

Drug Testing & CBD in the Workplace



EMPLOYEE SCREENING SOLUTIONS

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About WorkforceQA




MRO – Medical Review Officer
TPA – Drug & Alcohol Project Management
Reviewed over 800,00 drug screens per year
Complete Sleep Apnea program
MRO - Dr Joseph Sentef



Grady Phillips

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Marijuana positivity in US workforce

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Marijuana positivity in general US workforce

Tops the list of the most commonly detected illicit substances

Year	Urine (%)	Oral Fluid (%)	Hair (%)
2004	3	2	1
2005	3	2	1
2006	3	2	1
2007	3	2	1
2008	3	2	1
2009	3	2	1
2010	3	2	1
2011	3	2	1
2012	3	2	1
2013	3	2	1
2014	3	2	1
2015	3	2	1
2016	3	2	1
2017	3	2	1
2018	3	2	1
2019	3	2	1
2020	3	2	1

Increases in marijuana positivity across nearly all employee testing categories

Quest Diagnostics DTI

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Marijuana positivity in US workforce

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Chemistry - Cannabinoids


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Hemp
-Vs-
Marijuana

Both plants are Cannabis Sativa

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Chemistry - Cannabinoids




100+ cannabinoids in cannabis
 "Marijuana" and "hemp" possess in varying amounts
 16 Main classes

<ul style="list-style-type: none"> → THC (tetrahydrocannabinol) THCA (tetrahydrocannabinolic acid) → CBD (cannabidiol) CBDA (cannabidiolic acid) CBN (cannabinol) CBG (cannabigerol) CBC (cannabichromene) CBL (cannabicyclol) 	<ul style="list-style-type: none"> CBV (cannabivarin) THCV (tetrahydrocannabivarin) CBDV (cannabidivarin) CBCV (cannabichromevarin) CBGV (cannabigerovarin) CBGM (cannabigerol monomethyl ether) CBE (cannabielsoin) CBT (cannabicitran)
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Chemistry - THC and CBD



Both THC and CBD are found in every cannabis plant
 Total around 20-30%


<p>IN MARIJUANA 5 – 30%</p> <p>IN HEMP <0.3%</p>		<p>IN MARIJUANA VARIES WITH THC</p> <p>IN HEMP UP TO 20%</p>
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Photo Source: Dr. Jaleel Fakier

All other Cannabinoids - 1-2%

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THC and CBD – What is it good for ?




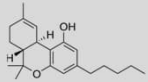






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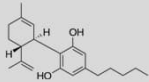
THC and CBD – What is it good for ? 



THC

The claims

- Nausea
- Appetite
- Pain Management
- Anxiety
- Sleep management
- Glaucoma



CBD

The claims

- Pain / Inflammation
- Anxiety / Depression
- PTSD
- Insomnia
- Seizures*
- High Blood Pressure
- Acne

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THC and CBD – What is it good for ? 


“Good for What Ails You”



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Chemistry - CBD 



CBD – Cannabidiol

Introduced after 2018 Farm bill

Non-psychoactive cannabinoid

Sold as oil, tincture, or edibles


Varying concentrations


Affects Endocannabinoid System

NOT FDA approved for Food

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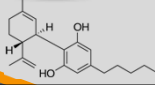
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CBD – What is it really good for ? 




FDA APPROVED PRESCRIPTION
 EPIDIOLEX (2018)
 Approved for Two Rare Severe forms of Epilepsy
 Dosage 225-1800 mg / day
 Bottle OTC CBD oil (200-800 mg)
 Edible gummy (5-25 mg)
 CBD Water (2-5 mg)

What is a “dose” of CBD?



