Road traffic and drugs

Seminar organised by the Pompidou Group

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The Pompidou Group

The Co-operation Group to Combat Drug Abuse and Illicit Trafficking in Drugs (Pompidou Group) is an inter-governmental body formed in 1971. Since 1980 it has carried out its activities within the framework of the Council of Europe. It provides a multi-disciplinary forum at the wider European level where it is possible for policy-makers, professionals and experts to discuss and exchange information and ideas on the whole range of drug misuse and trafficking problems. Its current work programme includes the promotion of global drug strategies at national, regional and local level; the improvement of data collection systems in Europe; the stimulation of transfer of knowledge and experience between the relevant administrations and professional groups in Europe on issues, policies and programme for drug demand reduction; the promotion of effective implementation at European level of international drug control treaties and the improvement of cross-border collaboration against trafficking.

Preface

The effects of alcohol on driving are well known. Both the prevalence of drink-driving and methods of detecting it have been analysed. The statutory alcohol levels have been laid down on the basis of reliable information and of experience, and prevention and punishment measures and policies also draw on practical information. The same is not the case, however, for “illicit” drugs, whether taken in isolation or in combination with alcohol or with various medicines.

It is not going too far to say that there has been no satisfactory investigation into the scale of the phenomenon, the actual effects on drivers of “illicit” substances or potential detection techniques. Thus the authorities face the difficult task of solving equations containing many unknown factors. Is this issue something to be tackled as part of a comprehensive drugs policy, or is it not rather a road safety issue? The difference in approach is not without consequences. If the first path is chosen, should a “zero tolerance” approach be adopted, amounting to a prohibition of driving for anyone who has taken “illicit” drugs? On the other hand, if the road safety viewpoint is chosen, will the problem be solved by simply laying down concentration limits based on driving ability which would be enforceable by law?

Also taking a highly pragmatic viewpoint, we might wonder what technical, scientific and regulatory possibilities the law enforcement agencies have to detect the presence of substances adversely affecting driving performance and, indeed, to measure the degree of diminution of that performance. Is sufficient training provided to members of the police, doctors, legal experts and everyone else involved in law enforcement and what improvements could, and should, be made to it?

There are numerous cases in which road accidents occur when drivers are under the influence of “medicines” prescribed by doctors. It is clear from this simple fact how difficult it is to define a credible and consistent policy relating to illicit drugs. How can “illicit” drug users be prohibited from driving while persons under the influence of psychotropic substances, the effects of which are fully comparable with those of substances classified as “illicit”, are allowed to drive? Can the decisive criterion in this respect be the classification of the said substances, or should it not depend on various aspects of the use made of them? Lastly, what ethical and human rights limits have to be respected by the law and by the authorities in general?

The Pompidou Group has decided to review the knowledge and practical experience acquired in member states and, where possible, to draw from these some guidelines enabling members to make progress in this area of uncertainty. The first step was to produce a summary of existing surveys of the prevalence of illicit drugs in relation to driving in thirteen European countries, a summary drawn up by Dr Johan de Gier (Netherlands). It was also thought useful to produce an overview of the national situation in twelve member states, covering legislation and its enforcement, the difficulties experienced by the police and preventive efforts. This was drawn up by a team of researchers under Prof. Hans-Peter Krüger (Germany), who based their efforts on a very large amount of material collected through a questionnaire. The information they gathered was subsequently added to and fleshed out through personal contact with experts during visits to the countries concerned.

The reports drawn up by Dr de Gier and by *Prof.* Krüger's team revealed a very wide range of national situations, as well as highlighting extensive areas about which little was known. The Permanent Correspondents of the Pompidou Group, noting the clear need to do more research and exchange more information, therefore decided to hold a seminar focusing on four main fields:

1. legal aspects;

2. practical aspects of law enforcement and detection;

3. prevalence, epidemiology and risk assessment;

4. prevention and rehabilitation.

The seminar took place in Strasbourg from 19 to 21 April 1999, with Mr Claude Gillard (Belgium) in the chair, and with the two general rapporteurs, Mr de Gier and Prof. Krüger, playing a leading role. The participating public servants, researchers, practitioners, doctors and police officers came from twenty-seven countries of Europe, as well as from the United States, to exchange information and opinions during the plenary sessions and in the four working groups which looked at the four themes. The key reports and most of the many papers presented to the seminar are reproduced in this publication, as are the conclusions and proposals adopted by the participants.

The European Commission, which is very active on road safety issues, dealing with the drug use aspect *inter alia*, co-operated very closely on preparations for the seminar, and made available a document containing additional information about the situation in five countries not covered by the key report drawn up by Prof. Krüger's team. A contribution to the seminar was also made by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), of Lisbon, which put forward the findings of its research into the relationship between drug use, dangerous driving and road traffic accidents.

The key reports, like the papers presented at the seminar, reflect the complexity of the problems and the diversity of national approaches. They also, however, highlight the need for a considerable expansion and intensification of research in the various fields, with a view to the taking of appropriate legislative and practical steps.

The central points which emerge from the work of the seminar are:

- It seems unacceptable to base a reasoned argument about drugs and road safety on an over-simplified distinction between “illicit” and “licit” drugs and substances (the latter encompassing alcohol and medicines). It is not their classification which matters, but the use to which such substances are put.

- The real scale of the problem of drug use by drivers is still not well enough known, and there is also a lack of significant evidence of the effects on driving ability of the use of the substances concerned. Much uncertainty also remains as to the necessary preventive action. Research in these fields therefore needs to be expanded and intensified as a matter of urgency.

- The legislature thus has two main options: the “zero tolerance” approach, involving the prohibition of any presence of illicit substances, or the approach based upon reduced capacity to drive (the “impairment approach”). The choice between the two is not scientific, but political, based on complex considerations and assumptions. The experience of those member states which have opted for one approach or the other could usefully be monitored and then carefully analysed.

- It is vital to increase the knowledge of the staff concerned (police, justice system, administrative authorities) through the development and implementation of training courses covering drugs and their detection, and reliable rapid detection systems should also be developed and made available to the police.

- Particular attention must be paid to the implications of the use of “licit” psychoactive substances which adversely affect ability to drive (medicines, especially substitution medication, such as methadone).

The Permanent Correspondents of the Pompidou Group, in the light of the results of the seminar, have acknowledged that the main aim of the seminar was to take stock, rather than to come up with specific and final recommendations for national or European regulation. In keeping with Pompidou Group tradition, they feel, on the other hand, that this is not the time to call a halt: the developments now taking shape should be closely analysed, so that the situation may be reviewed again after an appropriate period. In this effort, synergy must be achieved with the activities of the European Union. The Pompidou Group will therefore, under its next work programme, be continuing its activities relating to drugs and driving.

Review of investigations of prevalence of illicit drugs in road traffic in different European countries,

by Dr Johan J. de Gier, Oosterhout, Netherlands

Summary

The specific focus of this survey has been the prevalence of illicit drug use in road traffic in thirteen European counties. The literature search conducted to accomplish this survey included the relevant scientific journals, institutes' reports published over the last decade and the proceedings of the last two conferences organised by the International Council on Alcohol, Drugs and Traffic Safety in 1995 and 1997.

A total of thirty studies have been critically reviewed in order to present the prevalence of illicit drug use alone and in combination with alcohol as well as multiple drug use. The prevalence of licit drug use is also presented, since this has been frequently reported in most studies. The different scope of the various studies entails prevalence being presented in different driver populations, such as 'general driver population', 'drivers suspected of driving under the influence of alcohol and/or drugs' and 'collision involved drivers'.

Different methodological problems arise with sample collection and data collection in many studies, thus most study outcomes do not allow comparisons across different European countries. Differences may occur especially in selecting the sample of drivers if police forces in one country focus more on detecting drugged drivers than in other countries. One general problem for all categories of driver populations is the representativeness of the sample under examination, which is also a problem if small sample sizes are included and/or selection criteria are not clear.

Only four large scale studies have been published, one German study focusing on the general driver population, one Norwegian study involving drivers suspected of driving under the influence of drugs, and two studies, from Belgium and Italy, in which collision involved drivers were screened for drugs. The results from these studies are not expected to completely reflect the situation in other countries, for one thing because of societal and cultural differences that determine drug use patterns (licit and illicit drug use) and the impact of public campaigns, which is mostly unknown. Consequently the conclusions from these studies are intended to be indicators for further discussion.

In the *general driver population* the prevalence of *illicit* drug use will probably fall in the range of 1%-5% (cannabis and opiates being most frequently observed), whereas *licit* drug use will fall in the range of 5%-15% (with benzodiazepines being most frequently detected). The prevalence of the combination of illicit drugs with alcohol reflects much more of a problem than the combination of licit drugs with alcohol, probably because patients tend to be much more aware of impairing effects of this combination. The prevalence of multiple drug use in the general driver population is very low if the German results are taken as an indicator.

In *populations of drivers suspected of driving under the influence of drugs* high prevalences of *licit* drug use (primarily benzodiazepines) are reported ranging from 14%-74%. The prevalence of *illicit* drug use is lower than for illicit drugs (9%-57% for cannabis, 8%-42% for opiates, and 1%-20% for amphetamines). These findings depend on the perception and awareness of police officers in the different countries who decide on the inclusion of a driver in the sample. Remarkable differences between countries are observed, for example the prevalence of the use of amphetamines in Norway is relatively high, while in contrast the use of opiates is rather low.

The combination of licit and/or illicit drugs and alcohol is expected to be high in samples selected for suspicion of driving under the influence of drugs/alcohol. However, in most studies the data for separating the prevalence of combinations of drugs (including alcohol) are lacking. The prevalence in drug positive cases is 25% in Norway, whereas the prevalence in all drivers in the sample in two Swiss studies ranged from 18%-28%. The prevalence of multiple drug use is reported in a few studies for all licit and illicit drug use together. A high prevalence (62%) has been observed by Swiss researchers.

In *collision involved drivers* the prevalence of *illicit* drug use ranged from 10%-25% in the different studies. Cannabis and opiates are about equally divided among the samples (6% and 7.5% respectively) and are detected about two to three times more frequently than amphetamines. Cocaine has been detected with a very low prevalence (0.5%-0.7%) in Belgium and Italy, whereas in Spain a high prevalence (5%-7%) has been reported. The prevalence of the combination of drugs (licit and illicit together) and alcohol use in drug positive drivers ranged from 27%-65% in most studies. The prevalence of multiple drug use is also reported in most studies for licit and illicit drugs together and ranged from 20% in the Belgian study to 36% in a Norwegian study in drug positive cases. When considering the complete driver sample in some other studies, the prevalence is lower, from 5% in the study in the United Kingdom to 17.5% in an Italian study.

It should be stressed that knowledge about the prevalence of drug positive drivers in different driver populations cannot prove that the use of drugs is a serious safety problem. Ideally, a study to determine accident risks needs to match collision involved drivers for case-control comparisons. In most countries (except for Germany) there is a lack of data on the prevalence of drugs among the normal driver population. The high prevalence of drugs found in representative samples of collision-involved drivers supports the assumption that there is a serious road safety problem. However, Europe does not have an approach in which standardised methodologies are applied in repeated studies during a given period of time in each country for cross national comparisons. It is recommended that such studies should be embarked upon and that national laws prohibiting roadside surveys should be abolished or modified to permit the same surveys to be conducted on a pan-European basis.

1. Purpose

The purpose of this report is to give a review of investigations in different European countries that show the prevalence of illicit drugs in road traffic with special regard to multiple abuse, which means a combination of various drugs, including alcohol and licit drugs. The literature search conducted to accomplish this review included the relevant scientific journals, institutes reports published over the last decade, and the proceedings of the last two conferences organised by the International Council on Alcohol, Drugs and Traffic Safety in 1995 and 1997. After summarising the results of the different reports for each country, discussion will follow in order to combine the relevant data and to provide a general conclusion and define the problem that will allow those responsible for traffic safety throughout Europe to determine the necessary steps for developing counter-measures.

The results of this review will be complementary to the overview of the legal systems, analysis of difficulties faced by the police, the prosecutors and the courts with respect to illicit drugs in road traffic, and of preventive attempts to control the problem. These aspects are by a report written by Prof. H-P Krüger (Centre for Traffic Sciences, University of Würzburg, Germany).

2. Introduction

Background to the problem

Road accidents in countries of the European Union, resulting in 50,000 fatalities and 1.5 million injuries every year, cost society over 70 billion ECU (White Paper on Transport Policy, COM 92/494, European Commission). It has been suggested that if all the Member States were to compile their statistical data according to the criteria used in those countries that prepare the most accurate estimations, then the real number of people injured in road accidents would probably exceed 3 million annually (Gil-Robles, 1998). The figures have reached a level that the European Union can no longer accept.

Since transport safety and public health are interrelated, road accidents caused by drugs other than alcohol have become an important public health issue. It is widely recognised that alcohol use is a causal factor in 20-40% of fatal road accidents, but many licit and illicit drugs are also known to impair driving ability. Available data allow one to conclude that use of the most frequently prescribed benzodiazepine tranquillisers more than doubles the risk of injurious accidents (comparable to the risk of 0.5 g/l BAC or blood alcohol concentration), while the use of tricyclic antidepressants increases the risk even more (Ray et al., 1992). One more recent epidemiological investigation revealed an extremely high relative risk (5 to 6 - fold increase, comparable to 1.0 g/l BAC) within a large population of benzodiazepines users during the first two weeks of using their initial prescription (Neutel, 1995).

Epidemiological studies on the most widely used illicit drug cannabis indicate the presence of tetrahydrocannabinol (THC) in roughly 4-12% of drivers injured or killed in traffic accidents, even if the population at risk is probably less than 4%. The THC incidence among injured or killed drivers is not conclusive evidence for establishing its role as a causal factor, since alcohol was present in the majority of THC positive accident victims (Robbe, 1994). It has been suggested that cannabis and alcohol in combination carry a greater risk potential than either of them alone (Terhune et al., 992). The independent contribution of cannabis use in impairing road safety is still dubious.

Estimations of the percentage of illicit drug use in driving licence-holders varies from 1-2% in the various EU Member States, whereas an average of 10% of the adult population drives under the influence of impairing medicinal drugs (De Gier, 1995). Comparisons across Member States on the prevalence of illicit drug use in road traffic are, however, difficult to achieve. The data from the studies reviewed show major discrepancies, depending on the method and scale of data collection (last year or life-time prevalence), the scope of the survey (nation wide general population, regional data, or selected populations who seek professional treatment for drug dependence). In most cases the accuracy of the records in various countries is not known. It is impossible to draw any conclusions to demonstrate the relationship between illicit drug use and accidents because of a lack of sound epidemiological studies. There is a need for actions to standardise research methodologies and to provide the relevant data.

