

Urinalysis or Uromancy? The Untold Costs of Drug Testing Abuse

**by Dale H. Gieringer, Ph. D.,
Coordinator, California NORML**



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Among the impositions on personal privacy introduced in the Reagan-Bush era, few are more intrusive but less questioned than drug urinalysis. Relatively unknown at the start of the eighties, urinalysis has now become a condition for employment in over half of America's major companies, as well as for insurance, child custody, security clearance, and freedom from jail on probation or parole. While urinalysis has been challenged by civil libertarians, courts have generally upheld it in the face of strong public support. Opponents have objected that drug testing is an unwarranted violation of privacy and a search without probable cause, but supporters have successfully countered that the supposed hazards of drug abuse necessitate urine testing.

What is all too rarely challenged in this debate is the scientific rationale of urinalysis as a means of detecting drug abuse in the first place. The fact is that urinalysis does not detect whether someone is impaired or under the influence of drugs, rather it detects the presence of non-psychoactive drug metabolites, that may linger in the system days or weeks after use. In this respect urinalysis differs from the familiar alcohol breathalyzer and blood tests, which detect whether one is actually under the influence (as it turns out, alcohol is unique in this regard: for other drugs, there is no simple relation between impairment and concentration in bodily fluids). Thus it is not only possible, but entirely likely that someone whose urine tests positive for drugs is altogether competent and unimpaired.

As it happens, urinalysis is particularly sensitive to marijuana, a single use of which can register positive for as long as a week, long after any effects have vanished; heavy users may register positive for as long as 4-6 weeks. Thus, urinalysis precludes even the most innocent, weekend smoking of marijuana as "drug abuse." Ironically, urinalysis is considerably more tolerant of harder drugs such as cocaine and heroin, which generally wash out in 2-3 days at most. Other commonly used psychoactive drugs, including nicotine, tranquilizers, and psychedelic drugs such as LSD are generally not tested for. Above all, urinalysis doesn't detect America's number one drug of abuse, alcohol. Thus urinalysis in no way assures a drug-free workplace. Instead, it encourages substitution of alcohol and other non tested drugs for marijuana, cocaine, opiates and amphetamine.

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Drug urinalysis is therefore an inherently flawed technology. On one hand, it arbitrarily treats even the most occasional marijuana users as "drug abusers" despite the substantial evidence that moderate marijuana use is harmless. On the other, it ignores flagrant alcoholism. The upshot is that urinalysis disqualifies many productive, competent workers who enjoy non-traditional drugs in their free time, while completely ignoring the majority of drug abusers, who are alcoholics. All of this raises obvious questions about the value of drug urinalysis. Morally, urinalysis can be compared to randomly searching workers' homes and garbage cans and branding them alcohol abusers if empty liquor bottles are found. Though it might seem that Americans would strenuously object to such warrantless searches of their homes, polls have shown strong public support for searching their bladder contents, especially in jobs deemed safety-critical.

Urinalysis: An Unproven Technology

Despite the public support for drug testing, urinalysis is a remarkably unproven technology. Were urinalysis a life-saving drug, it would have had to undergo years of painstaking pre-market testing in order to meet FDA regulations, requiring it to be proven fully "safe and effective" in rigorous, double-blind studies. Yet the fact is that urinalysis has been imposed on millions of American workers involuntarily without so much as a single scientifically controlled study to show that it is a safe or effective means of promoting workplace safety. Moreover, unlike drug consumers, urinalysis subjects receive no warning labels informing them of what they are being tested for, nor of the risks, accepted usage or implications of the tests.

A close inspection of the evidence for drug testing shows that it rests largely on exaggerated, distorted and unfounded claims, as shown in critical reviews in *Scientific American* and elsewhere. ¹ For instance, testing advocates have cited a Research Triangle Institute survey purporting to show that the income loss due to marijuana use was some \$26 billion, yet the same data showed no difference at all in income between non-users and current users of marijuana or other drugs. Other, non-peer-reviewed studies by employers have likewise been misinterpreted to support urinalysis: for instance, a pair of studies at Utah Power and Light Co. and Georgia Power Co. purporting to show that drug users pose a high risk of accidents and absenteeism only looked at users who had exhibited problem behavior on the job. Not surprisingly, this population had worse than average work records. Nonetheless, Utah Power found that drug users cost \$215 less in health insurance benefits, while Georgia Power found lower rates of absenteeism in workers who tested positive only for marijuana!

