

Marijuana Testing

Testing and the Use of Testing in Dependency and Neglect Matters

*PowerPoint modified from one originally created by CU Law students Matt Stewart and Paige Olson

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Testing and the Use of Testing in Dependency and Neglect Matters

MARIJUANA TESTING -WHAT DO YOU WANT TO KNOW?

- Does this parent use marijuana?
- Have they used recently?
- How much have they used?
- Are they using more than expected?
- Are they intoxicated?
- Are they safe?

- WHAT YOU GET: FORENSIC URINE DRUG TESTING (FUDT)

Cannabis – Science Part 1

- **THC = Delta-9 TETRAHYDROCANNABINOL**
 - Active chemical found in cannabis plant
 - Plant material smoked directly
 - Or consumed in brownies, or gummies,
 - or as concentrate

Primary cause of Psychoactive effects

- Psychoactive - causing changes in perception, mood, behavior and consciousness
- General effects of THC include euphoria, relaxation, impaired memory, lack of balance and mood changes” (CBI report)



Cannabis – Science Part 2

- **Effects increase with dose, but are also highly dependent on the individual and their smoking history**
- **Duration of effects -**
 - Smoking – begin immediately, last about 4 hours
 - Oral ingestion – effects delayed, extended
- **The Colorado effect**
 - Legalization of recreational marijuana use has resulted in cannabis products of much higher potency, and higher levels of cannabis use than was envisioned during the time when much of the literature was published





Cannabis – Science Part 3

Now that the THC is in the body

- **THC is converted to THC-OH, then to THC-COOH**
 - This is process of metabolism
 - The effects of Cannabis wear off because the active molecule THC is converted to the inactive THC-COOH
 - “Inactive” means it has no effects.
 - THC-COOH is removed from the body in the urine
- THC-COOH in urine indicates past history, not current use; will be detectable days/weeks after last use
- **THC-COOH is inactive**; presence in urine or even blood is not related to impairment



Marijuana Testing - Mandated

- Urine testing for THC-COOH is used for employment purposes, forensic purposes such as sentencing, parole requirements, and for child custody assessments.
- Regulation of all these ultimately trace back to the SAMHSA mandatory guidelines for Federal Workplace Drug Testing.
- Cordant is not giving you a test result directly regulated under the Federal Workplace Guidelines. Cordant is certified by “CAP-FUDT” (College of American Pathologists - Forensic Urine Drug testing)
- The laboratory requirements for CAP-FUDT certification are based directly on the SAMHSA guidelines.



Forensic Urine Drug Testing

Understanding the Report

- The Cordant FUDT reports we will examine do not display any results labeled as “THC-COOH”.
 - The Cordant confirmatory report will show a numerical result labeled as “THC” under “Screening tests by IA”
 - The report will also show a “THC level” under “THC by LC/MS/MS”.
 - These two levels are very different because neither of them are actually THC.
- **HOW DO WE KNOW?**

Marijuana Testing – Urine

SAMHSA, HHS Regulations

- **Mandatory guidelines for Federal Workplace Drug Testing Programs**
- **Agency: SAMHSA, HHS**

Federal Register /Vol. 82, No. 13 /Monday, January 23, 2017 /Notices Page
7941

Initial test analyte: (THCA) ²		Marijuana metabolites
Initial test cutoff	50 ng/mL	
Confirmatory test analyte:	THCA	
Confirmatory test cutoff concentration:	15 ng/mL	

Note superscript “2”

“An immunoassay must be calibrated with the target analyte, D-9-tetrahydrocannabinol-9-carboxylic acid (THCA).”

Screening Test

PROFILE/TEST (CUTOFF)	RESULTS	FOOTNOTES
Screening Tests by IA		
URINE: Meth/Amphetamines (1000 ng/ml)	negative	
URINE: Barbiturates (300 ng/ml)	negative	
URINE: Benzodiazepines (300 ng/ml)	negative	
URINE: Cocaine (300 ng/ml)	negative	
URINE: Opiates (300 ng/ml)	**POSITIVE	
URINE: Propoxyphene (300 ng/ml)	negative	
URINE: THC (50 ng/ml)	**POSITIVE	1,2
URINE: THC (50 ng/ml) LEVEL	>1120	1,2
URINE: Ethyl Glucuronide-ETG (500 ng/ml)	negative	3
Specimen Validity Tests		
Specimen Validity Panel (20 mg/dl)		
URINE: Creatinine LEVEL	147.5	
Specimen Validity Panel		
Basic Adulteration Check	normal	4

Footnotes:

1. If THC level is >1120, the THC/CREATININE ratio cannot be calculated and interpretation of new use should not be implied. Confirmatory testing is recommended if a determination of new use is required.
 2. SEMI-QUANTITATIVE levels obtained from a screening test result may have contributions from multiple analytes, should be considered presumptive and may not meet forensic standards until confirmed with a specific and sensitive alternate method such as LC/MS/MS.
 3. ETG negative screen suggests alcohol was not consumed.
 4. Specimen checked for unusual color, physical characteristics and abnormal instrument response.
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Confirmation Test 1

CONFIRMATION OF A POSITIVE SCREEN IS RECOMMENDED IF LEGAL ACTION IS ANTICIPATED.
SPECIMEN RECEIVED SEALED AND INTACT UNLESS OTHERWISE NOTED.

