Workplace Drug Testing in the Era of Legal Marijuana

Institute for Behavior and Health, Inc.
6191 Executive Boulevard
Rockville, Maryland

March 2015

Table of Contents

Preface

The Institute for Behavior and Health, Inc. (IBH), a non-profit organization developing strategies to reduce drug use, hosted a one-day symposium in Washington, DC on September 29, 2014 on the future of workplace drug testing in the era of legal marijuana. The meeting included thought leaders from public and private drug-free workplace programs, and specialists in government, public policy, employment law, laboratory drug testing, and addiction treatment, among others. These and others who could not attend the symposium became the IBH Workplace Drug Testing Working Group. A list of members can be found in the Appendix to this report. While the report has been reviewed by the IBH Workplace Drug Testing Working Group, many of whom made contributions, corrections or added comments or material, it is solely the work of the Institute for Behavior and Health, Inc.

Funding for the September 29, 2014 symposium and the report was provided by unrestricted grants from the Drug and Alcohol Testing Industry Association (DATIA), DrugScan, DSI Medical, Alere Toxicology, and Quest Diagnostics.

Robert L. DuPont, MD
President, Institute for Behavior and Health, Inc.

I. Introduction

During the past three decades, drug testing of employees and job applicants has become a crucial part of employers' efforts to maintain drug-free workplaces. Drug use is a significant threat to workplace health, safety and productivity. In addition to testing, drug-free workplace programs typically include education about the risks of drug use, especially in the workplace, and employee assistance programs to support treatment and long-term recovery of employees with substance use and other medical and behavioral health problems. Workplace drug testing programs identify those who need assistance in addressing their drug use problems, reinforce prevention messages, and deter workers from using drugs.

II. The Challenge

The passage of public ballot and legislative initiatives has resulted in medical marijuana laws in 23 states and the District of Columbia and approval of legal recreational use of marijuana by adults in Colorado and Washington in 2012, and in Alaska, Oregon, and the District of Columbia in 2014. This shift in drug policy has created significant concern and confusion for many employers, employees, and job applicants about workplace drug testing in general and testing for marijuana specifically.

This report provides guidance for employers about drug testing employees and job applicants for marijuana use in the workplace in the context of the current legal environment. It also discusses improvements in the science and technology of drug testing not only for marijuana but for other drugs of abuse. The recommendations made in this report to update workplace drug testing respond to the rapidly changing drug abuse environment in the workplace.

The challenge of providing practical advice on workplace drug testing is complicated because the sale and use of marijuana remain illegal under federal law in every state in the nation and also because much workplace drug testing today is mandated by federal law. This means that even in states that permit medical and/or recreational marijuana under state law, many employers must test for marijuana and hold those who test positive accountable under federal government mandates. These federally-mandated drug tests are required for millions of workers including commercial drivers, airline pilots, flight attendants, railroad engineers and conductors, workers in nuclear power plants and many others in safety-sensitive positions. Additionally, numerous employers in every state receive federal grants for a wide variety of projects. Acceptance of federal funding requires compliance with the Drug Free Workplace Act. Although drug testing is not required by this Act, if drug testing is conducted by federal grantees, it has long been considered prudent to follow federal law. Setting aside federal law, there are substantial overlapping, and occasionally conflicting, roles of state and local laws and regulations relating to workplace drug testing in this confusing legal terrain. Ultimately, these conflicts are likely to reach the US Supreme Court for resolution.

Employers located solely in the states that permit medical or legal recreational use of marijuana may question whether state law or federal law applies for workplace drug testing. Although federal law has

trumped state law in a similarly polarized conflict over immigration law in Arizona,[1] there have been mixed administrative findings against employers related to marijuana use by employees.

In the face of legal uncertainty, it is important to focus on the undisputed fact that marijuana remains illegal under federal law and that workplace drug prevention programs, including workplace drug tests, protect the health and safety of all employees as well as the productivity of the workforce. Occupational Safety and Health Administration (OSHA) regulations and their state counterparts require employers to provide a workplace free from recognized hazards in what is commonly referred to as the "general duty clause." Workplace drug testing policies support essential workplace safety and productivity standards for employers as well as employees.

With respect to current drug testing technology and practices, this report recommends review of the comprehensive publication, *Drug Testing: A White Paper of the American Society of Addiction Medicine (ASAM),* released in 2013.[2] ASAM is the leading national organization of physicians devoted to the prevention and treatment of addiction to alcohol and other drugs. For information on ASAM's approach to marijuana, this report recommends two additional white papers from ASAM related to medical marijuana[3] and state-based legalization of recreational marijuana.[4]

III. A Brief History of Workplace Drug Testing and How It Works Today

Drug testing has been used in substance abuse treatment and the criminal justice system for half a century, during which time the technology of testing has improved dramatically. The 1981 crash of an aircraft aboard the USS Nimitz led to an investigation which showed the widespread use of drugs among US Navy personnel. Subsequently the US Department of Defense (DOD) recognized the high prevalence of illicit drug use in all armed forces. In response to this finding, that same year random and "for-cause" (or "reasonable suspicion") drug testing of all active-duty personnel was implemented. This was one of the first large-scale uses of drug testing as a prevention strategy in a workforce. The use of drugs and alcohol was seen as a clear threat to the safety and health of military personnel as well as to military "readiness." The US military random drug testing program has been credited with dramatically reducing drug use[5] and it remains a mainstay of military policy.

The explosive growth of cocaine use in the United States in the mid-1980s focused national attention on drug abuse, including its impact on the workplace. A national effort led by the federal government to

---

[1] *Arizona v. United States*, 2012.