Only a handful of published studies have compared the performance of drug-positive workers with others, with similar, mixed results. A one-year follow-up study of 180 new employees at a Georgia hospital found no relationship between drug screen results and subsequent job performance. It concluded, "The data presently available do not support

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the thesis that positive drug screening predicts poor job performance." 2 Nonetheless, the U.S. government has recently ordered random testing of its VA hospital employees.

The most extensive and widely cited research on workplace drug testing comes from the U.S. Postal Service, which tracked the job performance of new employees according to prior drug screen results. Test results were not used in hiring decisions, but were evaluated to determine their relation to job performance one year later. The first study, which tracked the performance of 2533 postal workers in Boston reported that drug-positive workers had a statistically 50% higher rate of dismissals, reprimands, accidents and absenteeism. 3 However, the authors noted that this difference was "much less than previously estimated." Looked at another way, the Boston data actually showed that the great majority of drug-positive users were reliable: fully 86% of marijuana-positive workers were discipline-free after one year, versus 91 % for non-users; 74% were accident-free, versus 81 % for non-users; and 71 % were still on the job, versus 81 % for non- users. Thus, on the average, marijuana-positive workers were 90% as reliable as clean-urine ones. Surprisingly, cocaine-positive workers fared even better, being over 95% as reliable in most categories.

The Boston findings regarding accidents and injuries were subsequently contradicted by a second, larger, study of 4,396 postal workers nationwide, which found no relation at all between drug test results and injuries or accidents. 4 The Boston accident findings had previously been criticized on methodological grounds. The second Postal Service study did find that those who tested positive for illicit drugs had a 50% higher rate of absenteeism and dismissals. Yet once again, they showed that drug-using workers were largely reliable: drug users had a 93.4% attendance record versus 95.8% for others, and 85% of users kept their jobs, versus 89.5% of non-users.

The Boston data were later analyzed in a cost-benefit study, which found that drug screening would be marginally economical, to the tune of about \$162 per drug-positive worker rejected. 5 However, the authors cautioned that these results were highly sensitive to variations in the extent of drug use and cost of urine testing, and that there were likely to be many situations where drug testing was not cost-effective. They concluded that companies "should carefully weigh the costs and benefits" in their particular industry. Had the authors examined the second Post Service study, they would presumably have found even slimmer benefits from urine testing, since there would have been no savings from accidents or injuries.

Furthermore, their analysis undoubtedly overstated the potential value of drug urine testing, since they assumed that all drug-positive workers would be screened out. In practice, however, drug-using workers are apt to avoid detection, either by discontinuing use temporarily beforehand or by other evasion techniques described below.

Victims of Urinalysis

While the benefits of drug testing to employers appear dubious and unproven, the costs to the workforce have scarcely been examined at all. Nonetheless, it is clear that urinalysis imposes significant costs on workers. To begin with, it forces millions of innocent employees to submit to scrutiny of intimate bodily fluids in a way that many regard as degrading and obnoxious. This is especially trying for the unfortunate minority suffering "blushing kidneys," who are unable to produce urine on demand. At least one urinalysis victim has even been hospitalized for water poisoning after being required to drink three liters of water in order to make her give urine.⁶

Urinalysis is especially burdensome and offensive to those otherwise responsible, productive workers who do not abuse drugs on the job but enjoy indulging them in their free time at home. Principal among these are the nation's 20 or 30 million marijuana users, the great majority of whom are recreational users.⁷ Due to the over sensitivity of urine tests to marijuana, pot smokers constitute the great majority of urinalysis victims: up to 90% of drug-positive test results are for marijuana.⁸ Urinalysis forces these workers either to give up a valued pleasure, or to risk losing employment, insurance, or other benefits and rights.

California NORML (National Organization for the Reform of Marijuana Laws) is one of several organizations offering drug testing advice via a telephone hotline, over which we have received scores of complaints from victims of drug testing abuse. Included are truck drivers, airline attendants, office workers, mechanics, nurses and other employees with impeccable work records, who have lost long-held jobs on account of their urine chemistry, often against the wishes of their own supervisors and co-workers.

