Independent Expert Panel on Drug Driving

Interim Advisory Report – 2

Executive Summary

This interim report of the Expert Panel on Drug Driving (the Panel) explores thresholds for drug concentrations in biological fluids (blood and oral fluid) in a driving impairment-drug testing context, and attempts to set them based on an impairment level commensurate with a blood alcohol concentration of 80 mg/100 mL. Drugs were considered in two categories: 1. Tetrahydrocannabinol (THC, cannabis) and methamphetamine, and 2. other drugs associated with impaired driving performance, including some prescription medicines. In addition, the Panel considered the use of roadside oral fluid testing devices used for screening purposes by police officers, followed by laboratory analytical confirmation of blood levels of the screened drugs. In a drug analysis context, the relevance of Limit of Detection (i.e. the lowest amount of a substance detectable) and Limit of Quantification (i.e. the amount of a drug that can reliably be quantified) is discussed.

The Panel concluded that:

- It is not possible to equate an impairing drug dose to a blood drug concentration equivalent to a blood alcohol concentration (BAC) of 80 mg/100 mL.
- It is not possible to set *impairment* limits for blood drug concentrations for the drugs of interest because no robust supportive data currently exist.
- It is possible to set legislative limits for non-medicinal drugs based on those set in other jurisdictions (where possible taking into account New Zealand blood drug concentrations detected in impaired drivers).
- It would be feasible to set legislative limits for medicinal drugs, since patients prescribed a medicine have a defence under New Zealand legislation.
- The cost of specifying oral fluid test device drug concentration cut-offs is likely not offset by the roadside testing benefit of a particular device.

The Panel recommends that:

1. Their Terms of Reference be reframed to remove the link between blood drug concentration and impairment equivalence to a BAC of 80 mg/100 mL. This will enable the Panel to recommend blood drug concentration limits based on those set in other jurisdictions, blood concentrations determined in impaired drivers in New Zealand, and data from the scientific literature. These blood drug concentrations may incur a penalty equivalent to that associated with the BAC of 80 mg/100mL (criminal limit).
2. Assessment of commercially available oral fluid screening devices with particular reference to oral fluid cut off concentrations (in relation to recommended blood drug concentrations) be carried out.
3. Lower level tolerance thresholds: for non-medicinal drugs, zero-tolerance based on analytical LoD should be considered; for prescription medicines the threshold limits may be determined by consideration of the ‘criminal’ limit and the pharmacokinetic properties of the drug.

Introduction

The Expert Panel on Drug Driving (the Panel) was appointed in May 2020. The Panel is tasked with advising Ministers on blood and oral fluid concentration thresholds associated with driving impairment for an array of drugs with a view to incorporating the values in legislation for a compulsory random roadside oral fluid testing scheme (Land Transport (Drug Driving) Amendment Bill 2020 (317-1)). The Panel's Terms of Reference reflect important components of the design of the roadside testing scheme, namely:

- The 'blood-drug' limits to be specified in legislation based on drug concentrations in blood that align with impairment equivalent to a blood-alcohol concentration of 80 mg of alcohol per 100 mL of blood.
- The low-level tolerance thresholds to be applied to the detection of drugs in blood by the Institute of Environmental Science and Research.
- The cut-off thresholds to be included in oral fluid testing devices (noting that this will require alignment with the procurement process by Police and the technical limitations of any device procured).
- Any other matters that may be referred to it by Joint Ministers.

A number of jurisdictions have already introduced, or are moving towards the introduction of legal 'blood-drug' limits for illicit drugs and/or medicines, including the United Kingdom, Norway, and several jurisdictions in North America. Like alcohol, these limits have been established as a proxy for impairment, based on scientific research about the impairing effects of different dosages of drugs. The Panel has considered the findings of these jurisdictions in its deliberations.

Initially, the Panel considered which drugs should have legislative limits. This decision-making process was based on New Zealand data linking road traffic accidents with the presence of these drugs in the drivers' blood samples (impaired, hospitalised and deceased driver samples analysed by ESR). Having determined which drugs to consider, the Panel examined the scientific literature, reports of similar expert panels, and findings from other jurisdictions in order to consolidate international thinking on the subject.