A complete understanding of the problem of illicit drugs and driving will only be achieved in two complementary approaches: experimentation and epidemiology (Simpson and Vingilis, 1992). Experimental studies focus on drug effects on psychomotor performance, in particular the types of skills affected and the dosages used. However, it is fairly impossible to translate these effects into road crashes. Questions on the extent or magnitude of this problem, as well as the determination of which drugs are risk factors for collision involvement, can be answered in sound epidemiological research.

Descriptive epidemiology provides insight into the relative importance of different types of drugs. In other words, which drugs are detected that contribute to a significant traffic safety problem. If repeated evaluations are performed in time, insight can be provided into changing patterns of drug use and driving within society.

Analytic epidemiology determines which drugs are over represented in persons involved in road accidents. Involvement of control groups allows researchers to provide relative risk data. The relationship established through the risk factors approach is one of association, not of causation. Experimental research into the causal links between drug levels and behavioural impairment remains necessary to draw conclusions on causation potentials of different drugs.

Generally speaking, the application of epidemiological research to drugs (other than alcohol) and driving can only permit meaningful cross-cultural comparisons if standardised data-gathering methods are used. However, several factors (such as political, legal, social, economic) determine the research capabilities of researchers in different countries and will result in different approaches to sample selection and data collection. A review of investigations of prevalence of illicit drugs in road traffic in selected countries will therefore include studies in which numerous methodological problems are to be encountered. This review for the Council of Europe, includes more recent studies; some of them have adopted improved methodological designs.

3. Methodological Issues

In general most methodological problems encountered with epidemiological studies of drugs and driving can be categorised as problems with sample collection and data collection (Simpson and Vingilis, 1992).

Population under examination

The choice of population studied is critical and can give rise to problems in comparisons across countries. Epidemiological research of illicit drugs and driving can be classified according to the population under examination:
General population
Offender populations
User/addict populations
Collision involved drivers

In surveys of illicit drug use in the *general population* data gathering is generally through the use of questionnaires or interviews. Two of the most common observed problems relate to representativeness and refusals. General population surveys include both drivers and non-drivers and do not allow extrapolation to the driver population.

In roadside surveys drivers are randomly or systematically selected to obtain information through self reports on demographics, drug use, driving, and drug use through toxicological analyses of body fluids. Since roadside surveys tend to be executed during late night hours on weekends, drivers tested are not representative of the total driving population. Refusal rates can have profound effects on inferences about illicit drug use derived from roadside surveys because those substances are detected with less frequency than alcohol where refusal rates of 15% are observed. Refusal rates can actually exceed the proportion of drivers who score positive for illicit drugs. An additional problem exists with the collection of body fluid samples for drug testing, when invasive procedures are unacceptable because of legal liability.

In surveys of *offender populations* (charged with driving under the influence of alcohol or drugs), drug screens are carried out if the blood alcohol level is below the legal limit. This approach automatically excludes information on combinations of drugs with high levels of alcohol. Furthermore, the selection of drivers is initially determined by the arresting officer, which introduces a variety of biases.

In investigations of *user/addict populations* samples are generally drawn from treatment facilities. These surveys cannot be considered representative of the total user/addict population, since only a small proportion will seek formal treatment.

In surveys of *collision involved populations* information is gathered on a wide range of variables (e.g. characteristics of crashes, psychological/behavioural characteristics, drug use problem). Documentation of drug impairment is based on different perceptions and decisions of officers, which can introduce biases. In accident fatalities data are most of the time incomplete due to the fact that drug screens are not carried out on fatally - injured drivers found to be impaired by alcohol.

Data collection

Sources of data and the methods by which they are collected can cause methodological problems. The first source of data is official records (police, coroner, medical, etc.) and has limitations because data on illicit drug use are not routinely collected. Even when drug tests are carried out a select number of drugs are tested. In official records underreporting is a serious problem, because they tend to contain only the most extreme cases.

The second source of data is self-report instruments. Underreporting is also a problem in this approach since deviants tend to underreport.

Different methods of data collection used in surveys have their own problems. The method of drug analyses in blood, sweat, saliva or urine has problems with respect to sample collection, handling and transportation as well as toxicological assays used. Interpretation of drug levels detected is difficult; for example cannabinoids can be detected in urine many days, even weeks, after use and the relevance of this to traffic safety is obscure. Blood specimens are considered to be essential for surveys of illicit drugs and driving. Another method for determining illicit drug use among drivers relies on the use of clinical and psychophysical tests. The usefulness of the last method is still unclear. Self-report tools for the assessment of drug use and driving show different problems with respect to accuracy (reliability of recall information).

Finally, comparisons across studies are often difficult because of the lack of conventions used in reporting findings. For example, there is no consistency in reporting percentages (all drivers in the sample or only those who were tested for drugs).

4. Surveys Of Illicit Drug Use In Road Traffic In Different European Countries

4.1 Austria

In a pilot study of the ‘Bundespolizeidirektion’ in Vienna urine samples of 27 drivers with extremely conspicuous behaviour in road traffic and negative breathalyser results for the presence of alcohol were analysed using the Abbott ADx-analyser (a fluorescence polarisation immunoassay) for cocaine metabolites, cannabinoids and opiates (Fous, 1995). Gas Chromatography/Mass Spectrometry (GC/MS) was used to confirm positive results obtained with the immunoassay technique. In 8 cases (32%) these analyses confirmed the use of one drug, in 13 cases (52%) two drugs, and in 4 cases (16%) all three drugs tested for could be found positive.

Without exception all 25 samples found positive in the ADx-analyser were taken from young drivers (22 males, 3 females), 48% of them born between 1968 and 1970. 84% of tested drivers had previous convictions and 68% had drug addiction records. The results of GC/MS confirmed samples are given in Table 1.

The author indicated that his findings could be considered the 'tip of the iceberg'. However, it is impossible to draw conclusions from only a small sample and to demonstrate the prevalence of illicit drug use in road traffic in Austria since the sub-sample of drivers was not representative of the driving population. No other examples of recent surveys could be obtained from the 'Kuratorium für Verkehrssicherheit'.

TABLE 1 RESULTS OF GC/MS CONFIRMED SAMPLES

Substance	Negatives	Positives		
		<100 ng/ml	<500 ng/ml	<1500 ng/ml
Cannabinoids (THC)	7	9	6	3
		<1000 ng/ml	<5000 ng/ml	<40000 ng/ml
Opiates	8	5	8	4
		<1000 ng/ml	5000 ng/ml	<36000 ng/ml
Cocaine metabolites	13	7	2	3

4.2 Belgium

The Belgian Toxicology and Trauma Study (BTTS) was conducted as a prospective, multi-centre survey in six hospital emergency departments sufficiently spread over the country (Meulemans et al., 1997). Inclusion criteria were: all drivers, at least 14 years of age, of bicycles or motor vehicles involved in a traffic accident on a public road, directly admitted to one of the selected emergency departments for at least one day or dying upon or after admission. During the registration period (January 16th 1995 till June 15th 1996) blood and urine samples were taken from 2,143 patients.

Blood alcohol concentration was assessed first by screening in whole blood on fluorideoxalate, using Radiative Energy Attenuation (REA; Abbott). Positive samples were confirmed by Gas Chromatography/Flame Ionisation Detection. Toxicological screening was per-formed on the urine samples, using Fluorescence Polarisation Immuno Assay FPIA) on ADx-analysing equipment (Abbott). The screening battery consisted of 8 tests and searched for amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine metabolites, methadone, opiates, and propoxyphene.

In addition the presence of benzodiazepines in serum was searched for using the same technique. Confirmation for most substances was performed on urine by Gas Chromatography/Mass Spectrometry (GC-MS). The confirmation of benzodiazepines in serum was carried out by High Pressure Liquid Chromatography (HPLC) and Gas Chromatography with Electron Capture Detection (GC-ECD). For barbiturates in serum confirmation was performed by Gas Chromatography with Nitrogen Phosphorus Detection (GC-NPD). Analytical cut-off values for the different drugs are presented in Table 2.

Although a total of 2,143 patients were included during the collection period of the study, a final sample size of 2,053 patients could be used for analyses. This was due to inappropriate handling of the methodological protocol by two of the collaborative centres. The study population consisted of 1514 men (74%) and 539 women (26%). A majority of younger people could be observed: more than one third (34.7% men, 33.8% women), whereas fewer than 10% were 65 years of age or older. Very young drivers (below 20 years) and elderly drivers (over 60 years) were slightly more represented in the female group compared to the male group (18% and 12% versus 12% and 9% respectively).

TABLE 2 SUBSTANCES, TEST METHODS AND CUT-OFF VALUES USED IN THE BTTS

Substance	Screening	Cut-off	Confirmation
Alcohol	REA, serum	0.10 g/l	GC-FID in total blood
Amphetamines	EPIA, urine	300 ng/ml	GC-MS in urine
Barbiturates	EPIA, urine	200 ng/ml	GC-NPD in serum
Benzodiazepines	EPIA, urine	50 ng/ml	HPLC/GC-ECD in
	EPIA, serum	12 ng/ml	serum
Cannabis	EPIA, urine	25 ng/ml	GC-MS in urine
Cocaine	EPIA, urine	300 ng/ml	GC-MS in urine
Methadone	EPIA, urine	300 ng/ml	GC-MS in urine
Opiates	EPIA, urine	200 ng/ml	GC-MS in urine
Propoxyphene	EPIA, urine	300 ng/ml	GC-MS in urine

In 1,959 cases from the final sample information on recent medication use could be obtained as reported by the patients. In 35% of those cases patients admitted having used some kind of medication during the week preceding the accident. If focus is given to psychotropic medication, it turned out that 10% of the study population reported the use of a medicine known to impair driving performance.

The consumption of more than 30 ‘standard units’ of alcohol during the last week preceding the accident was reported by 7% of the injured drivers. This was noticed more often in men (8,3% versus 1,7% in women) and most frequently in the 40-49 age group (13,8%). Eighty-six percent of the patients reported their alcohol consumption during the last week as representative for their normal drinking habits, in 7% it had been lower and in 5.4% it had been higher than usual.

The use of illicit drugs during the three months preceding the accident was admitted by 5.1% of the patients. The major classes reported were cannabis (3.7%) and amphetamines (1.4%).

The toxicological analyses showed the following results. In 35 cases (1.7%) neither blood nor urine samples had been obtained, while from another 139 patients (6.8%) only blood samples had been collected. Blood alcohol concentration (BAC) could be assessed in 1871 patients (91%), 1342 of which (72%) were presented with an analytical result not reaching the legal limit (0.5 g/l). Of the remaining 529 ‘positive’ patients (28%), two thirds (65.6%) had a BAC exceeding 1.5 g/l, and more than one third (37.6%) even exceeded 2 g/l. Of the patients with both self-reported information on recent alcohol consumption and blood samples, 17 (3.3%) of the 521 claiming they had not imbibed any alcohol during the last week were nevertheless shown to have a BAC exceeding 0.5 g/l, 11 of whom (65%) showing 1.5 g/l or more. In the group admitting recent alcohol consumption these figures reached 37% and 61% respectively. In patients reported with higher alcohol consumption habits (more than 30 ‘standard units’ in the week before the accident), 70% exceeded the legal limit and three quarters even showed more than 1.5 g/l.

The results on medication and illicit drugs were obtained in samples of patients who did not receive (potentially interfering) medication before sampling. In total 391 cases (19%) were confirmed positive on one or more of the following substances: amphetamines, benzodiazepines (in blood), barbiturates (in blood), cannabis, cocaine, opiates, methadone, or propoxyphene. Of these, 107 (27%) also had a BAC exceeding the legal limit of 0.5 g/l, the latter being seen significantly more often in men (32% of the positives, versus 15% in women). The prevalence of the detected substances is summarised in Table 3.

TABLE 3 TOXICOLOGICAL RESULTS OBTAINED IN PATIENTS INCLUDED THE IN THE BTTS

Substance (sample)	N analysed	Screening positive	Confirmation positive	Prevalence (%)
Amphetamines (urine)	1879	60	56	3.0
Barbiturates (urine)	1879	37	25	1.3
Benzodiazepines (blood)	1871	232	160	8.5
Benzodiazepines (urine)	1879	278	*	*
Cannabis (urine)	1879	114	113	6.0
Cocaine (urine)	1879	14	14	0.7
Methadone (urine)	1879	6	5	0.4
Opiates (urine)	1879	149	141**	7.5
Propoxyphene (urine)	1879	6	4	0.2

* Positive screening results were confirmed in blood only.
** 103 (73%) resulted from analgesics, anti-tussives, and 38 (27%) from the use of morphine/heroine.

The highest scores by far were noticed for benzodiazepines (8.5%), opiates (7.5%), and cannabis (6%), followed by the other substances (amphetamines 3%, barbiturates 1.3%, and cocaine, methadone, and propoxyphene each less than 1%). Of those found positive on amphetamines, only 22% had reported the use of this substance during admission. For cannabis and cocaine positive cases these figures were 36% and 21% respectively. For propoxyphene one out of the four patients mentioned the use of this substance. None of the five patients who were found positive for use of methadone had mentioned this upon anamnesis on illicit drug use and only two had mentioned it on medication use.

Multiple drug use was observed in 80 patients, or in 20% of the positives (64 on two substances, 13 on three, 2 on four, and 1 on five). In 24 of these multi-substance (abusers BAC levels exceeded 0.5 g/l. In general, teenagers had a positive rate of 20% for the toxicological analysis, 15% of them combining this with a BAC exceeding the legal limit. In the age group 20-30 years these figures reached 24% and 29% respectively, for 30-40 years 19% and 38%, for 40-50 years 27% and 38%, for 50-60 years 19% and 23%, and in the age group of 60 and over 21% and 10%.

One interesting finding that gives weight to the concern of higher accident risk by multiple drug use is a clear synergistic interaction for alcohol and medication/illicit drugs, if mortality was taken as the outcome variable. The results of the BSST indicate a relative risk of 2.56 in the combined positive group, in which a mere additive effect would theoretically have led to a relative risk of 1.60.

The Belgian Toxicology and Trauma Study (BSST) is one of the very few good examples of descriptive epidemiological research that provides insight into the relative importance of different types of drugs in collision involved drivers. By combining the data from self-reported drug use with data from toxicological analyses the relative usefulness of self-report instruments could be illustrated in a very comprehensive way.

4.3 Denmark

In a Danish study by Worm et al. (1996) the occurrence of drugs and narcotics in violators of the Danish Road Traffic Act during the year 1993 was determined according to the request by the police. These requests are not frequently received if the blood alcohol concentration (BAC) is above the legal limit of 0.8 g/l. In 1993 the central laboratory (Department of Forensic Chemistry at the University of Copenhagen) received 425 cases, of which only 317 were analysed for the presence of drugs (legal) or narcotics. In 256 cases drugs or narcotics were found present with in total 531 positive findings. In 40% of the cases only one substance was found present.

The most frequently detected substances were benzodiazepines, morphine, methadone, cannabinoids and amphetamine with 239, 52, 42, 32, and 28 positive findings, respectively. Radioimmunoassays or receptor methods were used for screening the samples. Quantitative determinations were carried out by using liquid chromatography with UV- and electrochemical detectors and capillary gaschromatography with nitrogen and electron capture detectors. Only findings confirmed by two different methods were included in the results.