One urinalysis victim, Mike Beatty, says he lost \$500,000 in Air Force retirement benefits after testing positive for marijuana. Beatty, a veteran of the Vietnam and Iraq wars, was court martialed and discharged for using marijuana solely on the evidence of one bad urine test. Beatty says that he used to smoke pot regularly, but like most fellow servicemen gave it up when urine testing was instituted. Nonetheless, he relates, he continued to socialize with pot smokers, and had the misfortune of accidentally consuming a marijuana brownie at a party shortly before a drug test Beatty says before his discharge he was "humiliated" by Air Force personnel with sexual aspersions and investigations into his wife's private sex life.

Another urinalysis victim named Don was fired from an ARCO truck driving job after 19 years on the job. "It didn't even occur to me that I had a problem," he said, "I thought they were looking for coke." Don, who had an excellent work record and seniority, complains how ARCO never explained the implications of its drug testing policy. After

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losing his job and pension benefits, he was forced to sell his house and settle for a much lower-paying job. "You can count me as a victim of drug testing," he says.

"Jim is outstanding at what he does," reads the employee evaluation file of another urinalysis victim, a tractor trailer driver who was fired under Department of Transportation drug testing regulations. "Excellent safe driving awareness," "great initiative," "demonstrated dedication and consistency," read other testimonials in Jim's file. Jim, who admits to being a weekend marijuana smoker was fired after five years on the job despite having the highest possible job safety rating with his company.

"My employer couldn't believe it " says another woman who was fired from a job with a major retail store after failing a surprise drug test. Like many other drug testing victim, the woman was tested after being "promoted" to a higher position.

"Drug testing has destroyed my attitude towards my job and my government," says another utility worker, who was forced into an "employee assistance program" for a positive urine test "They treat me like a drug addict " he says, echoing the complaint of many pot smokers, "and they go home and get drunk every night."

Dealing With Drug Tests

The most common question received on the California NORML hotline is how to deal with a urine test for marijuana. 'The most obvious advice is to abstain from suspect substances before the test. Many callers are surprised to learn that occasional, weekend use typically washes out in as few as 2-5 days. Most regular smokers commonly pass within a couple of weeks, though very heavy use can be detected for as long as six weeks. However, exceptions can occur. NORML has heard from callers who have reported flunking as long as 10 days after a single, isolated use, while other, regular smokers have been known to pass within hours of last use. Such reports only emphasize the essential capriciousness and unreliability of drug urinalysis. For pot smokers facing drug tests on short notice, the simplest and most effective advice is to drink large volumes of liquids immediately before the test. The purpose of this is to dilute the concentration of drug metabolites in the urine below the threshold of detection (usually 100 nanograms per milliliter for the commonly used EMIT test). Test subjects are also advised to avoid giving urine that has accumulated in the bladder overnight since this tends to be high in metabolites.

Although reliable information on urinalysis evasion is hard to come by, reports from underground investigators agree that urine dilution can be quite effective, Most regular smokers are able to pass within a week or two, and sometimes much sooner, though exceptions occur. 9 Dilution can be boosted by taking diuretics, which stimulate urination; however, the most effective of these are available only on prescription. A

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number of diets and wash-out regimes have been proposed for persons who have several days to prepare; however, none of these have been scientifically validated. It is possible for laboratories to detect dilute urine by special tests for specific gravity, creatinin content, etc.; however, such tests are expensive and rarely used. On rare occasion, subjects are asked to take a second test after submitting a sample that has been found to be too watery. Of course, this gives them more time to clear up.

Because urine dilution is far from 100% reliable, especially for regular users caught unaware, there is a natural demand for surer methods. Many users experiment with oral "drug screens" that are rumored to avert positive urine tests. Included are certain vitamins, vinegar, zinc sulfate, and goldenseal root, as well as some overpriced special formulas and herb teas sold on the underground market. Despite glowing testimonials from some lucky users, these nostrums have no good scientific foundation and have been found to be unreliable in underground investigations.

