemp Drying web page
3. Baker-Rulllman Manufacturing, Triple Pass Drying Technology web page
4. Deutsche Process, Extraction Equipment, web page
5. Wikipedia: Description of Ethanol
6. Industrial (Nonbeverage) Alcohol Industry
7. Wikipedia: Tetrahydrocannabinol (THC)
8. Recreational and Medical Marijuana: Regulations on growing, processing and selling recreational and medical marijuana in rural Marion County
9. Information on levels of environmental noise requisite to protect public health and welfare with an adequate margin of safety, US EPA Office of Noise Abatement and control, March 1974, 5509/9-74-004. Title page and summary page 4.

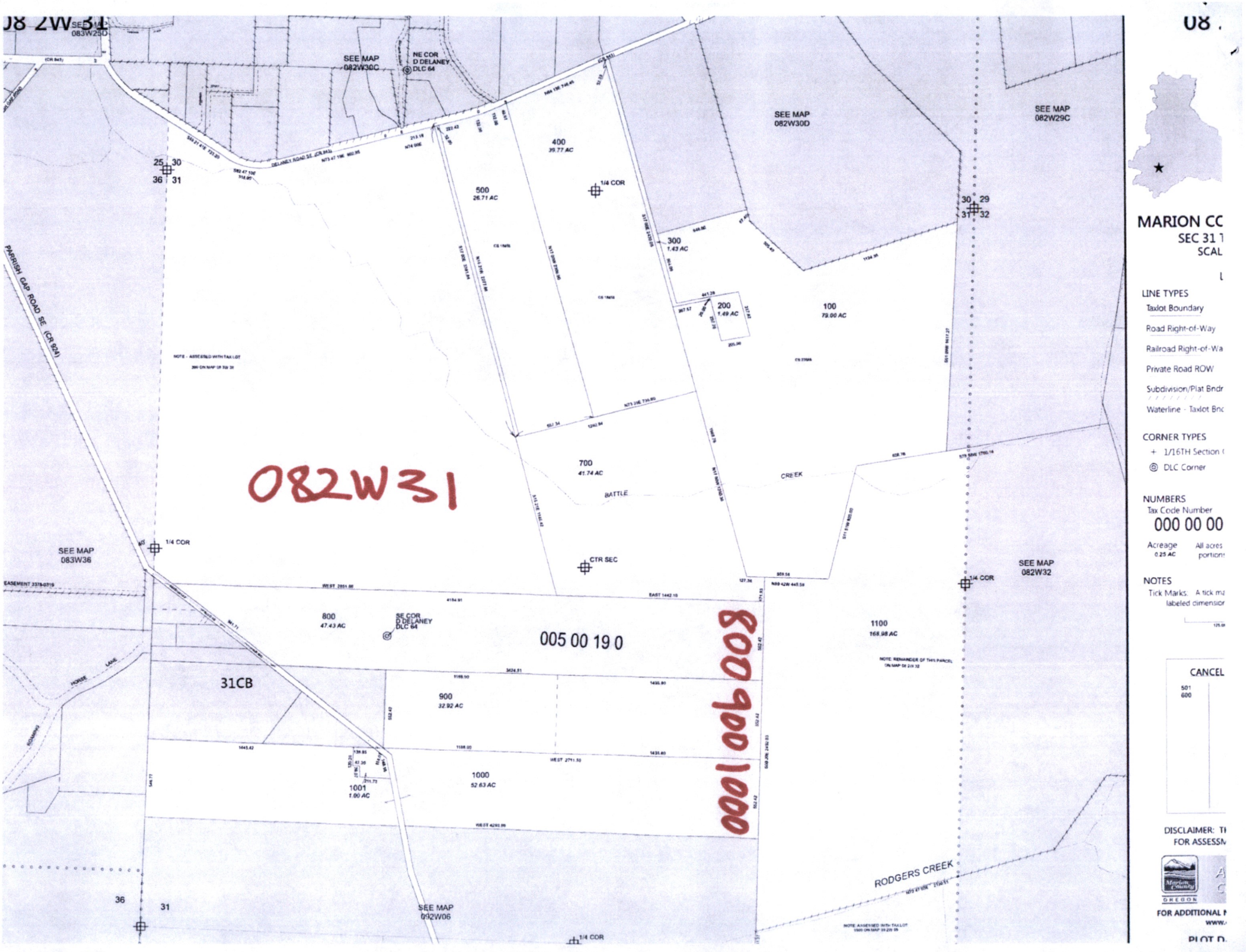
To: Seth Thompson, Marion County August 14, 2019 Re: CU19-024

My name is Richard Hein and I want to write about my concerns and want to express that the application should be denied. I live at 8785 Parrish Gap Rd., SE, Turner, on 52 acres right across the road from Ron & Rosemary Bell's property. On the north side of the Bell's property is 47 acres, tax lot # 082W3100800 (47 acres). Our property, tax lot # 082W3101000 (52 acres) of which approximately 38 acres, is on the south side of Bell's property (37 acres).

These three lots are northeast of Parrish Gap Rd. and comprise a total of approximately 132 acres. All of the parcels are currently in hay or cattle grazing. When I view the Google Maps picture of the lots there is a prominent depression of perhaps 10 ft. in depth and about 1400 ft. east of Parrish Gap Rd. I read the July 30th LDEP Comments by Max Hepburn. The section of the report, ENGINEERING ADVISORIES (G), points out the "...unnamed natural drainageway...". Also he states "...site grading should not impact surrounding properties, roads, or drainage ways in a negative manner."

