SB 1037 Fav.pdf

Uploaded by: Christopher West

Position: FAV

CHRIS WEST
Legislative District 42
Baltimore and Carroll Counties

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Judicial Proceedings Committee

Annapolis Office
James Senate Office Building
11 Bladen Street, Room 322
Annapolis, Maryland 21401
410-841-3648 · 301-858-3648
800-492-7122 *Ext.* 3648
Chris.West@senate.state.md.us

THE SENATE OF MARYLAND
ANNAPOLIS, MARYLAND 21401

March 6th, 2024
The Maryland State Senate Judicial Proceedings Committee
The Honorable William C. Smith, Jr.
2 East Miller Senate Building
Annapolis, Maryland 21401

Re: Senate Bill 1037: *Courts - Impaired Operation of Vehicle or Vessel - Expert Witnesses and Evidence*

Dear Chairman Smith and Members of the Committee,

Now that marijuana has been legalized in Maryland, it has become more imperative than ever to protect drivers on our roads and waterways from vehicles and vessels being driven by others who are impaired by drugs. Breathalyzer tests are effective in determining whether a driver is impaired by alcohol, but there is currently no comparable test for marijuana.

One of the core functions of law enforcement officers patrolling the State's roads and waterways is to identify, intervene, and stop drivers who are operating their vehicles or vessels while impaired by drugs. To that end, many law enforcement officers who are assigned to patrolling the State's roads and waterways are trained to recognize the signs of drug impairment and to subject vehicle and vessel operators to validated tests to determine whether they are suffering from such impairment. And for those who are using the State's roads and waterways in the expectation that other vehicle and vessel operators are not driving in an impaired condition, it is important that our law enforcement officers be able to do their work professionally and effectively.

Senate Bill 1037 is brought before you today to promote the professionalization of our law enforcement officers and to ensure that when people caught driving while impaired by drugs come into court, the testimony and evidence against them which is in accordance with current validated standards will be received by the courts.

Senate Bill 1037 has two parts. The first part provides that in order to become qualified as an expert witness in the area of drug impairment, a law enforcement officer must have successfully completed a drug recognition training program conducted by a law enforcement agency that was either held in conjunction with the National Highway Traffic Safety Administration or that involved the same requirements for successful completion as the drug recognition program developed by the National Highway Traffic Safety Administration. The bill states that any such police officer may testify on the ultimate issue of whether a driver was driving while impaired.

The second part of the bill focuses on a test to determine whether THC was present in the body of a driver. As originally drafted, the bill provided that a concentration of 5 nanograms per millimeter or more of THC in the driver's body would be prima facie evidence that the person was driving the vehicle or vessel while impaired. Several days ago, however, I met with several State experts on THC, and they informed me that because THC affects the brains of different people in different ways, the simple 5 nanogram test is not scientifically valid. Therefore, I have prepared an amendment which permits the results of a test for THC to be admitted into evidence but merely in order to show that the driver had previously used a substance containing THC. That fact would not be enough to prove impairment in and of itself but would be of assistance to the court in conjunction with the further testimony of a police officer about the results of the officer's impairment tests of the driver.

I appreciate the Committee's consideration of Senate Bill 1037 and will be happy to answer any questions the Committee may have.

SB1037 Amendment

Uploaded by: Christopher West
Position: FAV

SB1037/383523/1

BY: Senator West
(To be offered in the Judicial Proceedings Committee)

AMENDMENT TO SENATE BILL 1037
(First Reading File Bill)

On page 3, in line 7, strike "IF"; in lines 7 and 8, strike "INDICATE THAT A PERSON HAS A" and substitute "OR ANALYSIS THAT INDICATES"; in line 8, after "(THC)" insert "IS PRESENT IN A PERSON'S BODY"; strike beginning with "CONCENTRATION" in line 8 down through "IT" in line 9; and strike beginning with "PRIMA" in line 9 down through "BY" in line 10 and substitute "ADMISSIBLE IN COURT AS EVIDENCE THAT THE PERSON WAS DRIVING OR OPERATING A VEHICLE OR VESSEL AFTER HAVING USED A SUBSTANCE CONTAINING".

HB1392 - SB1037 Written Testimony of the Carroll C

Uploaded by: Adam Wells

Position: FWA

HAVEN N. SHOEMAKER, JR.
STATE'S ATTORNEY

410-386-2671
carrollcountystatesattorney.org

House Bill (HB) 1392 & Senate Bill (SB) 1037

Courts - Impaired Operation of Vehicle or Vessel - Expert Witnesses and Evidence

DATE :   March 6, 2024

COMMITTEE: House Judiciary & Senate Judicial Proceedings

POSITION: FAVORABLE WITH AMENDEMENT

Dear Chairman and Committee Members:

<u>PURPORTED PURPOSE</u>:

HB1392 and SB1037 have two provisions, the first addresses the admissibility of drug recognition expert (DRE) testimony under the *Daubert* standard, and the second creates a rebuttable presumption that a person whose blood test positive for 5 nanograms of Delta 9-tetrahydrocannabinol (Delta 9 THC) is operating a vehicle or vessel while impaired. We support the component relating to the admissibility of DRE testimony and oppose the component relating to *per se* impairment of 5 nanograms per milliliter of blood.

<u>ADMISSIBLITY OF DRUG RECOGNITION EXPERT TESTIMONY UNDER
DAUBERT STANDARD</u>

The first provision of HB1392 and SB1037 is in response to the Court of Appeals of Maryland's (now the Supreme Court of Maryland) decision in *Rochkind v. Steveson*, 471 Md. 1 (2020) that the standard for admissibility of expert testimony is *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) (*Daubert*), overruling *Read v. State*, 283 Md. 374 (1978)(also known as the *Frye-Reed* standard).

Driving by drug impaired persons is a dangerous public safety risk across the State and across the nation and the threat is growing. The purpose of this bill is to ensure that prosecutors have the necessary tools to combat this scourge on our State, especially in light of the new marijuana legalization laws. We are asking the legislature to recognize statutorily that the drug recognition protocol which is used by drug recognition expert officers throughout the country and across the world, be accepted in the State of Maryland.

A Drug Recognition Expert (DRE) is a specially trained officer that is called on after a person has been arrested for suspicion of driving while impaired by a substance other than alcohol. After the defendant has submitted to the alcohol concentration test, the DRE requests that the defendant submit to the twelve-part Drug Evaluation and Classification System (DEC).

The United States' Department of Transportation, National Highway Traffic Safety Administration (NHTSA) approves the use of Drug Recognition Experts and the DEC to detect and prosecute drug impaired drivers. To date, every state in the nation currently uses the DEC and have actively employed DRE's performing evaluations and testifying in court as to their observations and opinions. Case law nationwide overwhelmingly supports the utilization of DRE's in the battle against drugged driving. Since its implementation in the 1980's, no state has discontinued it, and no State's highest court has nullified it.

The upshot is that the use of DREs in impaired driving cases from drugs is at risk because there is no appellate Maryland case that holds that such testimony complies with the new *Daubert* standard. So, defense counsel could ask for a *Daubert* hearing in all 23 counties and Baltimore City challenging the use of DREs to opine whether someone was impaired due to a certain drug.

In New Jersey, in *State v. Olenowski,* 255 N.J. 529 (2023) (*Olenowski*), the court held a *Daubert* hearing before a special master that lasted 42 days. The New Jersey court appointed a special master to review all of the relevant data from the results of several years-worth of DRE evidence to determine the accuracy and admissibility of the protocol. This was the watershed analysis of the protocol as it included the review of 5,855 DRE reports and spanned all of the data from 2017 through 2018, admitted hundreds of exhibits, and utilized the reports and opinions of sixteen experts in their relevant fields from both the prosecution and the defense.