[2] American Society of Addiction Medicine. (2013). *Drug Testing: A White Paper of the American Society of Addiction Medicine.* Chevy Chase, MD: American Society of Addiction Medicine. Retrieved March 3, 2015: http://www.asam.org/docs/default-source/publicy-policy-statements/drug-testing-a-white-paper-by-asam.pdf

[3] American Society of Addiction Medicine. (2010). *The Role of the Physician in "Medical" Marijuana.* Chevy Chase, MD: American Society of Addiction Medicine. Retrieved March 3, 2015: http://www.asam.org/docs/publicy-policy-statements/1role_of_phys_in_med_mj_9-10.pdf?sfvrsn=0

[4] American Society of Addiction Medicine. (2012). *White Paper on State-Level Proposals to Legalize Marijuana.* Chevy Chase, MD: American Society of Addiction Medicine. Retrieved March 3, 2015: http://www.asam.org/docs/publicy-policy-statements/state-level-proposals-to-legalize-marijuana-final2773DD668C2D.pdf?sfvrsn=2

[5] U.S. Department of Defense, Office of the Assistant Secretary of Defense. (1999, May 13). DOD releases results of 1998 Survey of Health Related Behaviors. Retrieved March 3, 2015: http://www.defense.gov/releases/release.aspx?releaseid=2085

reduce the threats of drugs in the workplace was built on earlier workplace drug prevention and treatment efforts. For decades these programs had focused on employee assistance programs that identified alcohol abusing employees and steered them into treatment and then helped them remain alcohol- and drug-free following their return from treatment. This new national effort was shaped by federal guidelines for urine drug testing procedures for employees, especially in safety-sensitive positions. It also established a regulatory framework for laboratories conducting workplace drug testing.

Since 1988 federally regulated workplace urine drug tests have included five classes of drugs: amphetamine/methamphetamine, marijuana metabolites, cocaine, opiates (codeine, morphine, and 6-AM heroin [added in 2011]) as well as phencyclidine (PCP). MDMA (Ecstasy) with confirmatory testing for MDMA, MDA and MDEA was recently added to the short list of drugs covered in federal guidelines. The original federal guidelines authorized testing for the five classes of drugs.[*] The limited five drug-class panel has become the default standard for much of workplace drug testing, even though federal regulations only apply to testing of federal employees and to the drug tests mandated by the federal government. Most workplaces in the private sector also prohibit alcohol use on the job and conduct testing for alcohol as well.

Through the development of federal guidelines, which include important protections for employees, and their widespread adoption in the workplace, a clear distinction was made between legal medical use of prescribed medicines by employees and the nonmedical use of such substances without valid prescriptions, including potentially abused psychotherapeutic medications. To help distinguish between the medical and nonmedical use of drugs, federal guidelines for workplace drug testing require the use of a Medical Review Officer (MRO) to establish the legitimacy of a medical explanation for any non-negative drug test result and to validate the testing process. Only after a non-negative drug test has been verified by an MRO is it reported to the employer as a positive test under federal regulations.

Initially, workplace drug testing was controversial. Due to privacy concerns, workplace drug tests became the subject of two Supreme Court decisions which upheld federal drug testing guidelines.[6] In time workplace drug testing became commonplace with a focus on pre-employment drug testing for job applicants and random drug testing for safety-sensitive jobs and drug-free workplaces. Some employers, including but not limited to those in the field of law enforcement and safety-sensitive industries, randomly test all employees. Individual state drug testing laws, case law, and other laws that relate to the workplace play key roles in determining who can be tested, how they are tested, and under what circumstances. Among the variety of drug testing protocols are pre-employment, post-incident, reasonable suspicion, random, and substance abuse treatment follow-up testing.

The consequences for positive drug tests vary among employers based upon the reason for the drug test. Some employers terminate any employee who tests positive for a prohibited substance. Other employers refer employees to an employee assistance program or substance abuse professional for evaluation following an initial positive test result. Most employers do not terminate employees for drug use when they voluntarily present themselves for help prior to any positive workplace drug tests. From the start, workplace drug testing has focused on addressing substance use by supporting employee

[*] Federal guidelines preclude testing for other drugs.

[6] *Skinner v. Railway Labor Executives' Association,* 1989; *National Treasury Employees Union v. Von Raab,* 1989.

health, wellness, safety, and productivity. It is essential that each employer have a written drug policy detailing the reasons for drug testing and the consequences of positive test results. A clear, written policy promoting drug-free workforces and education of employees about the reasons for this testing is essential to a workplace program that supports prevention, treatment and recovery. The most common non-regulated testing is pre-employment applicant testing. Pre-employment testing needs to be covered by an employer testing policy in addition to employee testing.

IV. All Drug Use, Including Marijuana Use, is a Threat to the Workplace

In 2002 the estimated national cost of lost worker productivity including absenteeism and poor job performance due to illicit drug use was $129 billion.[7] This cost directly impacts employers, fellow employees, and families and indirectly, the nation's economy. Employees who use drugs are more likely to ask for early dismissal or time off, to be absent, to be late for work, to be involved in workplace accidents, and to file workers' compensation claims.[8] Additionally, past month illicit drug users are more likely than their non-using peers to report having worked for three or more employers in the past year.[9] Results from a blind longitudinal study of job applicants show that individuals who test positive on pre-employment tests are 77 percent more likely to be terminated within the first three years of employment and be absent from work 6 percent more frequently.[10]

Among adults age 18 and older, 9.1 percent of full time employees used an illicit drug in the past month in 2013, compared to 13.7 percent part-time employees and 18.2 percent of those who are unemployed.[11] Although drug use is more prevalent among those not employed, 68.9 percent of all illicit drug users aged 18 and older (15.4 million) were employed full or part-time. For decades marijuana has been and remains the most widely used illicit drug among those who are employed. A national study of worker substance use showed that for years 2002-2004, 6.4 percent (7.3 million) of

[7] Office of National Drug Control Policy. (2004). *The Economic Costs of Drug Abuse in the United States, 1992-2002*. (Publication No. 207303). Washington, DC: Office of National Drug Control Policy. Retrieved March 3, 2015: https://www.ncjrs.gov/ondcppubs/publications/pdf/economic_costs.pdf

[8] US Department of Labor. (n.d.). How does substance abuse impact the workplace? elaws Advisors – Drug-Free Workplace Advisor. Washington, DC: US Department of Labor. Retrieved March 3, 2015: http://www.dol.gov/elaws/asp/drugfree/benefits.htm; Backer, T.E. (1987). Strategic Planning for Workplace Drug Abuse Programs. Rockville, MD: National Institute on Drug Abuse.