The drugs the Panel concluded should have legislative limits fall into two distinct categories:

1. Methamphetamine and THC (see Interim Advice Report: *Proposed Blood Limits for Methamphetamine and THC*, July 2020)
2. Other drugs associated with impaired driving performance, including:
   Opioids – buprenorphine, codeine, dihydrocodeine, fentanyl, methadone, morphine, oxycodone, tramadol.
   Sedatives – alprazolam, clonazepam, diazepam, lorazepam, midazolam, nitrazepam, oxazepam, temazepam, triazolam, zopiclone.
   Others – ketamine, amphetamine, 3,4-methylenedioxymethamphetamine (MDMA), cocaine, gamma-hydroxybutyrate (GHB).

After considerable research in the scientific literature and in-depth discussion, the Panel concluded that it is impossible to equate the dose of the above drugs with a particular blood concentration and its concomitant pharmacological effect(s). In addition, in this Interim Report, the Panel's findings aligned to the Terms of Reference will be discussed in conjunction with international approaches to setting biological fluid concentration thresholds for drug driving. As a result of these deliberations, the Panel wishes to propose a set of realigned Terms of Reference that it considers achievable.

Setting criminal drug limits based on impairment equivalence to 80 mg/100 mL blood alcohol

A key facet of the Terms of Reference is that 'criminal limits [should be] based on drug concentrations in blood that align with drink driving measures of impairment, being equivalent to a blood-alcohol limit of 80 mg of alcohol per 100 mL of blood (above which a driver would commit a criminal offence).' For the reasons briefly outlined in the introduction to this report, this goal is not achievable. However, it is important that the scientific reasoning underpinning this conclusion is set in the context of drug use and abuse, as follows.

The degree of impairment for a particular drug, including alcohol, is a combination of pharmacodynamics (effects of a drug at its biological targets) as well as pharmacokinetics (the drug's concentrations in blood, oral fluids or other tissues such as brain, where the drug has its effect). Whilst there will be a relationship between the concentration of a drug at its target and its ability to impair driving skills, as well as a relationship between the exposure to a drug and the concentration achieved in a body fluid, there is no simple relationship between the dose of a drug and the resultant impairment of driving.

The drugs of interest (listed above) do not exert their effects at the same pharmacological targets within the body, and even within the same class of drugs, such as the opioids or the sedatives, different members of the class have different potencies. Thus, they have different pharmacodynamic properties.

The concentration of a drug in blood and oral fluid at any given time is dependent not just on the dose itself, but also factors such as:

- Route of administration
- Time since the last dose
- Cumulative effect(s) of previous doses
- Ability of an individual to eliminate the drug from their body.

For example, intravenous administration leads to instantaneous peak blood concentrations, inhalation to a rapid blood peak, whereas oral administration often results in relatively slow time to blood peak concentration, which can be several minutes to hours after the dose.

In addition, there is exposure to the complete dose immediately if it is administered intravenously, whereas oral doses are subject to a process termed first pass effect,

whereby some of the dose is removed from the body *before* it can reach the target site. For example, a drug taken orally is absorbed from the intestine into blood vessels which go directly to the liver – the liver metabolises the drug (which might make it less active) before it is released into the general circulatory system. Once the drug enters the circulatory system, its concentration in blood declines as the drug distributes into tissues (e.g., the brain) and is eliminated from the body (e.g., in urine). The mechanisms for absorption, distribution, metabolism and elimination for the drugs of interest vary, thus the pharmacokinetics for each drug will also differ.

It is well accepted that alcohol can effect driving performance and that there is a strong correlation between increasing BAC and increased crash risk. The determination of risk associated with alcohol use is possible because of the prevalence of use, legality of the drug, and ease of analysis. This has made it possible to carry out large epidemiological studies of alcohol use and crash risk. The legislative BAC limits are set at a level of **crash risk** deemed to be acceptable to government.

It is possible that a similar correlation could be determined for the drugs of interest. However, to date there is a paucity of studies due to illegality of the drug, (in)frequency of use and inconsistency of analytical methodology employed. For the studies that have been undertaken, a ***dose*** that caused impairment may have been reported but not the ***concentration*** of the drug ***at the time*** of impairment. For forensic purposes of roadside testing, it is the ***concentration-dependent impairment at the time*** of testing that is critical, not the ***dose*** that the driver took.

The Panel concludes that in the absence of such evidence, it is not possible to align specific blood drug concentrations to a degree of impairment that equates to a BAC of 80 mg/100 mL.