After reviewing all of that data and testimony, the State of New Jersey upheld the use of the DRE protocol and found that it did meet the *Daubert* standard, the same legal standard recently adopted by our courts. The Special Master in *Olenowski* found that expert analysis of the New Jersey data for those two years established that DREs in New Jersey, in actual, real-time enforcement situations, correctly opined the presence of impairing drugs in arrestees who did have such drugs in their systems as established through toxicology testing (true positives) at an extremely high rate, at or approaching 90%.

The legal support is not limited to case law alone. Several States (Maine, North Carolina, and Oklahoma) have even passed laws expressly supporting the DEC and the use of DREs. Specifically in Maryland, The General Assembly in enacting § 16-205.1 of the Transportation Article acknowledged the efficacy of the DRE protocol by requiring that only trained and certified DREs are permitted to request a blood test of drivers suspected of being impaired by drugs or controlled dangerous substances. *See* Transportation Article § 16-205.1(j).

Finally, the DRE protocol is also utilized internationally and is currently in use throughout the United Kingdom, Canada, and Australia. Likewise, Canada has a national law supporting the use of DREs and the DEC.

HB 1392 and SB 1037 are needed because Maryland recently adopted the *Daubert* standard of evaluating expert testimony. Previously there have been challenges raised in Maryland under the old standard and it showed the issue that we will face again today; the fact that the courts will never receive this issue to the appellate level. Should the State hold a *Daubert* hearing and lose,

the State is statutorily precluded from appealing the issue. See, Courts Article §§ 12-302 and 12-401. The State has won multiple trial court level challenges on this issue and the defense has repeatedly refused to appeal the issue for a final resolution of the argument. This issue is capable of repetition yet evading review.

So, instead of reinventing the wheel, **HB1392 and SB1037** allows trained and certified DREs to opine that someone driving is impaired due to a certain drug and that opinion is admissible under *Daubert*. If this does not pass, one or all jurisdictions in Maryland may lose the ability to use DRE testimony for years while this is sorted out in the appellate courts.

There are currently 33 agencies that have active DREs in the Maryland DRE Program; 189 DRE's in the Maryland DRE Program; and 52 DRE Instructors in the State of Maryland.[1] Those experts should be able to testify regarding driver impairment under the *Daubert* standard as recently adopted by Maryland because the DRE methodology is already recognized as a predicate to allowing a blood draw of drivers suspected of being impaired by statue and the protocol has passed muster as reliable under the *Daubert* standard as found in a thorough and exhaustive review of a Special Master and the New Jersey Supreme Court in *Olenowski*.[2]

Adam G. Wells   Michael J. Stewart Jr.
Senior Assistant State's Attorney   Special Counsel
Vehicular Homicide Unit

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[1] https://mddre.maryland.gov/(last visited February 20, 2024)
[2] https://www.njcourts.gov/sites/default/files/public/notable-cases/smfr.pdf (last visited February 20, 2024).

SB 1037 and HB 1392.pdf

MARYLAND STATE'S ATTORNEYS' ASSOCIATION
3300 North Ridge Road, Suite 185
Ellicott City, Maryland 21043

David Daggett
(c) 410.979.3356   O - 410.203.9881   Steven Kroll
(c) 410.979.3354

WRITTEN TESTIMONY *SUPPORTING WITH AMENDMENTS* SB 1037 AND HB 1392.

Please accept this written testimony from the Maryland State's Attorneys' Association supporting, with amendments, Senate Bill 1037 and House Bill 1392.

These bills consist of two primary components: 1.) the "Drug Recognition Expert" (DRE) component; and 2.) the "5 nanogram *per se* component for impairment." The Maryland State's Attorneys' Association supports the DRE component but opposes the 5 nanogram per se impairment component. I will address each component in order.

I. Drug Evaluation and Classification Program (aka Drug Recognition Expert) – Many, many years ago the Maryland Legislature adopted Transportation Article §16-205.1 subsection (j), a part of the statute that is commonly known as the "DRE subsection." This subsection generally states that a blood test for drugs or controlled dangerous substances may only be requested, required or directed under certain provisions of §16-205.1 <u>by an officer who has been trained as a sanctioned Drug Recognition Training Program by the National Highway Traffic Safety Administration.</u>

There are currently only approximately 188 law enforcement officers in the state of Maryland who are certified as Drug Recognition Experts. To attain that designation, officers must go through a rigorous training consisting of a 24-hour pre-training; 72 hours of additional classroom training; they must complete field certifications; and pass a comprehensive final examination. In order to retain their certification, officers must participate in continuing education trainings; complete a recertification training every two years; maintain a log of all evaluations completed in training as part of any enforcement activities; and meet any other administrative requirements as established in the International Association of Chiefs of Police (IACP) Standards governing the Drug Evaluation and Classification Program, otherwise known as the DRE program. In

addition, the Maryland State DRE Coordinator may also place other standards on each DRE as deemed necessary.

The ultimate goal of the Drug Evaluation and Classification Program (DRE) is to help prevent crashes and avoid deaths and injuries by improving enforcement of drug-impaired driving violations. A certified DRE is specifically trained to conduct a detailed evaluation consisting of twelve steps and to look for other evidence that can be used to articulate an opinion as to sobriety, impairment or possible medical issues at play. They are able to reach reasonably accurate conclusions concerning the category or categories of drug(s) or medical conditions causing the impairment observed in the subject. Based on these informed conclusions, the DRE can request the collection and analysis of a blood sample to obtain corroborative, scientific evidence of the subject's drug use.

The way this works in a practical manner is, when a police officer detains someone for suspicion of drug-impaired driving, they contact their local DRE, who then usually has to get out of bed, get dressed, drive to the station and then observe and conduct the 11-step examination of the suspect, leading up the 12th step – the request for a blood sample. Even then, that blood sample is voluntary, except in the case of a fatal or life-threatening injury crash in which the subject was deemed to be the at-fault driver.

The Drug Recognition and Classification Program (DRE) is active in every state in the country and in many countries around the world. It has been in existence since the mid- 1980's and has been accepted by courts all across the country. To have the Maryland Legislature adopt the DRE program into Maryland Transportation Article §16-205.1, have the State go through all the time and expense of training officers to be DREs, along with the expense of all the overtime hours involved in the individual examinations and then make their ability to testify in court subject to the whims of every individual judge in the State makes absolutely no sense. If a lay person is allowed to testify as to their *opinion* on whether a person is impaired by alcohol, why shouldn't a highly-trained DRE be allowed to do likewise when it comes to drugs?

House Bill 1392 and Senate Bill 1037, if passed, would remove this impediment to providing a judge or jury important evidence regarding drug-impaired driving. It would allow a police officer qualified as an expert witness to testify on the ultimate issue of whether an individual was driving a vehicle or operating a vessel while impaired by drugs or combination of drugs or impaired dangerous substances if the police officer has successfully completed such a program.

The Maryland State's Attorneys' Association endorses and supports the DRE component of SB 1037 and HB 1392.

II. The Five Nanogram *Per Se* Component - We take a much different position when it comes to the second part of these bills. Were it to pass, SB 1037/HB1392 would make it a per se offense of drug impaired driving should the person have a Delta 9 THC concentration of five (5) nanograms per milliliter of blood. There is no scientific basis of fact linking five nanograms with impairment.