[9] Substance Abuse and Mental Health Services Administration, Office of Applied Studies. (2007). *Worker Substance Use and Workplace Policies and Programs*, OAS Series A#29, DHHS Publication No. (SMA) 07-4273. Rockville, MD: Substance Abuse and Mental Health Services Administration. Retrieved March 3, 2015: http://www.oas.samhsa.gov/work2k7/toc.cfm

[10] US Department of Labor. (n.d.). How does substance abuse impact the workplace? elaws Advisors – Drug-Free Workplace Advisor. Washington, DC: US Department of Labor. Retrieved March 3, 2015: http://www.dol.gov/elaws/asp/drugfree/benefits.htm; Norman, J., Salyards, S. & Maloney, J. (1990). An evaluation of pre-employment drug testing. *Journal of Applied Psychology, 75*(6), 629-639.

[11] Substance Abuse and Mental Health Services Administration. (2014). *Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-48, HHS Publication No. (SMA) 14-4863. Rockville, MD: Substance Abuse and Mental Health Services Administration.

full-time workers aged 18 to 64 used marijuana in the past month.[12] This represented the large majority (77.6 percent) of those who used an illicit drug during this time.

Adverse Effects of Marijuana Use

The serious threats to health and safety created by the use of marijuana were recently reviewed in two leading medical journals.[13] [14] Marijuana is a drug of abuse that can produce addiction and symptoms of withdrawal.[15] [16] About 9 percent of all marijuana users develop addiction to the drug.[17] This figure increases dramatically to 17 percent if marijuana use is initiated during adolescence and increases to between 25-50 percent among daily marijuana users.[18] The early and heavy use of marijuana increases the risk of addiction to marijuana and it also increases risk of use and addiction to other drugs.[19] Over 61 percent of Americans age 12 and older with a substance use disorder for drugs other than alcohol are dependent on or abuse marijuana, making it by far the most prevalent illicit drug of abuse in the country.[20] More Americans obtain treatment for marijuana than for any other illegal drug.[21]

In addition to the link between early and heavy marijuana use and addiction, there is a strong association between marijuana use and diminished lifetime achievement; motor vehicle crashes; and symptoms of chronic bronchitis.[22] There is also a relationship between marijuana use and abnormal brain development, progression to use of other drugs, schizophrenia, depression and anxiety.[23]

Short-term effects of marijuana use include impaired short-term memory, impaired motor coordination, altered judgment and, in high doses, paranoia and psychosis.[24] Among the conclusions reached by Colorado's Retail Marijuana Public Health Advisory Committee charged with monitoring health effects of

---

[12] Substance Abuse and Mental Health Services Administration, Office of Applied Studies. (2007).*Worker Substance Use and Workplace Policies and Programs*, OAS Series A#29, DHHS Publication No. (SMA) 07-4273. Rockville, MD: Substance Abuse and Mental Health Services Administration. Retrieved March 3, 2015: http://www.oas.samhsa.gov/work2k7/toc.cfm

[13] Volkow, N.D., Baler, R.D., Compton, W.M., & Weiss, S.R.B. (2014). Adverse health effects of marijuana use. *The New England Journal of Medicine, 370*(23), 2219-2227.

[14] Hall, W. (2014). What has research over the past two decades revealed about the adverse health effects of recreational cannabis use? *Addiction*. doi: 10.1111/add.12703.

[15] Volkow, N.D., Baler, R.D., Compton, W.M., & Weiss, S.R.B. (2014). Adverse health effects of marijuana use. *The New England Journal of Medicine, 370*(23), 2219-2227.

[16] Hall, W. (2014). What has research over the past two decades revealed about the adverse health effects of recreational cannabis use? *Addiction*. doi: 10.1111/add.12703.

[17] Lopez-Quintero, C., Perez de los Cobos, J., Hasin, D. S., et al. Probability and predictors of transition from first use to dependence on nicotine, alcohol, cannabis and cocaine: results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Drug and Alcohol Dependence, 115,* 120-130.

[18] Hall, W., & Degendhardt, L. (2009). Adverse health effects of non-medical cannabis use. *Lancet, 374*, 1383-1391.

[19] Hall, W., & Degendhardt, L. (2007).Prevalence and correlates of cannabis use in developed and developing countries. *Current Opinion in Psychiatry, 20*, 393-397.

[20] Substance Abuse and Mental Health Services Administration. (2014). *Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings*, NSDUH Series H-48, HHS Publication No. (SMA) 14-4863. Rockville, MD: Substance Abuse and Mental Health Services Administration.

[21] Ibid.

[22] Volkow, N.D., Baler, R.D., Compton, W.M., & Weiss, S.R.B. (2014). Adverse health effects of marijuana use. *The New England Journal of Medicine, 370*(23), 2219-2227.

[23] Ibid.

[24] Ibid.

marijuana and released by the Colorado Department of Public Health and Environment, "We found substantial evidence for associations between marijuana use and memory impairments lasting at least seven days after last use, as well as the potential for acute psychotic symptoms immediately after use" (p. 12).[25] Given the short- and long-term impacts of marijuana use, the drug poses a serious threat to workplace safety and productivity. The legal status of marijuana does not remove this threat.

V. The Impact of State-Based Legal Marijuana on Workplace Drug Testing

The policy landscape for marijuana has dramatically changed over the last two decades. The state-based legalization of marijuana for medical use has expanded from the first medical marijuana ballot initiative in California in 1996 to 22 other states and the District of Columbia (as of the publication of this report). The medical marijuana ballot initiatives have resulted from a campaign promoting the view that marijuana is medicine, despite the fact that marijuana has not been through clinical research trials or received approval by the US Food and Drug Administration (FDA) and that no standards of purity, dose or amount have been established. In November 2012, the states of Colorado and Washington passed ballot initiatives legalizing the production, sale and use of marijuana for adults age 21 and older. Similar legalization initiatives were passed in November 2014 in Alaska, Oregon and the District of Columbia.

These legal changes have made the United States the first country in the world to fully legalize the production, sale and use of marijuana by those 21 and older. This trend portends significant threats to workplace health and safety. These state-based changes to law, which are in direct conflict with federal law and international treaty obligations[26] have raised concerns and caused confusion among employers and employees regarding standards for drug-free workplaces and drug testing procedures and programs.