In 58 of the 108 cases that were not analysed for drugs the BAC was below the legal limit. In 61 of the 317 cases analysed for drugs and/or narcotics no positive findings could be detected. In 28 of these drug negative cases the BAC was lower than the legal limit. In 44% of the drug positive cases only one compound was found present, alcohol not included. In about half of these cases the BAC was higher than 0.8 g/l.

The authors compared their results with outcomes of a similar investigation in Norway (Kruse, 1994). Denmark and Norway are both Scandinavian countries with approximately the same size of population, about four million in Norway and five million in Denmark. In the Norwegian study 2371 samples were analysed compared to the 317 in the Danish study. Interestingly, the drug use patterns in both countries are quiet different looking at the five most frequently detected substances (Table 4). In Norway cannabis was the most frequently observed drug, whereas this was only rated number five in Denmark. Methadone was probably more frequently used in Denmark, while codeine and ethylmorphine were seen quite often in Norway. The authors do not attempt to explain these differences, but it is clearly shown that drug use patterns differ substantially among European countries. It once again underlines the complex nature of licit and illicit drug use in general while discussing trends in European countries. Many factors influence drug use, most of them poorly understood, such as the effectiveness of public campaigns and rational prescribing of medicines by doctors.

In order to illustrate the development of drug use patterns in traffic cases the authors presented the results for the years 1989 and 1995 (Steentoft et al., 1997). Once again they emphasise that in Denmark the police decide for what drugs screening and analyses have to be performed. In about half of the cases only analyses for single drugs are requested, often directly related to information gathered from the person under suspicion. This practice introduces a variety of biases and will result in inconsistency in reporting percentages of drug use. The authors however detect a trend towards increased use of benzodiazepines, in particular of flunitrazepam, morphine and cocaine, but the numbers of the latter are limited (Table 5).

TABLE 4 COMPARISONS OF FREQUENTLY OBSERVED DRUGS OR NARCOTICS IN TRAFFIC CASES IN NORWAY AND DENMARK (WORM ET AL., 1996)

Country	N analysed samples	N positives in %	Drug name	N positives	In % of samples analysed
Norway	2372	60	Cannabinoids	842	35.5
			Benzodiazepines	802	33.8
			Amphetamines	391	16.0
			Morphine	107	4.5
			Codeine, ethylmorphine	86	3.6
Denmark	317	81	Benzodiazepines	239	75.4
			Morphine	52	16.4
			Methadone	42	13.3
			Cannabinoids	32	10.1
			Amphetamines	28	8.8

TABLE 5 TRAFFIC CASES INVESTIGATED FOR DRUGS OTHER THAN ALCOHOL (1989 VS 1995)

Selection of cases	**1989**	**1995**
Cases investigated for alcohol	26363	16432
Cases received for investigating drugs other than alcohol	391	314
Of these cancelled by police	119	93
Cases analysed for drugs other than alcohol	272	221
Drug names		
Benzodiazepines Diazepam Flunitrazepam	123 (45%) 85 (31%) 33 (12%)	118 (53%) 57 (26%) 62 (28%)
Cannabis	33 (12%)	38 (17%)
Amphetamine	31 (11%)	21 (10%)
Morphine	28 (10%)	59 (27%)
Methadone	29 (11%)	29 (13%)
Ketobemidone	12 (4%)	13 (6%)
Cocaine	2 (1%)	14 (6%)
No drugs detected	70 (26%)	31 (14%)

The data are difficult to apply in presenting the prevalence of illicit drug use in offender populations in road traffic in Denmark. Drug screening is carried out if the blood alcohol level is below the legal limit or if the police have specific information on potential drug use from the offender. This approach automatically excludes information on combinations of drugs with high levels of alcohol. Since the police determine the selection of drivers and decide on the screening for drugs other than alcohol, a variety of biases has been introduced. It is not possible to speak of anything more than 'possible trends in illicit drug use in Denmark'.

4.4 France

The prevalence of psychotropic licit drugs, opiates and alcohol in fatally - injured drivers during the period from 1 September 1991 till 31 August 1992 has been investigated in northern France (Region Nord- Pas de Calais) by Deveaux et al. (1995). Blood samples were taken from 103 fatally - injured drivers. Screening for benzodiazepines, tricyclic antidepressants and barbiturates was performed by fluorescence polarisation immunoasssays (FPIA) using ADX equipment (Abbott). Each positive result was confirmed using Gas Chromatography/Mass Spectrometry (GC/MS). Opiates were determined using a radio-immunoassay technique (RIA-Coat a Count Morphine, Behring), whereas alcohol was determined using Gas Chromatography.

Blood samples were taken from 88 males with an average age of 37.5 years (range 15-80), and 15 females with an average age of 38.9 years (range 14-81). Blood alcohol concentrations (BACs) were above the legal limit (> 0.7 g/l) in 45.7% of all cases (46.6% males, 40.0% females). For screening for drugs only 97 samples contained sufficient quantities of blood to perform analyses. The results are presented in Table 6.

Psychotropic drugs were detected in 36.4% of all cases. Alcohol and psychotropic drugs were found in 19.8% of the samples, whereas the combination with alcohol > 0.7 g/l was present in 15.6% of all cases.

In a study by Pélissier et al. (1996) urine samples of young adult injured drivers involved in road accidents were tested for opiates, cannabinoids, cocaine and amphetamines. This multi-center study was conducted in emergency units of three hospitals following a prospective case controlled design including injured drivers aged 18-35 years. A first screening was carried out using the Abbott ADx-analyser (a fluorescence polarisation immunoassay, FPIA). Positive samples were confirmed by gaschromatography/ mass spectrometry (GC/MS). The analyses of urine samples revealed that 10% of the injured drivers (6 out of 60) showed positive values for cannabinoids, 5% (3 out of 60) showed positive opiates values, while one sample was detected positive for amphetamines. Positive cocaine could not be observed. Only one sample indicated multiple drug use (cannabinoids and amphetamines used together). In 60 samples obtained from control patients (admitted to the hospital for other reasons than accidents) only five positive cannabinoids could be confirmed. Cocaine, opiates and amphetamines could not be detected at levels higher than the cut-off values. The results show no significant differences in the prevalence of illicit drugs between the two groups of relatively small sample size. Determination of alcohol and legal drugs was not involved in this study.

In a recent collaborative case-control study the prevalence of opiates, cocaine metabolites, cannabinoids, and amphetamines in the urine of drivers injured in road accidents was compared with the values of non-accident subjects (Marquet et al., 1998). Recruitment was performed nation wide in the emergency departments of five hospitals (Lille, Limoges, Marseille, Paris, and Toulouse) and comprised 296 drivers aged 18 to 35 (males or females, recruited consecutively, night and day) and 278 non-traumatic patients (admitted during the same period to the same emergency units for any non-traumatic reason) in the same age range. The whole study was strictly anonymous, no consent had to be requested and no information on the aim of the study was provided, leading to no refusals. Screening for drugs in urine was performed by fluorescence polarisation immunoasssays (FPIA) using ADX or TDX equipment (Abbott).

TABLE 6 PREVALENCE OF PSYCHOTROPIC DRUGS IN 97 FATALLY INJURED DRIVERS

Substance	Number of positives in males (n=35)	Number of positives in females (n=3)	Total number of positives
Benzodiazepines > 50 ng/ml	11	1	12
Tricyclic antidepressants > 75 ng/ml	19	1	20
Barbiturates > 2 µg/ml	1	0	1
Opiates >1.6 ng/ml	4	1	5

Each positive results was confirmed using Gas Chromatography/ Mass Spectrometry (GC/MS), in one single laboratory. Statistical analyses to assess potential differences in prevalence of drugs comprised single-step logistic regression. Confounding factors (age, sex, centers) between the two populations were simultaneously analysed.

The mean age of the drivers and patients was 25.5 $\pm$ 5.2 and 26.5 $\pm$ 5.2 years, respectively (p<0.02). Females represented 28.4% of the drivers and 44.2% of the patients (p=0.0001). The prevalence of drugs in urine of drivers and patients is presented in Table 7. The respective prevalences for drivers and patients were: 13.8% and 7.6% for cannabinoids; 10.5% and 10.4% for opiates; 1.35% and 2.52% for amphetamines; and 1.10% and 1.08% for cocaine metabolites.

After adjustments for differences in age and sex distribution, the apparent difference in the prevalence of cannabinoids between drivers and patients was not statistically significant (p=0.054), except in females for whom the prevalence in drivers' urine was significantly higher than in patients (p=0.020). A higher prevalence of cannabinoids was found in urine samples of males, both in drivers (p<0.05) and patients (p<0.0001). No difference between drivers and patients was found for the prevalence of urinary opiates. However, a significantly higher

prevalence of opiates was found in males positive for cannabinoids compared to cannabinoid-negative drivers (p=0.003) or patients (p=0.001). In female drivers and patients this difference was not significant. Because of the limited numbers of positives, no statistical comparison could be made between drivers and patients with regard to cocaine and amphetamines.

The authors discuss the limitations of their study. Firstly, the opiates found in about 10% of all samples. These results can correspond to either illicit or to therapeutic use. Secondly, there was no access to police records, thereby leaving out the determination of the control population as being a group of non-accident drivers. Thirdly, the lack of alcohol and licit drug testing. The probability of drivers being responsible for the accident increases with the combination of cannabis, alcohol and benzodiazepines (Schermann et al., 1992). Therefore the present results cannot be applied for determining the causal involvement of drugs in road accidents. They rather indicate the representation of drug users among injured drivers compared to a group of patients.

TABLE 7 PREVALENCE OF DRUGS IN 296 DRIVERS AND 278 PATIENTS

Substances	Positives (%) in drivers		Positives (%) in patients	
	males	females	males	females
Cannabinoids	16.0	8.3	12.3	1.6
Opiates	10.4	11.0	10.7	9.8
Cocaine	0.0	3.6	1.3	0.8
Amphetamines	0.5	3.6	1.9	3.3

4.5 Germany

In Germany several investigations have been published that allow some insight in to the prevalence of illicit drug use in road traffic. The first two studies were based on the screening of blood samples from drivers stopped for suspicion of driving under the influence of alcohol (DUI). In the study by Rittner et al. (1991) 650 randomly selected blood samples were taken from all samples submitted for blood alcohol in 1987 in Rheinland-Pfalz. It was found that 7.7% of male and 2.7% of female drivers aged between 18 and 35 who were suspected of DUI had also consumed cannabis, while 3.4% of males and 13.3% of females had taken benzodiazepines in addition to alcohol.

In another study by Möller (1994) 660 blood samples of randomly selected DUI cases were analysed for licit and illicit drugs. Toxicological screening was performed with Radio-Immuno Assay (RIA) and Fluorescence Polarisation Immuno-Assay (FPIA). The confirmation of benzodiazepines was carried out with use of Gas Chromatography with Electron Capture Detection (ECD). The other drugs were confirmed by Gas Chromatography/Mass Spectrometry (GS-MS).

In 570 (86.4%) of the 660 cases, only alcohol could be detected. In 65 cases (9.8%) licit and illicit drugs alone were found in addition to alcohol. In 22 cases (3.3%) licit and illicit drugs were found alone. Nearly two thirds (64.4%) of the positive cases (licit and illicit drugs) contained illicit drugs (amphetamines, cannabinoids, opiates). Cannabinoids were found in 54 cases, opiates in 12 cases and amphetamines in three. No cocaine was found. Benzodiazepines were found in 36 cases and barbiturates in seven. No tricyclic antidepressants were found (Table 8). Ten of the benzodiazepine positive cases (30.6%) and eighteen of the cannabinoids positive cases (33%) were found negative for alcohol use. The average blood alcohol concentration (BAC) of all drug positive cases (0.103%) was 0.06% lower than the average BAC of the drug negative ones (0.163%). Despite the fact that the average BAC was below 0.11% in 47.1% of the drug positive cases, the frequency of traffic accidents involving injuries was almost doubled in this group compared with the drug negative cases.

Multiple drug use was most prominently found in the amphetamine cases (all three cases were also positive for cannabinoids) and opiates cases (eight out of twelve were found positive for cannabinoids). Only 11% of cannabinoid positive cases were found positive for other drugs.

The average age of the drug positive drivers was 28.7 years, whereas that of drivers with only alcohol positive findings was 33.8. The average age in the cannabis positive cases was 24.9 years. A breakdown by sex revealed a relatively high proportion of females in drug positive cases.

The most recent large scale study was conducted by Krüger et al. (1995, 1996) to determine the prevalence of psychotropic drugs (licit and illicit) among the German general driving population. During the German Roadside Survey from 1992 to 1994, breath alcohol measurements were collected from more than 21,000 drivers in two regions: Unterfranken and Thueringen. In addition, 13,122 drivers were asked for a saliva sample, and 12,213 (93.1%) agreed to participate. In 1992, 3,027 samples were obtained for drug analyses (cannabinoids, amphetamines, opiates, cocaine, benzodiazepines, and barbiturates). Of the samples collected, 32,6% were essentially dry prior to analysis (volume less than 0.1 ml), therefore eventually 2,234 samples were actually analysed. Toxicological screening was performed on 0.3 ml of the saliva sample, using Fluorescence Polarisation Immuno-Assay (FPIA) on ADx-analysing equipment (Abbott).

Table 8 Drug and alcohol positive cases in 660 randomly selected DUI blood samples

Substance	Positive cases (n=)
Cannabinoids	54
Benzodiazepines	36
Opiates	12
Barbiturates	7
Amphetamines	3
Cocaine	0
Antiepileptic drugs	(1)
Tricyclic antidepressants	0
Alcohol	635

Table 9 Prevalence of alcohol and drugs in a sample of German drivers (n=3,027)

Substance	Positive cases (%)
BAC > 0%	5.50
BAC > 0.03%	2.01
BAC > 0.05%	1.20
BAC > 0.08%	0.56
BAC > 0.11%	0.43
Benzodiazepines 3 ng/ml cut-off	3.64
Benzodiazepines 5 ng/ml cut-off	2.60
Barbiturates 100 ng/ml cut-off	0.53
Cannabinoids 20 ng/ml cut-off	0.61
Opiates (including Codeine) 100 ng/ml cut-off	0.70
Opiates (excluding Codeine) 100 ng/ml cut-off	0.15
Amphetamines 100 ng/ml cut-off	0.08
Cocaine 200 ng/ml cut-off	0.01

Another 1.0 ml of the saliva sample was needed for confirmation by Gas Chromatography/Mass Spectrometry (GC-MS). Alcohol was determined using a Gas Chromatographic method on 0.2 ml of the sample.

After adjustments of the results to reflect a representative driving population, the following positives were found: benzodiazepines, 2.7%; opiates (including codeine), 0.7%; cannabinoids, 0.6%; barbiturates, 0.6%; amphetamines, 0.08%; cocaine, 0.01%. Alcohol was found in 5.5% of the saliva samples (Table 9).