A more reliable, if ethically dubious, way to foil urine tests is to furtively tamper with the sample. One popular trick is to adulterate the sample with one of a number of household products that are known to interfere with the common EMIT test so as to produce a false negative for marijuana. 10 Popular adulterants include detergent, salt, bleach and Drano crystals, which can be concealed under the fingernails. However, such substances may be detectable by sight or smell by diligent lab technicians. A more sophisticated, less easily detected adulterant is currently sold on the underground market 11 and has been proven to be quite reliable at producing false negatives for marijuana (the manufacturer was compelled to move operations when the Texas legislature passed a bill outlawing the sale of urine adulterants). 12

Another, more cumbersome trick is to substitute clean urine for one's own when delivering the sample. A surprising number of American workers appear to have rigged themselves up with substitute urine samples by methods elaborated in Abbie Hoffman's book, *Steal This Urine Test*. 13 In order to discourage such cheating, many labs now measure the temperature of each sample. Another, surer safeguard against tampering is to require that subjects be carefully observed during urination. However, aside from the armed forces and criminal justice system, few testers resort to such extreme measures. Most tests accordingly provide leeway for evasive sleights of hand. One regrettable side-effect of drug testing is thus to favor those more unscrupulous drug users who are willing to resort to tampering and similar evasion techniques, whereas honest users must either give up or face the risk of being fired. In a similar way, dishonesty is favored on questionnaires asking about illicit drug use: those drug users who are honest about their use are routinely turned down, with the result that only dishonest users are hired.

Pre-Employment Tests

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In general, the common pre-employment urine screen is by far the easiest kind of test to deal with, insofar as prospective employees need only avoid incriminating substances for the time they are on the job market. However, a surprising number of ignorant job applicants are unaware that they should be prepared for urine tests in the first place. Most pot smokers appear to have little problem abstaining for job tests, given the low addictive quality of marijuana. Only rarely has California NORML encountered long-term heavy marijuana users who complain of difficulty in giving up pot for a while.

Nonetheless, pre-employment tests can still be a problem even for moderate users if they happen to encounter a surprise job opportunity. In addition, many companies require drug screens of employees when they are promoted. As a result, many workers whose efforts have won them a promotion end up being fired instead on account of bad urine chemistry. Employees may also face urine tests unexpectedly when their company is sold to new management. In such cases, the new owners may demand a sudden spot urine check of the entire workforce, effectively purging it of anyone who has had the bad luck to indulge a suspect substance too recently. Victim of such abuses generally have no legal recourse against dismissal, and can also expect to lose unemployment benefits. NORML has heard from many otherwise blameless pot smokers who have lost jobs than to drug testing. Few cases better illustrate the absurd lengths to which urinalysis is carried than that of a newly "promoted" radio programmer who found himself fired for a positive marijuana test. The employee, who admitted to being a weekend pot smoker, had been working for a San Francisco "60s golden oldies" FM station!

Many NORML callers complain of having been coerced into drug testing programs they don't understand or approve of, with little explanation of how the policy will be administered. "It was very manipulative," recounts one woman concerning her employer's efforts to make her sign a form consenting to urinalysis. "They told us of course we wouldn't be randomly tested; we would only be tested on cause," she relates, "But the form specifically stated we would agree to random testing." Many employees receive no disclosure statements at all, leaving them vulnerable to arbitrary decisions. Some workers complain of being fired for a single bad test after being given the impression that they would be eligible for a rehabilitation program instead. Many employees complain about being "singled out" for drug tests because they are unpopular with their supervisor or manager. Others report being told by their managers that they will be protected from urine tests because they are valued employees. Some employees receive advance warnings about impending tests, giving them time to prepare; others are taken by surprise.

Because blood and urine samples are used for many other medical tests, subjects do not necessarily know when they are being drug tested. A Nevada mother told the NORML hotline that she had been unwittingly blood-tested for marijuana in a maternity ward, in what she had been told was a blood test for AIDS. She said her family was subsequently

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visited by plainclothes police demanding that they refer their newborn to a hospital ward for drug-addicted babies, or else give up custody. Another woman relates giving a urine specimen for what she was told was a pre-employment drug test, and losing the job when the employer inspected it to find out that she was pregnant instead!

Random Urinalysis

By far the most dreaded and inclusive form of drug testing is the random test, which is specifically designed to take workers by surprise. Under random testing, workers may be called on to provide a urine sample at any time, typically on no more than an hour or two's notice (however, in some shops, workers have been known to receive as much as a weeks' advance alert). A corollary of random urinalysis is to prevent workers from using any marijuana, even at home on weekends, at the risk of losing their jobs. While private employers have tended to shy away from random testing on grounds of expense, government drug warriors have successfully campaigned to impose random testing through federal regulations. Random urinalysis is now required for the military, many public employees and contractors, and the nation's entire interstate transportation workforce - including not only airline pilots, train engineers and truck drivers, but also flight attendants, mechanics, and gas pipeline workers.