When I lay the Applicant's Site Plan drawing over the Google Map I see that the site development falls about in the middle of the drainageway. In my experience farming this land for more than 45 years I don't think there is a way the development will NOT affect my farm. Now the hay is usually ready by early to mid June. This development is going to push excess water from those 5 acres of buildings and 5 acres of paved surface onto my property and the property to the north. Then my hay season will be delayed about one month to the end of June or early July. The hay will have less nutritional value and I will be forced to reduce my price to customers. Eventually my customers may find another supplier. Please deny this application to save my farm income and my farm.

Richard Hein
8785 Parrish Gap Rd., SE; Turner, OR 97392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SEE MAP 082W30D
SEE MAP 082W29C
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200 1.49 AC
100 79.00 AC
700 41.74 AC
800 47.43 AC
SE COR D DELANEY DLC 64
900 32.92 AC
1000 52.63 AC
1001 1.00 AC
1100 168.98 AC
31CB
PARRISH GAP ROAD SE (CR 924)
DELANEY ROAD SE (CR 843)
BATTLE CREEK
RODGERS CREEK
HORSE LANE
SEE MAP 083W36
SEE MAP 082W32
SEE MAP 082W06
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CTR SEC
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Google Maps 8710 Parrish Gap Rd SE

082W31

Imagery ©2019 Google, Map data ©2019 200 ft

DRAINAGEWAY-SWAMPY AREA

DRAINAGEWAY

EXHIBIT 14

Baker-Rullman announces rental program for portable, rotary, triple pass, high capacity, industrial hemp drying equipment

April 25th, 2019 Featured in Cision/PR

Baker-Rullman's portable, bulk drying equipment program is a significant advancement for hemp growers throughout the United States and Canada. Bulk hemp drying equipment is typically stationery which makes it impractical for many small or medium growers and cooperatives. The capital investment is large, and the plant may not necessarily be accessible to all co-op members. Portable bulk hemp dryers are an ideal solution since they can be moved from one location to another at harvest time. In addition, rental agreements can eliminate most capital investment.

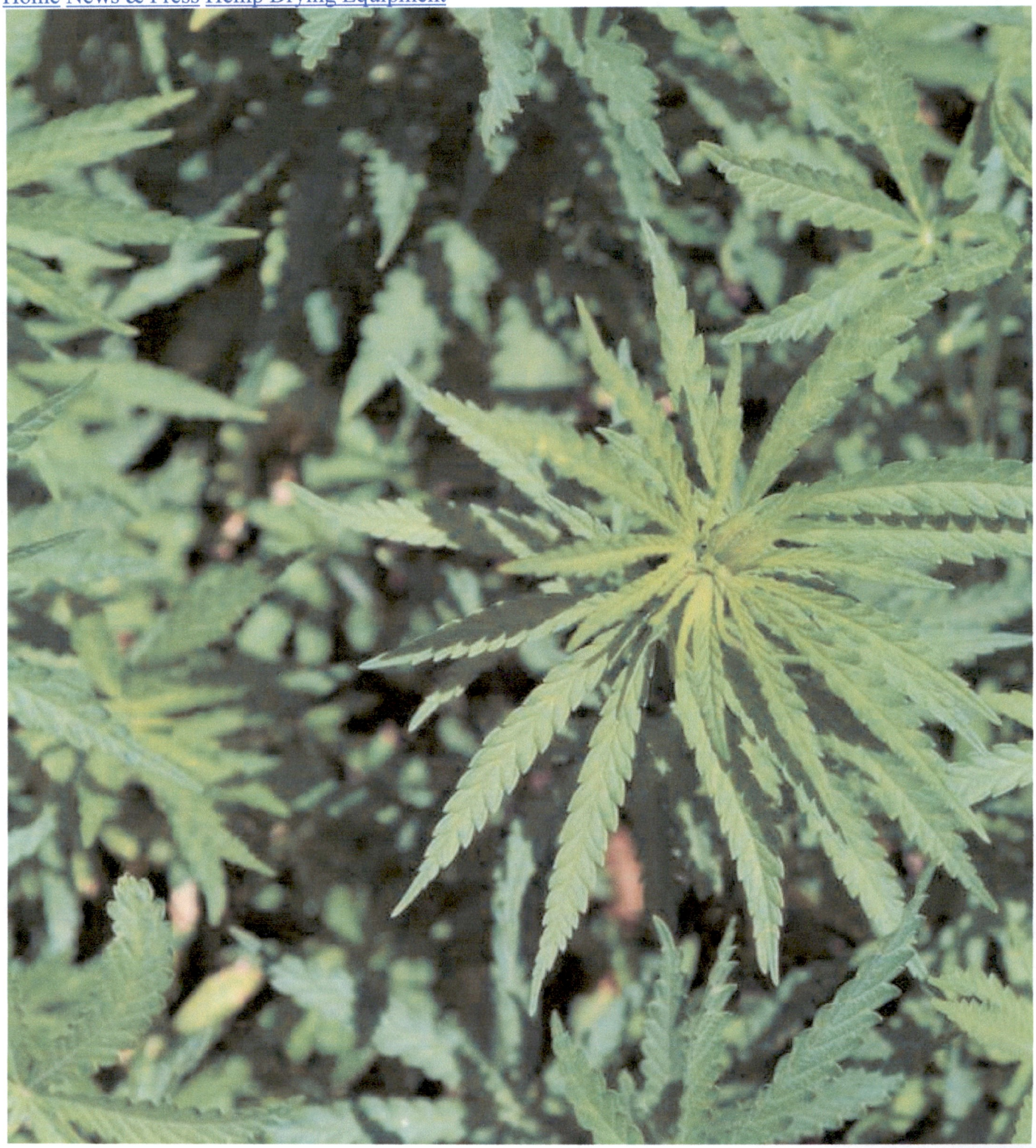
Baker-Rullman's portable hemp dryers are available in five (5) different sizes which can dry an acre of product in as little as 10 minutes or as much as 6 hours. Its triple pass dryer design protects product from under or over-drying and loss of CBD. Heavier, wetter product moves slower than finer, dryer product, providing uniform drying to all material. That's why our rotary dryers have long been known for protecting ingredient integrity, and thereby their market value.