Some employers that conduct non-regulated drug testing may treat medical marijuana the same way they treat prescribed controlled substances. In such cases, in the event of a confirmed laboratory positive for marijuana, the Medical Review Officer (MRO) could verify the existence of a physician-patient relationship and report the result as a MRO-confirmed negative drug test. This adopts the procedure used by MROs when investigating confirmed laboratory positives for drugs that are physician prescribed. Many employers question this strategy. Physicians, even in states that have medical marijuana laws, do not *prescribe* marijuana. The authority to write prescriptions is granted, and revoked when necessary, by the federal government which, as was noted, does not recognize marijuana as medicine. This is also true of other plants which contain useful chemical components, such as opium. As a plant, marijuana is not a standardized, pure pharmaceutical product approved by the FDA for prescriptive medical use at specific doses for specific disorders, nor is marijuana distributed in the closed and controlled system of pharmacies. There are FDA-approved cannabinoid medications, including dronabinol (Marinol®), synthetic tetrahydrocannabinol (THC) and nabilone (Cesamet®), a synthetic

[25] Retail Marijuana Public Health Advisory Committee. (2014). *Monitoring Health Concerns Related to Marijuana in Colorado: 2014*. Denver, CO: Department of Public Health and Environment. Retrieved March 3, 2015: https://www.colorado.gov/pacific/sites/default/files/DC_MJ-Monitoring-Health-Concerns-Related-to-Marijuana-in-CO-2014.pdf

[26] Reuters. (2014, November 12). U.S. states' pot legalization not in line with international law: U.N. agency. Retrieved March 3, 2015from: http://www.reuters.com/article/2014/11/12/us-usa-drugs-un-idUSKCN0IW1GV20141112

cannabinoid similar to THC, available by prescription for medical purposes. A recommendation for smoked marijuana bears no relationship to a prescription. When physicians recommend marijuana for medical use, individuals typically are free to purchase it from any vendor and in any form they choose for use in any amount. Herein lies one of the critical challenges with medical marijuana as it affects the workplace.

Drug-free workplace programs do not interfere with legitimate medical care, but they do protect workplaces against the negative effects of individuals at work under the influence of drugs, regardless of how legitimate that drug use might be. When an employee is observed to be under the influence of a prescribed medicine, the employee may be placed on administrative leave, while the legitimacy of the medical regimen is determined and any impairing effects of the medical treatment are eliminated.

There is abundant research providing evidence that marijuana use changes brain function,[27] with short-term effects including impaired short-term memory and motor coordination, altered judgment, and effects of long-term or heavy use including cognitive impairment and addiction.[28] [29] Despite such evidence, some people believe that marijuana is not impairing and that testing in the workplace for it is neither necessary nor justified. Further, the legalization of marijuana for medical and recreational use normalizes the use of marijuana implying to many people that its use is safe. In contrast to this benign view of marijuana, both alcohol and tobacco are widely understood to be major threats to health, and in the case of alcohol, to safety. The national campaign to legalize marijuana is changing public perceptions about marijuana not only in the states that have legalized either medical or recreational marijuana but throughout the country. A national poll reports that an estimated 52 percent of Americans think marijuana should be legal.[30] Human physiology does not change with shifting political opinions.

Quest Diagnostics' Drug Testing Index showed that in 2013, positive drug test results in the workforce for marijuana increased nationwide by 6.2 percent.[31] This is the first increase in positive reported drug tests in a decade. Positive tests for marijuana were dramatically higher in the two states with legal recreational marijuana. The marijuana positivity rates increased 20 percent in Colorado and 23 percent in Washington. Given the upward trend in marijuana use nationally and the changing state-based laws with regard to marijuana, employers must address marijuana use in the workplace and not fall prey to the misinformation surrounding this threat to employee health and safety.

---

[27] Crean, R. D., Crane, N. A., Mason, B. J. (2011). An evidence based review of acute and long-term effects of cannabis use on executive cognitive functions. *Journal of Addiction Medicine, 5*(1),1-8.

[28] Volkow, N. D., Baler, R. D., Compton, W. M., & Weiss, S. R. B. (2014). Adverse health effects of marijuana use. *New England Journal of Medicine, 370*(23), 2219-2227.

[29] Hall, W. What has research over the past two decades revealed about the adverse health effects of recreational cannabis use? *Addiction*.doi.org/10.1111/add.12703

[30] Motel, S. (2014, October 24). Six facts about marijuana. Washington, DC: PEW Center Research for the People & the Press. Retrieved March 3, 2015: http://www.pewresearch.org/fact-tank/2014/10/24/6-facts-about-marijuana/

[31] Quest Diagnostics Drug Testing Index. (2014, September 11). Workforce drug test positivity rate increases for the first time in 10 years, driven by marijuana and amphetamines, finds Quest Diagnostics Drug Testing Index™ analysis of employment drug tests. Madison, NJ: Quest Diagnostics. Retrieved March 3, 2015: http://www.questdiagnostics.com/home/physicians/health-trends/drug-testing

VI. What a Positive Drug Test for Marijuana Means

Marijuana Metabolism and a Positive Drug Test Result

Marijuana metabolism is complicated. Marijuana smoke enters the lungs and tetrahydrocannabinol (THC), the psychoactive substance in marijuana, is immediately absorbed into the bloodstream reaching the brain within seconds. Because THC is fat-soluble (lipophilic) but not soluble in water, it is rapidly absorbed by fatty tissues throughout the body including the brain. THC reenters the blood from the brain and other fatty tissues slowly and at low levels to be metabolized and then excreted in the urine and feces. Within hours after marijuana use, the main metabolite of THC, carboxy-THC (also referred to as "THC-acid"), begins to appear in the user's urine (and feces) and is eliminated from the body over a period of days.

In contrast to smoked marijuana, marijuana that is consumed in baked goods or other food (often referred to as "edibles") is absorbed through the intestines. The drug is metabolized by the liver before entering the bloodstream and going to the fatty tissues, including the brain, and highly perfused tissues. The drug reenters the bloodstream, is metabolized to carboxy-THC and is eliminated from the body. The onset of the marijuana high when eating marijuana is much slower than when it is smoked because it reaches the brain more slowly. The peak effect is also lower because of metabolism that occurs during first pass metabolism of THC in the liver and the less rapid delivery of THC to the brain following ingestion that produces a much lower and less sharp peak effect.

