Medical Marijuana in Utah
Marijuana Studies and Articles:

Flower Power: Study Finds Smoking Marijuana Best for Relieving Pain
Chocolate Ingredients Throw Off Cannabis Potency Tests, Researchers Say
Your Doctor May Not Know Much About Marijuana. Here’s Why.
Youth Marijuana Use Doesn’t Rise When it’s Legal. Federal Data Prove It.
Cannabinoids Have Potential to Reduce Tumor Growth, Researchers Find.
Cannabinoids Could Help Treat OCD, Researchers Suggest
Legal Marijuana Leads to Fewer Opioid Deaths, Studies Conclude
Researchers Unlock What Gives Cannabis its Anti-Inflammatory Qualities
Study: Drought Conditions Could Induce Plants to Make More Cannabinoids
Cannabis and Crohn’s Disease
Researchers Find Endocannabinoids in Gut Might Regulate Obesity
What Can Cannabis Do for Patients with ALS?
Study: Where Weed is Legal, Interest in Alcohol Down, bur Up for Tobacco
How Medical Cannabis Eases HIV Symptoms, Reduces Disease Progression
Your Transdermal Cannabis Patch Can Make For Effective Medicine
Study: Drug Rehab Experts Find Medical Marijuana Helpful, but with Risks
Endocannabinoid System Plays Key Role in Reducing Fear, Yale Study Finds
What Can Cannabis Do for Patients with ADHD?

Reference to articles:
What is Cannabis?

- Cannabis is a flowering plant.
- Uses carbon dioxide (CO$_2$), light, and water to grow.
- Used for industrial, medical and in some states recreational purposes.
- Used in raw form or refined through extraction processes to create cannabis oil.
According to 21 USCS § 802; [Title 21. Food and Drugs; Chapter 13. Drug Abuse Prevention and Control, Control and Enforcement, Introductory Provisions], Marijuana 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 preparations of such plant, its seeds or resin.”
What about Industrial Hemp?
(Cannabis *L.*)

Utah Administrative Code: **Rule R68-24-2(4):**

“Industrial Hemp” means any part of a cannabis plant, whether growing or not, with a concentration of less than 0.3% tetrahydrocannabinol by weight.

TetraHydroCannabinol = THC
Simple Comparison

Cannabis Sativa

Hemp

Higher CBD
Traces of THC < 0.3%
Medicinal uses
Various industrial uses
Food

non-psychoactive (no high)

CBD

Marijuana

Higher THC (5-25%)
Recreational uses
Medicinal uses

psychoactive (gets you high)

THC
How is THC legally defined by Utah’s Department of Agriculture?

‘THC’ means total composite tetrahydrocannabinol including delta-9-tetrahydrocannabinol and tetrahydrocannabinolic acid.

R68-24-2(6)

What does that mean in layman’s terms?
The first step to understanding THC is to understand cannabinoids.

- Cannabinoids are chemical compounds found in the cannabis plant that interact with receptors in the brain and body to create various effects.
- There exist dozens, and potentially more than 100, cannabinoids in the cannabis plant, but THC is most widely known among these due to its abundance and euphoric attributes.
What are Terpenes?

Terpenes are chemicals that determine how things smell.

Orange Citrus, Pine Tree, Fruity, Skunky, Floral

There are over 100 different terpenes found in cannabis. They serve as a defense mechanism against bacteria, fungi, insects and other pests.

Trichomes
(Tiny resin filled glands that contain majority of THC)
Cannabinoids and Terpenes work together in what is called the ‘Entourage Effect’.

Terpenes can intensify or down-play the effects of the cannabinoids.
Estimated Domestic Market Value

Hemp
$452 million

Marijuana
$10 billion to $120 billion
Numerous varieties and hybrids
Tetrahydrocannabinol (THC) is the main compound found in the cannabis plant, also known as marijuana. When ingested or inhaled, it binds to cannabinoid receptors in the brain. In low doses, the compound can reduce pain and aggression. Here’s a look at the various parts of the marijuana plant and how they are processed:

**Mature bud/calyx**
Actual “flower” part of the female plant that grows at the end of the stem; a high calyx-to-leaf ratio is preferable in breeding as leaves contain higher levels of chlorophyll, which makes the smoke harsh.

**Trichomes**
These are the tiny resin-filled glands that cover the surface of calyxes as well as leaves and stems; they contain the vast majority of THC; mushroom-like heads are where the potency really lies and are used most exclusively in hash-making.