With the rental program, eliminating initial capital costs is a major attraction daily, weekly, and monthly lease rates are available. And the rental program includes a rent-to-purchase agreement that offers a partial discount of rental payments in equipment price if a renter decides to purchase dryer equipment..

Available for use "when and where you need it" is another part of the program that makes it so attractive: Baker-Rullman will deliver the equipment to any designated location on a customer requested schedule. Typical operating costs for these portable hemp dryer rentals are between $20.00 and $30.00 per hour for smaller units, and up to $ 200.00 per hour for fuel and power.

Established in 1980, Baker-Rullman Manufacturing, Inc. is a leader in engineering, design, and fabrication of rotary drum dryers, modular steel bins and hoppers, structural steel, feed and seed mill systems, and related custom metalwork. Hundreds of Baker-Rullman industrial dehydration systems are installed on six continents and nearly every US state – their technology sets the bar for reliability in the industry. Their 50 years of experience ensures each project is done on-time and under-budget.

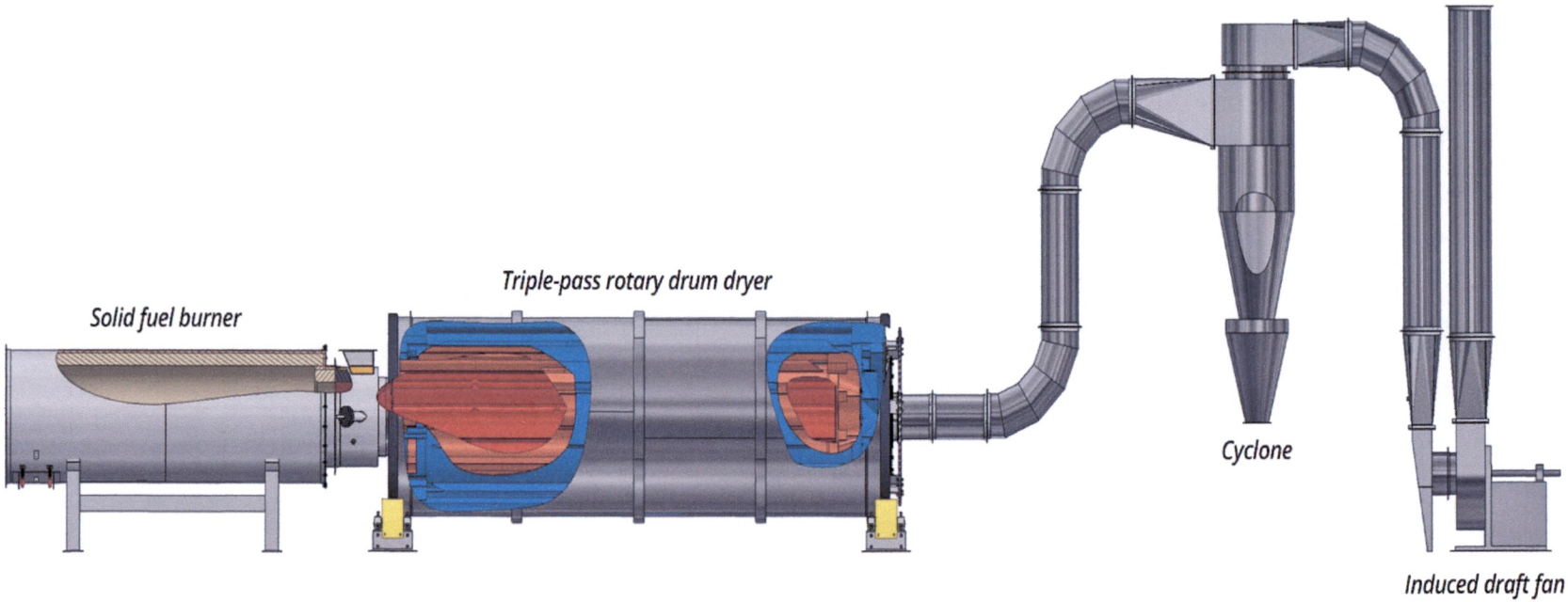
For more information contact Baker-Rullman Mfg., Inc., 920.261.8107, or visit the website at baker-rullman.com.



Triple-pass dryer technology offers superior dehydration solutions by optimizing operating costs, efficiency, and product consistency.

The engineers at Baker-Rullman have developed and refined rotary drying through the years, demonstrating that the triple-pass design is the most reliable and proven technology available.

Wet material enter the inner cylinder, propelled through the system via a hot gas air stream. The material is continuously lifted by the cylinder flights and showered through the concurrent stream of hot gases. The three full-length interlocked concentric cylinders rotate together design for the highest velocity in the inner-pass. As lighter particles quickly lose 60% of their moisture and move out of the cylinder, heavier/denser particles are retained until they also lose 60% of their moisture.

