

# MEDICAL MARIJUANA

in Montana

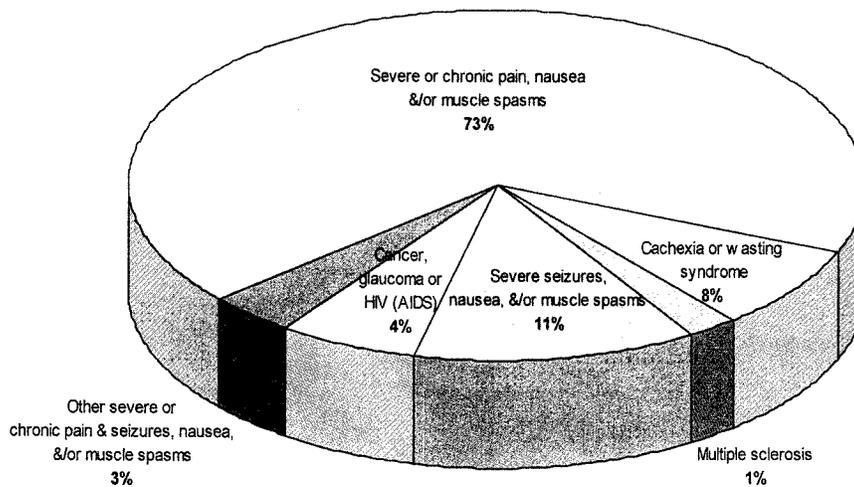
**1,926 registered patients**

**in 41 of the state's 56 counties**

**184 physicians making recommendations**

**575 caregivers, 74% for one patient each**

**Predominate Medical Condition**



(MT DPHHS, MARCH 2009)

## SB 326 Impairment from Marijuana

### Blood levels of THC in heavy and occasional marijuana users<sup>5</sup>

- Heavy User: > 4 times per week for the last year
  - 1-2 cannabis joints on 4-25 occasions previous week
  - Most recent use more than 8 hours prior to start of study
- Occasional User: weekly use or less
  - 3 of the 11 used 1 joint previous week; others none
- Participants were given marijuana [THC 500 ug/kg] or placebo [no THC]
- Occasional users given placebo had no detectable THC in blood [not included in chart]

THC ng/ml	Occasional User	Heavy User	Heavy User Placebo
C 0 h (before)	0	4.1 ± 3.4	3.5 ± 3.2
C maximum	49.1 ± 24.9	120.9 ± 78.1	NA
C 8 hours after	0	3.5 ± 2.9	3.3 ± 3.1
AUC 0-8 hr	35 ± 14	86 ± 54	28 ± 25
t <sub>1/2</sub> β (h)	1.6 ± 0.2	3.0 ± 1.5	27.4 ± 9.7

Heavy users who were given placebo still had significant blood levels of THC at least 16 hours after their last use of marijuana

Occasional users returned to 0 within 8 hours of marijuana use.

1 occasional user was unable to tolerate this dose of marijuana

C=Concentration in blood [ng/ml]

AUC = Area under the curve [total drug absorbed]

t<sub>1/2</sub> β = Half life of THC

### Relationship of THC level to impairment:<sup>6</sup>

- Critical Tracking Task (keeping cursor in place)
- Stop Signal Task (reaction time)
- Tower of London Task (correct decisions)
- Significant effects found with THC levels:
  - 2-5 ng/ml -- Only Critical Tracking impaired
  - >5 ng/ml -- Stop signal & Tower of London also impaired
- Critical tracking effects compared to alcohol
  - First 2 hours equivalent to BAC > 1.0 mg/ml
  - 2-6 hours equivalent to BAC > 0.05 mg/ml
- Stop signal and Tower of London tests do not show impairment with BAC <0.06 mg/ml

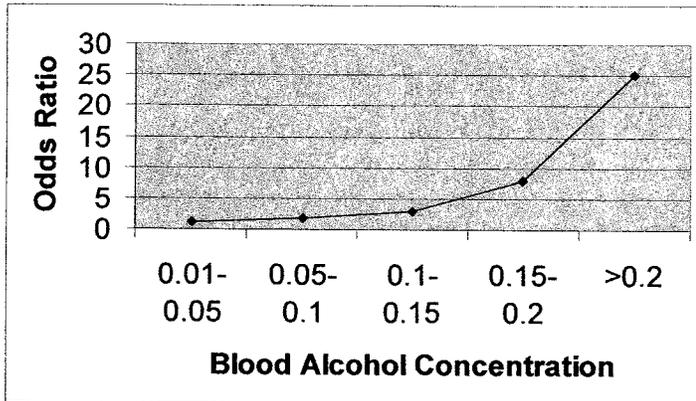
### Effects of cannabinoids on driving<sup>7</sup>