The NORML hotline receives many complaints about random testing from transportation workers. Most not only resent the intrusion on their Private lives, but also insist that illicit drug abuse is not a safety problem. "Alcohol is the worst abused drug especially by pilots," say some angry flight attendant, a view repeatedly expressed by others in the industry.

According to air industry spokesmen, not a single passenger airline crash had been attributed to alcohol or drug abuse. 14 Administration officials lamely pointed to a 1988 plane crash in Durango, Colorado, in which the pilot's blood showed evidence of cocaine use. Yet investigators determined that the pilot was not high at the time of the crash, and it was the co-pilot who was controlling the plane at the time of the crash! 15 The fact that drug testing is widely opposed by the very airline workers whose lives are most at stake would seem to raise obvious questions about the supposed dangers of drug abuse in the air industry. Congress in response to a highly publicized 1987 train collision in which 16 passengers were killed. 16 The accident was blamed on the negligence of an engineer and brakeman, who were determined to have been smoking marijuana shortly before the crash.

A subsequent investigation revealed that both men had an extensive record of drunken driving offenses and were known to be problem drinkers. Furthermore, some of the train's safety equipment had been disabled. The engineer admitted to culpability for ignoring warning signals, but denied that marijuana had anything to do with the accident. An

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investigation by the National Transportation Safety Board concluded that the railroad should undertake management's reforms and equipment improvements, but did not recommend drug testing.

Nonetheless, Transportation Secretary James Burnley argued for drug testing, pointing to evidence that a significant percentage of accident-involved rail personnel tested positive for drugs. 17 In fact however, Federal Railroad Administration statistics showed that only 4 - 6% of "reasonable cause" urine tests were positive for drugs or alcohol, 18 half of what might have been expected for a normal cross-section of the workforce! 19

The ultimate impact of random testing regulations remains to be seen, as testing is still being phased in within the transportation industry. Many workers have responded by adjusting their drug use, however grudgingly. Others persist in risking a urine positive, relying on one or another evasion techniques to minimize their risks. Relatively few are actually caught: airlines report fewer than 1 % of employees test urine positive. 20 Included are an unfortunate number of very occasional users: NORML has heard from more than one flight attendant dismissed for indulging a rare joint with an old friend.

Many workers report turning to alcohol as a substitute for marijuana. "I'm drinking a lot more now," says one trucker, echoing a common complaint of many drug-tested workers who say they use pot to control alcoholism. Other drug-tested workers report widespread alcohol abuse among their fellows: "You see guys stumbling in here drunk from the management on down," says a Customs employee, "There are guys drinking alcohol first thing in the morning." Another employee told NORML that workers at his job had started smoking heroin instead of pot. Meanwhile, in the military, LSD is said to have become the illicit drug of choice due to its relative undetectability. 21 It is tempting to speculate that recent reports of a parallel upsurge in alcohol and LSD use among young persons reflect a broader social trend created by the incentives of drug urinalysis. 22

Urinalysis: "On-Cause" or No Cause?

In many workplace, employees are subject to "on-cause" testing whenever they have an accident. While such testing might seem objectionable, it is often abused so as to inculcate innocent workers. For instance, a diesel mechanic told NORML that he had been ordered to take a urine test following a minor workplace accident on a Friday, and that his drug test was scheduled for Monday, three days after the accident. The worker was rightly concerned that he might be fired because he had recently had he actually been under the influence of any other drug - cocaine, heroin, alcohol or speed - at the time of the accident!

In another case, a woman reported that her husband, a print shop worker with eight years' seniority, had flunked a drug test for marijuana after receiving a minor finger cut in an

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accident caused by another worker. Not only was her husband fired for an accident that wasn't his fault but the family also lost health insurance coverage for their son, who had serious medical problems costing \$1200 per month. Like other urine testing victims, the woman charged that the company had financial motivations to fire her husband, namely the family's insurance costs.

Urinalysis abuse is a phenomenon that extends beyond the job market. For instance, some insurance companies require drug urinalysis as part of their physical exams. Applicants are routinely denied insurance if they are found to use marijuana, despite the fact that there is not an iota of actuarial evidence showing marijuana adversely affects life expectancy.