A common misconception is that smoking one or two marijuana joints will produce a positive drug test result for weeks, or even months, after the marijuana use has occurred. This is a gross exaggeration. After smoking one or two marijuana joints, a urine test that detects carboxy-THC will produce a positive drug test at the commonly used 50 µg/L cut-off result for roughly two days, depending on the fluid intake during that time and individual differences. Following the use of one or two marijuana joints, virtually all urine tests will be negative at the standard federal cut-off level within three to five days. In contrast, when a person smokes marijuana many times a week or every day, week after week, the chronic user's fatty tissues, including the brain, become saturated with THC and urine tests are positive for carboxy-THC for longer periods – days and, in some cases, weeks or months after all marijuana use stops. A person can be under the influence of marijuana for long periods of time as the result of heavy marijuana use. For example, recent research has shown that chronic marijuana smokers are measurably impaired on tasks related to driving (critical tracking and divided attention) at least three weeks after their marijuana use stopped.[32]

Some critics of workplace drug testing for marijuana claim that because carboxy-THC is an inactive metabolite (meaning it does not affect brain function as THC does), a positive urine drug test for carboy-THC is irrelevant in the workplace. This argument misses the point that the identification of carboxy-THC means that there is THC in the brain of the donor at the time the sample was collected. Carboxy-THC is not sequestered in the brain and other fatty tissues but THC is. This biology is significant for employers who wish to have safe and drug-free environments and for employees who want to work in safe and drug-free workplaces.

[32] Bosker, W. M., Karschner, E. L., Lee, D., et al. (2013).Psychomotor function in chronic daily cannabis smokers during sustained abstinence. *PLoS ONE, 8*(1), e53127. Retrieved March 3, 2015: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0053127

Workplace drug testing of oral fluids, which detect the active drug THC, is becoming increasingly common. Oral fluid testing has the advantage of being less intrusive and less subject to adulteration than urine testing. However, oral fluid tests have a shorter window of detection for marijuana than do urine tests, with most rapid onsite oral fluid tests, even of chronic users, providing negative results for THC 24 hours after use. Despite the shorter window of detection for marijuana in oral fluid, these tests often identify more positives than urine tests at the same time in the same people, partly because they are more resistant to adulteration.[33]

Random Drug Tests Positive for Marijuana

Many people use marijuana only occasionally. For these individuals, a random drug test is likely to produce a negative result. The majority of random urine drug tests that are positive for marijuana are from the relatively small number of heavy users.[34] As noted above, this is because most urine drug tests are negative within three days following drug use and most oral fluids drug tests are negative within 24 hours of drug use. For this reason infrequent drug use is seldom detected in a random test unless the drug use occurred immediately before the test. It is the urine or oral fluid of heavy users who make up the majority of the positive random test results. Random drug tests are most effective as a drug use prevention strategy. For-cause drug tests, conducted when an individual shows specific signs and symptoms of drug use, are much more likely to be positive than random tests.

Why a Test for Alcohol is Different

In contrast to marijuana, alcohol is water-soluble and is therefore relatively quickly eliminated from the brain, the blood and the urine. Alcohol is metabolized and eliminated from the body at a rate of about one drink per hour. Alcohol levels in blood and the brain are similar at the same time. As previously noted, this is not true for marijuana where the THC is picked up in the brain and retained for long periods of time even as blood levels fall precipitously. As a result, alcohol impairment levels are relatively closely tied to blood and breath alcohol levels. The fact that THC is retained for long periods after use while alcohol is rapidly eliminated after use is why withdrawal from heavy marijuana use is delayed and more subtle and why withdrawal from heavy alcohol use is more immediate and severe. Nicotine is more like alcohol in this regard. With alcohol and nicotine, it is the sudden sharp fall in the level of the drug in the brain and other tissues that produces withdrawal. Withdrawal from marijuana is more gradual and extended but genuine withdrawal nonetheless.[35]

---

[33] Private Sector Oral Fluid Testing Advisory Board. (2007). Oral Fluid Advisory Board Guidelines: guidelines for laboratory-based oral fluid workplace drug testing (pp. 289-304). In: J. Ferguson. (2013). *The Medical Review Officer Team Manual: MROCC's Guide for MROs and MRO Team Members* (2nd edition). Beverly Farms, MA: OEM Press.

[34] DuPont, R. L., Griffin, D. W., Siskin, B. R., Shiraki, S. & Katze, E. (1995). Random drug tests at work: The probability of identifying frequent and infrequent users of illicit drugs. *Journal of Addictive Diseases, 14*, 1-17.

[35] American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author.

VII. Advice to Employers about Marijuana Testing and Workplace Drug Testing Programs

Look at the Big Picture in Workplace Drug Testing

Workplace drug testing is an essential tool in confronting today's growing drug abuse problem. There is much more to workplace drug testing than just testing for marijuana. The use of other illicit drugs and the misuse of prescription drugs cause significant problems for employers and for employees. While marijuana produces more positive drug test results in the workplace than any other drug, testing for other drugs is also important. An effective drug-free workplace program includes drug testing for many widely used drugs.

Workplace drug testing programs provide important outcomes for employers and employees. Long before the legalization of medical and recreational marijuana, a study in Washington State showed that for three industry groups (construction, manufacturing and services), injury rates declined significantly following the implementation of drug testing.[36] Moreover, the use of drug testing was associated with a reduction in the rate of serious injuries involving four or more days of lost work for construction and services groups.

Consider the Legal Complications of Workplace Marijuana Testing

Some of the states that have legalized medical or recreational marijuana have specifically addressed workplace drug testing in their statutes. This has implications for future marijuana statutes in other states. For example, several states allowing medical use of marijuana are now requiring an employer to show impairment before taking action against an applicant or employee who tests positive for marijuana. These provisions pose a significant limitation to workplace drug testing programs for marijuana.