Methamphetamine and tetrahydrocannabinol (THC)

The Panel has recommended legislative limits for both methamphetamine and tetrahydrocannabinol (THC) (Interim Advice Report: *Proposed Blood Limits for Methamphetamine and THC*, July 2020). The recommended limits are based on the concentrations of methamphetamine and THC detected in New Zealand drivers who failed to satisfactorily complete a Compulsory Impairment Test (CIT). This is robust confirmation that these drivers were impaired and unsafe to drive at the time the CIT was applied. However, since blood samples for drug analysis were taken later (e.g., at the police station), and drug concentrations may have decreased significantly from the time the driver was stopped, the blood drug concentrations cannot be compared directly to a BAC of 80 mg/100 mL.

The Panel concludes that it is not possible to equate their previously recommended methamphetamine and THC blood concentration limits with a BAC of 80 mg/100 mL impairment level.

Legislative limits for 'other' drugs

The Panel agrees that, if possible, legislative limits should be set for the following drugs: buprenorphine, codeine, dihydrocodeine, fentanyl, methadone, morphine, oxycodone, tramadol, alprazolam, clonazepam, diazepam, lorazepam, midazolam, nitrazepam, oxazepam, temazepam, triazolam, zopiclone, ketamine, amphetamine, MDMA, cocaine and GHB.

All of these drugs have been associated with increased crash risk in the scientific literature, and they have all been detected in impaired drivers in New Zealand. However, due the lower incidence of detection, and when detected there is often the presence of at least one other drug of interest (including alcohol), a recommendation of blood drug limits determined in a similar way to methamphetamine and THC cannot be made.

The Panel concludes that it is not possible to set limits equivalent to a BAC of 80 mg/100 mL for selected 'other' drugs because no robust supportive data exist.

Blood drug limits set by other jurisdictions

The Panel agrees that it is possible to recommend blood drug concentration limits based on those set by other jurisdictions. However, it is important to understand the basis upon which other jurisdictions have set their legal limits before accepting them.

International approaches to setting concentration thresholds for drug driving

Three approaches to setting a concentration threshold for a psychoactive drug in relation to road traffic legislation have been used in other jurisdictions.

1. Zero tolerance' approach: this equates to a complete ban on the use of a specified drug whilst driving. The 'zero tolerance' approach regards any amount of drug detected in a specified body fluid as unacceptable; the limit of detection (LoD; i.e. the lowest amount detectable) of the analytical method used is important for this approach.
2. Proof of impairment approach: this uses impairment testing in conjunction with drug analysis.
3. Per se approach: this is based on the detection of a drug above a defined cut-off blood (or other biological fluid) concentration.

Setting per se thresholds

Per se thresholds can be analytical and set at the laboratory's LoD (i.e. akin to 'zero tolerance') or the threshold can be technical and based on the laboratory's limit of quantification (LoQ) – this is the amount of drug the laboratory can reliably quantify in a sample.

On the other hand, the threshold can specifically relate to the effects of a drug and can be set to the biological fluid concentration of the drug at which an effect on driving ability has been shown to occur. A 'lower effect threshold' can be set at the lowest concentration where an effect on driving has been observed (this accounts for effect (e.g., impairment variability).

A per se threshold can also relate to risk. In this case, a blood drug concentration threshold is set at a level which is associated with an unacceptable crash risk. This is the risk-based approach used in New Zealand to set blood alcohol limits where a BAC of 50 mg/100 mL is associated with a particular crash risk and 80 mg/100 mL is associated with a greater and unacceptable crash risk.

Using the risk approach to set per se thresholds requires good estimates of crash risk versus blood (or other biological fluid) drug concentrations. Estimates of crash risk can be obtained from three main sources:

- Prevalence (and concentrations) of specific drugs or drug classes in biological fluids from drivers who have crashed compared with those who have not crashed.
- Culpability analysis where the proportion of culpable drivers using a particular drug is compared with the proportion of drivers not using the drug.
- Data obtained from databases and registries.

The Panel assessed reports from other expert panels – their per se limits for various drugs are tabulated in Appendix 1. Excerpts from reports written by other expert panels are also included in Appendix 2. These reports illustrate the difficulties associated with determining per se limits in a scientifically robust manner. None of the other panels have tried to equate the impairing effects of the drugs at a particular blood concentration to the effects of alcohol at a particular blood concentration.

In brief:

The **Canadian panel** (2017) recommended per se limits for cocaine, GHB, methamphetamine and THC. Zero-tolerance limits were recommended for other illicit drugs.

The **UK panel** (2013) determined the feasibility of establishing and making recommendations for thresholds using estimates of traffic risk, epidemiological evidence and experimental studies. Their recommendations were accepted only for benzodiazepines. The legislative limits (2015) for medicinal drugs were set to ensure that patients would not be dissuaded from taking their prescribed medication for fear of exceeding statutory limits. For illicit drugs, a zero-tolerance limit was set, while making allowance for possible accidental exposure (e.g., exposure to smoke from illicit users).