Client Notes:

* OPI THC CONF PER CHERYL BURNS 1/28/20 JXP

PROFILE/TEST (CUTOFF)	RESULTS	FOOTNOTES
Screening Tests by IA		
URINE: Meth/Amphetamines (1000 ng/ml)	negative	
URINE: Barbiturates (300 ng/ml)	negative	
URINE: Benzodiazepines (300 ng/ml)	negative	
URINE: Cocaine (300 ng/ml)	negative	
URINE: Opiates (300 ng/ml)	**POSITIVE	
URINE: Propoxyphene (300 ng/ml)	negative	
URINE: THC (50 ng/ml)	**POSITIVE	1,2
URINE: THC (50 ng/ml) LEVEL	>1120	1,2
URINE: Ethyl Glucuronide-ETG (500 ng/ml)	negative	3
Confirmation Tests		
Opiates by LC/MS/MS (300 ng/ml)		
URINE: Codeine	**POSITIVE	
URINE: Codeine LEVEL	300	
URINE: Morphine	negative	
URINE: Morphine LEVEL	Not Detected	
URINE: Hydrocodone	negative	
URINE: Hydrocodone LEVEL	Not Detected	
URINE: Hydromorphone	negative	
URINE: Hydromorphone LEVEL	Not Detected	
URINE: Oxycodone	negative	
URINE: Oxycodone LEVEL	Not Detected	
URINE: Oxymorphone	negative	
URINE: Oxymorphone LEVEL	Not Detected	
THC by LC/MS/MS (15 ng/ml)		
URINE: THC	**POSITIVE	4
URINE: THC LEVEL	260	4
URINE: THC/CREAT RATIO	1.76	

Specimen Validity Tests

Confirmation Test 2

CONFIRMATION OF A POSITIVE SCREEN IS RECOMMENDED IF LEGAL ACTION IS ANTICIPATED.
SPECIMEN RECEIVED SEALED AND INTACT UNLESS OTHERWISE NOTED.

Client Notes:

* THC CONF PER CHERYL BURNS 2/14/20 JXP

PROFILE/TEST (CUTOFF)**RESULTS****FOOTNOTES****Screening Tests by IA**

URINE: Meth/Amphetamines (1000 ng/ml)

negative

URINE: Barbiturates (300 ng/ml)

negative

URINE: Benzodiazepines (300 ng/ml)

negative

URINE: Cocaine (300 ng/ml)

negative

URINE: Opiates (300 ng/ml)

negative

URINE: Propoxyphene (300 ng/ml)

negative

URINE: THC (50 ng/ml)

**POSITIVE

1,2

URINE: THC (50 ng/ml) LEVEL

>1120

1,2

URINE: Ethyl Glucuronide-ETG (500 ng/ml)

negative

3

Confirmation Tests**THC by LC/MS/MS (15 ng/ml)**

URINE: THC

**POSITIVE

4

URINE: THC LEVEL

260

4

URINE: THC/CREAT RATIO

4.11



Example – Determine if new use has occurred

- Parent tests at 800 on an IA; the creatinine level was 60. The confirmed LC/MS/MS level of THC-COOH was 240.
- A week later the IA result was above 1120 and the creatinine level was 220. The LC/MS/MS confirmatory level of THC-COOH was 360. What does this tell you about recent use or amount of use, if anything?
- In the first case, the THC-COOH / creatinine ratio is 4.0
- In the second specimen, the ratio is 1.6 Ratio of U2 / U1 is .4
 - → This person is showing a decrease in ratio consistent with clearing old marijuana from their body. NOT evidence of new use

It is possible for U2 / U1 to go up slightly on a sequential test but not indicate new use.



Example – Interpretation of consistent low levels

- Question: What if this parent takes one test a week for a month, and every test shows a level of 400? Can you conclude that the parent is using a low level of marijuana consistently?

- Answers:
 - 1. Never try to interpret an immunoassay level.
 - 2. At a minimum, get the confirmation by LC/MS/MS of THC-COOH, even if it will always be called “THC”. Look at the ratio.
 - 3. If the confirmation level creatinine ratio is consistent, and low for a month, likely means low usage EXCEPT in some cases of residual excretion from formerly very heavy users.



Can a urine test show a therapeutic level of use?

- Question: Can a test show a “therapeutic level” of marijuana use? For example, if a parent has a medical marijuana card and is prescribed to be using marijuana on an as needed basis for pain, could the UAs show when a parent has gone above that level? Is there a difference in terms of testing for medical use or recreational use?
- Answer:
- 1. Never try to interpret an immunoassay level.
- 2. At a minimum, get the confirmation by LC/MS/MS of THC-COOH, even if it will always be called “THC”. Look at the ratio. Evaluate on a case-by-case basis.
- 3. No.



What you CAN'T do with a urine test – Determine impairment level

- ❑ Biological variability – two people, smoking the same amount of THC, → very different urine levels
- ❑ It is not possible to determine the amount or marijuana use, or time of use, from urine.
- ❑ As per ANSI/ASB Best Practice Recommendation 037, Guidelines for Opinions and Testimony in Forensic Toxicology:
 - ❑ “A toxicologist should not imply impairment of an individual based on analytical findings from urine, hair or other matrices...”

Marijuana in APR cases

In re Marriage of Parr & Lyman, 240 P.3d 509 (Colo. App. 2010)

Issue: Parent's use of medical marijuana on parental visitation

Holding:

Use of medical marijuana cannot support restriction on parental visitation

Reasoning:

- Standard for restriction on visitation is “endangers the child’s physical health or significantly impair the child’s emotional development”
- Courts must look at the conduct, not the mere use of marijuana for child custody matters





Questions?