

Fact-packed booklet lays out the case

California NORML Exposes Flaws of Drug Testing

Dale Gieringer and his co-workers at California NORML answer the phone calls and emails from a steady stream of citizens concerned —to put it mildly— that a drug test might cost them their job. These conversations are really “where the rubber meets the road,” as the saying goes.

Now Gieringer, who has a PhD from Stanford in engineering, has produced a fact-packed booklet with thorough answers to all those frequently asked questions, plus documentation and some political commentary.

The California NORML Guide to Drug Testing, published by Berkeley's Regent-Press, is available in paperback and as an e-book. It's a must-have for any activist who finds her- or himself discussing the implications of marijuana use by workers and drivers. Some excerpts follow.

Marijuana and Auto Accidents

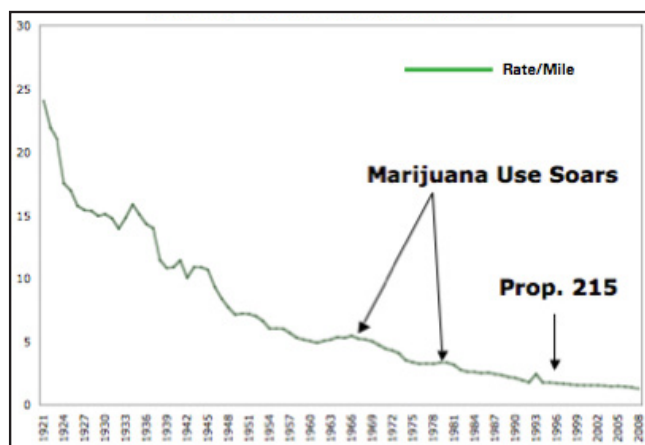
As support for marijuana legalization has grown, so has public concern about possible adverse impacts on driving safety. Fortunately, the evidence is strong that marijuana has a minimal impact on driving fatalities. In general, neither states and countries with higher marijuana use, nor those with more liberal marijuana laws, experience higher rates of highway fatalities. The Netherlands, where marijuana is legally available in coffee shops, ranks among the top nations in the world in highway safety.

Since the 1960s, the number of Americans using marijuana has increased dramatically, from a fringe minority to tens of millions consumers. Nonetheless, over the same period, highway accident rates have declined continually (see graph above at right). Evidently, therefore, marijuana is not a significant factor in overall highway safety.

Accident Studies

Numerous accident studies have found that marijuana is not a major risk factor in driving fatalities, especially when compared to alcohol. The table below summarizes studies of car crashes that have assessed the accident risk for drivers with traces of marijuana in their system. The studies surveyed fatal accidents, looking at levels of marijuana, alcohol and other drugs in the driver's blood or urine.

For each accident, researchers determine the degree to which the driver was responsible for the accident. Using this data, they compute a “culpability ratio,” comparing the risk of accidents for drug-positive drivers to drug-free drivers. A culpability ratio of 1 means no increased risk; above 1 means increased risk; and below 1 means reduced risk. Culpability factors above 3 or 4 are considered notably significant.



DECLINE OF FATAL AUTO ACCIDENTS IN THE U.S. resumed as marijuana use began soaring in the mid-1960s and continued after California's enactment of Proposition 215 in 1996, according to data from federal agencies. Horizontal scale shows three-year increments from 1921 through 2008. Vertical scale shows deaths from car crashes per 100 million vehicle miles.

Drivers with high blood-alcohol levels (above the standard legal limits of .08% or .10%) showed consistently high culpability ratios, on the order of 5 or 6. In contrast, drivers with only THC present in their blood rarely exceeded 2, and in several cases were less than one —implying they were actually safer than drug free drivers! This phenomenon could be due to the fact that marijuana-using drivers tend to slow down, while alcohol-using drivers tend to speed.

It is important to note that this is not true when marijuana is combined with alcohol. In general, studies agree that the combination of alcohol and THC is highly dangerous, if anything worse than “straight” drunken driving. The table does not include culpability data for drivers with both alcohol and THC in their system (that is, all of the marijuana drivers were alcohol-free).

The 2004 study by Drummer *et al*, which did not count drivers with less than 1 nanogram THC in blood, found that the rest of the THC-positive drivers had an average culpability ratio of 2.7. This is similar to the risk ratio for drivers with moderate, legal amounts of alcohol in their system (as shown in the studies by Laumon and Bédard, which looked at drivers with blood alcohol content less than or equal to 0.05%, a legal amount in the U.S.).

Note that the Drummer study found especially high culpability for drivers with 5 or more nanograms blood THC, comparable to the risk for drunken drivers. This confirms that high blood THC, indicating recent usage, is a sign of likely impairment, while lower levels, which remain for several hours, are not.