The benzodiazepines are the most prominent drugs other than alcohol. In fact these drugs had the same prevalence as alcohol in a BAC higher than 0.03%. Cannabis was the most frequently used illicit drug. Most samples could be analysed for more than one drug. Only one sample could be detected with multiple drug use (positive for benzodiazepines and opiates). None of the samples tested positive for benzodiazepines or barbiturates tested positive for alcohol as well. The combined use of illicit drugs and alcohol was tested with the following respective ratios: cocaine, 0 alcohol positives out of 2; opiates, 3 out of 9; cannabinoids, 2 out of 5; and amphetamines, 1 out of 2.
The authors also discuss the concentrations of the various drugs found in their survey. Although concentration measures only provide rough estimates of psychotropic activity, some information on interpreting the meaning of their findings is provided.

The results of the last two studies show important differences in the prevalence of benzodiazepines in combination with alcohol. In the German Roadside Survey 3.64% of the saliva samples were found positive for benzodiazepines, but none of these samples was tested positive for alcohol, whereas in the study by Möller benzodiazepines were found in 36 cases (=5.45%), of which 26 cases tested positive for alcohol use. These findings illustrate that prevalence in a normal driver population can differ substantially from prevalence in a population of drivers stopped for suspicion of driving under the influence of alcohol.

4.6 Hungary

In Hungary there are no systematic research efforts published that allow presentations of prevalence of illicit drug use by drivers, although interest in the topic of drugs (other than alcohol) and driving is present (Nyiri, 1997).

4.7 Italy

A large survey to determine drug usage of drivers, involving 5,910 injured drivers and pedestrians hospitalised in Padua from July 1978 - December 1988, was carried out by Ferrara et al. (1990). Patients under the age of 14, examined two hours after the accident, from whom no blood or urine samples were available or for whom a complete drug screening was not feasible were excluded from the survey. Urine and saliva samples from 4,350 drivers (3,002 males; 1,348 females) and 650 pedestrians (403 males; 247 females) included in the survey were used for screening on 72 different drugs (anti - inflammatory drugs, antiepileptics, barbiturates, benzodiazepines, meprobamate, methaqualone, tricyclic antidepressants, phenothiazines, analge-sics, narcotics, stimulants, psychomimetics and cannabinoids). Enzyme Immuno-Assay techniques (EMIT) were used for screening, while Chromatographic techniques (HPLC, GC/MS) were used for confirmation in blood. Any detectable concentration of psychotropic drugs (including alcohol) in blood plasma, was considered positive, whereas a positive drug level in urine existed with concentrations higher than 0.2 mg/l. A control group of drivers not involved in road accidents consisted of 500 non-violating drivers enlisted at two checkpoints in Padua on every last Friday of the week from 7:00 pm to 00:30 am for a three months period during the years 1981 till 1988.

Results indicate a total prevalence of drugs in plasma and urine in respectively 28.6% and 40.7% of all cases (Table 10). The total prevalence of alcohol was 49.0% and 53.3%, respectively. Anti - inflammatory drugs (9.8%) and benzodiazepines (8.5%) were the drugs most prominently found in blood plasma (Table 11). Fifty one percent of all BACs were in a lower range (< 0.1 g/l), whereas 31.8% were in the range between 0.1 and 0.5 g/l, the remainder was above 0.5 g/l. For the comparison group 85% was below 0.1 g/l, 7% in the 0.1 to 0.5 g/l range.

TABLE 10 PREVALENCE (%) OF ALCOHOL AND DRUGS IN PLASMA AND URINE

Substance	Plasma	Urine
Drugs alone	15.0	23.2
Alcohol and drugs	13.6	17.5
Alcohol alone	35.4	35.8
Total prevalence of drugs	28.6	40.7
Total prevalence of alcohol	49.0	53.3
No alcohol, no drugs	36.0	23.5

TABLE 11 DRUGS IN PLASMA SAMPLES OF 5,000 CASES

Substance	Number	%
Anti-inflammatory drugs	490	9.8
Benzodiazepines	425	8.5
Barbiturates	170	3.4
Phenothiazines	150	3.0
Tricyclic antidepressants	75	1.5
Antiepileptics	60	1.2
Narcotics	25	0.5
Amphetamines/cocaine	25	0.5
Meprobamate	10	0.2
Total	1430	28.6

Cannabis was the most prominently found illicit drug in urine, in 5.5% of all cases. Narcotics was found in 3.5% and stimulants in 2.7% of all samples (n=5,000). Multiple drug use is presented as a result of analyses in a subset of the samples (Table 12).

TABLE 12 MULTIPLE DRUG USE AS A PERCENTAGE OF POSITIVES IN PLASMA AND URINE

Substance	Plasma (n=940; 18.8%)	Urine (n=1534; 30.7%)
One drug	11.6	13.2
- drug only	6.1	7.8
- with alcohol	5.5	5.4
Two or more drugs	7.2	17.4
- drugs only	3.1	9.4
- with alcohol	4.1	8.0

The prevalence of psychoactive drugs alone or with alcohol in the subset of plasma and urine samples is about the same. Consumption of a combination of psychoactive substances is slightly more frequently observed if only urine samples are considered. If plasma samples are taken into consideration single drug use is observed more frequently.

The authors did not attempt to conclude on causation potentials of different drugs, obviously because of the limitations of the comparison group (e.g. samples collected on Friday nights only).

The study presents the methodology and results of a ten - year epidemiological survey carried out at the University of Padua. It provides guidelines for adequately presenting the epidemiological data in order to allow comparisons across studies performed by different teams of investigators.

A project involving a roadside survey in 1994-1995 to determine drug usage of drivers in northeast Italy is described by Zancaner et al. (1995). The study involved 1,237 drivers, including 265 who were suspected of driving under the influence of drugs. Data were collected in collaboration with the police who stopped the drivers on Sunday mornings between the hours of 1:00 a.m. and 7:00 a.m. during the months of July, August, and December 1994 and January 1995, and asked them to participate in the study. The subject selection, however, was not described. The authors indicated that ‘rapid clinical screening’ was performed on 1537 car drivers, and that 309 were subjected to ‘complete clinical and toxicological ascertainment’. They do not describe, however, what this means nor how these drivers were selected. Of these 309 drivers, 14 refused to provide a blood or urine sample, leaving 295 (94.2% males; 5.8% females) who were tested for drugs. Of these 249 supplied a blood sample and 221 a urine sample.

The results show that 51.4% of the drivers who were subjected to complete toxicological ascertainment had a measurable BAC, and 30.9% of the entire driver sample was legally drunk (BAC > 0.8 g/l). The study concluded that 10.2% (n=30) of the subjects were driving under the influence of psychoactive substances (Table 13).
Most of the 30 drug positive drivers had used either cannabis or cocaine or both. Table 14 presents the multiple drug intake by the subjects.

The results of this study do not allow any conclusions about the drug use of drivers in general. because of the failure to describe sample selection. Obviously the study focussed on drivers suspected of drunk or drugged driving, and allows for comparisons only if the same methods were to be used in a follow-up study carried out in the same region.

Table 13 Psychoactive substances in biological fluids

Substances	Number of subjects
Cannabinoids	18
Cocaine	9
Amphetamines	6
Opiates	3
Benzodiazepines	1

Table 14 Multiple intake of psychoactive substances

Substances	Number of subjects
Psychoactive substances without alcohol	30
Alcohol and psychoactive substances	18
Two or more psychoactive substances without alcohol	11
Alcohol and two or more psychoactive substances	6

The project described above is probably an ongoing one since a second report was published by Ferrara et al in 1997. The period of sample collection was extended and included the months August, September, and December 1995. Rapid clinical screening was carried out on 2,779 drivers, including 480 who were suspected of driving under the influence of drugs. The results indicate that 52.3% of the drivers who were subjected to complete toxicological ascertainment had a measurable BAC, and 31.7% of the entire driver sample were legally drunk (BAC > 0.8 g/l). The study concluded that 11.7% of the subjects were driving under the influence of psychoactive substances. Since the drivers were stopped early on Sunday morning (between 1:00 a.m. and 7:00 a.m.) it was obvious that many drivers came from discos and other public places (about 70%).
It was clear that stimulants were taken primarily by drivers coming from discos, whereas cannabis was found to be used by drivers coming from various places (Table 15).

Table 15 Use of psychoactive substances according to places visited before driving

Setting	Cannabinoids	Amphetamines	Cocaine	Opiates
Disco	15	6	6	2
Other public place	11	0	3	2
Private house	8	1	3	1
Other	7	0	2	0
Total	**41**	**7**	**14**	**5**

4.8 The Netherlands

The prevalence of drug and/or alcohol use by drivers during weekend nights has recently been investigated in the Netherlands (Mathijssen, 1998). In the autumn of 1997 roadside tests were conducted in nine selected research areas (cities, nationally distributed) on Friday or Saturday nights between 10:00 p.m. and 4:00 a.m. In one area (Amsterdam), measurements were carried out on both Friday and Saturday night. The main objective of the study was to obtain insight into possibilities for reliably determining the use of drugs (whether or not in combination with alcohol) among motorists. In particular the occurrence of non-responders was of interest to the investigators. A second objective of the study was to assess the practical application as well as the reliability of rapid drug screening tests, such as the Drugwipe® for detecting amphetamines and cannabinoids in sweat.

Subsequently, urine samples were tested afterwards for the detection of amphetamines, cannabinoids, cocaine, opiates, methadone, benzodiazepines, barbiturates and tricyclic antidepressants using the Triage® and Accusign® systems. Confirmative analyses were conducted by using Gas Chromatography/Mass Spectrometry (GC/MS), or, in the case of cannabinoids, with High Pressure Liquid Chromatography (HPLC-DAD).

A total of 402 motorists were requested by the police to participate in the study. Of them, 47 (11.7%) refused to participate. From 62 subjects (15.4%) it was not possible to obtain a urine sample, although sweat tests could be taken. No clear indications were found to suggest that drug use characteristics of these subjects differed from those who were able to produce a urine sample.

The results of the study indicated that 8.5% of the samples tested positive for drugs other than alcohol (Table 16). Especially among male drivers in the age of 18 to 25, the prevalence of illicit drugs was found to be high: 17.5% tested positive. The vast majority of these involved the use of cannabis.

The Drugwipe® for the rapid detection of amphetamines in sweat turned out to be an extremely insensitive test; none of the subjects who tested positive in urine had tested positive with the sweat test. No clear conclusions could be drawn from the results with the Drugwipe® for the detection of cannabinoids. Triage® and Accusign®, however, did appear to be reasonably reliable screening tests.

These results do not provide insight in the prevalence of drug use by the total driving population. The Dutch survey includes a subset of drivers stopped at roadside blocks during late-night hours on weekends. The sample of motorists is too limited to conclude on the prevalence of drugs in drivers during weekend nights. Furthermore, the refusal rate exceeds the total prevalence, which might have a profound effect on inferences about drug use from this study. The limited number of drivers tested positive for licit drugs is probably due to the selection of the periods during which drivers were stopped. At these hours drivers tend to be younger and are generally not being treated for anxiety, sleep disorders or depression.

TABLE 16 THE PREVALENCE OF DRUG USE WITH OR WITHOUT ALCOHOL IN 293 CASES

Region	N (urine samples)	Number of positives	% Positives
Utrecht	22	1 x benzodiazepines 1 x cannabinoids + BAC 1.53g/l	9.1
Amsterdam	40	1 x cannabinoids 1 x cocaine + BAC 1.10 g/l 1 x amphetamine + methamphetamine	7.5
Terneuzen	30	1 x codeine 1 x cannabinoids 1 x cocaine + cannabinoids	10.0
Oostburg	33	1 x codeine 1 x cannabinoids 1 x amphetamines	12.1
Noordwijk	30	1 x cannabinoids + BAC 0.45 g/l	3.3
Rotterdam	34	3 x cannabinoids 1 x amphetamines + cannabinoids	11.8
Sittard	28	1 x codeine + BAC 0.47 g/l 1 x cannabinoids 1 x morphine	10.7
Kerkrade	36	3 x cannabinoids 1 x amphetamine + BAC 0.28 g/l	11.1
Maastricht	40	1 x cannabinoids	2.5
Total	**293**	**25**	**8.5**

4.9 Norway

In a Norwegian study published by Skurtveit et al. (1996), blood samples from 2,819 drivers for suspicion of driving under the influence of drugs were received (as a subset of a total of 8,429 samples) by National Institute of Forensic Toxicology in 1994 were screened for the most commonly abused drugs. The screening was carried out if the BAC was below 0.15 percent (1.5 g/l). Samples with BACs above 0.15 percent, were analysed for drugs other than alcohol only after special requests by the police. Hence, drug analyses were completed on 2,529 samples. Screening on cannabinoids, amphetamines, benzodiazepines, opiates, cocaine and barbiturates was performed by using immunological methods. Positive results were confirmed by Gas Chromatography/ Mass Spectrometry (GC/MS).

The results show that about 47% of thesuspected drunken drivers had a BAC above 0.15 percent, being more than three times the legal limit in Norway of 0.5 g/l. This percentage was 25% for drugged drivers (Table 17).

Drugs were found in 59% (n=1,495) of all cases. In 30% (n=753) alcohol was the only psychoactive substance found. In 11% of the cases neither alcohol nor drugs were detected. The most frequently detected drugs were benzodiazepines (n=775; diazepam, n=577; flunitrazepam, n=198), cannabinoids (n=660), amphetamine (n=533), morphine (n=193), and codeine (n=104). Cocaine was found in only one case, whereas methylenedioxymetamphetamine (MDMA or Ecstasy) could not be detected.
Benzodiazepines were most frequently detected in female drivers, whereas cannabinoids were less frequently detected in this group, compared to male drivers (Table 18).

The authors emphasised that during the last ten years the number of drivers suspected for drugged driving in Norway has shown a three-fold increase. The largest increase since 1990 has been found for amphetamines (more than 145%). The authors further indicated that Norway has a higher frequency of cases from suspected drugged drivers compared to other Nordic countries. The ratio of frequencies varied from 3.9 (Finland) to 8.2 (Denmark). It is unclear whether this statement can be made in general, since the sample selection procedures by the police and road traffic laws might not be the same in the various Nordic countries. This explanation was suggested by the authors as well, since epidemiological studies revealed that the prevalence of drugs other than alcohol in fatal crashes in Norway was similar to that found in other countries. One possible explanation for the apparent high prevalence of drugged driving in Norway may be that the Norwegian police force is more focused on detecting these problems. Some countries do not have legislation that that applies to drug control in drivers as easily as for alcohol control. The results further indicate a high prevalence of benzodiazepine use in drugged drivers. It is unclear how the use of these drugs in the general population has been changed over the last few years.