The **Norwegian panel** (2010) assessed the effects seen after consumption of drugs by non-dependent individuals. The maximum blood drug concentration determined for an intoxicating dose of a drug was considered equivalent to a BAC of 100 mg/100 mL. This concentration was considered the criminal limit. The blood drug concentration divided by 5 (the scientific rationale for this is unclear) was considered equivalent to a

BAC of 20 mg/100 mL and was termed the prohibition limit. Per se limits have been used in Norway since 2012.

Legislative limits have been used in **Denmark** since 2007. The blood drug concentrations are based on the lower concentration limits typically associated with pharmacological effects as reported in the scientific literature.

The Panel concludes that it would be possible to set legislative limits for non-medicinal drugs based on those set in other jurisdictions and, where possible, that blood concentrations previously detected in impaired drivers in New Zealand should be taken into account.

Furthermore, the Panel considers that it would be possible to set legislative limits for medicinal drugs since patients prescribed a medicine have a defence under New Zealand legislation, which ensures that per se limits will target only illicit users of the drug.

Finally, while exceeding the statutory drug limit will likely incur a penalty akin to that associated with driving with a BAC of 80 mg/100 mL or more, it will not be possible to equate impairment associated with the drug at its statutory limit with impairment due to a BAC of 80 mg/100 mL for that individual.

Recommendation 1

Reframe the Panel's Terms of Reference to remove the link between blood drug concentration and impairment equivalence to a BAC of 80 mg/100 mL. This will enable the Panel to recommend limits for blood drug concentrations taking into account those set in other jurisdictions, blood concentrations determined in impaired drivers in New Zealand, and data from the scientific literature.

Applying low-level threshold testing to blood and oral fluids

The Panel's Terms of Reference state that 'Both the low-level thresholds [are] to be applied to the detection of drugs in blood and the cut-off thresholds [that are] to be included in oral fluid testing devices are intended to be set at levels that avoid penalising drivers who have:

- accidental or passive exposure to drugs,
- low residual levels of a drug in their blood due to previous use but have not recently used drugs,
- consumed standard prescription doses of some medicines.

To achieve the above it is important to understand the relationship between blood and oral fluid concentrations of drugs and to set the latter in the context of the test devices' capabilities.

Blood versus oral fluid drug concentrations

At any given time, the concentration of a drug in oral fluid is not necessarily the same as the concentration in blood. The ratio of the drug concentration in oral fluid to blood varies according to the route of administration and relates to the time that the drug was last taken. In short, there is often not a simple relationship between blood and oral fluid concentrations for a particular drug at a particular time.

Oral fluid testing devices

The cut-off drug concentrations for commercially available testing devices are generally aligned to oral fluid concentrations set in Standards. These Standards are most commonly applied to (and were developed for) workplace safety, and the recommended cut-offs are accepted as indicative of recent drug use rather than historical use or accidental exposure.

The commercially available oral fluid testing devices that are suitable for roadside testing are currently used in several jurisdictions. Their drug concentration cut-offs cannot be reset by the operator. The Panel considers it unlikely that it would be cost effective to commission a specific test device for New Zealand-specific oral fluid levels.

The commercially available oral fluid testing devices that detect opiates and benzodiazepines can detect more than one drug in each of the drug classes. This covers a wide range of concentrations of individual drugs.

The Panel concludes that the cost of specifying oral fluid test device drug concentration cut-offs is not offset by the benefit, since there is such a poor correlation between oral fluid and blood drug concentrations.

Recommendation 2

Assess commercially available devices with particular reference to oral fluid cut off concentrations in relation to recommended blood drug concentrations.

Low drug concentration thresholds in biological fluids

Choosing an appropriate analytical device for biological samples (including blood and oral fluid) is very important, as is the correct interpretation of the results. To set this in context, sophisticated laboratory analytical techniques can detect extremely low drug concentrations, which might have no significance in terms of pharmacological activity (e.g., driving impairment) of the test drug. Therefore, in this context a reliable quantification limit is required (i.e. LoQ). On the other hand, if a zero-tolerance approach for a particular drug is implemented, we would need a detection limit as low as possible, but would not necessarily need to quantify the drug (i.e. LoD).