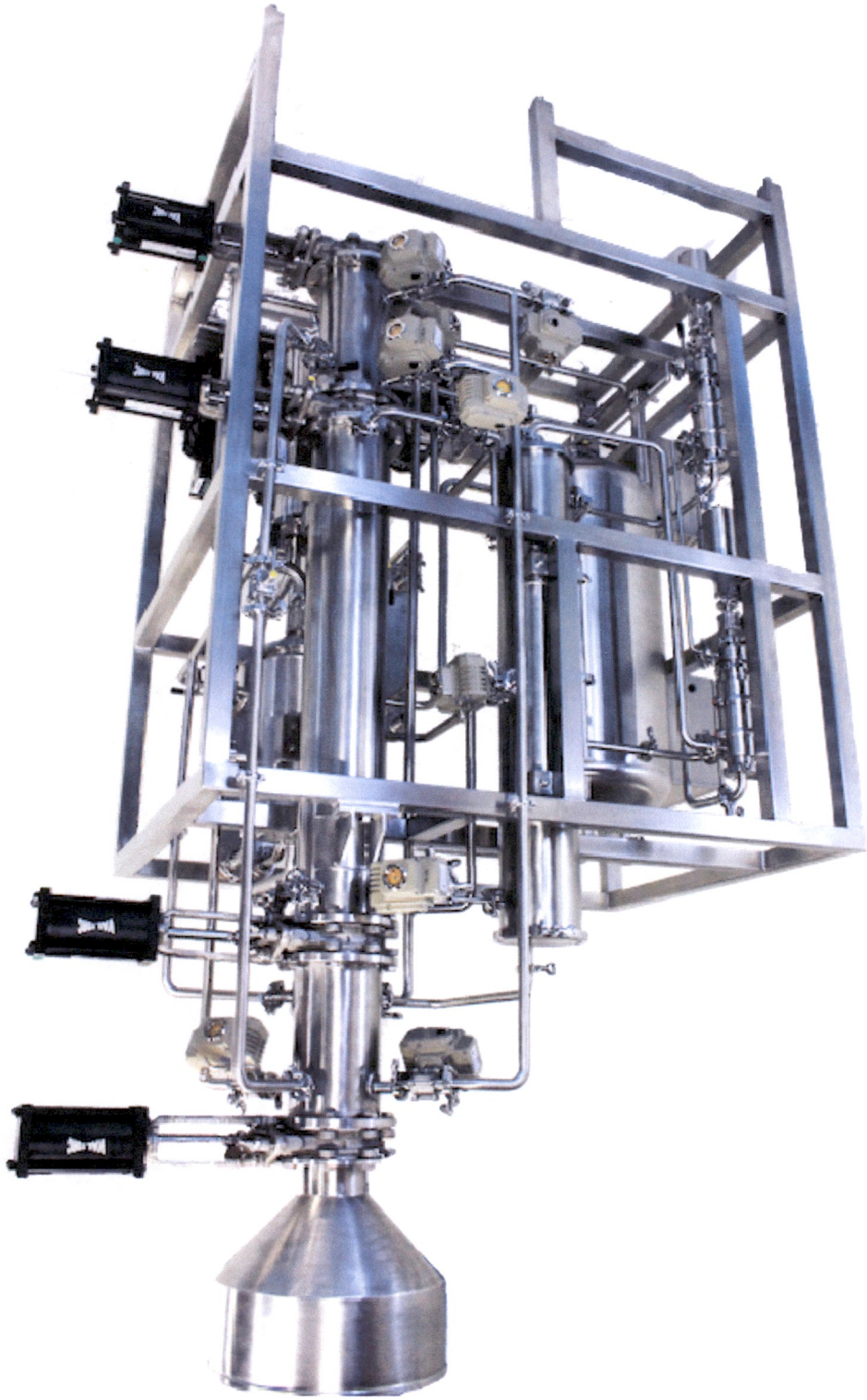

Solid fuel burner
Triple-pass rotary drum dryer
Cyclone
Induced draft fan

Particles graduate to the next cylinder only when they have shed enough of their moisture to be carried out. Progressively larger diameters of the cylinders cause the velocity to decrease with each subsequent pass. In this section, the partially evaporated particles are handled more gently, again only graduating to the next pass when they have shed the proper amount of moisture.

Because of the earlier retention time in the first two passes, material is relatively uniform by the time it makes it into the gentle third pass. This means the product is guarded against over-drying or under-drying and ensures the optimum use of heat while producing a consistently high quality end product.

DESIGNED BY YOU MADE BY DEUTSCHE PROCESS

Deutsche Process is a turnkey sanitary process equipment, systems integration/fabrication and industrial equipment service company. Deutsche Process leverages an expansive industry know-how to create and support sanitary processes for a wide variety of products. Deutsche Process can develop a new project or manipulate existing equipment and integrate new equipment in order to build/streamline a new process. An expansive range of very simple to complex applications help reduce labor cost and improve productivity. Deutsche Process's engineering solutions are designed to optimize the transformation of a wide variety of raw materials, creating a vast array of exciting products for the modern market.



Description:

The Semi-Continuous Extraction unit is designed for a high volume of Continuous Batch Counter Current Solvent Extraction. Used in a variety of agricultural Biomass Extraction the system is designed for Industrial process facilities that are attempting to achieve a high level of throughput with limited downtime or human interaction. The Semi-Continuous system is designed for Fully automated operation with self feeding input material and discharge of spent material with 99.9% solvent recovery through its patented recovery conveyor. All systems can be customized for the specifications; throughput and operational parameters of the end users needs. System are also designed for Cryogenic or heated operation.

24/7 Continuous Operation Capable

Siemens PLC Automation Controlled

Starting at 10lbs per Hour

Modular Design

Ethanol (also called **ethyl alcohol**, **grain alcohol**, **drinking alcohol**, or simply **alcohol**) is a chemical compound, a simple alcohol with the chemical formula C_2H_6O. Its formula can be also written as $CH_3–CH_2–OH$ or C_2H_5OH (an ethyl group linked to a hydroxyl group), and is often abbreviated as **EtOH**. Ethanol is a volatile, flammable, colorless liquid with a slight characteristic odor. It is a psychoactive substance and is the principal type of alcohol found in alcoholic drinks.