Of all medical marijuana statutes, Illinois has the most comprehensive description of impairment, articulating the grounds on which an employer could base a "good faith" belief that an employee is impaired, such as decreased job performance and "symptoms of the employee's speech, physical dexterity, agility, coordination, demeanor, irrational or unusual behavior, negligence or carelessness in operating equipment or machinery, disregard for the safety of the employee or others, or involvement in an accident that results in serious damage to equipment or property, disruption of a production or manufacturing process, or carelessness that results in any injury to the employee or others."[37] The statute does not quantify impairment, but instead protects an employer from liability by assuming a

[36] Wickizer, T. M., Kopjar, B., Franklin, G., & Joesch, J. (2004). Do drug-free workplace programs prevent occupational injuries? Evidence from Washington State. *Health Services Research, 39*(1), 91-110.

[37] "(e) Nothing in this Act shall be construed to create a defense for a third party who fails a drug test. (f) An employer may consider a registered qualifying patient to be impaired when he or she manifests specific, articulable symptoms while working that decrease or lessen his or her performance of the duties or tasks of the employee's job position, including symptoms of the employee's speech, physical dexterity, agility, coordination, demeanor, irrational or unusual behavior, negligence or carelessness in operating equipment or machinery, disregard for the safety of the employee or others, or involvement in an accident that results in serious damage to equipment or property, disruption of a production or manufacturing process, or carelessness that results in any injury to the employee or others. If an employer elects to discipline a qualifying patient under this subsection, it must afford the employee a reasonable opportunity to contest the basis of the determination." 410 ILCS 130/1, §50 Employment; employer liability (e)(f) (2013).

"good faith belief" that an employee used or possessed cannabis at work or "was impaired while working on the employer's premises during the hours of employment."[38]

In *People v. Koon*, the Michigan Supreme Court ruled that state's zero tolerance driving under the influence law does not apply to medical marijuana patients when it is based on mere presence of THC in a patient's blood.[39] In this case, although a blood test from Koon, the driver, was positive for THC ("internal possession"), the prosecution did not successfully prove that he was impaired. If other states apply "under the influence" to be a THC blood content above a threshold level, all the statutes using that phrase in the context of employment could be construed as permitting employees to work despite testing positive for marijuana use, as long as their behavior falls short of "impairment."

These complex and often conflicting requirements regarding the identification of "impairment" demonstrate the value for workplace drug testing policies to be specific that the presence of a marijuana metabolite or THC in the employee's body is itself a violation of the employer's drug-free workplace policy. Because marijuana is a confusing issue for employers, employees and job applicants, the best way to avoid the confusion is to have a zero-tolerance policy in place that is not based on "impairment" but rather is simple and strict standard of no use. This is called a *per se* zero tolerance standard. Any positive drug test is *per se* evidence of a violation of the employer's drug-free policy, with no necessity of showing impairment. These policies seek to prevent impairment in the workplace.

Per se policies that restrict all illicit drug use, including marijuana use, by employees and job applicants are supported by the fact that marijuana is illegal under federal law nationally (and is illegal in the majority of states under state law as well). Drug tests mandated by the federal government remain in full force in all states, including those with legal marijuana and those states with legislation addressing impairment. All federal agencies that require drug testing mandate testing for marijuana and use the zero tolerance *per se* standard, including the US Department of Transportation, the Department of Defense, and the Nuclear Regulatory Commission. This *per se* standard has been successfully used in these settings for three decades with little controversy.

In the context of unemployment benefits, under new state marijuana laws, some states have required evidence of "impairment of work performance or evidence that the tested levels of drugs would affect the employee's on-the-job performance" before denying unemployment benefits following job loss after the employee tested positive for the presence of marijuana.[40] In *Dolan v. Svitak*, the court upheld the employer's termination of an employee who did not come into contact with the employer's clients, but did deliberately violate the employer's drug-free policy.[41] The court credited the employer's policy as a "visible stand against chemical abuse and the associated detrimental effects," as well as an improvement technique for workplace safety.[42] In *Baldor Electric Company v. Reasoner*, another

[38] *Id*. "(g) Nothing in this Act shall be construed to create or imply a cause of action for any person against an employer for: (1) actions based on the employer's good faith belief that a registered qualifying patient used or possessed cannabis while on the employer's premises or during the hours of employment; (2) actions based on the employer's good faith belief that a registered qualifying patient was impaired while working on the employer's premises during the hours of employment; (3) injury or loss to a third party if the employer neither knew nor had reason to know that the employee was impaired. (h) Nothing in this Act shall be construed to interfere with any federal restrictions on employment including but not limited to the United States Department of Transportation regulation 49 CFR 40.151(e)."
[39] 494 Mich. 1, 832 N.W.2d 724, 2013 Mich. LEXIS 709 (Mich. 2013).
[40] *Dolan v. Svitak*, 247 Neb. 410, 415-416, 527 N.W.2d 621 (Neb. 1995).
[41] *Id*. at 417.
[42] *Id*. at 417.

unemployment benefits dispute, the court of appeals of Missouri discussed what evidence it would look for in order to deny benefits on grounds of "misconduct."[43] The court said the employer would have needed "substantial evidence that [the employee] ever used marijuana while at work or was in any way impaired by marijuana while at work" and the presence of 25ng/ml of marijuana metabolites in her urine was insufficient.[44] The employer would need to demonstrate that the "25ng/ml level in any way impaired [the employee's] ability to meet her on-the-job responsibilities."[45] The employee was not disqualified from receiving unemployment compensation benefits following her discharge for violating the appellant employer's substance abuse policy. These are examples of the evolving and conflicted legal environment today for workplace drug tests for marijuana.

Avoid Reliance on Politically-Derived Pseudoscience

In order to pass marijuana legalization initiatives, marijuana advocates have supported arbitrary, permissive alternative *per se* testing levels in blood (e.g., 5ng/ml THC in blood in Washington State), at which drivers could be presumed impaired and thus prosecuted. There is no scientific basis for the 5ng/ml THC blood level. This level, and other levels, show little correlation with marijuana-caused impairment. A large study of drivers arrested for driving impaired by their marijuana use showed that at the time of testing, 90 percent had blood concentrations of THC less than 5ng/ml.[46] This high concentration of 5ng/ml THC in blood is promoted as a recommended level to determine impairment because marijuana advocates know they must address impaired driving in order to persuade the public to support marijuana legalization ballot initiatives. As explained in **What a Positive Drug Test for Marijuana Means**, marijuana impairment can last a long time, particularly among heavy users, because the THC is long-retained in the brain and other fatty tissues. Supporting the use of a high level of THC concentration in the blood to define impairment opens the way for arrests and convictions for driving under the influence of marijuana to be challenged. It is possible that employers who make the mistake of thinking that they will simply "mirror the state law" and use such a permissive standard for THC in blood for employees may find themselves on the wrong end of litigation down the road when employees cause injury or death after having tested positive for marijuana without being required to be drug-free as a condition of their employment.