Urinalysis has also come to figure in custody battles between estranged couples. One husband told California NORML that he had been directed by a court to submit to urinalysis after his wife had accused him of being a marijuana smoker, a condition widely presumed to compromise parental fitness. He complained that he was given no time to prepare for the test despite the fact that his wife, who had demanded the test, had three weeks to prepare a clean sample of her own.

Another arena where urinalysis is widely abused is the prison system, where it is often imposed indiscriminately as a condition of probation or parole. As a result, many non-violent offenders face substantial prison time for simply smoking a joint. For instance, a California woman with a long history of medical marijuana use for migraines was sentenced to 8 months in jail on charges of marijuana transportation. The judge explained that he could not give her a suspended sentence because in that case she would be subject to drug testing, which she would almost certainly fail, thereby ending up with a substantial prison sentence! Drug test violations have been reported to constitute 45% of all parole violations in California, which in turn accounts for nearly half of all prison admissions.²³ The use of marijuana screening appears especially dubious in light of the fact that marijuana tends to suppress violence, whereas the nearest substitute, alcohol tends to aggravate it.

California NORML has heard from several medical marijuana patients with drug testing problems. "Pot makes me feel better," complains a government worker with psoriatic arthritis, "I can't take alcohol." Other patients are threatened with drug testing program following convictions for marijuana offenses. Although marijuana is not an approved medication, patients may be able to pass urinalysis by obtaining a prescription for Marinol, the government-approved synthetic marijuana substitute. Since Marinol reacts exactly like marijuana, patients could presumably obtain a medical exemption for a positive urine test.

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Unfortunately, however, prescriptions for Marinol are not easy to come by and federal regulations forbid its use outside of cancer chemotherapy.

One common concern about drug testing is the danger of "false positives," in which subjects are erroneously accused of drug use. Contrary to rumor, neither passive smoking nor drug interactions are likely to cause false marijuana positives. Only in the most unlikely conditions, such as sitting for hours on end in a closet full of heavy pot smokers, has passive smoking been shown to produce a level of urine metabolites high enough to be detected on the standard EMIT test. ²⁴ Likewise, no drug is known to cause a false positive for marijuana, but certain over-the-counter medicines can trigger the test for amphetamines and poppy seeds can be confused with opiates (it used to be that ibuprofen interfered somewhat with marijuana tests, but this problem has been fixed). ²⁵ Such problems are supposed to be sorted out by medical review officers, the reliability of whom can only be speculated on. However, NORML has not heard any complaints about false positives from drug interactions.

The important question remains whether false positives may be caused by lab error. Early surveys of drug testing labs reported remarkably high error rates. However, industry and government have taken steps to insure against false positives for the sake of public credibility and liability. By requiring accurate gas chromatography confirmation tests of positive samples and regulating the chain of custody, selected labs have demonstrated false positive rates as low as zero in 10,000 - 48,000 samples in proficiency tests (false negatives, in which drug use is not detected, run around 3%.) ²⁶ Nonetheless, given the profusion of unregulated labs, higher error rates may well be common. It should be noted that even if false positives occur in as few as one in 100,000 tests, hundreds of Americans per year can expect to be falsely branded as illicit drug users.

California NORML has heard from three or four persons claiming to be victims of "false positives" for marijuana. Claims of this kind are by nature suspicious and difficult to verify. On one occasion, however, I personally observed what appeared to be a serious lapse of security in a local clinic that administers drug tests to probationers for local corrections authorities. I had come there to have some experimental specimens tested, and was told to place them on a shelf. While I waited for an attendant to record and label the samples, a nurse came in and deposited another unlevelled specimen jar on the shelf next to mine. Had I not brought the situation to the attendant's attention, it would have been child's play to switch and mislabel the samples by error or mischief.

Uromancy: An Obsolescent Technology?

The full toll of drug urine victims has yet to be scientifically investigated. Nothing is known about the number of false positives, nor the number of responsible workers disqualified for urine positives, nor the costs to their families, the economy, and welfare

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roles, nor the extent to which drug urinalysis has aggravated abuse of alcohol, tobacco and other untested drugs. As for the purported benefits of testing, these too are unclear. Given the potential for drug substitution, however, it may be doubted whether they will prove significant. Indeed, a pair of recent studies suggest that the recent decline in marijuana use has led to an increase in drug-abuse emergencies and auto fatalities due to alcohol and other drugs. 27 Meanwhile, the Bureau of Labor Statistics has reported a jump in job-related sickness and injuries to a record 6.8 million in 1990, or 8.8 out of 10 workers, tie highest rate since 1979, before drug testing began! All of this raises obvious questions about the purported benefits of drug urinalysis. Insofar as the evidence for drug testing rests more on faith than science, it might aptly be called "uromancy."

