

**Marijuana DUI Workgroup**

**Recommendation**

**to the**

***Drug Policy Task Force***

**and**

***Colorado Commission on Criminal and Juvenile Justice***

**Written by:**

**Michael Elliott, Esq.  
Executive Director  
Medical Marijuana Industry Group  
Workgroup Member**

**Aaron Smith, Esq.  
Courtney La Cava, DU Law Intern**

*With special thanks to Paul Armentano*

**September 1, 2011**

*This report details Marijuana DUI Workgroup Member Michael Elliott's recommendation to the Drug Policy Task Force (DPTF) and the Colorado Commission on Criminal and Juvenile Justice (CCJJ) regarding marijuana DUI laws in Colorado. Comments about this report can be emailed to [info@mmig.org](mailto:info@mmig.org).*

## **Summary**

This report demonstrates that a 5 nanogram per se law would be:

1. Unnecessary;
2. Unsupported by the science; and
3. Unlikely to significantly improve public safety.

In the alternative to new legislation, this report recommends that:

1. The current law be enforced;
2. The Colorado Department of Transportation, the Medical Marijuana Industry Group, and other leaders of the medical marijuana community continue to educate the public on the hazards of impaired driving, and
3. Further scientific research should be done to reach consensus regarding a nanogram level that would ensure the innocent are not falsely convicted.

## **Introduction**

As a member of the DUI Workgroup, the Medical Marijuana Industry Group (MMIG) has sought to protect patient rights, promote public safety, and ensure that any recommended change to Colorado's DUI laws be based in science. After a comprehensive review of the literature, half of the DUI Workgroup members agreed that the science does not support a 5 nanogram per se limit. This is due, in part, to the fact that ample research indicates that people can have 5 nanograms of THC in their blood long after any impairment has resolved. Consequently, a 5 nanogram per se limit would convict the innocent, offering defendants little opportunity to demonstrate their

innocence. As a result, the current law, which has resulted in a 90% conviction rate over the past 4 years, is superior to a per se law.

MMIG believes that it is not safe to use marijuana and drive. In our effort to be responsible business owners, MMIG and other industry leaders have joined forces with the Colorado Department of Transportation (CDOT) to spread the following message to the public - Don't use marijuana and drive.

## **A Per Se Limit is not Supported by Current Scientific Research**

### ***A 5 nanogram per se limit would convict the innocent and unimpaired***

Research shows near consensus that a 5 nanogram per se limit would result in unimpaired and innocent people being wrongly convicted.<sup>1</sup> Furthermore, the Workgroup was unable to determine how many unimpaired drivers would test above 5 nanograms.<sup>2</sup>

Significantly, researchers agree that “blood tests can not accurately show impairment.”<sup>3</sup> This is due to several factors. First, ample research indicates that high levels of THC can remain in the blood long after impairment.<sup>4</sup> Second, frequent

---

<sup>1</sup> Toennes, *Comparison of Cannabinoid Pharmacokinetic Properties in Occasional and Heavy Users Smoking a Marijuana or Placebo Joint*, p. 474 (Subject had residual THC of 11.1 ng/ml eight hours after use); Memorandum of the Marijuana DUI Workgroup, page 7 (Ramaekers indicating 15 to 30 nanograms) (Carl Hart indicating that nanogram info is not sufficient to determine cognitive functioning); Franjo Grotenhermen, e-mail to Workgroup (“If you base your test only on THC and take for example a limit of 5 ng/ml you will miss many occasional users with a lower concentration who are actually impaired *and find several heavy users as impaired, who are indeed not impaired* (emphasis mine).”

<sup>2</sup> Memorandum of the Marijuana DUID Working Group, September 1, 2011, page 1.

<sup>3</sup> Grotenherman, Franjo – Letter to the DUI Workgroup, 8/6/11; see also Toennes et al., *Comparison of cannabinoid pharmacokinetic properties in occasional and heavy users smoking a marijuana or placebo joint* - “cannabinoid concentrations in heavy users’ blood from a later elimination phase might not be distinguished from an acute use of an occasional user.” See also Memorandum of the Marijuana DUID Working Group, September 1, 2011, page 5 (Dr. Carl Hart indicating that nanogram info is not sufficient to determine cognitive functionality).