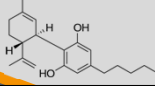
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CBD – Downside 


Interaction with other medicines
 Liver Injury – FDA
 Animal studies show male reproductive issues – FDA
 Unknown pregnancy risks

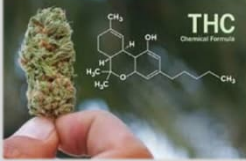
Not enough study to know long-term



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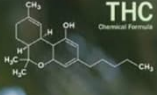
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Chemistry - THC 



THC
 Chemical Formula

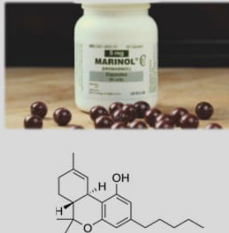
THC - Tetrahydrocannabinol
 Psychoactive cannabinoid
 Multiple Isomers
 Delta 9 (Δ^9) is 99+%
 Smoking still most popular means of ingestion
 Varying concentrations
 Affects Endocannabinoid System in the body
 No known lethal dose
 Impairment up to 24 hours



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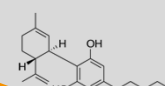
THC – What is it really good for ?



FDA APPROVED PRESCRIPTIONS
 Marinol (Dronabinol) (1992)
 Syndros (Dronabinol)
 Synthetic THC
 Generic available
 Approved for Appetite for HIV/AIDS and
 Cancer and Vomiting (Nausea)
 DOES produce impairment
 Usage does not result in DOT Violation
 but driver should be disqualified while
 using
 An additional test (THC-V) can verify that
 only Dronabinol is in the urine specimen

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THC – Downside




Impairment
 Driving or work-related injuries
 Brain health – particularly developing brains
 Pregnancy
 Addiction
 Concentration of THC has increased dramatically

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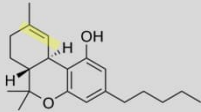
**Is Δ^8 THC different
 from Δ^9 THC?**

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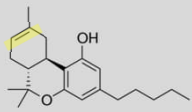
THC Isomers



Isomers have the same molecular weight, but a different chemical bond



Delta 9 THC





Delta 8 THC

Δ^8 (Delta 8)THC naturally occurs at 0.1%

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Delta 8 THC




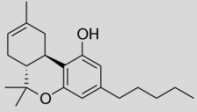


- In 2019, there was a glut of CBD on the market and the price tanked
- People are resourceful, and created the Delta-8 market by converting CBD to Δ^8 THC
- Toluene with lewis acids and distilling / filtering the resulting chemical soup

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Delta 8 THC






Minor cannabinoid (<1%)
 No claimed health benefits
 Sole purpose is to get high
 Suggested to be "lite" weed
 THC Isomer does not bond as strongly to endocannabinoid system
 Legalized by 2018 Farm Bill
 As long as source product is "Hemp"
 Most (maybe all) Δ^8 THC is synthesized from CBD or Δ^9 THC
 Dangerous conversion process – not for amateurs

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If most Delta 8 products were a drink



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Delta 8



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Delta 8 THC
FDA - May 2022



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Delta 8

FDA - US Food and Drug Administration – May 4, 2022

Delta-8 THC products often involve use of potentially harmful chemicals to create the concentrations of delta-8 THC claimed in the marketplace.

The natural amount of delta-8 THC in hemp is very low, and additional chemicals are needed to convert other cannabinoids in hemp, like CBD, into delta-8 THC (i.e., synthetic conversion). Concerns with this process include:

Some manufacturers may use potentially unsafe household chemicals to make delta-8 THC through this chemical synthesis process. A dilution of chemicals may be used to change the color of the final product. The final delta-8 THC product may have potentially harmful by-products (contaminants) due to the chemicals used in the process, and there is uncertainty with respect to other potential contaminants that may be present or produced depending on the composition of the starting raw material. If consumed or inhaled, these chemicals, including some used to make (synthesize) delta-8 THC and the by-products created during synthesis, can be harmful.

Manufacturing of delta-8 THC products may occur in uncontrolled or unsanitary settings, which may lead to the presence of unsafe contaminants or other potentially harmful substances.


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Will CBD and Δ^8 show up in lab-based drug screens ?

CC1=C(C(=O)O)C=CC2=C1OC(C2)C
 CBD



CC1=C(C(=O)O)C=CC2=C1OC(C2)C
 Δ^8 THC

CBD is not a drug of abuse and is not tested in drug screens
 Certified Labs use GC/MS technology to identify Δ^9 THCA (metabolite)

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Then what is the issue ?