Unlike alcohol, where it has been shown that all persons are impaired in their ability to drive a vehicle once attaining a blood alcohol concentration of 0.08, there is no specific amount of THC by which all persons are impaired. The states that have chosen to set a per se level have done so based upon political decisions, not science-based decisions, which is why different states have set different levels as their *per se* levels.

The 5 nanogram level that was first adopted was loosely based on studies that used blood serum testing, not whole blood testing. Impaired driving statutes are nationally based upon whole blood measurements. Crime labs always report blood results in terms of whole blood. When it comes to alcohol concentration, serum results usually read from 12% to 20% higher than whole blood.

Measured blood levels of THC do not tell us much about whether the person is impaired by THC. THC effects all people differently. THC moves very quickly from the blood stream to the brain. Within minutes after one has stopped smoking cannabis, much of the THC will have moved to the brain, where it is now impairing the person. Marijuana THC concentrations fall to about 60% of their peak within 15 minutes and to about 20% of their peak within 30 minutes, while impairment lasts for 2-4 hours (Studies conducted by Kelly-Baker, 2014; Logan, 2014). As such, by the time a blood draw occurs from the individual who is suspected of marijuana impaired driving, the THC content in the blood has reduced dramatically (at least 80%) while the impairment remains. This occurs because the THC, which is lipophilic, seeks regions of the body higher in fat content such as the brain and as a result moves quickly out of the blood, which is high in water content. As a result, the THC quickly crosses the blood-brain barrier, impacting the functioning of the brain for several hours after it has dissipated from the blood.

The Maryland Annotated Code, Courts and Judicial Proceedings Article, §10-303(b)(2) states that for the purpose of a test or tests for determining drug or controlled dangerous substance content of the person's blood, the specimen of blood shall be taken within _4_ hours after the person has been apprehended. Contrast this with the time limitations for the purpose of determining *alcohol* content, which is _2_ hours from apprehension (C&J §10-303(a)(2). The reason for the two additional hours for determining drug/CDS concentration is because a DRE may need to be brought in to conduct the 11-step DRE examination and then transport the suspect to the hospital and find staff that can withdraw the blood. Remember that during this time - not to mention the time that elapsed between the suspect ingesting the cannabis and the time

in which they were apprehended – the THC content levels are rapidly dissipating from the person's blood. So just as a reading of 5+ nanograms of THC is not dispositive of whether a person is impaired, a reading of less than 5 nanograms is not dispositive of the suspect's *lack* of impairment at the time they were driving their vehicle.

The Maryland State's Attorneys' Association <u>*opposes*</u> the component of SB 1037 and HB 1392 relating to 5 nanograms being *per se* impairment.

<div align="center"><u>Conclusion</u></div>

The Maryland State's Attorneys' Association <u>supports with amendments</u>, SB 1037 and HB 1392. We support the component relating to the admissibility of DRE testimony and oppose the component relating to *per se* impairment of 5 nanograms per milliliter of blood.

Respectfully Submitted,

David Daggett,
Maryland State's Attorneys' Association

HB1392 - SB1037 Written Testimony of the Carroll C
Uploaded by: Michael Stewart
Position: FWA

HAVEN N. SHOEMAKER, JR.
STATE'S ATTORNEY

410-386-2671
carrollcountystatesattorney.org

House Bill (HB) 1392 & Senate Bill (SB) 1037

Courts - Impaired Operation of Vehicle or Vessel - Expert Witnesses and Evidence

DATE :   March 6, 2024

COMMITTEE: House Judiciary & Senate Judicial Proceedings

POSITION: FAVORABLE WITH AMENDEMENT

Dear Chairman and Committee Members:

<u>PURPORTED PURPOSE</u>:

HB1392 and SB1037 have two provisions, the first addresses the admissibility of drug recognition expert (DRE) testimony under the *Daubert* standard, and the second creates a rebuttable presumption that a person whose blood test positive for 5 nanograms of Delta 9-tetrahydrocannabinol (Delta 9 THC) is operating a vehicle or vessel while impaired. We support the component relating to the admissibility of DRE testimony and oppose the component relating to *per se* impairment of 5 nanograms per milliliter of blood.

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A Drug Recognition Expert (DRE) is a specially trained officer that is called on after a person has been arrested for suspicion of driving while impaired by a substance other than alcohol. After the defendant has submitted to the alcohol concentration test, the DRE requests that the defendant submit to the twelve-part Drug Evaluation and Classification System (DEC).

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The upshot is that the use of DREs in impaired driving cases from drugs is at risk because there is no appellate Maryland case that holds that such testimony complies with the new *Daubert* standard. So, defense counsel could ask for a *Daubert* hearing in all 23 counties and Baltimore City challenging the use of DREs to opine whether someone was impaired due to a certain drug.

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The legal support is not limited to case law alone. Several States (Maine, North Carolina, and Oklahoma) have even passed laws expressly supporting the DEC and the use of DREs. Specifically in Maryland, The General Assembly in enacting § 16-205.1 of the Transportation Article acknowledged the efficacy of the DRE protocol by requiring that only trained and certified DREs are permitted to request a blood test of drivers suspected of being impaired by drugs or controlled dangerous substances. *See* Transportation Article § 16-205.1(j).

Finally, the DRE protocol is also utilized internationally and is currently in use throughout the United Kingdom, Canada, and Australia. Likewise, Canada has a national law supporting the use of DREs and the DEC.

HB 1392 and SB 1037 are needed because Maryland recently adopted the *Daubert* standard of evaluating expert testimony. Previously there have been challenges raised in Maryland under the old standard and it showed the issue that we will face again today; the fact that the courts will never receive this issue to the appellate level. Should the State hold a *Daubert* hearing and lose,

the State is statutorily precluded from appealing the issue. See, Courts Article §§ 12-302 and 12-401. The State has won multiple trial court level challenges on this issue and the defense has repeatedly refused to appeal the issue for a final resolution of the argument. This issue is capable of repetition yet evading review.

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Adam G. Wells   Michael J. Stewart Jr.
Senior Assistant State's Attorney   Special Counsel
Vehicular Homicide Unit

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[1] https://mddre.maryland.gov/(last visited February 20, 2024)
[2] https://www.njcourts.gov/sites/default/files/public/notable-cases/smfr.pdf (last visited February 20, 2024).

SB 1037 - AAA SUPPORT W AMENDMENTS - DRE - Eviden
Uploaded by: Ragina Ali
Position: FWA

AAA Mid-Atlantic's Testimony - FAVORABLE WITH AMENDMENTS
SB 1037 – Courts – Impaired Operation of Vehicle or Vessel – Expert Witnesses and Evidence
Sponsor: Senator West

- AAA Mid-Atlantic **supports** **SB 1037 - Courts – Impaired Operation of Vehicle or Vessel – Expert Witnesses and Evidence** **with amendments.**

- AAA supports the measure in SB 1037, which authorizes trained and qualified police officers or Drug Recognition Experts (DRE) to testify as an expert witness regarding the impairment of a driver (*or operator of a vessel*) while the driver is impaired by a drug, a combination of drugs, a combination of one or more drugs and alcohol, or while impaired by a controlled dangerous substance.

- AAA **opposes** "*per se*" standards for Delta-9-THC because science does **_not_** reliably show that drivers become impaired when specific levels of impairing chemicals found in cannabis are in the blood. This is very different from alcohol, where it is clear that crash risk increases significantly at higher BAC levels.

- Cannabis impairment varies from person to person. Depending on the person, drivers with relatively high levels of marijuana in their system might not be impaired, while others with very low levels may be unsafe behind the wheel.