<sup>4</sup> See Memorandum from the Marijuana DUID Working Group, September 1, 2011, page 1; see also Karschner et al., 2009. *Do Delta-9-tetrahydrocannabinol concentrations indicate recent use in chronic cannabis users?* (research participants still displayed detectable THC concentrations several days after testing – 7 nanograms after day 1, 3 nanograms after day 7); see also “Stefan W. Toennes, Johannes G.

marijuana users develop tolerance.<sup>5</sup> Consequently, as compared to infrequent users, frequent users will be less impaired, but more likely above 5 nanograms. Third, in a 2009 study by Sewell et al., 2009, “Experienced smokers who dr[o]ve on a set course show[ed] almost no functional impairment under the influence of marijuana.”<sup>6</sup>

Such research demonstrates the important distinctions between marijuana and alcohol. The Workgroup found: “Whereas BAC (Blood Alcohol Content) can be accurately measured and correlated with behavioral impairment, this may not be the case with cannabis . . . Alcohol is water soluble; cannabis is stored in the fat and is metabolized differently, making a direct correlation with behavior difficult to measure.”<sup>7</sup> Evidence from a study by Karschner et al. further demonstrated that women may be disproportionately affected by a per se law because they are more likely to retain THC in their system due to their typically higher adipose body fat rates.<sup>8</sup>

Thus, not only would a 5 nanogram per se law result in the innocent being convicted, but it would also disproportionately affect medical marijuana patients who are

---

Ramaekers, et al. Comparison of Cannabinoid Pharmacokinetic Properties in Occasional and Heavy Users Smoking a Marijuana or Placebo Joint. *J. Anal. Toxicol.* 32: 475. (2008) referencing M.A. Huestis, J.E. Henningfield, and E.J. Cone. Blood cannabinoids. Absorption of THC and formation of 11-OH-THC and THCCOOH during and after smoking marijuana. *J. Anal. Toxicol.* 16: 276–282 (1992)

<sup>5</sup> Memorandum of the Marijuana DUID Workgroup, September 1, 2011, page 1 (“The experts agree that chronic use, such as that by medical marijuana patients, can lead to drug tolerance”); see Ramaekers et al., 2010, *Tolerance and cross-tolerance to neurocognitive effects of THC and alcohol in heavy cannabis users*, “Heavy cannabis users can develop tolerance to behaviorally impairing effects of THC.” See Hart et al. (we must take “into account drug-use histories of research participants” when determining impairment)

<sup>6</sup> Sewell et al., *The effect of cannabis compared with alcohol on driving*. American Journal on Addictions, 2009. See also Lamers and Ramaekers, *Visual search and urban driving under the influence of marijuana and alcohol*, “[T]he effects of low doses of THC ... on higher-level driving skills as measured in the present study are minimal.” See also Sewell et al., *The effect of cannabis compared with alcohol on driving*.

“Although cognitive studies suggest that cannabis use may lead to unsafe driving, experimental studies have suggested that it can have the opposite effect.” 2009. American Journal on Addictions

<sup>7</sup> Memorandum from the Marijuana DUID Working Group, September 1, 2011, page 1; see also Chesher and Longo, *Cannabis and alcohol in motor vehicle accidents – Cannabis and Cannabinoids: Pharmacology, Toxicology, and Therapeutic Potential*. Editors: Grotenherman and Russo – Haworth Press, 2002.

<sup>8</sup> *Id.* at 4-5.

more likely to have a higher residual amount of THC in their body, but less likely to be impaired.

***More research needs to be done.***

It is premature to pass a per se bill when the following questions are still left unanswered:

- *What, if any, nanogram level would ensure impairment?* Jan Ramaekers, a leading researcher in this area, indicated to the Workgroup that it may be between 15 and 30.<sup>9</sup>
- *What is the duration of impairment, and how is it affected by different methods of consumption and frequency of use?* The Workgroup found that “[t]here is disagreement among the experts about the duration of impairment (approximately 2-4 hours for smoking, 8 hours for edibles).”<sup>10</sup> Most of the current research has been conducted on research participants who smoked marijuana - little research has been done on vaporizers, edible foods and drinks, and topicals (such as muscle rubs). Researchers such as Cynthia Burbach, were unable to tell the workgroup whether muscle rubs, which do not cause impairment, would enter the blood stream thereby increasing a person’s nanogram level.

The Workgroup found that “[r]esearch is currently underway in California and the Netherlands that will likely improve our understanding of nanogram levels of THC and behavioral impairment.”<sup>11</sup> In addition, medical marijuana researcher Alan Shackelford,

---

<sup>9</sup> Memorandum of the Marijuana DUID Working Group, September 1, 2011, page 7.

<sup>10</sup> Id., page 1.

<sup>11</sup> Memorandum of the Marijuana DUID Working Group, September 1, 2011, page 1.

M.D. is currently in the process of creating and executing a Colorado study with the following purpose:

[T]o examine the cannabis use patterns of typical Colorado medical cannabis patients and their effect on driving . . . Results would reveal how THC levels correlate with driving behavior in typical Colorado medical cannabis patients, including those who use high-dose as well as low-dose cannabis, those who use it frequently and infrequently, and novice patients as well as control subjects.<sup>12</sup>

With these questions left unanswered, and with this research incomplete, it appears that a per se limit cannot be supported by credible research.