These products are not regulated by the FDA
 Imported and disreputable vendors
 Products may contain anything
 If THC is in your system, consumption of other chemicals is not a valid reason

Lack of regulation – polluted product

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DOT "CBD" Notice

Compliance Notice Feb 18,2020

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DOT OFFICE OF DRUG AND ALCOHOL POLICY AND COMPLIANCE NOTICE

The Department of Transportation (DOT) is issuing this notice regarding the labeling of certain CBD products. The Food and Drug Administration (FDA) does not currently certify the levels of THC in CBD products, so there is no Federal oversight to ensure that the labels are accurate. The FDA has cautioned the public that "Consumers should beware purchasing and using any [CBD] products." The FDA has stated: "It is currently illegal to market CBD by adding it to a food or labeling it as a dietary supplement." Also, the FDA has issued several warning letters to companies because their products contained more CBD than indicated on the product label. ***

2. The labeling of many CBD products may be misleading because the products could contain higher levels of THC than what the product label states. The Food and Drug Administration (FDA) does not currently certify the levels of THC in CBD products, so there is no Federal oversight to ensure that the labels are accurate. The FDA has cautioned the public that "Consumers should beware purchasing and using any [CBD] products." The FDA has stated: "It is currently illegal to market CBD by adding it to a food or labeling it as a dietary supplement." Also, the FDA has issued several warning letters to companies because their products contained more CBD than indicated on the product label. ***

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MRO will follow DOT Regulations

49CFR§40.151(d-f)

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(d) It is not your function to consider explanations of confirmed positive, adulterated, or substituted test results that would not, even if true, constitute a legitimate medical explanation. For example, an employee may tell you that someone slipped amphetamines into her drink at a party, that she unknowingly ingested a marijuana brownie, or that she traveled in a closed car with several people smoking crack. MROs are unlikely to be able to verify the facts of such passive or unknowing ingestion stories. Even if true, such stories do not present a legitimate medical explanation. Consequently, you must not declare a test as negative based on an explanation of this kind.

(e) You must not verify a test negative based on information that a physician recommended that the employee use a drug listed in Schedule I of the Controlled Substances Act, (e.g., under a state law that purports to authorize such recommendations, such as the "medical marijuana" laws that some states have adopted).

(f) You must not accept an assertion of consumption or other use of a hemp or other non-prescription marijuana-related product as a basis for verifying a marijuana test negative. You also must not accept such an explanation related to consumption of coca teas as a basis for verifying a cocaine test result as negative. Consuming or using such a product is not a legitimate medical explanation.



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**It's ok, it's only
0.3% THC
Right ?**

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Why 0.3%





1976
A Practical and Natural Taxonomy for Cannabis
- Ernest Small
"Northern" strain - Hemp
"Southern" strain - Marijuana
Became the basis for Hemp vs Marijuana (Psychoactive)
Was never intended to represent "Impairment" potential


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How much is 0.3% THC



0.3% THC "CBD Oil" (30g bottle) - 90 mg THC



0.3% THC Gummy (10g) - 30 mg THC



Typical joint 60-150 mg THC

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How much THC does it take to be Positive



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How much THC does it take to be Positive 

Comparison with other studies
 The results of this study are in general agreement with those of a study by Bray and Cole (12). When administering daily THC doses similar to those in the present study, these researchers found significantly higher retention of THCA and THCA-S (immature) and GC-MS results. During their study, they exposed, over a period of 7 days, 6 males to single daily THC doses in hemp oil, ranging from 0.3 to 0.7 mg/day. They found that daily ingestion of 0.54 mg of total THC produces positive screening results at the 10-ng/ml, oral and urine, positive at the 10-ng/ml, oral by GC-MS. Two individuals consuming 0.1 and 0.175 mg/day of THC, respectively, screened at >20 ng/ml.