An ethanol–water solution will catch fire if heated above a temperature called its flash point and an ignition source is then applied to it.[65] For 20% alcohol by mass (about 25% by volume), this will occur at about 25 °C (77 °F). The flash point of pure ethanol is 13 °C (55 °F),[66] but may be influenced very slightly by atmospheric composition such as pressure and humidity. Ethanol mixtures can ignite below average room temperature. Ethanol is considered a flammable liquid (Class 3 Hazardous Material) in concentrations above 2.35% by mass (3.0% by volume; 6 proof).

Industrial (Nonbeverage) Alcohol Industry

Get Email Updates

Click to subscribe to Nonbeverage Alcohol

While many people may associate the word "alcohol" with beverages, alcohol has many other scientific, medical, and industrial uses.

Wondering how to get started in the industrial alcohol industry? Visit our industry startup guide: Getting Started in TTB-Regulated Industry. Already have approval to operate and looking for next steps? See our industry compliance guide: Maintaining Compliance in a TTB-Regulated Business.

*For information about **beverage** alcohol products including beer, wine, and distilled spirits, see our Beverage Alcohol page.*

Key Industrial Alcohol Topics

Tax Free Alcohol

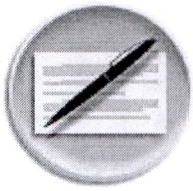
Laws and regulations, industry circulars and rulings, and industry guidance

Regulations, Laws, and Public Guidance

Links to Title 27 of the Code of Federal Regulations, and relevant sections

Formula Approval

Nonbeverage Products Laboratory frequently asked questions



Permits

Information for alcohol producers and manufacturers. You can apply online!

Denatured Alcohol

Information about both specially and completely denatured alcohol

Alcohol Fuel

Legal information and authorized materials for rendering spirits unfit for beverage use

Top Questions about Industrial Alcohol

How Do I...?

Apply for a Permit
Determine and Pay Taxes
Renew my SOT registration
Purchase a Security for a Collateral Bond
Determine Special Occupational Tax Liability
Submit a Product Sample

CONTACT US

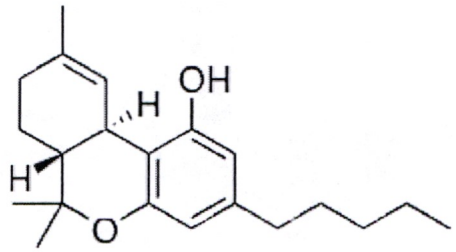
Questions? If you have questions about permits, applications, bonds, claims, etc., you may contact the National Revenue Center online or at **877-882-3277**. For more information see industrial alcohol contacts. If you're having technical issues with our online applications contact the TTB Help Desk or see the TTB Online Help Center.

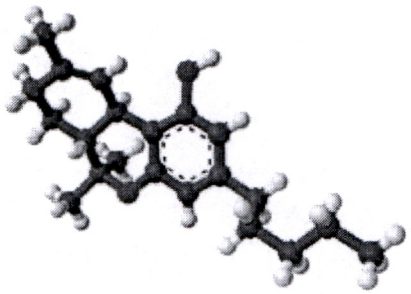
Page last reviewed: July 20, 2017
Page last updated: April 16, 2019
Maintained by: Office of Communications

Tetrahydrocannabinol

From Wikipedia, the free encyclopedia
Jump to navigation Jump to search
"THC" redirects here. For other uses, see THC (disambiguation).

Tetrahydrocannabinol
INN: dronabinol





Clinical data	
Trade names	Marinol
Synonyms	(6a*R*,10a*R*)-delta-9-tetrahydrocannabinol, (−)-*trans*-Δ^9-tetrahydrocannabinol
License data	• US FDA: Dronabinol
Pregnancy category	• US: C (Risk not ruled out)
Dependence liability	8–10% (Relatively low risk of tolerance)[1]
Routes of administration	Oral, local/topical, transdermal, sublingual, inhaled
ATC code	• A04AD10 (WHO)
Legal status	
Legal status	• AU: S8 (Controlled) • CA: Legal

- DE: Dronabinol: Anlage III, Δ9-THC: II, other isomers and their stereochemical variants: I. (Does not apply to THC as part of cannabis, which is regulated separately, see Cannabis (drug))
- UK: Class B
- US: Schedule II as Syndros, and Schedule III as Marinol[2]

Pharmacokinetic data	
Bioavailability	10–35% (inhalation), 6–20% (oral)[3]
Protein binding	97–99%[3][4][5]
Metabolism	Mostly hepatic by CYP2C[3]
Elimination half-life	1.6–59 h,[3] 25–36 h (orally administered dronabinol)
Excretion	65–80% (feces), 20–35% (urine) as acid metabolites[3]

Identifiers	
IUPAC name[show]	
CAS Number	• 1972-08-3 ✓
PubChem CID	• 16078
IUPHAR/BPS	• 2424
DrugBank	• DB00470 ✓
ChemSpider	• 15266 ✓
UNII	• 7J8897W37S
ChEBI	• CHEBI:66964 ✗
ChEMBL	• ChEMBL465 ✓

CompTox Dashboard (EPA)	• DTXSID6021327
ECHA InfoCard	100.153.676

Chemical and physical data

Formula	$C_{21}H_{30}O_2$
Molar mass	314.469 g·mol^{-1}
3D model (JSmol)	• Interactive image
Specific rotation	−152° (ethanol)
Boiling point	155-157°C @ 0.05mmHg,[7] 157-160°C @ 0.05mmHg[8]
Solubility in water	0.0028,[6] (23 °C) mg/mL (20 °C)

SMILES[show]

InChI[show]

✗✓ **(what is this?) (verify)**

Tetrahydrocannabinol (**THC**) is one of at least 113 cannabinoids identified in cannabis. THC is the principal psychoactive constituent of cannabis. With chemical name **(−)-*trans*-Δ^9-tetrahydrocannabinol**, the term *THC* also refers to cannabinoid isomers.