TABLE 17 DISTRIBUTION OF BAC'S OF DRIVERS SUSPECTED FOR DRUNK AND DRUGGED DRIVING

Blood Alcohol Concentration (g/l)	**Suspicion of driving under the influence of alcohol**	**Suspicion of driving under the influence of drugs other than alcohol**
	Number (%)	**Number (%)**
0.0 - 0.5	767 (13.7)	1,575 (55.9)
0.5 - 1.5	2,229 (39.7)	538 (19.1)
> 1.5	2,614 (48.6)	706 (25.0)
Total	5,610 (100)	2,819 (100)

TABLE 18 DISTRIBUTION OF DRUGS OTHER THAN ALCOHOL IN 267 FEMALE AND 2,262 MALE DRIVERS

Substance	Number of positives (f)	Percentage (f)	Number of positives (m)	Percentage (m)	Significance p<
Benzodiazep-ines	103	38.6	672	29.7	0.005
Cannabinoids	47	17.6	613	27.1	0.001
Amphetam-ines	50	18.7	483	21.4	NS
Morphine	28	10.5	165	7.3	NS

f = females; m = males

An update of the Norwegian data has been given by Christophersen and Mørland (1997). They report an increase in the total number of drivers suspected of driving under the influence of drugs other than alcohol, from 33% in 1994 to about 40% in 1995. The highest increase was noted for cannabinoids and amphetamines, the increase of the latter being recorded from 216 cases in 1991 to 937 cases in 1995 (more than 300%). Some other findings are of interest as trends in drug abuse. An increasing misuse of clonazepam (medicinal drug for the treatment of epilepsy) among drivers has been observed, often found in combination with other drugs and/or in concentrations above therapeutic levels. Only 3% (n=3) of the clonazepam positive samples (n=91) could be referred to medical treatment. A closer look at the samples analysed in 1995 revealed that benzodiazepines were often not taken according to recommended therapeutic standards. According to the authors' interpretation of the blood levels they indicated that only 5% of the benzodiazepine positive samples could represent normal therapeutic use. A correlation has been documented between the number of prescriptions for benzodiazepines in the different provinces and the frequency of benzodiazepines detected in blood samples of drugged drivers (Skurtveit et al. 1995). The normal prescribing and dispensing practices therefore are found responsible for the use of these drugs in the driver population.

In an attempt to estimate the prevalence of drugs in drivers injured in traffic crashes in Norway Christophersen et al. (1995) analysed the blood samples of drivers involved in non-fatal accidents. The study included all blood samples of injured drivers (n=394) received by the Norwegian Institute of Forensic Toxicology during a five - month period (August through December 1993). The samples were analysed by using the methods described above both for alcohol and drugs independently of the primary suspicion by the police. The total number of blood samples included 206 drivers suspected of driving under the influence of alcohol, and 188 suspected of driving under the influence of drugs other than alcohol. Alcohol only, drugs only and alcohol combined with drugs were found in 51.8 (n=204), 12.9 (n=51), and 11.2% (n=44) of the samples respectively. The most prevalent drugs besides alcohol were benzodiazepines (13.7%), cannabinoids (7.5%) and amphetamines (4.1%). The number of positive cases and multiple drug use are summarised in Tables 19 and 20.

All samples with blood alcohol concentration (BAC) above 0.01% were recorded as positive. Alcohol was detected with a prevalence of more than 50% among accident drivers. Alcohol was also found in 46% of the samples positive for drugs other than alcohol. More than one drug was detected in 36% of the drug positive samples (alcohol not included). The distribution of BACs in samples positive for alcohol and samples positive for both alcohol and drugs was not significantly different ($p>0.05$; χ^2-test). This finding indicates that alcohol consumption by drivers combining alcohol and drugs, is similar to the consumption by drivers using alcohol only.

The Norwegian data presented by Christophersen et al. are most likely to be conservative for injured drivers in general, since samples entered the study as a result of police suspecting alcohol or drug involvement. As a concluding remark Christophersen and Mørland (1997) indicate that Norwegian authorities have decided that all blood samples from drivers suspected by the police of driving under the influence will be analysed for both alcohol and drugs, independent of the primary suspicion from the police. This new routine started from October 1996.

TABLE 19 ALCOHOL AND DRUG USE AMONG INJURED DRIVERS (N=394)

Substance	Number of cases (%)
No alcohol, no drugs	95 (24.1)
Alcohol only	204 (51.8)
Drugs only	51 (12.9)
Alcohol and drugs	44 (11.2)
Alcohol- total	248 (62.9)
Drugs - total	95 (24.1)
Drugs and alcohol - total	299 (75.9)

TABLE 20 SINGLE AND MULTIPLE DRUG USE AMONG INJURED DRIVERS (N=394)

Substances	Number of cases (%)
Benzodiazepines only	12 (3.1)
Benzodiazepines only or combined with other drugs	28 (7.4)
Benzodiazepines - total	54 (13.7)
Cannabinoids only	5 (1.3)
Cannabinoids only or combined with other drugs	15 (3.8)
Cannabinoids - total	30 (7.6)
Amphetamines only	6 (1.5)
Amphetamines only or combined with other drugs	13 (3.3)
Amphetamines - total	16 (4.1)
Opiates only	5 (1.3)
Opiates only or combined with other drugs	13 (3.3)
Opiates - total	17 (4.3)

4.10 Spain

A driver population based survey carried out by the University of Valladolid and the National Traffic Agency revealed that about 5% of Spanish drivers are taking regularly (at least for 1 month duration) medication which can impair driving performance (Del Rio & Alvarez, 1996). The medicines involved are characterised as known to impair driving ability according to the drug's official summary of product characteristics and package insert. Furthermore, the same study revealed that driving after taking illicit drugs is reported by 3% of the driver population included in the survey (Del Rio & Alvarez, 1995).

The prevalence of licit and illicit drug use in fatally - injured drivers was investigated in two separate studies conducted with support of the National Traffic Agency (Alvarez et al., 1997).
The first study was carried out by the University of Valladolid. Between January 1994 and October 1996 in total 322 blood samples could be obtained from drivers killed in road traffic accidents. The authors did not provide any information on selection procedures. However, they stated that research purposes instead of legal objectives were involved. In 37 cases analytical procedures could not be carried out (reason not mentioned), resulting in 285 cases in the final sample (from 255 male and 30 female drivers).

Age distribution was as follows: 33.7% (n=96) between 16 and 25 years, 43.3% (n=129) between 26 and 45, and 21.0% (n=60) over 45. The average age (± SD) was 34.1 ± 13.2, 33.9 ± 13.1 for men and 36.0 ± 14.7 for women. Most accidents occurred during weekend hours (60.3%), whereas 39.6% of the drivers were killed on week days (Monday to Friday). Blood samples were analysed for alcohol by head space Gas Chromatography. Screening for drugs other than alcohol was carried out by immunoassay techniques or chromatographic methods. Positives were confirmed and analysed for quantitative determinations by Gas Chromatography/ Mass Spectrometry (GC/MS), High Pressure Liquid Chromatography or Gas Chromatography.

In the second study 979 blood samples of drivers killed in road crashes and suspected by the police to be influenced by drugs or alcohol were taken by forensic doctors and sent to the National Toxicological Center in Madrid. Samples could be obtained from 887 male drivers, whereas 86 were females (the sex was not known in six cases). The average age of the fatally injured drivers was 35 years. In 42% of all cases accidents occurred during weekends (Saturday and Sunday). Analytical procedures were the same as those described above in the first study. Statistical analyses in both studies were carried out by means of SAS (version 6.7) and p-values < 0.05 were considered to show significant differences.

The prevalence of alcohol, licit and illicit drugs in fatally - injured drivers in both studies are summarised in Table 21. Different types of illicit drugs found in the samples are given in Table 22.

Alcohol was detected in more than half of the drivers killed in road traffic accidents. The combination of illicit drugs with alcohol was more frequently found than the combination of medicines and alcohol.

TABLE 21 PREVALENCE OF ALCOHOL AND DRUG USE IN FATAL ROAD ACCIDENTS

Substances	**Study 1 (n=285) Number of cases (%)**	**Study 2 (n=979) Number of cases (%)**
Alcohol only	126 (44.2)	434 (44.3)
Alcohol with other substances	18 (6.3)	68 (6.9)
Alcohol with BAC's 0.01-0.79 g/l	43 (15.1)	136 (13.9)
Alcohol with BAC's >0.8 g/l	101 (35.4)	366 (37.4)
Medicines only	12 (4.2)	31 (3.9)
Medicines with alcohol	4 (1.4)	23 (2.3)
Medicines with illicit drugs	8 (2.8)	16 (1.6)
Medicines with alcohol and illicit drugs	2 (0.7)	4 (0.4)
Illicit drugs only	7 (2.5)	20 (2.0)
Illicit drugs with alcohol	12 (4.2)	41 (4.1)
Medicines - total	26 (9.1)	74 (7.5)
Illicit drugs - total	29 (10.2)	81 (8.3)
Any substance - total	45 (15.8)	135 (13.8)
No substance detected	114 (40.0)	410 (41.6)

TABLE 22 DIFFERENT ILLICIT DRUGS FOUND IN DRIVERS INVOLVED IN FATAL ROAD ACCIDENTS

Substances	Study 1 (n=285) Number of cases (%)	Study 2 (n=979) Number of cases (%)
Any illicit drug	46 (100.0)	109 (100.0)
Amphetamine	4 (8.7)	9 (8.3)
Cocaine	21 (45.6)	49 (44.9)
Cannabinoids	4 (8.7)	15 (13.8)
Opiates	14 (30.4)	30 (27.5)
Other substances	3 (6.5)	6 (5.5)

Cocaine and opiates were the drug most frequently found in fatally - injured drivers. The most recent information on the prevalence of drugs other than alcohol in drivers killed in road accidents is presented in Table 23. These data are the extension of the second study for the year 1996 (Sancho, 1997). The total number of samples sent to the National Toxicological Center was 383, compared to the number of 1995 (279) an increase by 37%. The samples were obtained from forensic doctors in ten different regions of Spain. The majority of the samples were taken from male drivers (90.6%), whereas about half of the total samples were collected during weekends and holidays (52%). Alcohol was found positive (>0.2 g/l) in 186 blood samples (48.5%); 35% of all positives were found with BACs > 0.8 g/l.

Table 23 Prevalence of licit and illicit drug use, with or without alcohol, in fatally injured drivers (1996)

Substance	Number of positives cases with alcohol	Number of positives cases without alcohol
Medicines:	11	11
Benzodiazepines	(5)	(4)
Antidepressants	(0)	(4)
Barbiturates/antiepileptics	(4)	(2)
Analgesics	(1)	(1)
Antiemetics	(1)	(0)
Illicit drugs:	23	12
Cocaine	(14)	(10)
Cannabinoids	(7)	(2)
Amphetamines	(7)	(2)
Benzodiazepines	(2)	(4)
Heroin	(2)	(5)
Multiple drug use:	7	11
Cocaine, cannabinoids	(1)	(1)
Cocaine, amphetamines	(3)	(1)
Cocaine, benzodiazepines, heroin	(2)	(0)
Amphetamines, cannabinoids	(1)	(1)
Benzodiazepines, heroin	(0)	(1)
Benzodiazepines, cocaine	(0)	(3)
Heroin, cocaine	(0)	(4)

Although the number of the positive cases is too small to draw any conclusions, it is clear that the trend shown in the previous years is still apparent. Cocaine is the most frequently detected illicit drug, whereas the use of illicit drugs in combination with alcohol is more prominent than the use without alcohol consumption.
It is unclear how these data relate to the prevalence of drug use in Spain, since the selection of cases and blood samples is determined by forensic doctors and the selection procedures are unknown.
However, the data are collected and analysed within the last five years using those procedures and methods and can provide reasonable insight into the trends in licit and illicit drug use in Spanish drivers killed in road accidents.

4.11 Sweden

A number of studies on the prevalence of drugs other than alcohol were carried out in the 1970s and early 1980s. A Swedish study done in the late 1970s revealed that drugs were found in 4% of road accident victims (motor vehicle occupants, pedestrians, and cyclists) treated at the emergency ward (Jacobson et al. 1983). An other study done in the late 1970s in Southern Sweden showed that 32% of fatally injured drivers had drugs and/or alcohol (Krantz and Wannerberg, 1981). A more recent study was undertaken by Sjögren et al. (1997a) to determine the prevalence of drug and alcohol use in motor vehicle drivers. Injured motor vehicle drivers (n=130; 104 men, 26 women) who were hospitalised in Umeå (Northern Sweden) and fatally injured drivers who were autopsied (in Umeå: n=111: 91 men, 20 women; and in Gothenburg, Western Sweden: n=136, 104 men, 32 women) from May 1991 through December 1993 were tested for alcohol and both licit and illicit drugs. Because Swedish law strongly recommends that police authorities request postmortem examination of all fatally injured drivers, almost all traffic fatalities are autopsied in Sweden. Since official statistics in Sweden on alcohol and drug use by injured victims are based on police assessments of inebriation the authors also compared the rate of police detection by comparing blood analyses. Blood samples were tested for the presence of alcohol, licit drugs (including all drugs that are officially regarded as traffic hasardous in Sweden, e.g. benzodiazepines and barbiturates), and illicit drugs such as amphetamines, heroin, cocaine, and cannabinoids. Nineteen percent of the Umeå-hospitalised drivers (UHDs), 28% of the Umeå fatally injured drivers (UFDs), and 21% of the Gothenburg fatally injured drivers (GFDs) tested positive for drugs and/or alcohol (Table 24). Ten percent of the UHDs, 8% of the UFDs and 6% of the GFDs tested positive for drugs. Almost 5% of the UHDs had illicit drugs, and 5% had licit drugs. Only 3% of the GFDs and none of the UFDs had illicit drugs. Twelve percent of the UHDs, 24% of the HFDs, and 17% of the GFDs tested positive for alcohol. Two percent of the UHDs, 6% of the UFDs, and 2% of the GFDs had a combination drugs and alcohol (Sjögren et al., 1997b). Benzodiazepines were the most commonly found licit drugs in the UHDs (Table 25). Five percent of the UHDs had opiates such as codeine, dextropropoxyphene and morphine. These drugs were less common among the GFDs. The most commonly found illicit drug was cannabis, followed by amphetamines.

TABLE 24 PREVALENCE OF DRUG/ALCOHOL USE IN (FATALLY) INJURED DRIVERS

Substance	UHDs ; n=130 (%)	UFDs; n=111 (%)	GFDs; n=136 (%)
Drugs	10 (8)	2 (2)	6 (4)
Alcohol	13 (10)	21 (19)	20 (15)
Drugs and alcohol	2 (2)	6 (6)	3 (2)
Missing data	5 (4)	-	-
Negative test	100 (77)	82 (74)	107 (79)

TABLE 25 DRUGS FOUND IN (FATALLY) INJURED DRIVERS

Substance	UHDs ; n=130 (%)	UFDs; n=111 (%)	GFDs; n=136 (%)
Benzodiazepines	8 (6)	3 (3)	4 (3)
Opiates	6 (5)	5 (5)	3 (2)
Cannabinoids	4 (3)	-	3 (2)
Amphetamines	3 (2)	-	-
Barbiturates	2 (2)	1 (1)	-
Antiepileptics	2 (2)	-	-
Central muscle relax.	-	2 (2)	3 (2)
Sedatives	-	1 (1)	3 (2)

Drivers who tested positive for drugs and/or alcohol were more likely to be involved in single vehicle crashes than those who were tested negative ($p<0.0005$).