2001 STUDY
 IMPACT OF HEMP FOOD ON
 WORKPLACE DRUG TESTS
 DAILY DOSE FOR 10 DAYS
 FOUR INCREMENTAL THC DOSES
 UP TO 0.45 MG/DAY
 NO POSITIVE TESTS
 WASHOUT WAS RAPID

2000 STUDY
 0.54 MG/DAY CAUSES POSITIVE TESTS

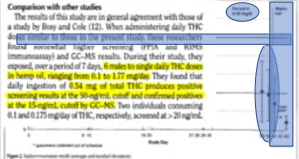




Figure 3. Subchronic oral THC dosing and metabolic clearance.

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Impairment and testing 

THC vs Alcohol

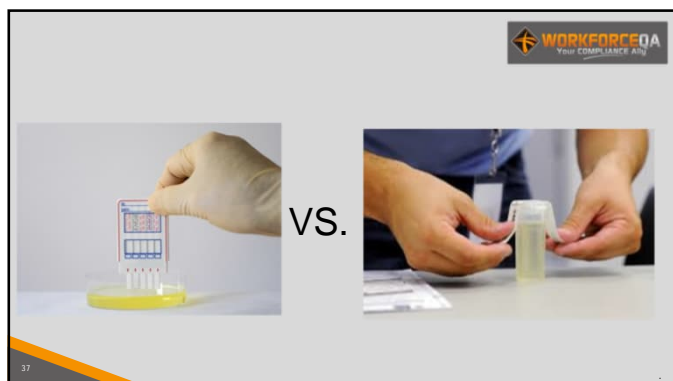
Marijuana		Alcohol
One "hit"	VS	One "drink"
Concentration varies widely		14 grams alcohol
"High" for 3-7 Hours		"High" for 1 hour
Impairment up to 24 hours		Impairment 1 hour
Testing exceeds impairment	A test for THC that proves impairment does not yet exist	Testing matches impairment

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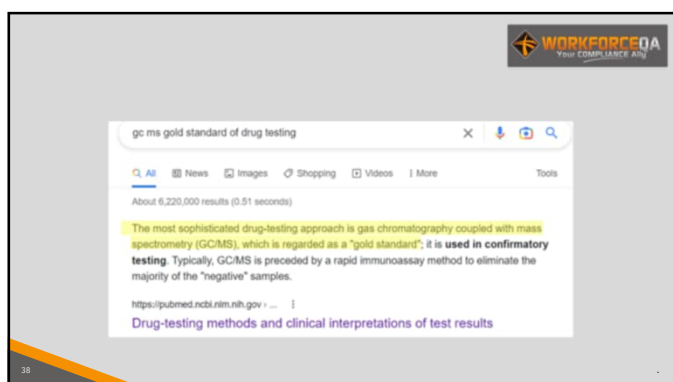