- Marinol and a cannabis decoction in whole milk
  - Placebo was hemp decoction in whole milk
  - Cannabis decoction 17 or 46 mg THC
  - Marinol 20 mg
- Obvious impairment noted with all doses
- Tracking test most significant [keeping the vehicle on the road] Effects up to 5 hours

## SB 326 Impairment from Marijuana

### Relative Risk of Death<sup>8</sup>

- Drivers killed in road crashes (3398) in western Australia
- Blood specimens within 4 hours of crash
- Responsibility analysis based on 8 mitigating factors; only “culpable” drivers included
- 29.1% had alcohol  $\geq 0.05\%$  BAC [legal limit for DUI in Australia]
- 26.7% had psychoactive drugs – 13.5% Cannabinoids



	Drivers	Odds Ratio
Drug & Alcohol Free	1704 (50%)	1
Opiates	59 (1.7%)	1.41*
Benzodiazepines	34 (1%)	1.27*
THC only	58 (1.7%)	2.7
THC only ( $\geq 5\text{ng/ml}$ )	49(1.4%)	6.6
Stimulants (all drivers)	53 (1.6%)	2.27*
Stimulants (truckers)	22(15.8%)	8.83
*Not significant		

- THC  $\geq 5\text{ng/ml}$  odds ratio similar to drivers with BAC  $\geq 0.15\%$
- THC + BAC  $\geq 0.05\%$  odds ratio 2.8 times BAC  $\geq 0.05\%$  alone

### Responsibility for Death<sup>9</sup>

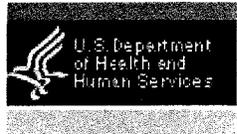
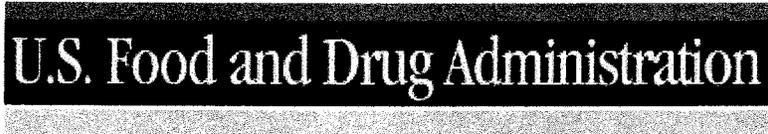
- 10,799 drivers involved in traffic fatalities in France 2001-2003; prospective study
- Blood specimen within 4 hours of crash
- THC cut off level 1 ng/ml
- Responsibility analysis

	Alcohol & drug free	THC $\geq 1 \text{ ng/ml}$	Alcohol $\geq 0.05\%$	Alcohol and THC
All drivers	7886	391	1908	278
Known responsibility	7339	360	1823	272
Responsible	3996	252	1647	254
Not responsible	3343	108	176	18
Responsible/ not responsible ratio	1.2	2.3	9.4	14.1

### I'm OK to drive<sup>10</sup>

- Marijuana users were interviewed to determine beliefs about using and driving
  - Only 10% believed they were too impaired to drive when under the influence
  - 16% believed their driving improved when they were using!
- Of these marijuana users who also drank alcohol [most of them]
  - 60% believed that they were too impaired to drive after 4 alcohol drinks.
- 70% believed driving under the influence of marijuana did not cause crashes

# SB 326 Impairment from Marijuana



**FOR IMMEDIATE RELEASE**  
April 20, 2006

**Media Inquiries:**  
FDA Press Office, 301-827-6242  
**Consumer Inquiries:**  
888-INFO-FDA

## **Inter-Agency Advisory Regarding Claims That Smoked Marijuana Is a Medicine<sup>11</sup>**

Claims have been advanced asserting smoked marijuana has a value in treating various medical conditions. Some have argued that herbal marijuana is a safe and effective medication and that it should be made available to people who suffer from a number of ailments upon a doctor's recommendation, even though it is not an approved drug.

Marijuana is listed in schedule I of the Controlled Substances Act (CSA), the most restrictive schedule. The Drug Enforcement Administration (DEA), which administers the CSA, continues to support that placement and FDA concurred because marijuana met the three criteria for placement in Schedule I under 21 U.S.C. 812(b)(1) (e.g., marijuana has a high potential for abuse, has no currently accepted medical use in treatment in the United States, and has a lack of accepted safety for use under medical supervision). Furthermore, there is currently sound evidence that smoked marijuana is harmful. A past evaluation by several Department of Health and Human Services (HHS) agencies, including the Food and Drug Administration (FDA), Substance Abuse and Mental Health Services Administration (SAMHSA) and National Institute for Drug Abuse (NIDA), concluded that no sound scientific studies supported medical use of marijuana for treatment in the United States, and no animal or human data supported the safety or efficacy of marijuana for general medical use. There are alternative FDA-approved medications in existence for treatment of many of the proposed uses of smoked marijuana.