One-fifth of the injured hospitalised drivers had taken drugs and/or alcohol. There are no comparable reports in Sweden. The present figures for the fatally injured drivers (26% in Northern Sweden and 21% in Western Sweden) are lower than those found (32%) in the study carried out in the late 1970s. The authors indicate that this discrepancy may be due to a change in drug and/or alcohol consumption in the last 20 years or due to a geographical variation in substance use in the different areas in Sweden or due to a combination of these factors.

The findings of the blood analyses were compared with police reports on intoxication by alcohol and/or drugs in the second study (Sjögren et al., 1997b). In the injured hospitalised drivers the police suspected intoxication in 13%, whereas blood analyses showed drug and/or alcohol in 18% of the drivers. In the fatally injured drivers these figures were 7% and 23%, respectively. The sample size was too small and too limited to be considered as representative of the entire Swedish population. But the findings are important indicators of the disparity between assessments on intoxications made by the police and blood analyses. Therefore the authors conclude that official statistics on these prevalences should be based on blood analyses only. An important final finding was the fact that 17% of the reports on hospitalised drivers were missing. The most likely reason for this is that the crash was not reported to the police. It is estimated that in Sweden, only 51% of crashes in which drivers are inured will be reported to the police (Official Statistics of Sweden. Traffic Injuries, 1992).

4.12 Switzerland

The objective of a survey by Augsburger and Rivier (1997) was to investigate the nature of drugs used among drivers suspected of driving under the influence of drugs (DUID) in the Canton of Vaud during a 13 years period ranging from 1982 to 1994. In a retrospective evaluation 641 cases were selected using the following criteria: drivers still alive 24 hours after the event with age over 18 years, availability of specimens (urine and/or blood) suitable for analyses and documentation to support DUID. Analytical procedures were kept unchanged over the period of 13 years and included several immunological screening tests and different Gas Chromatographical methods for confirming the presence of various drugs. Drugs included in the analytical screening were several drugs of abuse such as amphetamines, cannabinoids, cocaine, LSD-25, opiates and medicinal drugs such as antiepileptics, barbiturates, benzodiazepines, phenothiazines, and tricyclic antidepressants. Police controls (273 of 641, 42.6%) and accidents (254 of 641, 39.6%) were the most frequent circumstances for requesting toxicological analyses. Erratic driving was less frequently found (95 of 641, 14.8%), whereas in the remaining cases circumstances were not indicated. The population of the sample consisted of 551 males (86%) and 90 females (14%), and the average age was 27 $\pm$ 7 years (range: 18-74).

Only 46 cases (7.2%) were concluded drug free (alcohol included), to be considered as false positive observations by the police. Among these cases 27 (58.7%) were accidents, situations in which identification of drug influence is not easy, because of state of shock or injuries. The prevalence of detected drugs in urine or blood among 641 drivers suspected of DUID is presented in Table 26.

Benzodiazepines were the most frequently present licit drugs. Methadone and methaqualone were never found alone. Methadone is frequently used as heroin substitute for narcotic maintenance treatment in former opiate addicts, but the drug is also used illegally. In the case of treatment methadone is often prescribed in combination with benzodiazepines. Methaqualone is commercially available in a combined preparation with diphenhydramine.

TABLE 26 PREVALENCE OF DRUG USE AMONG 641 DRIVERS SUSPECTED OF DUID

Substance	Number of positives (%)
Alcohol only	50 (7.8)
Drugs only	365 (56.9)
Alcohol with drugs	180 (28.1)
Alcohol - total	230 (35.9)
Drugs - total	545 (85.0)
Cannabinnoids	(57.3)
Opiates	(36.3)
Benzodiazepines	(14.8)
Cocaine	(10.5)
Methadone	(10.3)
Amphetamines, methaqualone others	(<5%)

TABLE 27 PREVALENCE OF MULTIPLE DRUG USE IN 641 CASES

Multiple use	Number of positives (%)
Cannabinoids with alcohol	132 (20.6)
Cannabinoids with opiates	123 (19.2)
Opiates with methadone	50 (7.8)
Opiates with cocaine	46 (7.2)
Opiates with alcohol	45 (7.0)
Opiates with benzodiazepines	44 (6.9)
Cannabinoids with benzodiazepines	35 (5.5)
Cannabinoids with cocaine	32 (5.0)
Cannabinoids with methadone	30 (4.7)
Benzodiazepines with alcohol	26 (4.1)

Combinations of drugs were most frequently observed with cannabinoids (132 cases with alcohol; and 123 cases with opiates), both found in approximately 20% of the drivers suspected of DUID. Multiple drug use is presented in Table 27.

There was a remarkable increase in the number of positive cases for amphetamines. During 1982 - 1989 only one case was found positive, whereas eight cases were found for the period 1990-1992, and eighteen cases for the1993-1994 period.

The authors focus their results on discussing the risk of combinations of drugs. The use of cannabis without any other drug seems to be less common, since 70.3% of the cannabinoids positives also contain at least one other drug, and 36% of cannabinoids positives also contain alcohol. They stress the fact that the adverse effects from interactions of drugs on driving ability have still not been investigated to an extent that allows simple interpretations of results by toxicological experts. They strongly suggest that educational programmes should be developed to prevent drivers from driving after polydrug consumption and abuse.

In a study by Staub et al. (1994) the prevalence of psychotropic drugs of 383 drivers being responsible for car accidents and had taken alcohol as well, was investigated in the Canton of Geneva. During the period of 1st November 1990 till 31st October 1991 blood analyses were requested by the police in 476 cases (out of in total 4592 traffic accidents). Only the cases in which the driver was responsible for the accident were included in this study. The average age of the drivers included in the study was 36 years (range 18-72). In 88% of all samples blood alcohol concentrations (BACs) above the legal limit of 0.8 g/l were detected, whereas about half of the samples (51.2%) contained BACs between 1.0 and 2.0 g/l. In 58% of all cases (n=222) accidents occurred between 8:00 p.m. and 4:00 a.m.

Drugs included in the analytical screening were several drugs of abuse such as amphetamines, cannabinoids, cocaine, opiates and medicinal drugs such as barbiturates, benzodiazepines, methadone and tricyclic antidepressants. Blood samples were first screened by using the Abbott ADx-analyser (a fluorescence polarisation immunoassay). For screening on benzodiazepines the immunological technique developed by DPC (Diagnostic Product Corporation) was used in order to achieve more sensitivity. Different Chromatographic techniques and detectors as well as Gas Chromatography/Mass Spectrometry (GC/MS) were used to confirm positive results obtained with the immunoassay technique. The prevalence of psychotropic drugs in the 383 cases is presented in Table 28.

It was shown that multiple drug use could be observed in 20% of the drug positive cases. Benzodiazepines and cannabinoids were the drugs most frequently detected in the blood samples of the drivers. In comparing the users of both drugs it was further shown that in 21% of the benzodiazepine positive cases no alcohol was detected, whereas this was the case in only 11% of the cannabinoids positives. The average age of drivers using benzodiazepine was 41 years, with 18% above 55. In this age category no cannabinoids postive driver could be detected, while the average age of cannabinoids positive cases was 32 years.

The time of accident in the benzodiazepine positive cases was between 12.00 hrs and 16.00 hrs, whereas 40% of the cannabinoids positives were detected in drivers involved in accidents between 24.00 hrs and 4.00 hrs. These results are not representative for all drivers taking psychotropic drugs, but indicate the different types of drug users among those drivers who are found responsible for a car accident while having consumed alcohol.

In a study conducted by the Institute of Forensic Medicine of the University of Zurich (Canton of Zurich) all cases of drivers suspected of driving under theinfluence of drugs other than alcohol submitted from 1989-1991 were used for toxicological and medical evaluations (Friedrich-Koch and Iten, 1994). Blood and urine samples were screened with different immunoassays (RIA and EMIT) for opiates, cocaine, cannabinoids, methadone, benzodiazepines, barbiturates and amphetamines. Different Chromatographic techniques and detectors as well as Gas Chromatography/Mass Spectrometry (GC/MS) were used to confirm positive results obtained with the immunoassay technique. In 160 of the 243 cases included (65.8%) at least one substance possibly affecting driving performance could be confirmed in blood (or urine for cannabis). Of these 160 positive drug cases 105 resulted from accidents and 55 from police controls, whereas one third of these were registered while making routine controls.

Only 137 of the 160 cases allowed complete toxicological and medical evaluations and were included for final analyses. Most of the drivers were male (87.5%). The majority of the drivers were between 20-29 years (67.5%), whereas the next most frequent group were drivers between 30-39 (18.1%). Most drivers belonged to the so - called ‘drug scene’. The prevalence of drugs in blood and urine samples of 137 cases is presented in Table 29.

TABLE 28 PREVALENCE OF DRUG POSITIVES IN 383 DRIVERS RESPONSIBLE FOR CAR ACCIDENTS

Substance	Number of positives (%)
Alcohol only	285 (74.4)
Alcohol with drugs	70 (18.3)
Drugs only	15 (4.0)
Benzodiazepines	52 (13.6)
Cannabinoids	31 (8.9)
Barbiturates	11 (2.9)
Opiates	5 (1.3)
Tricyclic antidepressants	2 (0.5)
Cocaine	2 (0.5)
Methadone	2 (0.5)
Amphetamines	1 (0.3)

Flunitrazepam (a hypnotic also very popular as a drug of abuse) was detected in 35 of the 54 benzodiazepine positives (64.8%).
When examining the consumption pattern of the drivers included in this study, it was shown that multiple drug occurred in two thirds of all cases (62%). In 38% of drug positive cases only one substance could be detected (Table 30).

The most frequently used combinations of drugs were all drugs/alcohol (30x), cannabis/alcohol (12x), opiates/cannabis (9x), opiates/cocaine (7x), benzodiazepines/cannabis (7x). Cannabis use in combination with alcohol was more frequently found than any other licit or illicit drug. The results of this study provide an estimate of drug presence in drivers suspected of driving under the influence of drugs other than alcohol in the Canton of Zurich. The percentages reported are most likely conservative for drivers in general due to the way in which samples entered the study, that is, as a result of police suspecting drug involvement particularly in accident situations.

TABLE 29 PREVALENCE OF DRUGS IN 137 DRIVERS SUSPECTED OF DRIVING UNDER THE INFLUENCE OF DRUGS OTHER THAN ALCOHOL

Substance	Number of positives (%)
Cannabinoids	64 (46.7)
Opiates	58 (42.3)
Benzodiazepines	54 (39.4)
Cocaine	38 (27.7)
Alcohol	30 (21.9)
Methadone	7 (5.1)
Codeine	3 (2.2)
Phenobarbital	2 (1.5)
Clomethiazol	1 (0.7)

TABLE 30 MULTIPLE DRUG USE IN 137 DRUG POSITIVE CASES

Multiple drug use	Number of positives (%)
One drug	52 (38.0)
Two drugs	55 (40.1)
Three drugs	25 (18.2)
Four drugs	5 (3.6)

4.13 United Kingdom

In a survey by the Road Safety Division of the Department of the Environment, Transport & the Regions findings were reported from 619 road user fatalities during the first 15 months of the study (up to 7th January 1998) of a 3 year study on the incidence of drugs in road accident fatalities (DETR, 1998). These 619 fatalities represented a sample of about 20% of all road fatalities aged 16 years and over, including passengers and pedestrians, who died within 12 hours of being injured in a road traffic accident in England, Scotland and Wales. Pathologists had been asked to take samples at random. Blood and urine samples were taken in all cases, whether the presence of drugs was suspected or not. The following classes of drugs were screened for in the urine samples by immunoassay techniques: alcohol, amphetamines, cannabis, cocaine, opiates, methadone, LSD, benzodiazepines, tricyclic antidepressants. The percentages of those testing positive for licit and illicit drugs by road user group are given in Table 31.

All these figures indicate a considerable increase in cannabis taking and multiple illicit drug use compared with a previous study in 1985-1987. The prevalence of licit drugs likely to affect driving has not changed significantly in comparing the results of both surveys.

The results of the recent study are based on a representative sample of the incidence of drugs amongst various road user groups. There was a wide geographical distribution, both urban and rural. Furthermore, the distribution of cases which had alcohol above the 0.8 g/l limit was almost identical to that found in national data for each of the road user groups.

Analysis of the data found by age show that cannabis use is confined largely to the under 40s, particularly the under 25, whereas licit drug use is mainly found in the drivers over 40 (Table 32)

Table 31 Percentages of various road user groups testing positive for licit and illicit drugs

Substance	Percentage positives				
	Drivers (n=284)	Riders (n=125)	Passengers (n=126)	Pedestrians (n=84)	Total (n=619)
Licit drugs	4	6	9	8	6
Illicit drugs: of which	18	14	21	8	16
Cannabinoids	10	5	13	1	8
Amphetamines	2	2	2	2	2
Opiates	1	1	2	1	1
Cocaine	0	0	0	0	0
Methadone	1	0	0	0	0
Multiple drugs	4	6	4	4	5
Alcohol (> 0.8 g/l)	22	15	29	31	23

TABLE 32 DRUG USE BY ROAD USERS IN DIFFERENT AGE GROUPS

	Number of positives						
Substance	**Age groups**						
	16-19	20-24	25-39	40-59	60+	Not known	Total
No drugs	44	71	159	109	66	31	480
Cannabis	17	15	13	3	2	1	51
Amphetamines	0	2	4	4	1	1	12
Opiates	0	3	3	4	5	3	18
Cocaine	1	0	0	0	0	0	1
Methadone	0	0	1	0	1	1	3
LSD	0	0	0	0	0	0	0
Benzodiazepines	0	1	2	4	6	0	13
Tricycl. Antidepr	0	0	0	1	2	0	3
Multiple drugs	3	12	6	6	8	3	38
Total	65	104	188	131	91	40	619

The results represent a realistic picture of the change in the drug use pattern amongst road users since the last study, 10 years ago. There has been a noticeable increase in the number of fatalities, particularly among drivers and riders, who had taken two or more different types of illicit drugs. Only a few drivers and riders (19%) had taken both an illicit drug and alcohol over the legal limit.