Google says lab results are easily fooled

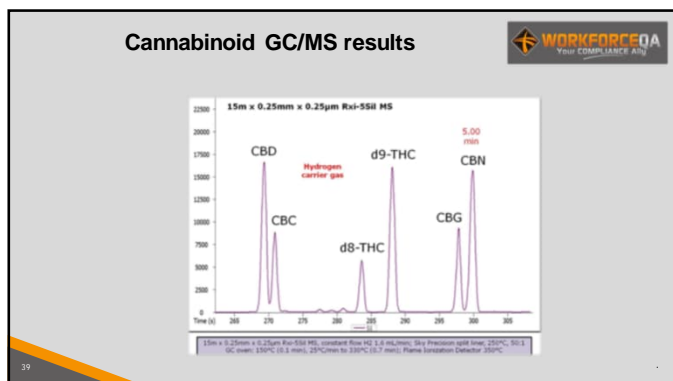
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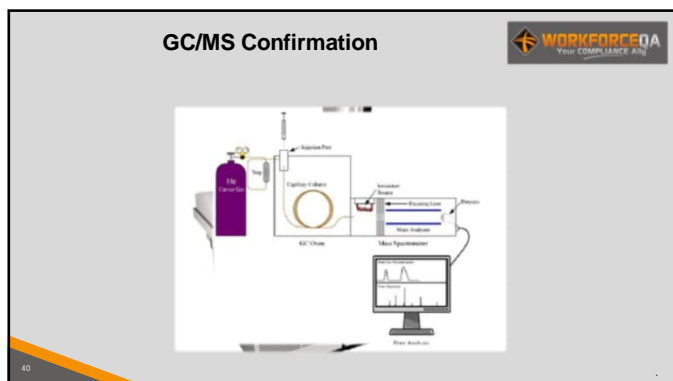
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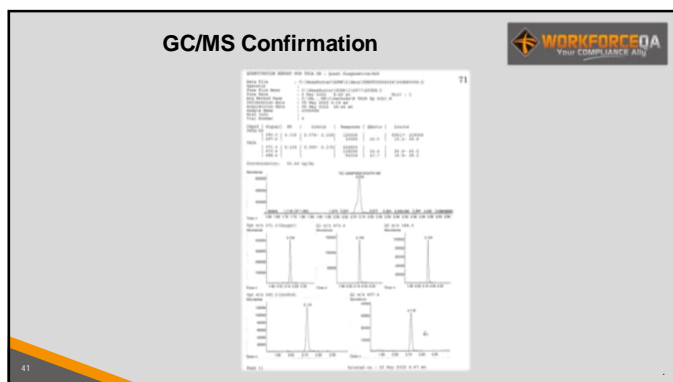
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Hair Testing






- FAST Act 2015
- Proposed Mandatory Guidelines 9/10/2020
- Requires Alternate specimen to confirm positive result
- Concerns of hair type and color affecting result
- Not likely to change anytime soon
- 12/26/22 Trucking Petition denied to include results in Clearinghouse


<https://www.govinfo.gov/content/pkg/FR-2020-09-10/pdf/2020-16432.pdf>

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Oral Fluid Testing




- Oral Fluids approved for HHS 2019.
- No labs approved yet
- FMCSA NPRM 2/28/22
- Major hurdle is kit split specimen
- Limited detection window for THC
- Closest test for impairment
- No action at this time




<https://www.govinfo.gov/content/pkg/FR-2022-02-28/pdf/2022-02364.pdf>

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Annual drug panel change




- April 7, 2022
- HHS Proposed revised Urine and Oral Fluid Mandatory Guidelines
- HHS annual publishes test panel without comment period
- Allow labs to test for biomarkers without request and create authorized biomarker panel
- New MRO requirements
- No action yet




<https://www.govinfo.gov/content/pkg/FR-2022-02-28/pdf/2022-02364.pdf>

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What drugs to test ?




- April 7, 2022
- HHS Proposed revised Urine and Oral Fluid Mandatory Guidelines
- HHS annual publishes test panel without comment period
- Allow labs to test for biomarkers

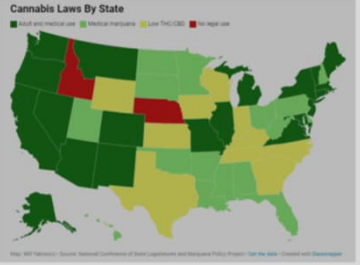


Washington (December 13, 2022) - Senator Edward J. Markey (D-Mass.) [Announces](#) that he will introduce legislation today to the Department of Health and Human Services (HHS) to update the Department's Mandatory Guidelines for Urine and Oral Fluid Testing for Opioid Use Disorder. The proposed rule would expand access to opioid use disorder treatment by creating additional flexibilities for Opioid Treatment Programs (OTPs) to provide services through telemedicine and toll-free services, and allow more practitioners within OTPs to prescribe the medication. The proposal is also consistent with the Senator's oversight and legislative efforts to increase access to effective treatments and combat the nation's opioid epidemic. The Justice vs. key provisions within his [Opioid Treatment Access Act](#).

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State Legalization






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Wisconsin Legalization



- Wisconsin
- 0.3 % THC and CBD
- No Medical accommodation required for users



- Wisconsin was the nation's leading Hemp producer in 1940s
- 2014 CBD for seizures "Lydia's law"
- 2017 expanded to include any medical use of CBD

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