Not surprisingly, no elevated risk was found in the three studies which looked at urine metabolite levels rather than blood THC. This confirms that urine testing has

no bearing on driving impairment. Despite this fact, U.S. Department of Transportation regulations force millions of commercial drivers to submit to random urine testing. The government has never produced convincing scientific evidence that this policy is necessary or effective to protect public safety. But they're the government, so they don't have to provide any evidence!

A recent meta-analysis of 42 different studies on cannabis and driving concluded that the odds of a fatal accident due to cannabis use are only 1.25 times normal, significantly less than many other risks such as age, gender, and alcohol use. The study found higher fatal accident odds for opiates (1.44), benzodiazepine tranquilizers (2.30), anti-depressants (1.32), cocaine (2.96), amphetamines (4.46) and the sleeping aid zopiclone (2.60). Alcohol wasn't included, but has elsewhere been calculated at 2 to 6, depending on blood level.

Privacy

Urine tests intrude on intimate bodily privacy. Mass drug screening violates the privacy of the majority of responsible employees in order to spot a minority of supposed drug abusers. Most of these are probably not drug abusers at all, but responsible off-the-job users. Most Americans would consider it unacceptable, and most courts would hold it illegal, for employers to search workers' homes for empty liquor bottles in the trash, yet they routinely allow them to search workers' urine.

Government-imposed drug testing may be restricted by the 4th Amendment to the Constitution, which forbids unreasonable search and seizure and requires “probable cause” for search warrants. However, the 4th Amendment does not generally apply to tests by private employers. Furthermore, the U.S. Supreme Court has ruled that it does not protect workers in safety or security sensitive positions, students seeking to participate in sports or extracurricular activities, etc.

Accuracy

No test is infallible. Surveys of drug testing labs have found remarkably high error rates from poor quality control. While good labs have added safeguards to minimize the risk of “false positives,” even if error rates are only one in 10,000, the extension of drug testing to tens of millions of workers means that many workers are falsely accused of drug abuse every year.

The most common misconception about urine testing is that it detects drug-impaired workers, whereas it actually detects evidence of past drug use with no clear relation to on-the-job performance. Because drug tests are highly sensitive to marijuana, random testing encourages use of other, more dangerous drugs such as cocaine and opiates, which wash out in two days, or LSD, which is rarely tested.

At the same time, most drug testing programs totally disregard alcohol, the nation's leading drug of abuse. Drug testing programs that rely solely on urine tests are thus inherently flawed. They rule out the most innocent off-the-job marijuana use, while permitting flagrant on-the-job alcohol use.

Not FDA-Proven Effective

Unlike other medical devices and drugs, urine testing has never been scientifically proven to be “safe and effective” in FDA studies. While other medical devices and pharmaceutical drugs are required to ob-

tain FDA approval by providing exhaustive, rigorously controlled, double-blind studies proving they are “safe and effective” for their intended use, no such studies have been conducted.

Such studies as have been done of drug testing have lacked scientific rigor and had mixed results. In a study of hospital workers, researchers found no relation between job performance and drug use as measured by drug tests. Another study of postal workers found that employees who tested positive on pre-employment tests had no worse safety records, though slightly more absenteeism, than other workers. Yet another study of high-tech companies found that those adopting drug testing programs exhibited lower levels of productivity than those that do not —a result that could be explained by a tendency for companies with worse problems to be more likely to turn to drug testing in the first place.

On the other hand, a study of the construction industry found that injury rates declined by one-half among companies that instituted drug testing programs; however, the study did not compare them to companies who didn't test. Given that there exists a long-term trend for accident rates to decline on account of technological advances, it is unclear what if any part of this could be due to drug testing.

The bottom line is that current evidence is insufficient to decide whether drug testing is in any way beneficial. An expert review by the prestigious National Academy of Sciences Institute of Medicine expressed caution, noting “the data obtained in worker population studies... do not provide clear evidence of the deleterious effects of drugs other than alcohol on safety and other job performance indicators.” The IOM advised companies to be cautious because “There are very few empirically based conclusions that may be reached concerning the effectiveness of drug testing programs.”

A recent review of the evidence by researchers at the Centre for Addictions Research of British Columbia found that “although drug testing is widespread in US workplaces, there is a lack of evidence it reduces injury or accident rates.”