Like most pharmacologically-active secondary metabolites of plants, THC is a lipid found in cannabis,[9] assumed to be involved in the plant's self-defense, putatively against insect predation, ultraviolet light, and environmental stress.[10][11][12]

THC, along with its double bond isomers and their stereoisomers[13], is one of only three cannabinoids scheduled by the UN Convention on Psychotropic Substances (the other two are dimethylheptylpyran and parahexyl). It was listed under Schedule I in 1971, but reclassified to Schedule II in 1991 following a recommendation from the WHO. Based on subsequent studies, the WHO has recommended the reclassification to the less-stringent Schedule III.[14] Cannabis as a plant is scheduled by the Single Convention on Narcotic Drugs (Schedule I and IV). It is specifically still listed under Schedule I by US federal law[15] under the Controlled Substances Act for having "no accepted medical use" and "lack of accepted safety". However, dronabinol is a synthetic form of THC approved by the FDA as an appetite stimulant for people with AIDS and antiemetic for people receiving chemotherapy.[16] The pharmaceutical formulation dronabinol is an oily resin provided in capsules available by prescription in the United States, Canada, Germany, and New Zealand.

Contents

Medical uses

Further information: Dronabinol
Not to be confused with Droperidol.

THC is an active ingredient in Nabiximols, a specific extract of *Cannabis* that was approved as a botanical drug in the United Kingdom in 2010 as a mouth spray for people with multiple sclerosis to alleviate neuropathic pain, spasticity, overactive bladder, and other symptoms.[17][18] Nabiximols (as Sativex) is available as a prescription drug in Canada.[19]

Pharmacology

See also: Effects of cannabis, Long-term effects of cannabis, and Cannabis in pregnancy

Mechanism of action

For a review of the mechanisms behind endocannabinoid synaptic transmission, see Endocannabinoid system.

The actions of THC result from its partial agonist activity at the cannabinoid receptor CB_1 (K_i = 10 nM[20]), located mainly in the central nervous system, and the CB_2 receptor (K_i = 24 nM[20]), mainly expressed in cells of the immune system.[21] The psychoactive effects of THC are primarily mediated by the activation of cannabinoid receptors, which result in a decrease in the concentration of the second messenger molecule cAMP through inhibition of adenylate cyclase.[22]

The presence of these specialized cannabinoid receptors in the brain led researchers to the discovery of endocannabinoids, such as anandamide and 2-arachidonoyl glyceride (2-AG). THC targets receptors in a manner far less selective than endocannabinoid molecules released during retrograde signaling, as the drug has a relatively low cannabinoid receptor efficacy and affinity. In populations of low cannabinoid receptor density, THC may act to antagonize endogenous agonists that possess greater receptor efficacy.[23] THC is a lipophilic molecule[24] and may bind non-specifically to a variety of entities in the brain and body, such as adipose tissue (fat).[25][26]

THC, similarly to cannabidiol, albeit less potently, is a positive allosteric modulator of the μ- and δ-opioid receptors.[27]

Due to its partial agonistic activity, THC appears to result in greater downregulation of cannabinoid receptors than endocannabinoids, further limiting its efficacy over other cannabinoids. While tolerance may limit the maximal effects of certain drugs, evidence suggests that tolerance develops irregularly for different effects with greater resistance for primary over side-effects, and may actually serve to enhance the drug's therapeutic window.[23] However, this form of tolerance appears to be irregular throughout mouse brain areas. THC, as well as other cannabinoids that contain a phenol group, possesses mild antioxidant activity sufficient to protect neurons against oxidative stress, such as that produced by glutamate-induced excitotoxicity.[21]

Pharmacokinetics

THC is metabolized mainly to 11-OH-THC by the body. This metabolite is still psychoactive and is further oxidized to 11-nor-9-carboxy-THC (THC-COOH). In humans and animals, more than 100 metabolites could be identified, but 11-OH-THC and THC-COOH are the dominating metabolites.[28] Metabolism occurs mainly in the liver by cytochrome P450 enzymes CYP2C9, CYP2C19, and CYP3A4.[29] More than 55% of THC is excreted in the feces and ≈20% in the urine. The main metabolite in urine is the ester of glucuronic acid and THC-COOH and free THC-COOH. In the feces, mainly 11-OH-THC was detected.[30]

Physical and chemical properties

Discovery and structure identification

In 1940, cannabidiol was isolated and identified from *Cannabis sativa*,[31] and THC was isolated and described for its structure and synthesis in 1964.[32][33]

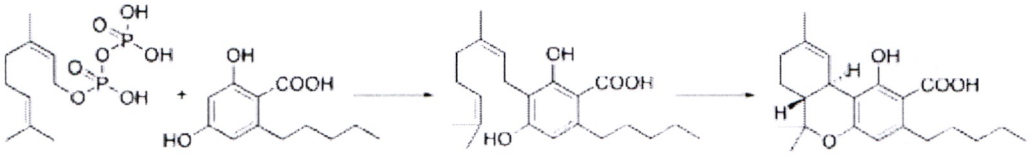
Solubility

As with many aromatic terpenoids, THC has a very low solubility in water, but good solubility in most organic solvents, specifically lipids and alcohols.[6]