- Unlike with alcohol, it is important to consider that people who use marijuana cannot accurately determine how much marijuana is in their blood or in their brain (*where impairment occurs*). The ability to consume cannabis in a number of ways (inhaling, eating, drinking) also complicates the ability of the user to estimate how much THC is entering their system.

- AAA supports the use of blood tests as **_one_** piece of evidence that is used to determine if a person was driving under the influence of marijuana, but believes it should be used in conjunction with other evidence, like the multi-level analysis done by a highly trained DRE to determine impairment.

- The AAA Foundation for Traffic Safety evaluated data on THC-positive drivers, comparing them to assessments made by Drug Recognition Experts to see if the data supported a limit for a *per se* driving law for cannabis. **It did not.** The study concluded that THC concentration thresholds examined would have misclassified a substantial number of drivers as impaired, who didn't demonstrate impairment on the Standard Field Sobriety Test (SFST), and would have misclassified a substantial number of drivers as unimpaired, who did demonstrate impairment at the roadside.

- THC *per se* limits do not reflect the realities of the adjudication and conviction of impaired drivers. Law enforcement is encountering many impaired drivers under the influence of cannabis with readings below the common 5ng/mL THC threshold for blood. Often, *per se* limits are interpreted as "safe limits" which explains why prosecutions of alcohol-impaired drivers with less than 0.08% BAC are rare, especially in a jury trial. We shouldn't expect a different outcome for cannabis-impaired drivers.

- AAA fears innocent drivers who are legally partaking of recreational marijuana, but who are not impaired, could be wrongfully convicted under *per se* laws that are problematic, inconsistent, and unsupported by science.

- Maryland's best resource to identify impaired driving is a Drug Recognition Expert, who is trained to accurately identify impairment in drivers under the influence of drugs other than, or in addition to, alcohol, which is why we support SB 1037 with amendments.

- While a *per se* limit for THC might appear to offer a useful tool for law enforcement to enforce Driving Under the Influence of Drugs (DUID) laws just as the 0.08% BAC statute does for alcohol, it does not. Highly sensitive and specific roadside tests are not currently available for THC, and research evidence in support of impairment at or above a cutoff of 5 ng/ml (or any other threshold) does not currently exist.

- For these reasons, we request a favorable report for SB 1037, with the caveat that the bill be amended to **remove lines 4-11 on page 3.**

Contacts:

Ragina C. Ali, AAA Mid-Atlantic
Public and Government Affairs Manager
443.465.5020

Sherrie Sims, GS Proctor & Associates
Senior Associate
410.733.7171

SB 1037 MOPD Unfav.pdf

Uploaded by: Andrew Northrup

Position: UNF

NATASHA DARTIGUE
PUBLIC DEFENDER

KEITH LOTRIDGE
DEPUTY PUBLIC DEFENDER

MELISSA ROTHSTEIN
CHIEF OF EXTERNAL AFFAIRS

ELIZABETH HILLIARD
ACTING DIRECTOR OF GOVERNMENT RELATIONS

POSITION ON PROPOSED LEGISLATION

BILL: SENATE BILL 1037 Courts - Impaired Operation of Vehicle or Vessel – Expert Witnesses and Evidence

FROM: Maryland Office of the Public Defender

POSITION: Unfavorable

DATE: 03/05/24

The Maryland Office of the Public Defender urges an unfavorable report on SB 1037.

While keeping impaired drivers off of the road is an important goal, this bill is not the way to do so. Legislation and policy should be based on science. Cases should be ruled upon based upon their individual merit and the evidence in those cases. This bill precludes a court from making such individualized case-based assessments with blanket rules on admissibility that are not based on science or evidence.

In the 2020 Rochkind case, Maryland adopted the federal Daubert standard for the admissibility of scientific evidence and expert testimony. Under this decision, Maryland trial courts are required to individually assess whether scientific evidence and expert testimony is reliable in any given case. Courts do so by reviewing the qualifications of the expert, the method utilized, and whether there is an adequate factual basis for the opinion. The Daubert Standard requires a court to determine if the method is reliable generally and, if so, whether the method was reliably applied to the facts and circumstances of the particular case. This dual analysis highlights the fact that expert admissibility must be assessed on a case-by-case basis. The appropriateness of expert testimony is a fact specific determination and courts should not be hamstrung by legislation, however well-meaning, that interferes with its gatekeeping function. This statute will strip courts of any authority or discretion to evaluate testimony in this area in individual cases.

Normally in court, an expert's qualifications are proffered to the Judge, and the Judge decides if the person is an expert before they are able to render any expert opinions. This is as it should be, as the Judge is in the best position to make that determination. Under this statute, a police officer with the qualifications set forth herein would automatically be able to render expert testimony. Critically, this statute does not require that a reliable methodology be used or that an individual be proficient and current in the field since it only requires 'successful completion' of a DRE training program.

It is also important to keep in mind what the DRE program is. It is a program designed to help officers determine if an individual is impaired by drugs, and if so, by what class of drugs. There is a 72 hour classroom component, and about 40-60 of field hours required to complete the program and

become a certified DRE. Basically, this statute would allow someone who completes a three week program to have an unassailable expert opinion about impairment no matter what methodology was used or whether the method was properly applied to the facts of the case.

Determining if a person is impaired by drugs is not an easy task, particularly when there are underlying medical conditions and incomplete data. To say that this is complex is an understatement, and every individual is different. Moreover, just like every driver is different, so is every evaluator. It does not require or even allow the judge to make a determination that the evaluator has the competence to do their job correctly.

The other part of the statute setting forth a per se limit on THC is also incredibly problematic. The research that has been done in this area shows a poor and inconsistent relationship between magnitude of impairment and THC levels. I have attached a scientific study on this issue from the website of the International Association of the Chiefs of Police (the organization behind the DRE program) to that effect.

Drugged drivers is an important issue to address, but doing so with laws that have no scientific basis and that interfere with a court's ability to weigh evidence in individual cases is not a good solution.

For these reasons, the Maryland Office of the Public Defender urges this Committee to issue an unfavorable report on Senate Bill 1037.
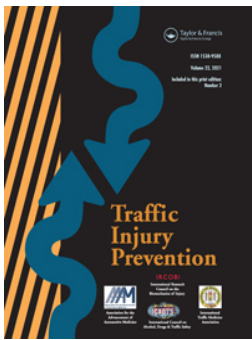
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Submitted by: Maryland Office of the Public Defender, Government Relations Division.

Authored by: Andrew Northrup, Forensics Division, (312) 804-9343, andrew.northrup@maryland.gov.

The failings of *per se* limits to detect cannabis-induced driving impairment: Results from a simulated driving study

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The failings of *per se* limits to detect cannabis-induced driving impairment: Results from a simulated driving study

Thomas R. Arkell[a,b,c]* (iD), Tory R. Spindle[d]*, Richard C. Kevin[a,b,e], Ryan Vandrey[d], and Iain S. McGregor[a,b,e]

[a]Lambert Initiative for Cannabinoid Therapeutics, The University of Sydney, Sydney, New South Wales, Australia; [b]Brain and Mind Centre, The University of Sydney, Sydney, New South Wales, Australia; [c]Faculty of Medicine and Health, Central Clinical School, The University of Sydney, Sydney, New South Wales, Australia; [d]Johns Hopkins University School of Medicine, Baltimore, Maryland; [e]Faculty of Science, School of Psychology, The University of Sydney, Sydney, New South Wales, Australia

ABSTRACT

Objective: Many jurisdictions use *per se* limits to define cannabis-impaired driving. Previous studies, however, suggest that THC concentrations in biological matrices do not reliably reflect cannabis dose and are poorly correlated with magnitude of driving impairment. Here, we first review a range of concerns associated with *per se* limits for THC. We then use data from a recent clinical trial to test the validity of a range of extant blood and oral fluid THC *per se* limits in predicting driving impairment during a simulated driving task.