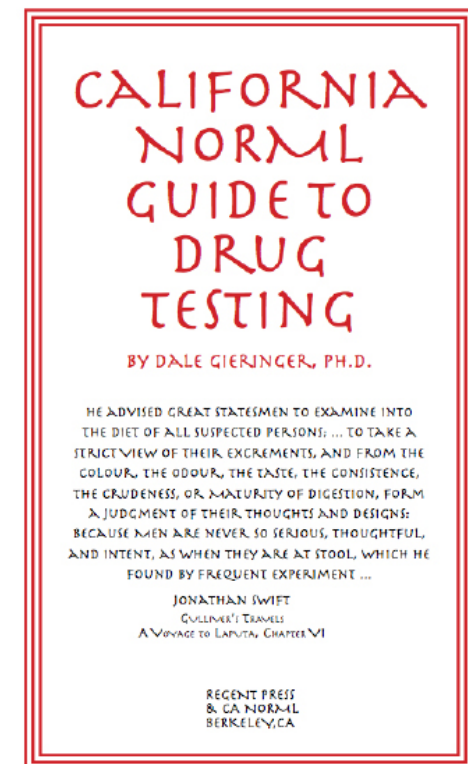
Likewise, a consensus report of the National Institute on Drug Abuse concluded that drug testing is an inherently unreliable indicator of drug impairment.

In this light, it is highly ironic that the same U.S. government which prohibits its

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LOCATION	NUMBER OF DRIVERS	STUDY	CULPABILITY RATIO Blood alcohol content = .08-.10%	CULPABILITY RATIO THC (only) present in blood
NEW YORK	497	Terhune & Fell ²⁸ (1982)	5.7	2.1
CALIFORNIA	440	Williams et al ²⁹ (1985)	5.0	0.2
U.S.	1,882	Terhune et al. ³⁰ (1992)	5.7	0.7
AUSTRALIA	1,045	Drummer ³¹ (1994)	5.5	0.7
AUSTRALIA	2,500	Longo and Hunter ³² (2000 & 1998)	6.8	0.9 any THC 0.36 THC<1 ng/ml 1.8 THC (>2 ng/ml)
AUSTRALIA	2,298	Drummer et al ³³ (2004)	6.0	2.7 (>1 ng/ml)* 6.6 (>5 ng/ml)*
FRANCE	10,748	Laumon ³⁴ (2005)	3.0 - 6.2 (BAC ≥ 10) 2.01 (BAC ≤ .05)	1.78
U.S.	32,543	Bédard ³⁵ (2007)	8.51 (3.3 BAC ≤ .05)	1.29
NETHERLANDS	110 cases +816 controls	Movig ³⁶ (2003)	5.46 (BAC .05-.08) 15.5 BAC > .08	1.22 (urine and/or blood)
COLORADO	414	Lowenstein et al ³⁷ (2004)	3.2	1.1 (urine)
MARYLAND	5,573	Soderstrom et al ³⁸ (2005)	7.45	1.2 (urine)

SUMMARY OF DUI CULPABILITY STUDIES shows the risk of fatal auto accidents involving drivers whose blood contained metabolites of alcohol or marijuana. Culpability ratios above 1 indicate increased risk.



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Drug testing *from previous page*

citizens from using marijuana as medicine on the grounds that it isn't FDA-proven "safe and effective," requires them to submit involuntarily to drug tests that have never been FDA-proven as safe or effective in increasing job safety or productivity.

After Congress passed a law imposing random drug testing on all federal transportation workers, accident statistics showed no perceptible improvement in railway safety.

Political Motivations

Drug testing was introduced by the federal government under President Reagan, who issued a 1986 executive order requiring federal agencies to institute urine testing to promote "drug-free" workplaces. Political pressure for drug testing was intensified by a fatal train collision between an Amtrak and Conrail train (1987), in which the engineer and conductor both tested positive for marijuana.

In fact, the role of marijuana in the Amtrak-Conrail collision was never clear. An official investigation by the National Transportation Safety Board (NTSB) found several glaring safety lapses had contributed to the accident: three separate safety devices had been disabled; other warning signals had been ignored; the crewmembers had a record of DUIs and traffic violations; and the railroad lacked a basic emergency braking system commonly used in other countries that would have averted the accident. Although the NTSB only recommended equipment and management changes, administration officials pushed for random drug testing. Congress duly passed a law imposing random drug testing on all federal transportation workers, from airline flight attendants to pipeline workers. An unpublicized reality is that subsequent accident statistics showed

no perceptible improvement in railway safety following the institution of random drug testing.

Americans Most Tested

The United States leads the world in drug testing its citizens. Testing is comparatively rare in most foreign countries, including the Netherlands, which enjoys one of the best worker safety records in the world even while marijuana is openly available at coffee shops. Nonetheless, U.S. multinational corporations have tried to promote drug testing abroad. Workplace drug testing has been found to be unconstitutional by Canadian courts except in the case of safety-sensitive jobs and employees of American firms that require it. It is a remarkable irony that a nation which prides itself so much on its freedom is so submissive when it comes to urine testing.