Provide Clarity in Drug-Free Workplace Policies

Employers using drug testing should make testing procedures a part of a comprehensive policy that promotes essential workplace priorities including safety, health and productivity. Illicit drug use, including marijuana use, is a threat to each of these goals. Every employee must be informed of the company's substance use policy and the reasons for the policy. Drug testing needs to be described in a written statement of the employer's substance use policy. This policy statement must clearly lay out the elements of the drug testing program including who is subject to testing, how testing is administered, how positive results are confirmed, and what the consequences are for positive drug test results. Supervisors and human resources staff should be trained in the employers' substance use policies and procedures and be able to explain them to all employees and job applicants.

---

[43] 66 S.W.3d 130, 134-135, 2001 Mo. App. LEXIS 2196 (Mo. Ct. App. 2001).
[44] *Id*.
[45] *Id*.
[46] Jones, A.W., Holmgren, A., & Kugelberg, F.C. (2008). Driving under the influence of cannabis: A 10-year study of age and gender differences in the concentrations of tetrahydrocannabinol in blood. *Addiction, 103*(3), 452-461.

Employers conducting workplace drug testing should provide educational opportunities for employees about substance abuse. Programs focused on wellness and/or employee assistance programs should provide education, screening and follow-up services for employees' drug and alcohol problems. This may include return-to-work agreements provided through employee assistance programs. Provisions for assisting employees with substance use problems should be known to all employees. Encouraging employees to seek treatment confidentially, apart from a testing event, without jeopardizing their jobs is a practice that can help guide employees to recovery. As part of a drug-free workplace, an employer's substance use policy should address employees under the influence and it should provide training to identify behaviors and related signs and symptoms of substance use.

Specifically Address Marijuana in Employee Drug Testing Policies

All employers in states with legal marijuana are cautioned to pay close attention to the specifics of state and local law. It is important for the safety, health and productivity of the workforce to continue testing employees for marijuana along with other drugs. Workplace drug testing policies need to be reviewed by attorneys who are familiar with federal, state and local laws related to drug testing and particularly related to marijuana.

The New Mexico Court of Appeals ruled in August 2014 that medical marijuana recommended by a physician to treat an individual's pain following spinal surgeries for a workplace back injury should be reimbursed by the worker's employer and insurer.[47] Even some legal professionals mistakenly believe that marijuana recommended by physicians should be treated in the same manner as are prescribed drugs. This is based on the inference that these recommendations are in fact medical marijuana "prescriptions" which they are not. As stated earlier, marijuana can be *recommended* by a medical practitioner, not prescribed. Medical marijuana recommendations should be reviewed as are other non-prescription recommendations unless state law provides instruction otherwise.

Considerations for Employers of Different Sizes

Drug-free workplace policies and programs differ depending on the size of the workforce and on whether the employer operates within a single state or many states. Despite these important variations, the principles articulated in this report can guide specific policies in these various settings. Among employers located in multiple states and localities, drug testing policies can be universally adopted across locations, e.g., the use of Department of Transportation guidelines can be used for all employees to help employers ensure they cover their workforce consistently.

Explore Insurance Benefits for Drug Testing Program

Insurance companies may reimburse employers for effective safety programs that meet state standards by giving discounts on premiums. Drug testing can be a part of the safety program but there are no current benefits for drug testing alone. Employers should explore the opportunities for reimbursement from insurance companies for programs that include drug testing.

[47] *Vialpando v. Ben's Automotive Services and Redwood Fire & Casualty*, 2014; Tartre, D. (2014, September 5). Workers' comp must cover medical marijuana. *Courthouse News Services.* Retrieved March 3, 2015: http://www.courthousenews.com/2014/09/05/71084.htm

Consider Going Beyond the Urine Cup and Beyond the Typical Five Drug Tests

The dramatic developments of legal medical and recreational marijuana and the resulting focus on testing employees for marijuana in the workplace provide an important opportunity to reevaluate all workplace drug testing practices and to update drug testing procedures – not only for marijuana.

In the mid-1980s, the use of a five-panel urine screen for drugs was revolutionary. The guidelines set forth by the federal government for workplace testing have since become standard procedure for all federal employers and even for most private employers with well-structured, comprehensive drug policies and procedures. The federal government is in a strong position to provide much-needed leadership as it was responsible for the pioneering research on drug testing which created the important role of the MRO to protect legitimate medical use of drugs with abuse potential, and which pioneered the use of urine testing for a small core list of drugs. Presently, there is great untapped potential to take advantage of the rapidly improving drug testing technology as well as to better address the proliferation of drugs abuse, including prescription drug abuse, which has been labeled a national epidemic,[48] and the prevalence of new psychoactive substances. In 2012, the Substance Abuse and Mental Health Services Administration (SAMHSA) accepted recommendations to include oral fluid as an alternative specimen in federal workplace drug testing programs and to expand opioid testing to include prescription medications including oxycodone, oxymorphone, hydrocodone and hydromorphone.[49] These are important steps that are in the process of being implemented; however, as of the writing of this report, new psychoactive substances such as Spice/K2 and bath salts, while severely impairing, have not been addressed by federal drug testing regulations. These synthetic drugs, also known as "designer drugs" are *designed* to evade workplace and other drug tests. Updating federal drug testing regulations will likely have an important impact on all of workplace drug testing given that today's employers use the federal guidelines as their default standard, even when their testing is not covered by them under law.