FDA is the sole Federal agency that approves drug products as safe and effective for intended indications. The Federal Food, Drug, and Cosmetic (FD&C) Act requires that new drugs be shown to be safe and effective for their intended use before being marketed in this country. FDA's drug approval process requires well-controlled clinical trials that provide the necessary scientific data upon which FDA makes its approval and labeling decisions. If a drug product is to be marketed, disciplined, systematic, scientifically conducted trials are the best means to obtain data to ensure that drug is safe and effective when used as indicated. Efforts that seek to bypass the FDA drug approval process would not serve the interests of public health because they might expose patients to unsafe and ineffective drug products. FDA has not approved smoked marijuana for any condition or disease indication.

A growing number of states have passed voter referenda (or legislative actions) making smoked marijuana available for a variety of medical conditions upon a doctor's recommendation. These measures are inconsistent with efforts to ensure that medications undergo the rigorous scientific scrutiny of the FDA approval process and are proven safe and effective under the standards of the FD&C Act. Accordingly, FDA, as the federal agency responsible for reviewing the safety and efficacy of drugs, DEA as the federal agency charged with enforcing the CSA, and the Office of National Drug Control Policy, as the federal coordinator of drug control policy, do not support the use of smoked marijuana for medical purposes.

# SB 326 Impairment from Marijuana

## REFERENCES:

<sup>1</sup> <http://mdt.mt.gov/publications/datastats.shtml#crash>

<sup>2</sup> Personal communication, Montana State Crime Lab

<sup>3</sup> \*<http://www.nhtsa.dot.gov/people/injury/research/job185drugs/index.htm>

<sup>4</sup> Leirer, 1991 Marijuana Carry-Over Effects on Aircraft Pilot Performance, Aviation, Space, and Environmental Medicine, March, 1991, 221-227.

<sup>5</sup> Toennes, et.al., 2008, Comparison of Cannabinoid Pharmacokinetic Properties in Occasional and Heavy Users Smoking a Marijuana or Placebo Joint, J Anal Toxicology 32: 470-477

<sup>6</sup> Ramaekers, et.al., 2006, Cognition and Motor Control as a Function of  $\Delta 9$ -THC concentration in serum and oral fluid: Limits of Impairment. Drug and Alcohol Dependence 85: 114-122.

<sup>7</sup> Menetry, et.al., Assessment of driving capability through the use of clinical and psychomotor tests in relation to blood cannabinoids levels following oral administration of dronabinol or of a cannabis decoction. Journal of Analytical Toxicology 2005 (29):327-338.

<sup>8</sup> Drummer, et.al., 2003, The involvement of drugs in drivers of motor vehicles killed in Australian road traffic crashes. Accident Analysis and Prevention 943 1-10.

<sup>9</sup> Biecheler, et.al., 2008, SAM Survey on "Drugs and Fatal Accidents": Search of substances consumed and comparison between drivers involved under the influence of alcohol or cannabis. Traf Inj Prev 9:11-21

<sup>10</sup> Terry & Wright, 2005, Self-reported driving behaviour and attitudes towards driving under the influence of cannabis among three different user groups in England. Addictive Behaviours 30:619-626.

<sup>11</sup> <http://www.fda.gov/bbs/topics/NEWS/2006/NEW01362.html>

# Marijuana Facts

There's a lot of misinformation out there about marijuana. It should be approved as a medicine, it's harmless, it should be legalized outright just like it is in some European countries and it's all about a laid back and worry-free lifestyle. Consider these facts and statistics and give marijuana use a little more thought.

So, you think it should be legalized, just like it has in some European countries? Think it hasn't had a negative impact on the citizens of those countries?

- After the Netherlands legalized marijuana use for adults, the usage rate for 18 to 20 year olds nearly tripled from 15 to 44 percent.
- Registered marijuana dealers in the Netherlands are allowed to deduct from their taxes the business expenses of drug dealing--things like guard dogs and assault rifles.

You think marijuana makes you mellow, relaxed and worry-free?

- According to [freevibe.com](http://freevibe.com), marijuana users are four times more likely to commit violent acts and five times more likely to steal as non-marijuana users.

You think marijuana use is harmless, that it can't get you into any trouble or lead you into further drug experimentation?

- Pot users are two to five times more likely to go on to use harder drugs.
- Marijuana users are 8 times more likely to use cocaine and 15 times more likely to use heroin.

You think smoking marijuana is a victimless crime? That it doesn't affect anyone around you?