Other key issues are accidental and passive exposure to drugs (e.g., cannabis side-stream smoke). Very few drugs are likely to be present in blood samples due to accidental or passive exposure, which means that laboratory testing is unlikely to give false positives in terms of drug use. However, since drug contaminated air might be inhaled through the mouth, it is possible that the drug will be detected in oral fluids. This means that the roadside screening might be positive, but the confirmatory laboratory test would likely be negative.

Low-level tolerance thresholds should not be based on the consumption of standard prescription doses because consumption of such doses may lead to impairment. However, some drugs are not eliminated rapidly and may be detected for a longer period than any significant impairment is manifested. Furthermore, the sensitivity of laboratory analyses means that some drugs may be detected for a longer period than their pharmacological effects.

As discussed previously in this report, low-level detections may need to be determined for each drug in a different way. The three options are:

- LoD (oral fluid or blood)
- LoQ (laboratory-based analysis)
- A proportion of the ‘criminal’ limit taking into consideration the pharmacokinetic properties of the drug.

LoDs and LoQs for different drugs can be comfortably determined as part of an analytical method validation process.

Recommendation 3

For non-medicinal drugs: apply zero-tolerance and use LoD.

For prescription medicines: use either a proportion of the ‘criminal’ limit or the LoQ following laboratory analysis.

Independent Expert Panel on Drug Driving

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9th September, 2020 (Final minor amendments approved by Chair 16th September 2020)

Appendix 1 – Per se limits from international jurisdictions

Drug	UK (legislative)	UK (recommended by Expert Panel)	Norway (equivalent to BAC 20 mg/100 mL)	Norway (equivalent to BAC 50 mg/100 mL)	Norway (equivalent to BAC 120 mg/100 mL)	Denmark	Netherlands	Canada (recommended by Committee)
Blood concentration	**ng/mL**	**ng/mL**	**ng/mL**	**ng/mL**	**ng/mL**	**ng/mL**	**ng/mL**	**ng/mL**
alprazolam	x	x	3	6	15	5.3	x	x
amphetamine	250	600	41	x	x	21	x	x
buprenorphine	x	x	0.9	x	x	0.53	x	x
clonazepam	50	50	1.3	3	8	5.3	x	x
cocaine	10	80	24	x	x	21	50	30
codeine	x	x	9	x	x	x	x	x
diazepam	550	550	57	143	342	110	x	x
fentanyl	x	x	0.34	x	x	x	x	x
GHB	x	x	10300	30900	123600	x	x	10000
ketamine	20	200	55	137	329	x	x	zero
lorazepam	100	100	x	x	x	21	x	x
MDMA	10	300	48	x	x	21	x	x
methadone	500	500	25	x	x	53	x	x
methamphetamine	10	200	48	x	x	21	50	50
midazolam	x	x	33	x	x	x	x	x
morphine	80	80	9	24	61	10	x	x
nitrazepam	x	x	17	42	98	21	x	x
oxazepam	300	300	172	430	860	110	x	x
oxycodone	x	x	16	x	x	x	x	x
temazepam	1000	1000	x	x	x	x	x	x
THC	2	5	1.3	3	9	1.1[1]	3	2 to 5
tramadol	x	x	53	x	x	x	x	x
triazolam	x	x	x	x	x	x	x	x
zopiclone	x	x	12	23	58	11	x	x

[1] In 2017 Denmark introduced a progressive sanctioning scale for THC similar to Norway. Fines or prison time increase based on the level of THC identified (low = 1 ng/mL, medium = 3 ng/mL and high = 9 ng/mL), and the number of previous offences.

Appendix 2 – Excerpts from international reports

Excerpt of report from Drugs and Driving Committee (2017) - Canada

“While many jurisdictions have introduced per se limits to help with drug-impaired driving enforcement, to date there has not been a consistent approach used in the development of this type of legislation. Per se limits specify the concentration of a particular drug in the blood or other bodily fluid at or above which it is an offence to operate a motor vehicle, irrespective of any observed driving impairment. As such, the court needs only to determine if the individual’s drug concentration was at or above the specified threshold to determine guilt.

In Canada, a per se limit of over 80 mg of alcohol in 100 mL of blood has been in place since 1969. This per se limit is supported by the epidemiological relationship between blood alcohol concentration (BAC) and crash risk, experimental closed-course driving studies,
and laboratory studies of alcohol-induced impairment on specific driving-related tasks and functions. Unlike alcohol, one of the challenges for many potentially impairing drugs is that there is not currently substantive and consistent scientific evidence upon which to base per se limits.