Total synthesis

A total synthesis of the compound was reported in 1965; that procedure called for the intramolecular alkyl lithium attack on a starting carbonyl to form the fused rings, and a tosyl chloride mediated formation of the ether.[34][*third-party source needed*]

Biosynthesis



Biosynthesis of THCA

In the *Cannabis* plant, THC occurs mainly as tetrahydrocannabinolic acid (THCA, 2-COOH-THC, THC-COOH). Geranyl pyrophosphate and olivetolic acid react, catalysed by an enzyme to produce cannabigerolic acid,[35] which is cyclized by the enzyme THC acid synthase to give THCA. Over time, or when heated, THCA is decarboxylated, producing THC. The pathway for THCA biosynthesis is similar to that which produces the bitter acid humulone in hops.[36][37]

Detection in body fluids

Main article: Cannabis drug testing

THC and its 11-OH-THC and THC-COOH metabolites can be detected and quantified in blood, urine, hair, oral fluid or sweat using a combination of immunoassay and chromatographic techniques as part of a drug use testing program or in a forensic investigation.[38][39][40]

History

Further information: Removal of cannabis from Schedule I of the Controlled Substances Act

THC was first isolated in 1964 by Raphael Mechoulam and Yechiel Gaoni at the Weizmann Institute of Science in Israel.[32][41][42]

At its 33rd meeting, in 2003, the World Health Organization Expert Committee on Drug Dependence recommended transferring THC to Schedule IV of the Convention, citing its medical uses and low abuse potential.[43]

Society and culture

Comparisons with medical cannabis

Further information: Medical cannabis

Part of a series on

Cannabis

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Female cannabis plants contain at least 113 cannabinoids,[44] including cannabidiol (CBD), thought to be the major anticonvulsant that helps people with multiple sclerosis;[45] and cannabichromene (CBC), an anti-inflammatory which may contribute to the pain-killing effect of cannabis.[46]

Regulation in Canada

As of October 2018 when recreational use of cannabis was legalized in Canada, some 220 dietary supplements and 19 veterinary health products containing not more than 10 parts per million of THC extract were approved with general health claims for treating minor conditions.[19]

Research

The status of THC as an illegal drug in most countries imposes restrictions on research material supply and funding, such as in the United States where the National Institute on Drug Abuse and Drug Enforcement Administration regulated sources of cannabis for researchers until August 2016 when licenses were provided to growers for supplies of medical marijuana.[47] Although cannabis is legalized for medical uses in half of the United States, no products have been approved for federal commerce by the Food and Drug Administration, a status that limits cultivation, manufacture, distribution, clinical research, and therapeutic applications.[48]

In April 2014, the American Academy of Neurology found evidence supporting the effectiveness of the cannabis extracts in treating certain symptoms of multiple sclerosis and pain, but there was insufficient evidence to determine effectiveness for treating several other neurological diseases.[49] A 2015 review confirmed that medical marijuana was effective for treating spasticity and chronic pain, but caused numerous short-lasting adverse events, such as euphoria and dizziness.[50]

Multiple sclerosis symptoms

- *Spasticity*. Based on the results of 3 high quality trials and 5 of lower quality, oral cannabis extract was rated as effective, and THC as probably effective, for improving people's subjective experience of spasticity. Oral cannabis extract and THC both were rated as possibly effective for improving objective measures of spasticity.[49][50]
- *Centrally mediated pain and painful spasms*. Based on the results of 4 high quality trials and 4 low quality trials, oral cannabis extract was rated as effective, and THC as probably effective in treating central pain and painful spasms.[49]
- *Bladder dysfunction*. Based on a single high quality study, oral cannabis extract and THC were rated as probably ineffective for controlling bladder complaints in multiple sclerosis[49]

Neurodegenerative disorders

- *Huntington disease*. No reliable conclusions could be drawn regarding the effectiveness of THC or oral cannabis extract in treating the symptoms of Huntington disease as the available trials were too small to reliably detect any difference[49]
- *Parkinson's disease*. Based on a single study, oral CBD extract was rated probably ineffective in treating levodopa-induced dyskinesia in Parkinson's disease.[49]
- *Alzheimer's disease*. A 2009 Cochrane Review found insufficient evidence to conclude whether cannabis products have any utility in the treatment of Alzheimer's disease.[51]

Other neurological disorders

- *Tourette syndrome*. The available data was determined to be insufficient to allow reliable conclusions to be drawn regarding the effectiveness of oral cannabis extract or THC in controlling tics.[49]
- *Cervical dystonia*. Insufficient data was available to assess the effectiveness of oral cannabis extract of THC in treating cervical dystonia.[49]
- *Epilepsy*. Data was considered insufficient to judge the utility of cannabis products in reducing seizure frequency or severity.[49]

Marion County
OREGON

Recreational and Medical Marijuana

Regulations on growing, processing and selling recreational and medical marijuana in rural Marion County

Marion County Planning Division
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Are recreational marijuana businesses allowed in Marion County?

No. In the November 8, 2016 general election, the voters of Marion County did not pass Measure 24-405 to allow recreational marijuana businesses in unincorporated Marion County (outside city limits).

This prohibition includes growing, processing and retail sales businesses.

Are medical marijuana businesses (growing, processing and/or selling) allowed in Marion County?

Yes. At the same election, the citizens of Marion County passed Measure 24-404 to allow medical marijuana businesses in unincorporated Marion County.