Methods: Simulated driving performance was assessed in 14 infrequent cannabis users at two timepoints (30 min and 3.5 h) under three different conditions, namely controlled vaporization of 125 mg (i) THC-dominant (11% THC; <1% CBD), (ii) THC/CBD equivalent (11% THC; 11% CBD), and (iii) placebo (<1% THC & CBD) cannabis. Plasma and oral fluid samples were collected before each driving assessment. We examined whether *per se* limits of 1.4 and 7 ng/mL THC in plasma (meant to approximate 1 and 5 ng/mL whole blood) and 2 and 5 ng/mL THC in oral fluid reliably predicted impairment (defined as an increase in standard deviation of lateral position (SDLP) of >2 cm relative to placebo).

Results: For all participants, plasma and oral fluid THC concentrations were over the *per se* limits used 30 min after vaporizing THC-dominant or THC/CBD equivalent cannabis. However, 46% of participants failed to meet SDLP criteria for driving impairment. At 3.5 h post-vaporization, 57% of participants showed impairment, despite having low concentrations of THC in both blood (median = 1.0 ng/mL) and oral fluid (median = 1.0 ng/mL). We highlight two individual cases illustrating how (i) impairment can be minimal in the presence of a positive THC result, and (ii) impairment can be profound in the presence of a negative THC result.

Conclusions: There appears to be a poor and inconsistent relationship between magnitude of impairment and THC concentrations in biological samples, meaning that *per se* limits cannot reliably discriminate between impaired from unimpaired drivers. There is a pressing need to develop improved methods of detecting cannabis intoxication and impairment.

Introduction

Recent policy changes have greatly increased cannabis accessibility and acceptance of use for both medicinal and non-medicinal purposes, making accurate detection of driving under the influence of cannabis (DUIC) a major public safety concern. Legislative approaches toward the detection and prosecution of DUIC generally fall under three categories: effect-based, *per se* and zero-tolerance. Effect-based approaches require proof that a driver was behaviorally impaired at the time of the offense, while the latter two categories involve the collection and testing of biological specimens (typically blood and/or oral fluid) to test for Δ^9-tetrahydrocannabinol (THC). Under *per se* laws, a driver is deemed to have committed an offense if THC is detected at or above a pre-determined cutoff (analogous to blood alcohol concentration (BAC) limits for alcohol), while zero tolerance laws make it an offense for a driver to have any detectable amount of THC (or in some cases, THC metabolites) in a given biological matrix.

In the U.S., 19 states currently have *per se* or zero tolerance laws in place for cannabis (Foundation for Advancing Alcohol Responsibility 2019). For those states with *per se* laws (Illinois, Montana, Nevada, Ohio, Pennsylvania, Washington and West Virginia), cutoffs range from 1 to 5 ng/mL THC in whole blood. In three of these states (Nevada, Ohio and Pennsylvania), *per se* limits also apply to THC metabolites with cutoffs of 1-5 ng/mL for 11-hydroxy-Δ^9-tetrahydrocannabinol (11-OH-THC) and 1 ng/mL for 11-nor-9-carboxy-

Δ^9-tetrahydrocannabinol (11-COOH-THC). Colorado has a 'reasonable inference' law which states that a driver can be presumed to have been under the influence if their blood contained >5 ng/mL THC at the time of the offense. The remaining states either have zero tolerance laws for THC only (n = 3) or for THC and/or a metabolite (n = 8).

Several international jurisdictions (e.g., Australia, Belgium, France) use oral fluid, rather than blood, to assess DUIC. In Australia, point-of-collection testing (POCT) devices are used to screen drivers' oral fluid for THC at the roadside. Positive results are verified via laboratory analysis. POCT devices are used in some Canadian jurisdictions, although an officer or drug recognition expert (DRE) must also demonstrate that the driver was behaviorally impaired at the time of the offense to prosecute a DUIC case. Screening cutoffs for THC in oral fluid vary depending on the device used: this can be as low as 5 ng/mL (e.g., Securetec DrugWipe 5 s). In jurisdictions with zero-tolerance legislation, the mere presence of THC is sufficient to indicate DUIC; therefore, the screening cutoff is the lowest THC concentration that can be reliably detected by the device, or an otherwise specified cutoff that is appropriate for the test. For roadside drug testing, the screening cutoff may be set to a higher value than the detection limit of the device to minimize the risk of false positives.

Though many jurisdictions use blood or oral fluid *per se* limits to infer DUIC, few controlled studies have explicitly evaluated the utility of extant *per se* limits for predicting driving impairment following cannabis administration. In this report, we explore the validity of a range of oral fluid THC *per se* cutoffs as well as plasma THC cutoffs, meant to approximate whole blood THC *per se* limits, in predicting impairment of simulated driving performance in a sample of infrequent cannabis users who had inhaled vaporized cannabis in a controlled, laboratory setting. Driving impairment was examined 30 min and 3.5 h after vaporization of THC-dominant, THC/CBD-equivalent and placebo cannabis. We also describe data from two participants in detail to illustrate the complexities associated with using biological concentrations of THC as a proxy for impaired driving.

Methods

The methods provide a brief overview of the study design and procedures; additional details are described in our prior report (Arkell et al. 2019) and in the Appendix.

Study methods, design and procedures

Fourteen healthy adult (aged 18-65 years) infrequent cannabis users (≤ 2 uses/week in the previous 3 months) completed this within-subjects, double-blind crossover study. Participants completed three experimental sessions at Royal Prince Alfred Hospital in Sydney, Australia, (separated by ≥7 days), in which they inhaled vaporized THC-dominant ('THC'; 11% THC, <1% CBD; 13.75 mg THC), THC/CBD-equivalent ('THC/CBD'; 11% THC, 11% CBD; 13.75 mg THC and 13.75 mg CBD) or placebo (<1% THC, <1% CBD) cannabis (Tilray, BC, Canada). All procedures were

approved by the Sydney Local Health District (RPAH Zone) Human Research Ethics Committee.

Biological sample collection and analysis

Blood and oral fluid samples were collected prior to the first (30 min) and second (3.5 h) driving tasks and analyzed via LC-MS/MS.

Driving simulator and scenarios

In this report, we focus on the results of a car-following task in which participants had to follow and maintain a constant distance to a lead vehicle while driving in steady traffic along a stretch of straight highway. This was completed twice during each experimental session (30 min and 3.5 h after cannabis administration). The primary outcome measure was standard deviation of lateral position (SDLP; lane weaving); a widely-used measure of driving impairment that is highly sensitive to the effects of cannabis and alcohol (Verster and Roth 2011; Hartman et al. 2015b; Helland et al. 2015; Jongen et al. 2017).

Additional outcomes

Subjective drug effects (e.g., "Stoned", "Confident to drive") were evaluated before and after the 30 min and 3.5 h post-dosing driving timepoints using the Drug Effect Questionnaire (DEQ). Self-reported sleep quality and hours of sleep were also collected.