The interest in utilizing a per se approach is an attempt to simplify the adjudication process, facilitate enforcement, and enhance deterrence. Together, these factors can have a positive impact on traffic safety. Research has determined that alcohol per se laws are associated with a 14%-15% reduction in alcohol-related fatal crashes. The relative simplicity of per se laws, their widespread acceptance, and the demonstrated effectiveness of alcohol per se laws, have bolstered the call that similar limits be established for other drugs in Canada.

1985, a National Institute on Drug Abuse (NIDA) sponsored consensus development panel (Consensus Report, 1985) stated “In order to establish that use of a drug results in impairment of driving skills and to justify a testing program to respond to this hazard, certain facts must be available.”

1) The drug can be demonstrated in laboratory studies to produce a dose-related impairment of skills associated either with driving or with related psychomotor functions.
2) Concentrations of the drug and/or its metabolites in body fluids can be accurately and quantitatively measured and related to the degree of impairment produced.
3) Such impairment is confirmed by actual highway experience.
4) Simple behavioural tests, such as can be done at the roadside by police officers with modest training, can indicate the presence of such impairment to the satisfaction of courts.
5) A range of concentrations of the drug can be incorporated in laws relating to impaired driving as ipso facto evidence.

These criteria have been met for ethanol. It is not certain that they can be met for other drugs that are now of concern to highway safety.

It remains challenging to fulfil all five aforementioned criteria for many drugs for several reasons: relevant laboratory studies are limited in part due to the medical and ethical issues with administering illicit drugs and/or prescription drugs to subjects at the elevated levels detected in impaired driving populations; interpretation of crash and fatality data is complicated by the prevalence of poly-drug use in such cases. Further complications with these data include: the potential for drug concentrations to alter due to variable timeliness of sample collection and, for fatalities, postmortem redistribution, choice of sample collection area, and/or putrefactive changes may result in altered drug concentrations between the time of death and the time of sample collection."

Excerpt of translated report from Professional Advisory Group – Norway (2010)

"The limits are based on scientific assessments of impairment after single doses of the drug in naive individuals. No consideration is given to tolerance phenomena or aberrant handling, including metabolism, of the evaluated compounds.

For most of the 20 substances where fixed limits are proposed, there are epidemiological studies showing that use is associated with increased accident risk.

For alcohol, clear influence / intoxication is usually considered to be present at about 1% [100mg/100mL] , and the fixed 0.2 % [20 mg/100mL] limit in the Road Traffic Act is 1/5 of the "impact concentration". For substances other than alcohol, limits are suggested which are also about 1/5 of the concentration seen in blood after taking a regular "intoxication / exposure dose". This limit is called a ban limit and should represent concentrations in blood where the effect will be of the same magnitude as blood alcohol concentrations of 0.2%.

Punishment metric limits are the limits at which exposure can be compared to alcoholic effects corresponding to 0.5% and 1.2%. Such sentencing limits are set for those substances where there is scientific literature showing dose- and / or concentration-dependent effects comparable to given alcohol concentrations in relevant experimental tests. Such limits are used in the Norwegian judicial system today to determine sanctions in criminal cases that deal with driving in an affected state, cf. the Road Traffic Act."

Excerpt of report from Expert Panel on Drug Driving (2013) – United Kingdom

"The main challenge in establishing recommendations for driving under the influence of psychoactive drugs is the need to provide an easily-understood and justifiable scientific rationale for particular drugs being covered by the offence of drug-driving, whilst recognising that the evidence base is dynamic and will develop as our knowledge and understanding increases. The Panel aimed to establish whether there was sufficient evidence in the scientific literature to be able to determine a relationship between the use of psychoactive drugs and an effect on driving performance in average members of the general public.

Setting a concentration or "limit" for a psychoactive drug, for the new drug driving offence, means that if a driver exceeds this threshold the driver can be prosecuted without the requirement to prove that he or she was impaired and that this impairment

was caused by the drug in his body. The implications of setting such a limit in law are therefore far-reaching, and the Panel members accept that their task in advising Government on such limits is crucial. Before recommending drug thresholds the Panel have therefore properly considered both the empirical (epidemiological) and experimental evidence, in relation to blood drug concentrations and driving behaviour.

Therefore the Panel has not sought to define and measure or proportion a concentration of a drug in a person's body to a certain degree of impairment. There are two main reasons for this decision. Firstly, there is no universal agreement on how to objectively measure impairment for psychoactive drugs and driving. Secondly, the Panel considered that defining impairment for several different classes of drugs would prove too complicated and not sufficiently robust to inform drug-driving legislation, if such a task could be completed at all."

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