This report recommends the expansion of workplace testing procedures to identify more than the standard five-drug panel, and it recommends using other matrices in addition to urine as warranted. Alternative matrices can offer significant advantages in many workplace settings compared to the more commonly used urine tests. For a detailed description of current drug testing technology and how it can be used today, see *Drug Testing: A White Paper of the American Society of Addiction Medicine*.[50]

---

[48] Centers for Disease Control and Prevention. (2011). Policy Impact: Prescription Painkiller Overdoses. Atlanta, GA: CDC. Retrieved March 3, 2015: http://www.cdc.gov/homeandrecreationalsafety/rxbrief/; Centers for Disease Control and Prevention. (2014). Prescription Drug Overdose in the United States: Fact Sheet. Atlanta, GA: CDC. Retrieved March 3, 2015: http://www.cdc.gov/homeandrecreationalsafety/overdose/facts.html

[49] Recommendations from SAMHSA's Center for Substance Abuse Prevention Drug Testing Advisory Board. (2012, January 26). Substance Abuse and Mental Health Services Administration. Retrieved March 3, 2015: http://www.datia.org/resources/DTAB+recommendation+memo+signed.pdf

[50] American Society of Addiction Medicine. (2013). *Drug Testing: A White Paper of the American Society of Addiction Medicine.* Chevy Chase, MD: American Society of Addiction Medicine. Retrieved March 3, 2015: http://www.asam.org/docs/default-source/publicy-policy-statements/drug-testing-a-white-paper-by-asam.pdf

VIII. Summary

Legal medical or recreational marijuana in some states creates a valuable wakeup call for all employers across all states to update and improve their workplace drug testing programs. The legalization of marijuana for medical and/or recreational use is not a reason to abandon workplace testing for marijuana, but rather a clarion call to review all types of workplace drug testing. This report recommends use of the *per se* zero tolerance drug-free workplace standard that has been in use in safety sensitive jobs and in federally regulated workplace drug testing for three decades. This standard remains in full force today in those applications. Marijuana use remains a significant concern for employers for reasons of health, safety and productivity.

The legal terrain on marijuana, including marijuana testing in the workplace, is rapidly shifting. The controversies associated with marijuana testing are intense and politically charged. The outcome of these controversies cannot be predicted with confidence. The initial introduction of workplace drug testing three decades ago was similarly controversial. Those controversies were settled over time by the courts. Current controversies regarding workplace drug testing, specifically marijuana testing, in time will be settled. Meanwhile it is important for employers to take prudent, legal and affordable steps to protect their employees and their workplaces from the threats of drug use, including but not limited to the threat of marijuana use, as well as to protect themselves from legal challenges. Employers should conduct competent legal reviews of their drug-free workplace policies and programs consulting attorneys who are familiar with applicable federal, state and local laws.

Appendix: IBH Workplace Drug Testing Working Group

Report Author:

Robert L. DuPont, MD
President, Institute for Behavior and Health, Inc.

Report Editors:

Corinne L. Shea, MA
Director of Programs and Communications, Institute for Behavior and Health, Inc.

Helen S. DuPont, MBA
Executive Director, Institute for Behavior and Health, Inc.

IBH Workplace Drug Testing Working Group:

Members of the IBH Workplace Drug Testing Working Group are listed in alphabetical order. An asterisk (*) denotes participation in-person in the symposium, *The Future of Workplace Drug Testing in the Era of Legal Marijuana*, hosted by the Institute for Behavior and Health, Inc. on the September 29, 2014. This report has been reviewed by the IBH Workplace Drug Testing Working Group, but it is solely the work of the Institute for Behavior and Health, Inc.

Robert L. DuPont, MD,* Working Group Chair
President, Institute for Behavior and Health

Pam Beltz*
Administrator, Employee Substance Abuse Programs, City of Seattle

Peter B. Bensinger*
President & CEO, Bensinger, DuPont & Associates; Former DEA Administrator

Lawrence Brown, MD, MPH*
CEO, START Treatment and Recovery Centers

John Coleman, PhD*
President, Prescription Drug Research Center; President, Drug Watch International

Anthony Costantino, PhD, DABFT*
President & CEO, DrugScan

Wayne J. Creasap, II*
Senior Director of Environmental Health and Safety, The Association of Union Constructors

Lynette Crow-Iverson*
President & CEO, Conspire!

Bill Current*
President and Founding Partner, Current Consulting Group

Philip Dubois*
Chairman of the Board, Drug and Alcohol Testing Industry Association (DATIA); Executive Vice President, DSI Medical Services; DrugScan Laboratories

Thomas M. Eden, III, JD*
Partner, Constangy, Brooks & Smith, LLP

David G. Evans, Esq.*
Attorney at Law

James L. Ferguson, DO, FASAM*
Medical Director of Professional Health Monitoring, FirstLab

Ronald R. Flegel*
Director, Division of Workplace Programs, Center for Substance Abuse Prevention

Stuart Gitlow, MD, MPH
President, American Society of Addiction Medicine; Executive Director, Annenberg Physician Training Program in Addictive Disease

Marilyn Huestis, PhD
Chief, Chemistry and Drug Metabolism
National Institute on Drug Abuse
National Institutes of Health

Jo McGuire*
Board Member, Drug and Alcohol Testing Industry Association (DATIA); Co-Chair, International Marijuana Education Committee

William D. Nelson, JD*
Partner, Lewis Roca Rothgerber, LLP

Thomas Pool
Executive Director
Drug Free Business

Andrew Powell*
Board Member, Drug and Alcohol Testing Industry Association (DATIA);
Director of Operations, Nursing Corps, Inc.

Pamela Powell*
General Manager
Bensinger, DuPont & Associates

Joseph Reilly*
Board Member, Drug and Alcohol Testing Industry Association (DATIA);
Joe Reilly & Associates, Inc.

Sue Rusche*
President & CEO, National Families in Action

Kevin Sabet, PhD*
Co-Founder, SAM-Smart Approaches to Marijuana

Laura Shelton*
Executive Director, Drug and Alcohol Testing Industry Association (DATIA)

Scott A. Taillie*
Board Member, Drug and Alcohol Testing Industry Association (DATIA);
Vice President of Marketing and Development, Alere, Inc.

Sherri Vogler*
Chairman-Elect, Drug and Alcohol Testing Industry Association (DATIA); President, Houston Medical Testing Services

J. Michael Walsh, PhD*
President, The Walsh Group, PA