Data analysis

Because most *per se* laws apply to whole blood, a conversion factor of 0.71 (median ratio of whole blood to plasma THC among 32 cannabis users in a vaporized cannabis administration study (Hartman et al. 2015a) was applied to the 5 and 1 ng/mL whole blood limits to yield plasma limits of 7 and 1.4, respectively. Sensitivity, specificity, and agreement analyses determined whether driving performance results (impaired or not impaired) were correctly confirmed by these two plasma cutoffs. We also examined driving performance in relation to two oral fluid THC cutoffs: 5 ng/mL (detection limit for Securetec DrugWipe® and Dräger DrugTest® 5000 POCT devices) and 2 ng/mL (LC-MS/MS limit of detection for oral fluid THC in this study).

Determination of driving impairment in the THC-dominant and THC/CBD-equivalent conditions was based on whether participants' SDLP increased by more than 2 cm from their placebo condition at the respective timepoint (30 min or 3.5 h); this cutoff is consistent with what is considered to be the lowest criterion for clinically relevant driving impairment (Jongen et al. 2017) and is equivalent to the predicted increase in SDLP associated with a BAC of 0.05% (Irwin et al. 2017), the legal alcohol limit in many countries. Therefore, participants with a change in SDLP (from placebo) of greater than 2 cm were considered impaired, while those with a change in SDLP of 2 cm or less were considered not impaired.

Results were categorized as: true positive (driving impairment + biological concentration over *per se* limit), true negative
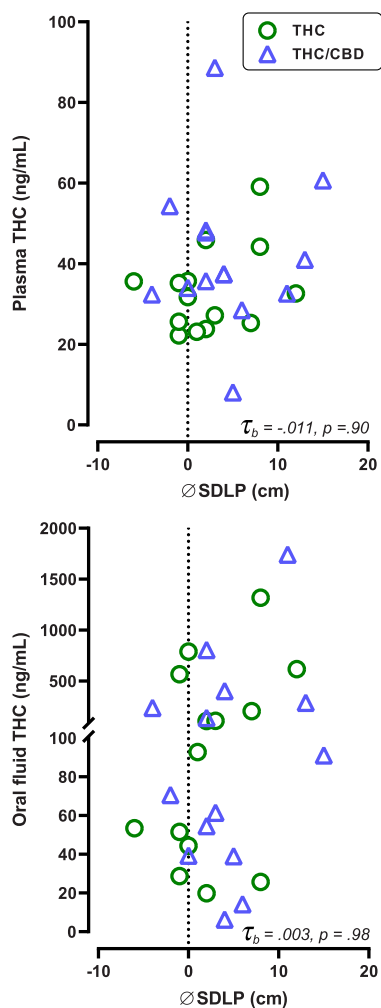
Figure 1. Left panel: Plasma THC concentrations (ng/mL), y-axis, by SDLP values, x-axis, for each individual participant in the THC and THC/CBD conditions. Right panel: Oral fluid THC concentrations (ng/mL), y-axis, by SDLP values, x-axis, for each individual participant in the THC and THC/CBD conditions. Blood and oral fluid THC concentrations were not significantly correlated with driving impairment (SDLP).

(no driving impairment + biological concentration under *per se* limit), false positive (no driving impairment + biological concentration over *per se* limit), or false negative (driving impairment + biological concentration under *per se* limit). Sensitivity, specificity and agreement were calculated as: sensitivity ($100 \times [TP/(TP + FN)]$), specificity ($100 \times [TN/(TN + FP)]$) and agreement ($100 \times [(TP + TN)/(TP + TN + FP + FN)]$).

Results

eTable 1 (Appendix) shows driving and subjective effect data and plasma and oral fluid cannabinoid concentrations for each participant at both timepoints.

Driving performance

Thirty minutes after cannabis administration, 7/14 and 8/14 participants displayed impaired driving in the THC-dominant and THC + CBD conditions, respectively. At 3.5 h after cannabis administration, 6/14 and 10/14 participants displayed impaired driving in the THC-dominant and

Table 1. Classification of driving impairment following vaporization of THC-dominant (THC) and THC/CBD-equivalent (THC/CBD) cannabis using *per se* limits of 7 ng/mL and 1.4 ng/mL blood plasma THC.

	7 ng/mL		1.4 ng/mL	
	Time 1 (30 min)	Time 2 (3.5 h)	Time 1 (30 min)	Time 2 (3.5 h)
THC				
#True Positive (%)	7 (50.0)	0 (0)	7 (50.0)	2 (14.3)
#True Negative (%)	0 (0)	8 (57.1)	0 (0)	5 (35.7)
#False Positive (%)	7 (50.0)	0 (0)	7 (50.0)	3 (21.4)
#False Negative (%)	0 (0)	6 (42.9)	0 (0)	4 (28.6)
% Sensitivity	100.0	0.0	100.0	33.3
% Specificity	0.0	100.0	0.0	62.5
% Agreement	50.0	57.1	50.0	50.0
THC/CBD				
#True Positive (%)	8 (57.1)	0 (0)	8 (57.1)	4 (28.6)
#True Negative (%)	0 (0)	4 (28.6)	0 (0)	3 (21.4)
#False Positive (%)	6 (42.9)	0 (0)	6 (42.9)	1 (7.1)
#False Negative (%)	0 (0)	10 (71.4)	0 (0)	6 (42.9)
% Sensitivity	100.0	0.0	100.0	40.0
% Specificity	0.0	100.0	0.0	75.0
% Agreement	57.1	28.6	57.1	50.0

Note: Cutoff for impaired driving = SDLP change from placebo of >2 cm. These cutoffs of 7.0 and 1.4 ng/mL are meant to approximate two common whole blood *per se* cutoffs (5 and 1 ng/mL) used in the U.S.

Table 2. Classification of driving impairment following vaporization of THC-dominant (THC) and THC/CBD-equivalent (THC/CBD) cannabis using *per se* limits of 5 ng/mL and 2 ng/mL oral fluid THC.

	5 ng/mL		2 ng/mL	
	Time 1 (30 min)	Time 2 (3.5 h)	Time 1 (30 min)	Time 2 (3.5 h)
THC				
#True Positive (%)	7 (50.0)	3 (21.4)	7 (50.0)	3 (21.4)
#True Negative (%)	0 (0)	7 (50.0)	0 (0)	6 (42.9)
#False Positive (%)	7 (50.0)	1 (7.1)	7 (50.0)	2 (14.3)
#False Negative (%)	0 (0)	3 (21.4)	0 (0)	3 (21.4)
% Sensitivity	100.0	50.0	100.0	50.0
% Specificity	0.0	87.5	0.0	60.0
% Agreement	50.0	71.4	50.0	64.3
THC/CBD				
#True Positive (%)	8 (57.1)	2 (14.3)	8 (57.1)	3 (21.4)
#True Negative (%)	0 (0)	4 (28.6)	0 (0)	3 (21.4)
#False Positive (%)	6 (42.9)	0 (0)	6 (42.9)	1 (7.1)
#False Negative (%)	0 (0)	8 (57.1)	0 (0)	7 (50.0)
% Sensitivity	100.0	20.0	100.0	30.0
% Specificity	0.0	100.0	0.0	75.0
% Agreement	57.1	42.9	57.1	42.9

Note: Cutoff for impaired driving = SDLP change from placebo of >2 cm.

THC + CBD conditions, respectively. Self-reported sleep quality and hours of sleep prior to study sessions did not influence driving performance (see Appendix).

Correlations

Neither plasma nor oral fluid THC concentration was significantly correlated with SDLP (Figure 1).

Sensitivity, specificity, and agreement analyses

Full sensitivity, specificity, and agreement results are presented in Tables 1 (plasma) and 2 (oral fluid).