5. Discussion

In surveys of illicit drug use in the driver population several problems are encountered such as problems with sample collection and data collection (see also Chapter 3). As a result comparisons across studies from different European countries are often very difficult. Furthermore the lack of conventions used in reporting of the findings may result in significant differences as well. For example, there is no consistency in reporting percentages (all drivers in the sample or only those who were tested for drugs). In the following tables the prevalences of different drugs other than alcohol are presented for each country based upon the research findings gathered in this survey. The overview in each table does not allow the reader to conclude on the prevalence with reference to different populations of drivers. It will only serve as a global description of what has been published and caution is required in presenting an average prevalence.

In the tables for each drug class or substance the following categories of driver populations have been included: general driver population, driver population (during late-night hours on weekends), drivers suspected of driving under the influence of drugs, and collision-involved drivers, including (fatally) injured drivers. Different problems exist with each of these categories of drivers. One general problem for all categories is the representativeness of the sample under examination, which in addition is a problem if small sample sizes are included and/or selection criteria are not clear.

In surveys of drug use in the *general driver population* data - gathering is generally through the use of questionnaires or interviews. One major problem observed here involves refusals. Refusal rates can be expected among those drivers who anticipate being confronted with driving under the influence of a drug in a possible contact with the police. This will have profound effects on the results presented if substances are detected with less frequency than alcohol where refusal rates of 15% are observed. For example, if refusal rates of 10% are observed when the expected proportion of drivers who are positive for a given drug is below this percentage, caution has to be given to the interpretation of the research findings.

With *driver populations during late-night hours on weekends* it is clear that the drivers tested are not representative of the total driving population. In general younger drivers are observed, while older drivers are underrepresented. This may cause serious problems if the prevalence of medicinal drugs is determined. For example tranquillisers are expected among a population over 40.

In surveys of *drivers suspected of driving under the influence of alcohol or drugs* drug screens are generally carried out if the blood alcohol level is below the legal limit. This approach automatically excludes information on combinations of licit and illicit drugs with higher blood alcohol levels. Furthermore, the selection of drivers is initially determined by the arresting officer which will undoubtedly introduce biases. Depending upon what variables (e.g. behavioural, signs of drug use) are taken into consideration, if there is suspicion of driving under the influence of drugs other than alcohol, high prevalences can be reported. If drug screening has been carried out in randomly - selected blood samples of drivers suspected of driving under the influence of alcohol-low prevalences will be observed.

In investigations on *collision-involved drivers* documentation of drug impairment is based on different decisions of police officers, doctors and coroners, which can introduce biases. Furthermore, it is known from several studies that only about one half of accidents with injured drivers are reported to the police. It is likely that drivers who have consumed illicit drugs or large doses of alcohol will avoid contact with the police if possible. Consequently, the prevalence of drug use among drivers in accidents reported to the police is probably lower than among drivers involved in (fatal) injury accidents. In fatally - injured drivers who are found to be impaired by alcohol, data are incomplete most of the time due to the fact that screening for drugs other than alcohol is often not carried out. Previous studies have shown that the police only detects a part of drug positive drivers involved in accidents, which results in the reporting of lower prevalences than actually exist.

Benzodiazepines (Table 33)
The most frequently detected licit drugs in all driver populations are the benzodiazepines. It is expected that these drugs will only show with low prevalences in the general driving population compared to drivers suspected of driving under the influence of drugs other than alcohol. These drugs are normally observed in the older age categories above 40. In Germany a large roadside survey allows one to conclude that for this country the prevalence is about 3%. In Italy and the Netherlands the reported data from roadside surveys were collected during weekend nights and therefore will probably lack a representation of the population of users, since primarily younger drivers were included. In most studies on drivers suspected of driving under the influence of drugs other than alcohol, benzodiazepines are the most predominantly found licit drug class with high prevalences (13% - 75 %). In collision-involved drivers lower prevalences are found (2%-13%). The high prevalence found in Norwegian studies has been explained by the authors as a result of the fact that the Norwegian police force is more focused on detecting drugged driver problems.

Barbiturates (Table 34)
These drugs are known to cause severe drowsiness and sedation. For that reason physicians frequently will not prescribe these ‘old’ medicines, unless a barbituarate has been selected for the treatment of epilepsy. Users of these drugs will be less frequently detected in all samples of driver population than users of benzodiazepines. Concequently, compared to the latter drugs barbiturates are less of a safety problem in all European countries.

TABLE 33 PREVALENCE OF BENZODIAZEPINES IN DIFFERENT DRIVER POPULATIONS IN EUROPE

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of drug use in percentages *
Belgium Meulemans (1997)				n = 2,143	8.5
Denmark Worm (1996) Steentoft (1997)			n = 317 n = 221		75 53
France Deveaux (1995)				n = 97	12
Germany Möller (1994) Krüger (1995)	n = 3,027		n = 660		5 3.6
Italy Ferrara (1990) Zancaner (1995)		n = 972	n = 265	n = 5,000	8.5 <1
Netherlands Mathijssen (1998)		n = 293			0.3
Norway Skurtveit (1996) Christophersen (1995)			n = 2,529	n = 394	31 13.7
Spain Sancho (1997)				n = 383	2
Sweden Sjögren (1997)				n = 377	4
Switzerland Augsburger (1997) Staub (1994) F-Koch (1994)			n = 641 n = 383 n = 137		14.8 13.6 39.4
United Kingdom DETR (1998)				n = 619	2

*NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies

Table 34 Prevalence of barbiturates in different driver populations in Europe

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of drug use in percentages *
France Deveaux (1995)				n = 97	1
Germany Möller (1994) Krüger (1995)	n = 3,027		n = 660		1 0.5
Italy Ferrara (1990)				n = 5,000	3.4
Netherlands Mathijssen (1998)		n = 293			0
Spain Sancho (1997)				n = 383	1.6
Sweden Sjögren (1997)				n = 377	1.5
Switzerland Staub (1994) F-Koch (1994)			n = 383 n = 137		2.9 1.5

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

TABLE 35 PREVALENCE OF TRICYCLIC ANTIDEPRESSANTS IN DIFFERENT DRIVER POPULATIONS IN EUROPE

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of drug use in percentages *
France Deveaux (1995)				n = 97	21
Germany Möller (1994)			n = 660		0
Italy Ferrara (1990)				n = 5,000	1.5
Spain Sancho (1997)				n = 383	1
Sweden Sjögren (1997)				n = 377	4
Switzerland Staub (1994)			n = 383		0.5
United Kingdom DETR (1998)				n = 619	0.5

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

Tricyclic antidepressants (Table 35)
Over the last decade the use of antidepressants has increased in some European countries where data on medicinal drug consumption are available (De Gier, 1995). For example in Germany a 50% increase was observed in 1993 compared to 1984. By contrast the consumption of benzodiazepines has been cut virtually by half during that same period. An increase in the use of antidepressants has also been reported in the Netherlands. An increase in use of antidepressants caused by the introduction of the so-called 'second generation' antidepressants (such as serotonine reuptake inhibitors) does not necessarily mean an increase in the use of drugs that cause driving impairment. These newer antidepressants are known to be less impairing than the 'older' ones such as the tricyclic antidepressants.

The prevalence of tricyclic antidepressants in the general driver population is unknown due to the lack of screening data in the reported surveys. The remarkable high prevalence of 21% in fatally - injured drivers in the French study cannot be explained. This high figure even exceeds the prevalence of benzodiazepines. Similar findings are not known in the available literature and may have to do with the prescribing practices of physicians in northern France (Region Nord- Pas de Calais).

The impairing properties of tricyclic antidepressants (in contrast to 'second generation' drugs) are well know from experimental research. On the other hand, users of tricyclic antidepressants are probably at lower increased risk of experiencing a road traffic accident than users of benzodiazepines, based on some epidemiological data. (Barbone et al., 1998). Therefore, the problems with respect to traffic safety based on the findings in various European countries in this survey (excluding France) are less servere than expected for benzodiazepines and of the same magnitude as those reported for barbiturates.

Cannabinoids (Table 36)

In most surveys reported in different European countries cannabinoids are the most frequently detected illicit drug. The prevalence in the driver population as derived from a German study is rather low (0.6%). Higher prevalences are observed in the 'late-night weekend-drivers' (e.g. 5% in the Netherlands), whereas drivers suspected of driving under the influence of alcohol and/or drugs show results with great variation: from 8% in Germany in randomly - selected blood alcohol samples to 57% in samples of drivers suspected of driving under the influence of drugs in Switzerland. In collision-involved drivers results are observed with similar variation (from 1.3% in fatally injured drivers in Spain to 12% in injured drivers in France). These differences are partly explained by differences in selecting the population under examination. However, another contributing factor might be the differences in drug use pattern among European countries. For example, Denmark and Norway are both Scandinavian countries with approximately the same size of population. Looking at the five most frequently detected substances in similar investigations, it is shown that in Norway cannabis was most observed, whereas in Denmark this drug only rated number five. This once again underlines the complex nature of cannabis use when discussing trends in European countries.

Opiates (Table 37)

In general the use of opiates is less frequently observed in driver populations than the use of cannabis. In investigating the general driver population in Germany a low prevalence was presented (0.7%). A slightly higher prevalence was detected in drivers screened in the late-night hours (<1% in Italy and 1.3% in the Netherlands). Data derived from drivers suspected of driving under the influence of alcohol or drug, once again show great variations (from 1.3% in a Swiss study among drivers responsible for car accidents and having taken alcohol as well, to 42.3% in another Swiss study among drivers suspected of driving under the influence of drugs other than alcohol). A ten-fold variation has been observed in collision-involved drivers (from 1% in the United Kingdom in fatally injured drivers to 10.7% in injured drivers in France). The differences in drug use patterns among drivers in the different European countries will once again contribute to the great variation in prevalence of drug use observed in this survey.

TABLE 36 PREVALENCE OF CANNABINOIDS IN DIFFERENT DRIVER POPULATIONS IN EUROPE

Country (Referenes)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of drug use in percentages *
Belgium Meulemans (1997)				n = 2,143	6
Denmark Worm (1996) Steentoft (1997)			n = 317 n = 221		10 17
France Pélissier (1996) Marquet (1998)				n = 60 n = 296	10 12
Germany Möller (1994) Krüger (1995)	n = 3,027		n = 660		8 0.6
Italy Ferrara (1990) Zancaner (1995)		n = 972	n = 265	n = 5,000	5.5 1.5
Netherlands Mathijssen (1998)		n = 293			5
Norway Skurtveit (1996) Christophersen (1995)			n = 2,529	n = 394	26 7.6
Spain Alvarez (1997) Alvarez (1997) Sancho (1997)				n = 285 n = 979 n = 383	1.3 1.5 2
Sweden Sjögren (1997)				n = 377	3
Switzerland Augsburger (1997) Staub (1994) F-Koch (1994)			n = 641 n = 383 n = 137		57 8.9 46.7
United Kingdom DETR (1998)				n = 619	8

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

TABLE 37 PREVALENCE OF OPIATES IN DIFFERENT DRIVER POPULATIONS IN EUROPE

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of drug use in percentages *
Belgium Meulemans (1997)				n = 2,143	7.5
Denmark Worm (1996) Steentoft (1997)			n = 317 n = 221		16.4 40
France Pélissier (1996) Marquet (1998)				n = 60 n = 296	5 10.7
Germany Möller (1994) Krüger (1995)	n = 3,027		n = 660		2 0.7
Italy Ferrara (1990) Zancaner (1995)		n = 972	n = 265	n = 5,000	3.5 <1
Netherlands Mathijssen (1998)		n = 293			1.3
Norway Skurtveit (1996) Christophersen (1995)			n = 2,529	n = 394	8 4.3
Spain Alvarez (1997) Alvarez (1997) Sancho (1997)				n = 285 n = 979 n = 383	4.6 3 2
Sweden Sjögren (1997)				n = 377	4
Switzerland Augsburger (1997) Staub (1994) F-Koch (1994)			n = 641 n = 383 n = 137		36.3 1.3 42.3
United Kingdom DETR (1998)				n = 619	1

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

Amphetamines (Table 38)

The prevalence of amphetamines in different driver populations compared to opiates is lower. One remarkable exception is the Norwegian study by Skurtveit (1996) in which blood samples from drivers suspected of driving under the influence of drugs were received in 1994. Amphetamines were detected in 21% (compared to 8% for opiates) of the samples, whereas methylenedioxy-metamphetamine (MDMA or Ecstasy) could not be detected.

The authors emphasised that during the last ten years the number of drivers suspected of drugged driving has shown a three-fold increase in Norway. The largest increase since 1990 has been found for amphetamines (more than 145%). In non-fatal accidents the prevalence of amphetamines (4.1%) in Norway is also the highest compared to data from non-fatal accidents in other countries. The authors indicate that one explanation for this increase may be that the Norwegian police force is more focused to detect drugged driving than in other countries.

TABLE 38 PREVALENCE OF AMPHETAMINES IN DIFFERENT DRIVER POPULATIONS IN EUROPE

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of drug use in percentages *
Belgium Meulemans (1997)				n = 2,143	3
Denmark Worm (1996) Steentoft (1997)			n = 317 n = 221		8.8 10
France Pélissier (1996) Marquet (1998)				n = 60 n = 296	2 2
Germany Möller (1994) Krüger (1995)	n = 3,027		n = 660		0.5 0.08
Italy Ferrara (1990) Zancaner (1995)		n = 972	n = 265	n = 5,000	2.7 0.5
Netherlands Mathijssen (1998)		n = 293			1.3
Norway Skurtveit (1996) Christophersen (1995)			n = 2,529	n = 394	21 4.1
Spain Alvarez (1997) Alvarez (1997) Sancho (1997)				n = 285 n = 979 n = 383	1.3 1.0 2
Sweden Sjögren (1997)				n = 377	2
Switzerland Augsburger (1997) Staub (1994)			n = 641 n = 383		<5 0.3
United Kingdom DETR (1998)				n = 619	2

NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

Cocaine (Table 39)

The prevalence of cocaine among drivers is among the lowest compared with other illicit substances. In the Norwegian study by Skurtveit (1996) only one sample of the 2,529 blood samples was detected positive for cocaine (not included in Table 39). A high prevalence among drivers suspected of driving under the influence of drugs other than alcohol has been found in the Swiss study by Friedrich-Koch and Iten (1994). In 27.7% of the samples cocaine could be detected. In fatally injured drivers the prevalence of cocaine in Spain is remarkably high (6%) compared to other countries such as the United Kingdom where cocaine use by (fatally-injured) drivers is not observed.