The case for drug urinalysis is further undermined by the fact that there exist alternative means for detecting impairment. Most promising of these are performance tests, which measure reaction time, alertness, and agility at various tasks. Computer-based performance tests are now on the market and have started to be used in some workplaces. 28 Performance tests have the obvious advantage of measuring actual impairment, regardless of the cause. Unlike urinalysis, they can detect problems caused by alcohol and other, untested drugs, as well as stress, fatigue, and emotional distress. In addition, they have the important advantage of disregarding private behavior that is irrelevant to job performance.

Another, often ignored alternative to urinalysis is blood testing. Although blood tests are even more physically invasive than urine tests, they provide a much better indication of current impairment, since they detect the active presence of psychoactive drugs in the system rather than inactive urine metabolites. Because blood tests are less sensitive to behaviorally irrelevant past drug use than urine tests, they are commonly used in forensic studies of accident victims to determine whether the subject was under the influence of drugs. Unfortunately, blood tests are at best an imperfect indicator of intoxication for drugs other than alcohol, and it is impossible to determine fixed thresholds for impairment. In the case of marijuana, THC blood levels decline quite rapidly to negligible levels in as little as two hours for recreational users, although chronic users can manifest detectable levels for a couple of days. Blood tests may therefore offer a useful way for occasional drug users to establish their innocence of being under the influence.

The case can be made that any worker accused of on-the-job drug abuse should have the option of taking a blood or impairment test to prove his or her competence (in California, motorists accused of driving under the influence of drugs have the option of blood or urine tests; unfortunately, few if any drivers understand the dramatic differences in sensitivity between the two). Another, more sinister alternative to urinalysis is hair testing, which is even more sensitive to past drug use than urinalysis. Promoters claim to detect drug use for months and even years, far longer than any pharmacological impact on health. Despite the fact that hair testing has unresolved technical problems and is

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considered to be an unproven technology by the scientific community, 29 it is already being marketed and used by some private employers and has been boosted by federal officials like Drug Czars William Bennett and Bob Martinez. The one advantage of hair testing is that it is less invasive of bodily privacy than blood or urine testing, although some persons, such as those of the Sikh religion, object to having their hair disturbed. However, because hair testing is also much more indiscriminate than other technologies in distinguishing harmless drug use from abuse, it poses even greater potential costs to society, the economy, and civil liberties.

The choice between hair testing and performance testing marks a crucial crossroads for the nation's drug policy. While the outcome remains to be seen, there are good reasons to think that urine and hair testing will eventually be rejected for all but forensic purposes, given their basic inability to measure competence.

Drug urine testing is perhaps best understood as a tool for imposing social conformity that has aptly been described as "chemical McCarthyism", 30 Like the loyalty oath of the fifties, urinalysis seeks to impose "politically correct" attitudes in the workforce. As drugs have replaced Communism as domestic enemy number one, so the question, 'Are you now or have you ever been a member of the Communist party?-' has been replaced by, 'Are you-now or have you been the user of a controlled substance?' When the current and drug hysteria subsides, the absurdity of this question will become apparent.

Technologically, drug urine testing can best be compared to that other tool of McCarthyism--the polygraph. Like the polygraph, drug testing rests on the spurious premise that the human mind can be read via crude physiological measures. Like the polygraph, drug testing is inherently misleading and endangers innocent parties. Time has revealed the polygraph to be an essentially flawed technology, and it has now been outlawed for most purposes (ironically, by the very same Congress that eagerly embraced random urinalysis).

In the fullness of time, it can be expected that the same will happen to drug urinalysis. As the costs of drug testing are examined more closely, it is apt to be seen that human beings are best judged by their performance, not the chemicals in their urine.

1 John Horgan, "Test Negative: A look at the 'evidence justifying illicit-drug tests," Scientific American, March 1990, pp. 18-22; John Horgan, "Postal Mortem," Scientific American, February 1991, pp. 22-3; Dr. John Morgan, "Impaired Statistics and the Unimpaired Worker", The Drug Policy Letter 1(2): May/June 1999.