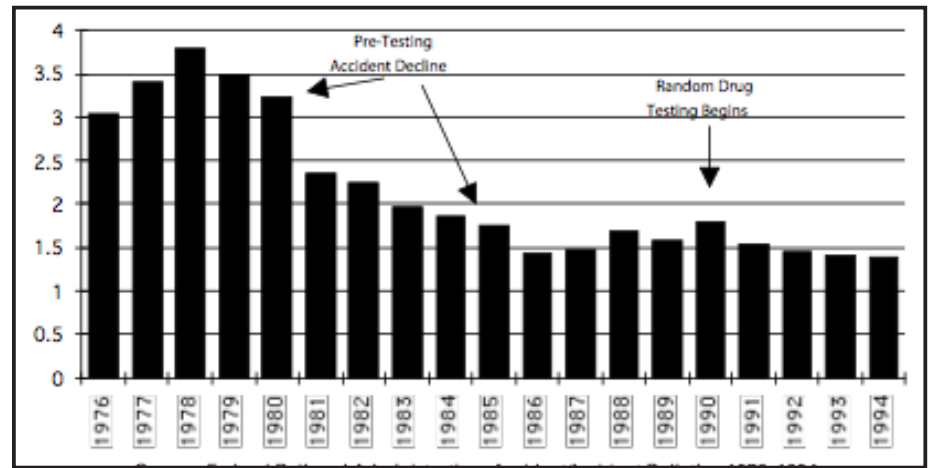
Alternatives

The shortcomings of drug testing can be avoided through the use of impairment testing systems that use game-like computer tests. By measuring reaction time, decision making and hand-eye coordination, these tests screen for factors that cause employee impairment: fatigue, stress and illness. Impairment testing for employees, including applications for iPods and other devices, are available from Bowles-Langley Technology. One current limitation of these tests is that they need to be calibrated beforehand for each individual worker and therefore cannot be used on a one-time, spot-check basis.

Drug testing is inherently flawed because it doesn't measure impairment, but only past use.

An Inherently Flawed Technology

Drug testing is inherently flawed because it doesn't measure impairment, but only past use. Urine tests incorrectly treat even the most harmless off-the-job use of marijuana as drug abuse, while at the same time



DECLINE OF RAILROAD ACCIDENTS in the early 1980s preceded the imposition of random drug testing in 1990, according to data from the Federal Railroad Administration analyzed by Gieringer. Horizontal scale shows years (1976 through 1994). Vertical scale shows "human factor accidents per million rail miles."

completely disregarding the use of alcohol and other legal drugs, which constitute by far and away the greatest hazard to public safety. Whereas alcohol accounts for 75% of all emergency room visits in which drug use is implicated and non-medical use of prescription drugs for 13%, marijuana accounts for just 4%.

In this regard, it is instructive to compare urine testing to the now discredited polygraph or lie detector, which enjoyed popularity 50 years ago. The polygraph purports to detect lying by physical cues such as pulse and perspiration. While advocates claim that the polygraph is 90–95% reliable in spotting lies, critics put the level closer to 61%. In either case, employers might do better identifying on-the-job substance abuse by asking employees about it in a polygraph exam than by conducting a urine test. In contrast urine testing completely disregards the majority of drug abusers who use alcohol and other legal or undetectable drugs on the job.

Nonetheless, some 10% of the responses recorded as lies by the polygraph are in fact truthful. Because this wrongly stigmatizes a minority of truth-tellers, use of the polygraph is now widely discredited and disallowed in most employment settings.

Yet urine testing for marijuana is not only allowed but encouraged despite its inaccuracy in discriminating between harmless, responsible use and dangerous, on-the-job misuse.

In sum, the polygraph would seem to be more reliable at detecting drug abuse than urine tests. Nonetheless, the polygraph has been discredited as "unreliable, unscientific and biased" by the National Academy of Sciences, and its use is disallowed in most circumstances. Hopefully the day will come when drug urine testing goes the same way.

In the meantime, Americans need to stand up for their rights of personal freedom and privacy. There is no need for urine testing to protect public health or safety.

Drug testing has been aptly described as "Chemical McCarthyism" by Dr. George Lundberg of the American Medical Association. In McCarthy's day, the question was, "Are you now or have you even been a member of the Communist Party?" Today it is, "Are you now or have you ever been the user of an illegal drug?" Such questions should have no place in a free country. The time has come to recognize that people can't be judged by the content of their bodily fluids.