Plasma THC

Median (range) plasma THC concentrations across both active cannabis conditions were 37.6 ng/mL (8.1–88.6 ng/

mL) at 30 min and 1.0 (0.0–2.5) ng/mL at 3.5 h. Both blood plasma *per se* cutoffs (7 and 1.4 ng/mL) produced high rates of false positives at the 30 min timepoint. That is, though all participants had plasma concentrations above these cutoffs immediately after vaping, only 7/14 participants in the THC-dominant condition and 8/14 participants in the CBD + THC condition displayed impaired driving. Participant F, described below, is an example of a false positive at 30 min. Conversely, at 3.5 h, 6/14 cases were false negatives in the THC condition and 10/14 in the THC/CBD condition with the 7 ng/mL cutoff (these participants displayed impaired driving, but their plasma THC levels had fallen under 7 ng/mL by this time). Participant C, described below, is an example of a false negative case at 3.5 h. At the 1.4 ng/mL cutoff 3.5 h after dosing, the incidence of true positives increased, though there were still numerous false negatives and several false positives (Table 1).

Oral fluid THC

Median (range) oral fluid THC concentrations across both active cannabis conditions were 92.0 ng/mL (6.3–1740.6 ng/mL) at 30 min and 1.0 (0–23.7) ng/mL at 3.5 h. At 30 min, both oral fluid *per se* cutoffs used (5 and 2 ng/mL) were similarly ineffective at identifying impaired driving. That is, all samples obtained were above both cutoffs used, but only half of the participants exhibited impaired driving ability. At 3.5 h, 14-21% of cases were true positives with a 5 ng/mL cutoff, and 21% with a 2 ng/mL cutoff and there were few false positives. However, at 3.5 h, 21-57% and 21-50% of cases were false negatives with cutoffs of 5 and 2 ng/mL, respectively (Table 2).

Case studies

Extended descriptions of the case studies are presented in the Appendix.

Participant C

Participant C's SDLP values at the 30 min timepoint were similar in the THC and placebo conditions (29 cm; 30 cm), but markedly increased in the THC/CBD condition (45 cm), suggesting extreme impairment. At 30 min, her rating of "Confident to drive" (5/100) in the THC/CBD condition was far lower than in the THC or placebo conditions (66/100; 46/100). Although Participant C displayed worse driving performance in the THC/CBD condition, she had similar plasma THC concentrations at 30 min in the THC and THC/CBD conditions (35.7 ng/mL vs. 34 ng/ml). Oral fluid THC concentrations were also similar in the THC and THC/CBD conditions (44.4 ng/mL vs. 39.3 ng/mL).

Participant C continued to exhibit significant driving impairment at 3.5 h in the THC/CBD condition (37 cm) relative to her performance in the THC (25 cm) and placebo (24 cm) conditions, indicating that the extreme SDLP values observed at 30 min in the THC/CBD condition were not erroneous. However, at 3.5 h, THC was not detected in plasma or oral fluid in the THC and THC/CBD conditions. Although her driving performance was still impaired at 3.5 h

in the THC/CBD condition, her subjective drug effect ratings had decreased and "Confident to drive" ratings had increased markedly relative to 30 min; ratings on these measures were similar at 3.5 h to those in the THC condition where she did not display driving impairment.

Participant F

Contrary to Participant C, Participant F's SDLP values at 30 min were identical in the THC and placebo conditions (20 cm), and slightly higher in the THC/CBD condition (22 cm), just under the SDLP threshold for impairment. His rating of "Confident to drive" was 0/100 in the THC and THC/CBD conditions. His peak plasma THC concentrations were 23.1 ng/mL in the THC condition and 41.0 ng/mL in the THC/CBD condition. Oral fluid THC concentrations were 92.8 ng/mL (THC) and 286.2 ng/mL (THC/CBD). Thus, at 30 min, Participant F had THC levels well above the selected *per se* cutoffs and reported significant subjective impairment yet exhibited no driving impairment.

By 3.5 h, his plasma THC concentrations were < LLOQ in the THC condition and 1.5 ng/mL in the THC/CBD condition while oral fluid THC concentrations were < LLOQ in both conditions. At 3.5 h, SDLP values were highest in the placebo condition and lowest in the THC condition. Despite this, his rating of "Confident to drive" was lower in the THC condition (1/100) than the THC/CBD (19/100) and placebo (96/100) conditions.

Discussion

Per se limits for THC, analogous to BAC limits for alcohol, are increasingly applied as a legal definition of cannabis-impaired driving. The present study explored the validity of several plasma (7 and 1.4 ng/mL; meant to approximate 1 and 5 ng/mL whole blood) and oral fluid (5 and 2 ng/mL) cutoffs in relation to impaired driving performance. We also described two individual participants' experimental sessions in detail to highlight challenges associated with using blood and oral fluid THC concentrations to determine cannabis-related driving impairment.

The blood and oral fluid *per se* limits examined often failed to discriminate between impaired and unimpaired drivers. Moreover, blood and oral fluid THC concentrations were poorly correlated with driving impairment; other studies have likewise shown a poor relationship between blood/oral fluid THC and cognitive/psychomotor performance (Ramaekers et al. 2006; Vandrey et al. 2017). Blood and oral fluid THC concentrations for all participants exceeded extant *per se* limits shortly after vaporization (30 min), but roughly half of participants displayed little or no driving impairment at this time. Conversely, several participants continued to exhibit impaired driving 3.5 h after cannabis exposure, by which time their THC concentrations had typically fallen below the *per se* limits examined here. Thus, following cannabis inhalation, the window of detection for THC in blood and oral fluid is often much shorter than the window of impairment.

The two detailed cases highlight these and other shortcomings of *per se* limits for THC. In the first case,

Participant C exhibited profound driving impairment in one drug condition (THC/CBD) but not the other (THC), yet had similar plasma and oral fluid THC concentrations in both conditions. Participant C (in the THC/CBD condition) also highlights that some individuals may exhibit substantial driving impairment well past the point at which THC is detectable in plasma or oral fluid. This observation has important real-world implications because blood is often collected hours after a crash occurred, by which time THC concentrations may be a fraction of what they were at the time of the crash and therefore poorly representative of a driver's impairment at the time of the crash. Critically, though she was still impaired at 3.5 h, Participant C felt more confident in her ability to drive and reported less intense subjective drug effects relative to those observed 30 min after cannabis exposure. In the second case, Participant F exhibited little to no driving impairment at 30 min, despite having blood/oral fluid THC concentrations well above any existing *per se* cutoff. Despite his apparent lack of impairment at 30 min, Participant F still reported maximal subjective drug effects and very low confidence in his driving ability, suggesting subjective intoxication may be a poor proxy for actual driving ability. Given that his last reported use of cannabis was nearly 2 months prior to study entry, this lack of impairment was not likely due to tolerance. The variability in the magnitude and duration of impairment observed in this study highlights the need to better understand factors that contribute to individual differences in susceptibility to cannabis intoxication.

The present plasma and oral fluid cannabinoid data are consistent with previous studies showing that THC concentrations peak shortly after, or during, cannabis inhalation and decline rapidly thereafter (Huestis and Cone 2004; Spindle et al. 2019). Subjective ratings of intoxication and cognitive impairment, on the other hand, are typically maximal within the first hour of cannabis inhalation and begin to decline slowly thereafter. Because THC is rapidly distributed into tissue and metabolized into 11-OH-THC, which is also psychoactive, blood and oral fluid THC concentrations are typically declining while cannabis' intoxicating and impairing effects are increasing.