Please note medical marijuana growers, processors and dispensaries must be licensed by the State of Oregon Health Authority (OHA) and comply with any State regulations. Contact the OHA for more information.

Are there County regulations for medical marijuana businesses?

Yes. The Marion County Board of Commissioners passed Ordinance #1372 that approved amendments to the County's Urban and Rural Zone Codes that include various regulations on medical marijuana growing, processing, and dispensaries.

Medical Marijuana Production (Growing):

The production of medical marijuana is allowed as farm use in the Exclusive Farm Use and Special Agriculture zones. Growing must be conducted indoors and any visible grow lights must be turned off from 7:00 pm to 7:00 am.

Producing is also allowed in all urban and rural Industrial zones after obtaining a Conditional Use permit and subject to standards in the Urban Code section MCC 16.32.500(A) and in the Rural Code at MCC 17.120.120(A). These standards include:

- The activity is conducted indoors.
- Emit no light or odors detectable on neighboring properties.
- Comply with the alarm system control ordinance.
- The person or entity shall keep all real and personal property tax accounts current for the business for which it is the taxpayer.
- No minors allowed on the business premises.
- Owners and employees must pass a background check.
- No consumption allowed on the business premises unless otherwise allowed for employees in OAR 333-008-1200.
- The business must comply with the Oregon Indoor Clean Air Act that prohibits indoor tobacco smoking. The business may not be co-located with a tobacco smoking lounge, or any kind of marijuana social club where marijuana is consumed.

Medical marijuana growing **is not** allowed in the following zones:

- Farm/Timber
- Timber Conservation
- Public
- Residential
- Commercial
- Urban Transition
- Urban Development
- Interchange District

Medical Marijuana Processing:
Small scale medical marijuana processors and facilities are allowed in the EFU and SA zones after obtaining an Administrative Review approval. The processing must be conducted indoors with no lights visible or odors detectable on adjacent neighboring properties.

Medical marijuana processing is allowed in all rural and urban Industrial zones after obtaining a Conditional Use permit and are also subject to the standards in Marion County Urban Code Section 16.32.500(A) and Marion County Rural Code Section 17.120.120(A). These standards are the same as outlined above for medical marijuana production.

Medical marijuana processing **is not** allowed in the following zones:

- Farm/Timber
- Timber Conservation
- Public
- Residential
- Commercial
- Urban Transition
- Urban Development
- Interchange District

Medical Marijuana Dispensaries (Retail Sales):
Medical marijuana dispensaries are allowed in all of the urban and rural Commercial zones except the urban Commercial Office zone, after obtaining a Conditional Use permit. The specific Conditional Use standards in the Urban Code are in Section 16.32.500(B) and in the Rural Code in Section 17.120.120(B) and include:

- The facility may not be located within 1,000 feet of a property containing a pre-kindergarten, Head Start program, community learning center, certified child care facility, relief nursery, public park, public or private elementary, secondary, or career school primarily attended by minors.
- May not be open before 7:00 am or after 10:00 pm.
- Comply with the alarm system control ordinance.
- The person or entity shall keep all real and personal property tax accounts current for the business for which it is the taxpayer.
- No minors are allowed on the business premises unless the minor is an Oregon Medical Marijuana Program (OMMP) cardholder and is accompanied by a parent or guardian and not in areas prohibited by OAR 333-008-1200.
- No consumption of medical marijuana is allowed on the business premises unless otherwise as allowed for employees in OAR 333-008-1200. The business must comply with the Oregon Indoor Clean Air Act that prohibits indoor tobacco smoking. The business may not be co-located with a tobacco smoking lounge, or any kind of marijuana social club where marijuana is consumed.

Medical marijuana dispensaries **are not** allowed in the following zones:

- Exclusive Farm Use
- Special Agriculture
- Farm/Timber
- Timber Conservation
- Public
- Residential
- Industrial
- Interchange District
- Urban Transition,
- Urban Development
- Commercial Office
- Highway Commercial

Are there any other restrictions?
Yes:

- Medical marijuana businesses cannot be home occupations.
- Income from medical marijuana businesses cannot be used to justify a farm dwelling.
- Farm stands and agri-tourism events may not be used for the sale of or to promote the sale of marijuana products or extracts.

Where do I obtain a Conditional Use or Administrative Review permit?
Marion County Planning Division issues these permits. You can download an application from our website or obtain one from the office.

Visit our website at:
publicworks.co.marion.or.us/planning

Marion County
OREGON

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INFORMATION ON LEVELS OF ENVIRONMENTAL NOISE REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY

MARCH 1974

PREPARED BY
THE U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF NOISE ABATEMENT AND CONTROL

Table 1

SUMMARY OF NOISE LEVELS IDENTIFIED AS REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY
(see Table 4 for detailed description)

Effect	Level	Area
Hearing Loss	$L_{eq(24)} \leq 70$ dB	All areas
Outdoor activity interference and annoyance	$L_{dn} \leq 55$ dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
	$L_{eq(24)} \leq 55$ dB	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{dn} \leq 45$ dB	Indoor residential areas
	$L_{eq(24)} \leq 45$ dB	Other indoor areas with human activities such as schools, etc.

Explanation of Table 1 :

1. Detailed discussions of the terms L_{dn}, $L_{eq(8)}$ and $L_{eq(24)}$ appear later in the document. Briefly, $L_{eq(8)}$ represents the sound energy averaged over an 8-hour period while $L_{eq(24)}$ energy averages over a 24-hour period. L_{dn} represents the L_{eq} with a 10 dB nighttime weighting.

2. The hearing loss level identified here represents annual averages of the daily level over a period of forty years. (These are energy averages, not to be confused with arithmetic averages.)