**Sugar leaves**
Smaller leaves with a high concentration of THC are used to make edibles after being trimmed, dried and cured.

**Pistils**
They are the red- or orangecolored hairs; their only function is to catch the male pollen in order to create seeds and procreate; they don’t contain any THC.

**Stalk**
Not considered a usable part of the plant; however, the fibers in the stalk, known as hemp, can be used to make fabric, paper, rope, and oil.

**Stem**
Stem contains little THC; after everything is trimmed from it, the stem can be used as an additive for infusions, an alcoholic extract.

**Fan leaves**
Big leaves with as many as 13 leaflets are the universal image of marijuana; they have the lowest concentration of THC and are typically tossed after the plant is trimmed.

Source: Kindreasures.com, Rocky Mountain Remedies, L!Neu Network, marijuana-seeds-seeds.com
Graphic: Jeff Goedjen, Brian Chabot, The Orange County Register
© 2013 MCT
Grow facilities won’t always look the same
It takes approximately 150 days for the plant to produce flowers. Only the Female Flowers are used.

The male plants produce seeds.
But the end product should look like this...
CO₂ Enrichment for Indoor Cultivation Operations
CO₂ Enrichment

Growers may use a generator or compressed CO₂ to elevate CO₂ levels to make plants grow faster.

Typical set range is 1,500 ppm or less of CO₂ in grow rooms.

OSHA Permissible Exposure Limit (PEL) in an 8 hour Time Weighted Average (TWA) for human occupancy is 5,000 ppm.
CO₂ Enrichment

40,000 ppm of CO₂ is the Immediately Dangerous to Life and Health concentration (IDLH) by the National Institute for Occupational Safety and Health (NIOSH)

CO₂ alarms are required and should be set to alarm at 5,000 ppm (NFPA 1: 38.6.4.3)
Is CO2 Plant Food?
Here is what happens with more CO2

385 ppm  
535 ppm  
685 ppm  
835 ppm
Initial Processing

Harvesting
Drying
Storage
Analysis
Extraction Methods:

- Dry-sieved then pressed
- Water extracted, dried, pressed
- Rosin, heat & pressure applied
- Liquid Nitrogen
- CO₂ (Carbon Dioxide)
- Ethanol Alcohol
- Distillation
- Hydrocarbon (Butane, IsoButane, Propane, Propylene, Hexane)
Hydrocarbon compounds are highly flammable: but they are efficient cannabinoid extractors. In practice; only propane and butane are used.

Why these? They work efficiently, and evaporate very quickly, making recovery of the dissolved cannabinoids easy. They also leave the colored pigments and chlorophyll behind.
The properties of hydrocarbons that are ideal for cannabis extraction (high volatility, low viscosity) make them extremely dangerous. All hydrocarbons can form explosive mixtures.

**Explosive Potential**

- **Butane**: LEL is 1.8% and UEL is 8.4% in air
- **Propane**: LEL is 2.1% and UEL is 9.5% in air
There is no way to make these hazardous compounds safe, thus extensive engineering controls MUST be employed to avoid disaster.

Even then, operator error, or inadequate SOPs can lead to hazardous conditions.
Extraction Process

Process produces the crude cannabis oils (often called “Hash Oil”)

- Biomass Cooling
- Conveying
- Milling/Grinding
- Extraction
- Degumming & Winterization
- Filtration
- Desolventization
- Biomass Waste & Analysis
- Azeotropic Solvent Distillation
- Clean Solvent
Post Processing

Distillation
Decarboxylation and Analysis
Crystallization
Sonification
Water Soluble Cannabinoids
Isolate and Analysis
The Guide to Marijuana Facilities Design

“AIA Trust: Where smart architects manage risk.”
https://www.theaiatrust.com/marijuana-facilities-design-common-risk-problems/

- Threat of Explosion and Fire
- Worker Safety
- Damage to Real Property
- Electrical Risks
- Miscellaneous Risks
- Inadequate Design
- Nuisance
Facility Inspection

INSPECTING THE WEED SUPPLY
A visitor must show identification and get a visitor's badge, then don a white coat and shoe covers before entering the secure facility.