With other routes of administration (e.g., oral), THC displays very different pharmacokinetics. For example, following ingestion of brownies containing 10, 25, or 50 mg THC, blood THC concentrations did not exceed 3 ng/mL (10 mg), 4 ng/mL (25 mg) or 5 ng/mL (50 mg) (Vandrey et al. 2017); even though this latter dose is almost four-fold higher than that of the present study, and produced significant cognitive impairment, no participants would have been classified as impaired with a 5 ng/mL *per se* limit. This incongruity is particularly pertinent given the growing popularity of cannabis edibles. Although lower cutoffs (e.g., 1 ng/mL) would seemingly reduce false negatives, chronic cannabis users – analogous to medical cannabis patients using prescribed cannabinoid products on a daily basis - can have low levels of THC in their blood for several weeks to a month after their last use without displaying cognitive or psychomotor impairment (Bergamaschi et al. 2013). While these problems might have been non-issues

when cannabis was illegal, in this current context of increasing cannabis legalization, they are very real issues that need to be addressed in current regulation.

Many jurisdictions have adopted *per se* limits for cannabis because they make prosecuting DUIC cases straightforward and mirror policies for alcohol impaired driving. However, it is critical for policy makers to understand that when it comes to easily and reliably detecting drug-induced impairment, alcohol is the exception to the rule. Though alcohol breathalyzers are commonly used to detect alcohol impairment, no analogous biological detection method currently exists for cannabis. Alcohol displays zero-order, or linear, pharmacokinetics, meaning that a constant amount of alcohol is eliminated per unit time from a person's system, independent of the amount of alcohol consumed (Wilkinson 1980). THC, on the other hand, is highly lipophilic and has a short-distribution half-life, meaning that the drug is rapidly taken up into fatty and vascularized tissues from where it is slowly released back into blood (Huestis 2007). Consequently, it is almost impossible to infer how much cannabis was consumed, or when it was consumed, based solely on a given concentration of THC in any biological matrix.

Some jurisdictions rely on standard field sobriety tests to classify DUIC because these tests are proven to be valid predictors of alcohol impairment. However, several controlled studies have found standard field sobriety tests often lack sensitivity to cannabis-induced cognitive/driving impairment (Papafotiou, Carter, and Stough 2005; Bosker et al. 2012). Additional research is needed to identify novel biomarkers of cannabis exposure and objective behavioral measures that can reliably detect cannabis intoxication. Until such novel impairment detection methods are realized, a multidimensional approach to identifying drivers who may be impaired by cannabis is advisable. In cases of suspected DUIC, officers could first look for signs of recent cannabis use (e.g., smell of cannabis, cannabis paraphernalia) and use standardized field sobriety tests (SFST) to assess behavioral impairment, focusing on the individual components of these tests that are most sensitive to cannabis intoxication. If a driver fails this initial assessment, blood and/or oral fluid testing could then follow. Jurisdictions might also consider public health campaigns aimed at decreasing DUIC. Such efforts could educate cannabis users about the unpredictable relationship between cannabis dose and impairment, the additive impairing effects of consuming cannabis with alcohol (Hartman et al. 2015b), the poor relationship between subjective feelings of intoxication and actual impairment, and the differences in onset of effects between inhaled and oral cannabis.

There were several study limitations. First, we only examined infrequent cannabis users, so these data may not be applicable to other populations (e.g., daily users) with greater THC tolerance. Second, while there are clear advantages to using a driving simulator (e.g., safety and experimental control), simulation only partly captures the complexity and experience of real-world driving, and conclusions must therefore be treated with caution. Third, blood plasma samples were collected as opposed to whole blood, but cannabis *per se* laws typically apply to whole blood. Moreover, we applied a conversion factor so that the plasma

per se limits used in this study would approximate common whole blood *per se* limits; the suitability of this approach may have differed across participants. Fourth, although SDLP is a valid and widely used driving impairment measure, we did not examine other factors related to driving impairment (e.g., braking latency). Lastly, there was a delay of 10-20 minutes between the time of blood and oral fluid sampling and the beginning of the driving task; therefore, actual THC concentrations during both drives would have likely been lower than those reported.

Overall, our findings highlight the complexities and limitations with using *per se* limits to identify cases of DUIC. These data are consistent with the conclusion of a recent AAA Foundation for Traffic Safety report that the available scientific evidence does not support the use of quantitative thresholds for THC (Logan, Kacinko, and Beirness 2016). Due to erratic and route-dependent differences in THC pharmacokinetics as well as significant inter- and intra-individual variability, blood and oral fluid THC concentrations, unlike BAC for alcohol, provide little information as to the amount of cannabis consumed or the extent to which an individual may be intoxicated. Collectively, these results suggest that the *per se* limits examined here do not reliably represent thresholds for impaired driving.

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Disclosure statement

Ryan Vandrey has received consulting fees from Zynerba Pharmaceuticals, Battelle Memorial Institute, and Canopy Health Innovations Inc and has received compensation for being on the advisory boards for Insys Therapeutics, Brain Solutions Inc., and The Realm of Caring Foundation. Iain McGregor acts as a consultant to Kinoxis Therapeutics, has received compensation for sitting on the advisory board of BOD Australia and has received speaker fees from Janssen. In addition, Iain McGregor holds patent AU2017904438 pending, and patents WO2019/227167 and WO2019071302 that are relevant to cannabinoid therapeutics.

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ORCID

Thomas R. Arkell http://orcid.org/0000-0002-8559-6995

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Department of State Police Position Paper SB 1037.

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Position: UNF

State of Maryland
Department of State Police
Government Affairs Unit
Annapolis Office (410) 260-6100

POSITION ON PROPOSED LEGISLATION

DATE: **March 6, 2024**

BILL NUMBER: **Senate Bill 1037**   **POSITION: Oppose**

BILL TITLE: **Courts – Impaired Operation of Vehicle or Vessel – Expert Witness and Evidence**

REVIEW AND ANALYSIS

This legislation authorizes police officers trained and certified as Drug Recognition Experts (DRE) to testify as experts on the ultimate issue of whether a person was driving a vehicle or operating a vessel while impaired by drugs. The bill establishes a threshold for a blood result for drugs that a THC concentration of 5 nanograms per milliliter is prima facie evidence that the person was driving a vehicle or operating a vessel while impaired by THC.

Under current law, once a person is arrested or detained for driving under the influence of drugs or alcohol and drugs, a DRE is contacted to perform additional tests to determine the class of drug a person may have in their system. The DRE then requests a blood test and later appears in court to testify to their findings. Designating a person as an expert in court is not automatic, but follows a process.

Under our accrediting body, ANSI National Accreditation Board (ANAB), the Forensic Sciences Division, toxicology unit is only approved for qualitative determination of Ante-Mortem biological items. This means that we can only report that THC was present in someone's blood, not how much THC was present. Regarding the THC concentration standard established in the bill, it should be noted that any per se law for THC (including a zero-tolerance policy) is not endorsed by the forensic toxicology community, and is actively discouraged. There is no medical or scientific evidence to support the correlation of THC level in the blood to impairment.

The Department of State Police, Forensic Sciences Division is the only lab approved for testing blood for alcohol and drugs relating to driving a vehicle while under the influence. Should Senate Bill 1037 pass, there will be a significant cost to the Department of State Police to outsource the testing of all blood screened positive for THC until such time as we can purchase the necessary equipment, train our personnel, and have the accrediting body approve our process.

The Department has had a conversation with the sponsor regarding amendments to the bill. The discussion involved appropriate amendments to remove the specific reference to prima facia evidence for THC and the number of nanograms per milliliter in the bill. As such, the Department urges the Committee to consider an unfavorable report for Senate Bill 1037 unless the bill can be amended as discussed.