- 80 percent of the people hurt in on the job accidents involving marijuana are the co-workers of the users – not the users themselves.
- You're hurting everyone around you – even people you don't even know. One of the greatest myths of marijuana is that it is a "victimless" crime. So you know what marijuana's doing to you? Think about the people in your life who depend on you. And what about the public safety of others when confronted with intoxicated drug users? Marijuana affects safe driving skills, such as alertness, concentration, coordination and reaction time, as well as makes it difficult to judge distances and react to signals and signs on the road. Don't kid yourself into thinking it's not dangerous.

You think marijuana should be a medicine? That doctors and medical groups are saying it should be, and that those are the people trying to get it legalized, one state at a time?

- The majority of funding for state ballot initiatives (and legislative measures) to allow marijuana to be used as medicine comes from drug legalization organizations, not qualified medical professionals. One example is the Marijuana Policy Project [www.mpp.org](http://www.mpp.org)
- The bulk of the funds and the effort come not from small contributors, but from millionaires who are long-time supporters of the drug-legalization movement.
- Ballot initiatives in CA, AZ, and MT were passed through a major disinformation campaign financed by wealthy individuals who don't even live in those states!
- Proposition 215 in California, Proposition 200 in Arizona, and Initiative 148 in Montana, were drafted, financed and supported by legalization proponents using the compassionate pain argument as a guise for their recreational drug legalization agenda.

You think marijuana's not addictive? Think it's safe? There's no harm in having a few drinks and smoking some pot?

- The effects of one drug can magnify the effects and risks of another. Mixing drugs can be lethal. When you binge drink and then smoke pot, there's a chemical in the pot that suppresses your body's natural urge to throw up. You may die from alcohol poisoning.
- Currently, 60 percent of teenagers in drug treatment are seeking help for their marijuana addiction.

- An Australian study found that one in three teens who smoke marijuana become psychologically addicted by the time they hit their early 20's.
- In 1999, marijuana was the primary drug of abuse in about 14 percent of admissions to treatment facilities in the United States. 57 percent of patients had used it by age 14 and 92 percent had used it by age 18.

You think marijuana is a "safe" drug, a clean one, with no sketchy dealers or strung out violent people roaming the streets?

- Hashish dealers will use filler to mix with the marijuana plant resin to extend their profits. A commonly used filler in Morocco is goat dung.
- Marijuana dealers will sometimes lace their drug with a highly addictive drug like crack or PCP to get their users to come back.
- Many drug dealers don't use the drugs they sell. They stay straight so that they can concentrate on making money off their addicts.

So you know smoking tobacco is bad for you, but think something marijuana isn't the same thing? Well, you're right. It's not the same – it's worse.

- Marijuana has 50 percent more tar than tobacco and contains more than 400 chemicals.
- According to the National Institutes of Health (NIH), someone who smokes five joints per week may be taking in as many cancer-causing chemicals as someone who smokes a full pack of cigarettes per day.
- Smoking one marijuana cigarette deposits about four times as much tar into the lungs as a filtered tobacco cigarette.

You think marijuana's all about the laid-back, hippie, environmentally friendly lifestyle? You know the type – think West Coast.

- U.S. Forest Service law enforcement agents estimate the street value of marijuana planted on national forest land in California alone exceeds \$1 billion a year.
- Since 1997, the U.S. Forest Service has eradicated seven million pounds of marijuana grown on California national forest land.
- Law enforcement officers and agents say hikers, hunters, and other backcountry users have been chased away at gunpoint after stumbling into marijuana gardens – on U.S. National Forest land!

(These are all straight out of National Geographic, by the way.)

Think legalization of marijuana wouldn't lead to more kids trying it? Think legalization would have no effect on how they think about drug use and its harms? Think the issue has nothing to do with kids at all? Think again.

- Because of the new marketing tactics of drug promoters, there is a growing perception among young people today that drugs are harmless. A decade ago, for example, 79 percent of 12th graders thought regular marijuana use was harmful; only 58 percent do so today.
- A study in the American Journal of Psychiatry found that teens' brains are hardwired for addiction, making them more vulnerable to the addictive properties of drugs.
- A long-term study of 1,000 children found that those who had used marijuana by the age of 13 were more than three times as likely to develop a mental illness as adults. A tenth of these youth developed schizophrenia, compared to three percent of the non-using group.
- In 2003, one out of every six high school seniors admitted to driving under the influence of marijuana.

Think you and your family are immune to the problems of drug use and addiction?

- One in six Americans will struggle with addiction to either alcohol or illicit drugs.
- Four out of ten families in the United States directly suffer the effects of addiction.
- One out of every four deaths in America is caused by the use of addictive substances – tobacco, alcohol or illegal drugs.
- The number one preventable health problem in America and in other developed countries is addiction.