## **A Per Se Standard is Unnecessary**

A per se limit is unnecessary because (1) prosecutors are achieving a 90% conviction rate, (2) there is no evidence of any increase in marijuana related traffic accidents or fatalities, and (3) it is unclear whether a per se limit would improve public safety.

### ***Prosecutors are achieving a 90% conviction rate***

Though Marijuana DUI Workgroup Member Mark Hurlbert stated that juries are demanding a per se limit, these demands have not significantly affected the ability of prosecutors to get their convictions. According to statistics presented by Marijuana DUI Workgroup Member Heather Garwood (Colorado Judicial Department), roughly 90% of the DUI cases in the last four years have resulted in a conviction.<sup>13</sup> Additionally, Colorado Toxicologist Cynthia Burbank earned convictions in 15 of her 16 cases involving Marijuana DUI in 2010.<sup>14</sup>

---

<sup>12</sup> Letter from Alan Shackelford, M.D. to the Members of the Marijuana DUI Workgroup, August 8, 2011, page 3.

<sup>13</sup> Memorandum of the Marijuana DUID Working Group, page 2.

<sup>14</sup> Memorandum of the Marijuana DUID Working Group, September 1, 2011, page 2.

***There is no evidence that marijuana-related traffic accidents or deaths are increasing***

Under the current law, traffic fatalities in Colorado have decreased each of the last four years, resulting in a net reduction of **19 percent**.<sup>15</sup> Though this reduction does not necessarily mean that marijuana related accidents decreased, Heather Halpape and Glenn Davis of the Colorado Department of Transportation confirmed in testimony before the Workgroup that they saw no evidence of an increase in marijuana related traffic accidents or deaths.<sup>16</sup>

***It is unclear whether a per se limit would improve public safety.***

Per se laws do not increase the number of officers or marijuana DUI arrests. In addition, no evidence was presented to the Workgroup indicating that per se laws in other states have improved public safety. However, a study by Jones on the effect of Sweden's zero tolerance policy indicated that "Zero-concentration limit[s] have done nothing to reduce DUID."<sup>17</sup>

Certainly, a per se law may increase judicial efficiency by providing a simple framework in which to convict, thereby eliminating much of the need for juries, judges, and attorneys. However, with the consensus of research showing that a 5 nanogram per se limit would result in the unimpaired being convicted, this simple framework would create an injustice that the judge or jury could not remedy. Judicial efficiency certainly has utility, but not at the expense of convicting the innocent. The current law is superior to a per se law because it allows juries to consider the totality of the circumstances,

---

<sup>15</sup> Colorado Drugged Driving Fact Sheet, Colorado Department of Transportation, revised August 9, 2011.

<sup>16</sup> Memorandum of the Marijuana DUID Working Group, September 1, 2011, page 6.

<sup>17</sup> Jones, *Driving Under the Influence of Drugs in Sweden with Zero Concentration Limits in Blood for Controlled Substances*, 2005.

including blood test results and divergent expert opinion on what blood level may indicate impairment in that particular person.

Finally, though a per se law may deter some people from driving under the influence of marijuana, CDOT's public relations campaign is a more valuable deterrent that doesn't result in the unimpaired getting convicted.<sup>18</sup> The Medical Marijuana Industry Group (MMIG) has partnered with CDOT to promote *The Heat is On* campaign, which unlike other years, is highlighting the dangers of using marijuana and driving. In recent weeks, this campaign has already resulted in posters, billboards, and advertisements being posted across the state. Campaign posters have been mailed to the approximately 800 medical marijuana centers operating in Colorado. In addition, with the help of other industry leaders, MMIG is ready to launch its own campaign to further encourage business owners and patients to not use marijuana and drive. We are confident that this campaign will increase public awareness about this issue and deter people from using marijuana and driving.

## **Recommendation**

With researchers unable to determine a nanogram level that would avoid convicting the innocent, a current law that results in a 90% conviction rate, and little evidence that a per se law would in fact improve public safety, this report recommends that (1) the current law be enforced; (2) CDOT, MMIG, and other leaders of the medical marijuana community continue to educate the public on the hazards of impaired driving;

---

<sup>18</sup> For additional information on CDOT's drugged driving initiative, see: <http://www.coloradodot.info/programs/alcohol-and-impaired-driving>



and (3) further scientific research be done to determine a nanogram level that would ensure the innocent are not falsely convicted.

*Comments about this report may be sent to [info@mmig.org](mailto:info@mmig.org).*