Everyone who enters the agricultural part of the facility must go through an enclosed space where they are sprayed with air to ‘wash off’ any potential contaminants, like pollen.
Considerable Lighting, HVAC, Humidity control, & Aisles (?)
Plants are tagged and tracked from seed or seedling to final production. When growers identify a healthy mother plant, they take cuttings for multiple new baby plants.
Using a flashlight to inspect plants

Looking for:

Powdery mildew
Pest damage
Detritus
(organic matter produced by the decomposition of organisms)
Inspecting Chemical Storage and Flammable Liquids Cabinets
Lab tests find mold on medical marijuana sold in Phoenix  Dec. 7, 2017

Crew Orientation Hazards Tour

Utah’s Adopted Codes dealing with Marijuana

IFC Chapter 39: Processing and Extraction Facilities

COMPLICATED PROCESSES:

Require the best sources of code in dealing with the actual operations and processes within a facility.

NFPA 1, Chapter 38: Marijuana Growing, Processing, or Extraction Facilities
# Code References Spreadsheet

Includes: 2018 IFC, NFPA 1 Chapter 38 & some minor 2018 IBC

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Hazards of the Trade - Jesse Roman, NFPA

Cultivation/Growing Hazards Include:

- Access and Egress
- High Electrical Loads and Lights
- Plastic dividers/combustible interior finishes
- Loads on trusses: Humidifiers, carbon filters, lights
- Fumigation – including pesticides
- Illegal locks/barriers
- CO₂ enrichment and/or extraction
- Butane / Propane – other Hazardous Materials
- Extraction Equipment

Incidents at Marijuana Facilities

- Chemical-fueled explosion causes fire inside Coolidge marijuana facility
  - Casa Grande Dispatch, Aug. 14, 2018

- Man dies in fire at marijuana facility
  - WBKB News, May 8, 2019

- Fire Damages medical marijuana facility
  - Coast Mountain News, Aug. 23, 2019

- Fire at marijuana growing warehouse prompts evacuation
  - The Spokesman-Review, Sept. 15, 2019
Explosion at Medical Marijuana Grow Facility
Hamilton, Michigan  03 December 2015

https://fox17online.com/2015/12/03/crews-responding-to-explosion-in-hamilton/

Propane explosion – Propane was being used to heat the facility
Two workers burned in Santa Fe, NM
Two injured in explosion while trying to extract Marijuana Oil - Los Angeles
March 20, 2019
Second hash oil extraction laboratory explosion in San Diego County within two week period  17 May 2019

“Legalization of marijuana at the state level has resulted in at least 10 recorded instances of fires or explosions at facilities that extract hash oil.” – Politico, Feb. 18, 2019

States are facing a new danger as legal marijuana spreads across the country: Explosions and fires at cannabis factories are sending workers to the hospital with severe burns, revealing the nascent industry’s lack of proper safety standards.

POLITICO - By REBECCA RAINNEY 02/18/2019
SECURITY ISSUES
Heightened Security Measures

- Perimeter Fencing
- Vehicular Drives/Approaches
- Fire Lanes
- Parking Lot Layouts & Islands
- Parking Lot Lighting
- Loading Docks
- Site/Exterior Building Lighting
- Sidewalks - Pedestrian approaches
- Exterior Doors and Glazing
- Landscaping
- Bollards, Barriers, Level Changes, Walls
- Exterior Cameras
- Call Boxes

Facility Hardening
The Great Seattle “Pot Heist”
(Politico; August 23, 2019)
“We plant a seed, we report it,” the marijuana facility owner says. “You take a cutting, you report it. How long you dry it. What the final weight was. How soon did it go out the door? What did you sell, who did you sell it to, for how much? What did they mark it up to? Easily, 25% of our time is given over to tracking.” The state and state-licensed data firms then post much of this information online, where it is available to the public.

Marijuana Waste Stream

Closing the Loop

Fibrous Waste → Processor
Cannabis → Compostable Packaging
Compost

Waste 360

Nationwide Cannabis and HEMP Waste Disposal Services
Affordable Pricing and EPA Compliant

Cannabis and Hemp Waste Disposal Services
PegEx Hazardous Waste Experts provides affordable nationwide (USA) cannabis, hemp, and lab waste disposal services.

Per the EPA, cannabis and hemp waste must be made "unusable and unrecognizable" before disposal, mixed with at least 50 percent non-cannabis (or hemp) waste (such as non-consumable solids), and stored in a "secured" waste receptacle.

Cannabis and hemp waste must be disposed of in a...
“Track and Trace” compliance measures

Plant waste must be rendered unusable by grinding and incorporating it with other ground materials.

The resulting mixture must be at least 51% non-marijuana waste by volume.