2 Dr. David Charles Parish, "Relation of the Pre-employment Drug Testing Result to Employment Status: A One-year Follow-up", Journal of General Internal Medicine 4:44-7 (1989).

3 Zwerling, Ryan and Orav, "The Efficacy of Preemployment Drug Screening for Marijuana and Cocaine in Predicting Employment Outcome," JAMA 264 (20):2639-43 (1990).

4 Normand, Salyards and Mahoney, "An Evaluation of Preemployment Drug Testing," Journal of Applied Psychology, 75(6): 629-39 (1990).

5 Zwerling, Ryan and Orav, "Costs and Benefits of Preemployment Drug Screening," JAMA 267(1): 91-3 (1992).

6 Klonoff, "Acute Water Intoxication as a complication of urine drug testing," JAMA 265: 84-5 (1991).

7 One in four current marijuana users say they are daily users, while one in seven report smoking at least two joints a day, according to NIDA's 1982 National Survey of Drug Abuse.

8 Dr. John Morgan, cited in Horgan, "Test Negative", loc. cit.

9 "Lab Experiments: How to Piss and Pass", The Urine Nation News #7, Jan. 1992 ; Robert Freeman, "How to Beat A Urine Test," High Times, August 1988.

10 John Morgan, "Marijuana Metabolism in the Context of Urine Testing for Cannabinoid Metabolite," Journal of Psychoactive Drugs 20(1): 107-15 (Jan-Mar 1988).

11 UrinAid, available from Byrd Labs

12 Urine Nation News, loc. cit.; "Urine Trouble", Austin Chronicle, June 21, 1991.

13 A. Hoffman, Steal this Urine Test, Penguin Books, 1987.

14 Washington Post, "Signs of Drug Use in Fatal Air Crash," printed in San Francisco Chronicle, March 12 1988.; R.B. Stone, testimony in Hearings on the Airline and Rail Service Protection Act of 1987, Senate Committee on Commerce, Science and Transportation, 100th Congress, Feb. 20 1997.

15 Associated Press, "Cocaine Called a Factor in Colorado Air Crash," San Francisco Chronicle, Feb. 2, 1989.

16 D. Gieringer, "Marijuana, Driving, and Accident Safety," Journal of Psychoactive Drugs 20(1): 93-101 (Jan-Mar, 1988).

- 17 "Drug-Test Rules For Rail Workers Proposed by U.S.", Wall Street Journal, May 6, 1988.
- 18 Federal Register Vol. 53 #224, Nov. 21, 1988, p. 47104.
- 19 A roadside survey of truckers found 14% urine positive on the job: A.K. Lund et al, "Drug use by tractor-trailer drivers," Washington DC, Insurance Institute for Highway Safety, 1987.
- 20 "Airlines Seek Cutback in Drug Testing," Wall Street Journal, May 12, 1992.
- 21 "By the Way," Reason, August/Sept. 1989, P. 14.
- 22 "The New Age Of Aquarius," Newsweek, Feb. 3, 1992"; "Binge Drinking More Common On Campus," San Francisco Chronicle, June 5, 1992.
- 23 "California Prisoners and Parolees," California Department of Corrections, 1989.
- 24 E. Cone and R. Johnson, "Contact highs and urinary cannabinoid excretion after passive exposure to marijuana smoke", Clinical Pharmacology and Therapeutics 40(3): 247-56 (Sept. 1986).
- 25 David W. Fretthold, "Drug Testing Methods and Reliability," Journal of Psychoactive Drugs, 22: 419-28 (Oct-Dec 1990).
- 26 *ibid.*
- 27 Peter Passell, "Less Marijuana, More Alcohol?", New York Times, June 17, 1992.
- 28 Manufactured by Performance Factors, 980 Atlantic Ave #104, Alameda, CA 94501.
- 29 "Hairy Problems for New Drug Testing Method," Science, Sept. 7, 1990 P. 1099f; The Forensic Drug Abuse Advisor, Vol. 2 #10, Nov/Dec. 1990.
- 30 Dr. George Lundberg, "The Rush to Test Urine," Washington Post Health, Dec 9, 1986; see also JAMA Dec. 5, 1986 P. 3003.