Failure to meet marijuana waste disposal requirements can lead to fines or cancellation of license.
Where is Utah now with Marijuana?
Under the Utah Medical Cannabis act:
Utah Code 26-61a-102(29)

**SMOKING OF MARIJUANA IS PROHIBITED.**

However, “...patients may purchase a medical cannabis device that warms cannabis material into a vapor without use of a flame and delivers cannabis to an individual’s respiratory system.”

Edible products (beside the gelatinous cubes) such as candies, cookies, brownies, and unprocessed flowers outside of blister packs **are not permitted.**
Allowable forms of Medical Cannabis
(Utah Rule: 26-61A-102, 502)

- Tablet or Capsule
- Concentrated Oil
- Sublingual preparation
- Liquid Suspension
- Topical Preparation
- Gelatinous Cube
- Unprocessed cannabis flower in blister pack of less than 1 gram

“If the patient doesn’t respond to two of the above, then the medical provider may recommend a wax or resin dosage form.”
Department of Agriculture Grow Licenses

Dragonfly Greenhouse     Lic.# 20175 Location: Moroni, Sanpete Co.
Harvest of Utah          Lic. # 20180 Location: Ogden, Weber Co.
Medical Cannabis LLC     Lic. # 20177 Location: Garland, Box Elder Co.
Standard Wellness of Utah Lic. # 20173 Location: Corinne, Box Elder Co.
True North of Utah LLC   Lic. # 20178 Location: Brigham City, Box Elder Co.
Tryke Companies Utah LLC Lic. # 20174 Location: Tooele, Tooele Co.
Wholesome Ag.            Lic. # 20179 Location: North Salt Lake, Davis Co.
Zion Cultivars LLC       Lic. # 20176 Location: Benjamin, Utah Co.
Utah Dept. of Health Pharmacy Licenses:

- Beehive’s Own (2 licenses: Salt Lake City and TBD either in Box Elder, Morgan or Rich)
- Bloom Medicinals, Cedar City
- Columbia Care, Springville
- Curaleaf, Lindon
- Deseret Wellness (2 lics: Park City, Provo)
- Dragonfly Wellness, Salt Lake City
- Justice Grown Utah (2 lics: Salt Lake City, St. George)
- Pure UT, Vernal
- True North of Utah (2 lics: Logan & Ogden)
- Wholesome Therapy, West Bountiful

Announced on 03 January 2020
Utah Medical Cannabis Pharmacy License Locations

**Medical Cannabis Pharmacy Regions**
- Region 1
- Region 2
- Region 3
- Region 4

**City** | **Name** | **Address**
---|---|---
Logan | True North of Utah | 2359 North Main Street, Logan
Ogden | True North of Utah | 1148 Century Drive, Ogden
West Bountiful | Wholesome Therapy | 724 West 500 South #100, West Bountiful
Salt Lake City | Beehive's Own | 1991 South 3600 West, Salt Lake City
Salt Lake City | Justice Grown Utah | 242 East Broadway, Salt Lake City
Salt Lake City | Dragonfly Wellness | 711 S State Street, Salt Lake City
Park City | Deseret Wellness | 4554 Forestdale Drive, Park City
Vernal | Pure UT | 2075 US-40, Vernal
Lindon | Curaleaf | 1172 West 700 North, Lindon
Provo | Deseret Wellness | 222 North Draper Lane, Provo
Springville | Columbia Care Utah | 484 South 1750 West, Springville
Cedar City | Bloom Medicinals | Old Hwy 91 West Green Lake Drive, Cedar City
St. George | Justice Grown Utah | TBD, St. George
Other | Beehive's Own | The location will be in Box Elder, Morgan, or Rich County in a highly populated area.
Prior to January 2021, patients may obtain recommendations from qualified providers* to use medical cannabis. Click here for more information.
Resources from SFM Office:

1. Generic Inspection Form for Marijuana Facilities
2. Relevant 2018 IFC Code references spreadsheet
3. NFPA 1: Chapter 38*  *Marijuana Growing, Processing, and Extraction Facilities*
4. NFPA 1: Chapter 38  Annex A
5. List of marijuana grow facilities licensed by the Utah Department of Agriculture (8 businesses)
6. List of pharmacies licensed by the Utah Department of Health (14 businesses)
7. Slide show presentation note pages

* SB 1002, 1st Substitute Medical Cannabis Amendments (lines 971-974) passed the Utah State legislature on 16 September 2019 and signed into law by the Governor on 23 September 2019.
Code Question: Is Grandma’s “portable” grow facility legal?
Questions?

Comments?