TABLE 39 PREVALENCE OF COCAINE IN DIFFERENT DRIVER POPULATIONS IN EUROPE

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of drug use in percentages *
Belgium Meulemans (1997)				n = 2,143	0.7
Denmark Worm (1996)			n = 221		6
France Marquet (1998)				n = 296	1.8
Germany Möller (1994) Krüger (1995)	n = 3,027		n = 660		0 0.01
Italy Ferrara (1990) Zancaner (1995)		n = 972	n = 265	n = 5,000	0.5 0.7
Netherlands Mathijssen (1998)		n = 293			0.7
Spain Alvarez (1997) Alvarez (1997) Sancho (1997)				n = 285 n = 979 n = 383	7 5 6
Switzerland Augsburger (1997) Staub (1994) F-Koch (1994)			n = 641 n = 383 n = 137		10.5 0.5 27.7
United Kingdom DETR (1998)				n = 619	0

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

Combination of drugs with alcohol (Tables 40 and 41)

The prevalence of drug use in combination with alcohol is frequently reported in the different studies included in this survey. Although the available data do not allow a general figure to be presented, some of the studies have shown results that need further discussion. In studies in which the combination of drugs with alcohol has been reported as observation in a selection of drug positive cases (Table 40), the prevalence is higher than the percentage of the total sample (Table 41). The variation caused by characteristics of driver populations seem to be less extensive than presented in the previous discussion on the prevalences of various types of drugs. Among drivers found positive for drug use other than alcohol, 20%-65% show positive levels of alcohol in the blood or urine samples. However, differences do exist, especially if the prevalence in a normal driver population is compared to prevalence in a population of drivers stopped for suspicion of driving under the influence of alcohol. In the German Road Side Survey (Krüger et al., 1995), it was shown that none of the samples that were found positive for benzodiazepines (3.64%) was tested positive for alcohol. In contrast, in the study by Möller (1994) benzodiazepines were found in 36 cases (= 5.45%), of which 26 cases tested positive for alcohol use. These findings illustrate that caution is required in drawing conclusions on the use of the combination of drugs with alcohol.

One interesting finding that gives weight to the concern about higher accident risks in the event of multiple drug use is a clear synergistic interaction for alcohol and licit/illicit drugs, if mortality is taken as the outcome variable.

The results of the Belgian Toxicology and Trauma Study indicate a relative risk of 3.56 in the combined positive group, in which a mere additive effect would theoretically have led to a relative risk of 1.60.

In the presentation of data obtained from studies in which the combination of drugs and alcohol among all drivers in the sample has been reported the prevalences are obviously lower and vary from 3% in a Swedish survey to 28% in a Swiss study (Table 41). The latter has reported higher prevalences because the drivers involved were suspected of driving under the influence of drugs other than alcohol. In fatally injured drivers the prevalence ranges from 3% in Sweden to 19.8% in France.

Table 40 Prevalence of the combination of drugs with alcohol in drug positive cases among driver populations in Europe

Country (References)	**General driver population**	**Driver population (during weekend nights)**	**Drivers suspected of Driving Under the Influence**	**Collision-involved drivers, incl (fatally) injured**	**Prevalence of drug use in combination with alcohol in percentages ***
Belgium Meulemans (1997)				n = 2,143	27
Germany Krüger (1995)	n = 3,027				44
Netherlands Mathijssen (1998)		n = 293			20
Norway Skurtveit (1996) Christophersen (1995)			n = 2,529	 n = 394	25 46
Spain Sancho (1997)				n = 383	65

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

Table 41 Prevalence of the combination of drug and alcohol use among all drivers in the sample

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, include (fatally) injured	Prevalence of drug use in combination with alcohol in percentages *
France Deveaux (1995)				n = 97	19.8
Italy Ferrara (1990)				n = 5,000	17.5
Norway Christophersen (1998)				n = 394	11.2
Spain Alvarez (1997) Alvarez (1997)				n = 285 n = 979	6.3 6.8
Sweden Sjögren (1997)				n = 377	3
Switzerland Augsburger (1997) Staub (1994)			n = 641 n = 383		28.1 18.3

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

Multiple drug use (Tables 42 and 43)
The multiple use of drugs has been reported in different studies. In some studies it is unclear whether or not alcohol is included as a drug. Multiple drug use in drug positive cases is presented without alcohol (Table 42). In a general driver population the prevalence of multiple drug use is zero in the German roadside survey.

In another German study involving randomly - selected samples of drivers suspected of driving under the influence of alcohol the prevalence of multiple drug use among drug positive cases was 25%. In the driver population screened at the weekend during late-night hours in the Netherlands the prevalence of multiple drug use in drug positive cases is 12% (3 out of 25 drug positive cases). In collision-involved drivers with positive tests on drugs other than alcohol the prevalence of multiple drug use tends to be somewhat higher (ranging from 20%-36%).

Multiple drug use among all injured drivers in the Italian study has been reported with a prevalence of 17.4% (two or more drugs, alcohol included) for urine samples. The prevalence for drugs only has been given as 9.4%. In fatally - injured drivers in Spain and the United Kingdom the prevalence is almost similar, 3% and 5% respectively. In drivers suspected of driving under the influence of drugs other than alcohol the prevalence of multiple drug use is higher. In two Swiss studies these prevalences were 62% and 85%, although alcohol was included as a drug.

TABLE 42 MULTIPLE DRUG USE IN DRUG POSITIVE CASES

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of multiple drug use in percentages *
Belgium Meulemans (1997)				n = 2,143	20
Germany Möller (1994) Krüger (1995)	n = 3,027		n = 660		25 nil
Netherlands Mathijssen (1998)		n = 293			12
Norway Christophersen (1995)				n = 394	36
Spain Sancho (1997)				n = 383	32

* NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

TABLE 43 MULTIPLE DRUG USE AMONG ALL DRIVERS IN THE SAMPLE

Country (References)	General driver population	Driver population (during weekend nights)	Drivers suspected of Driving Under the Influence	Collision-involved drivers, incl (fatally) injured	Prevalence of multiple drug use in percentages *
Italy Ferrara (1990)				n = 5,000	17.5
Norway Christophersen (1995)				n = 394	15
Spain Alvarez (1997) Alvarez (1997)				n = 285 n = 979	2.8 1.6
Switzerland Augsburger (1997) F-Koch (1994)			n = 641 n = 137		85 62
United Kingdom DETR (1998)				n = 619	5

- NOTE: Prevalence data from different countries are not comparable due to differences in the set-up of the studies!

6. Conclusions

In this survey specific focus has been given to the prevalence of illicit drug use in road traffic in different European countries. Information could be gathered from literature and other sources concerning research findings in twelve countries. The provision of data from countries in eastern Europe turned out to be a problem. As a result no review on drug use in traffic could be included in this survey. It is not clear whether relevant data on illicit drug use by motorists exist, although interest is growing in countries such as Hungary.

The results presented in the foregoing chapters are based on recent research efforts by scientists and experts in the field of drugs and driving. The identification of issues previously described as 'methodological issues' (Chapter 3) is crucial in order to draw further conclusions from each individual research effort. These 'methodological issues' have been discussed again in reviewing the combined results as presented in Chapter 5 (Discussion). Only four large scale studies have been published, one German study focusing on the general driving population, one Norwegian study involving drivers suspected of driving under the influence of drugs and two studies (from Italy and Belgium) in which collision-involved drivers were screened for drugs. The results derived from these studies are not expected to reflect the situation in other European countries with respect to the different driver populations mentioned above, especially if in those countries the drug use patterns (for illicit drugs), the prescribing practices of physicians with respect to licit drugs, and the impact of public campaigns are not known. However, if one wishes to describe the magnitude of a problem, it is defensible to make reference to sound epidemiological investigations and discuss the contributions of societal and cultural differences that can have an effect on drug use in general in each individual country. If these aspects are considered to be significantly different to those in the four countries mentioned above, it will be a problem to apply the results presented in this survey.

The following conclusions are meant to be used as indicators for further discussion and will be presented with reference to the comments discussed in the last chapter. Although the terminology relating to 'drugs other than alcohol' differs from one country to another, the following definitions have been used to achieve a common nomenclature:

Licit or medicinal drugs are medications which might impair functions of the central nervous system and which are prescribed for patients by doctors or obtained as OTC -over the counter- drugs.
Illicit drugs are sometimes described as 'drugs' or 'narcotics' in lay language.

General driving population:

1) In the *general driving population* the prevalence of *licit* drug use will fall in the range of 5%-15%, depending upon the inclusion of classes of drugs known to impair driving performance and drug use patterns. Benzodiazepines are the most frequently detected drugs. Tricyclic antidepressants and barbiturates will be used by a very small proportion of the driving population, but cannot be ignored in defining countermeasures (e.g. programme to promote the use of 'safer' alternatives).

2) The prevalence of *illicit* drug use will fall in the range of 1%-5%. Cannabis (in the majority of cases) and opiates are most frequently observed, but the use of amphetamines (especially by younger drivers) is increasing in some countries (e.g. Norway). The detection of cocaine is a rare event according to the findings in the German roadside survey.

3) The combination of *licit* drugs and alcohol is not well established in the general driving population. The German roadside survey revealed that the prevalence of this combination was extremely low. Probably most patients are aware of the detrimental effects of the combination on driving.

4) The combination of *illicit* drugs and alcohol is much more of a problem. In the German roadside survey the prevalence of this combination in drug positive cases was 44%. However, the number of cases was limited and caution should be given to drawing any conclusions.

5) The prevalence of multiple drug use in the general population is probably very low. In the German roadside survey only one sample was detected as positive for a combination of benzodiazepines and opiates.

Population of drivers suspected of driving under the influence of drugs:

1) In *drivers suspected of driving under the influence of drugs* high prevalences of *licit* drug use are reported. However, the selection of this sample of the driving population is completely dependent on the perception and awareness of police officers who decide on the inclusion of a driver in the sample. The procedures they use and the focus they give to detect drugged drivers is different in the various countries. With this restriction in mind the prevalence of benzodiazepine use is rather high in Denmark (53%-75%), Norway (31%), and Switzerland (14%-39%). The prevalence of tricyclic antidepressants and barbiturates is very moderate, ranging from 0.5%-3%.

2) The prevalence of *illicit* drug use is lower than for licit drugs. For cannabinoids the prevalence is 10%-17% in Denmark, 26% in Norway, and 9%-57% in Switzerland. For opiates these prevalences are 17%-40% in Denmark, 8% in Norway and 1%-42% in Switzerland, whereas for amphetamines these figures are 9%-10%, 21%, and 1%-5% in the respective countries. For cocaine the prevalence is 6% in Denmark, and ranges from 0.5%-28% in Switzerland. Remarkable differences between countries are observed, for example the prevalence of use of amphetamines in Norway is relatively high, while in contrast the use of opiates rather low.

3) The combination of *licit* and/or *illicit* drugs and alcohol is expected in samples selected for the suspicion of driving under the influence of alcohol/drugs. In most studies the data for separating prevalences of combinations of alcohol with licit and illicit drug are lacking. The prevalence in drug positive cases is 25% in Norway, whereas the prevalence in all drivers in the sample in two Swiss studies ranged from 18%-28%.

4) The prevalence of multiple drug use is reported in a few studies for the total of licit and illicit drug use. A high prevalence (62%) has been observed by Swiss researchers.

Collision-involved drivers:

1) The prevalence of *licit* drug use in different surveys ranged from 6%-21%. The two large studies from Belgium and Italy both show a prevalence of benzodiazepine use of 8.5%, whereas in Spain and Sweden these figures are 2% and 4% respectively. In France and Norway the prevalence of benzodiazepine use is 12% and 14% respectively. The prevalence of barbiturates show lower figures, 1.5% in Sweden and Spain, and 3.5% in Italy. The prevalence of tricyclic antidepressants in most studies was similarly low from 0.5%-4%. One exception has been reported in a French study: 21%.

2) The prevalence of *illicit* drugs in (fatally) injured drivers ranged from 10%-25% in the different studies. Cannabinoids and opiates are about equally divided among the samples and are detected about two to three times more frequently than amphetamines. Cocaine has been detected with low prevalences (0.5%-0.7%) in Belgium and Italy, whereas in Spain relatively high prevalences (5%-7%) have been reported. The two largest studies from Belgium and Italy reported with fairly similar prevalences for cannabinoids, opiates and amphetamines: 6%, 7.5% and 3%.

3) The prevalence of the combination of drugs and alcohol use has been reported for licit and illicit drugs together in most studies. In the Belgian study the prevalence in drug positive drivers was 27%, whereas in a Norwegian study and a Spanish study the prevalences were 46% and 65%, respectively. In some other studies the prevalences are reported including the whole sample of drivers. The figures presented are lower ranging from 3%-20%.

4) The prevalence of multiple drug use is also reported in most studies for licit and illicit drugs together and ranged from 20% in the Belgian study to 36% in a Norwegian study in drug positive cases. When considering the complete driver samples in some other studies, the prevalences are lower, from 5% in the study from the United Kingdom to 17.5% in an Italian study.

Knowledge about the prevalence of drug positive drivers in different driver populations cannot prove that the use of drugs is a serious safety problem. Ideally a study to determine accident risks, needs to match collision-involved drivers for case-control comparisons. In all studies (but one, the German roadside survey) there is a lack of data on the prevalence of drugs among the normal driving population in respective countries. It is obvious that if the prevalence of drug positive drivers is negligible in collision-involved drivers, there will be no serious traffic safety problem. A high prevalence of drug positive drivers will support the assumption that there will be a serious road safety problem.

This survey shows significant prevalences of cannabinoids, opiates, amphetamines, and for the licit drugs this will also counts for benzodiazepines. The combination with alcohol and multiple drug use are issues to be considered as well. In monitoring the prevalence of (multiple) drug use, either licit or illicit, and in combination with alcohol, the best approach would be to repeat studies with standardised methodologies over a given period of time in different European countries. These studies need to be conducted in representative samples of collision-involved drivers with matched controls in the normal driving population. This approach will allow the accident risk of drugged drivers to be determined. In addition trends in drug use and drug use patterns among drivers will become apparent in studies involving any driver population under investigation provided that the methodologies are standardised with respect to sample selection and data collection. It is recommended that roadside surveys in different European countries should be devised to define the relative risk of accident involvement for the users of various drugs, alone or in combination. National laws prohibiting roadside surveys should be abolished or modified to permit the same surveys to be conducted on a pan-European basis.

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8. Appendix

Resources used in the survey

The review of investigations was based on the availability of research data published in both scientific journals and institute's reports. The first resource was covered by the International Road Research Documentation (IRRD) database (an OECD database). Reports provided by a European network of experts (members of the International Council on Alcohol, Drugs and Traffic Safety, ICADTS) were screened to reveal information on the prevalence of illicit drugs and driving with specific regard to multiple drug abuse, comprised the second resource to be applied in this survey. In addition proceedings of ICADTS conferences in the last five to seven years were included.
Valuable information could be obtained from various national traffic safety organisations in the different countries as indicated by the Pompidou Group. Permanent Correspondents of some European countries have been approached with requests to send relevant reports. Their support has been gratefully acknowledged.

Overview of the Legal Provisions, Difficulties Faced by Police, and Analysis of Prevention Attempts in Selected European Countries

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Summary

This study provides an overview of the legal regulations against drugs in road traffic in seventeen selected European countries. It also analyzes the enforcement difficulties of these regulations and the efforts made to date in the field of prevention. The present project involved three phases of data gathering: (1) identification of drug and alcohol specialists in agencies of justice, police, public health, and transportation, as well as research organizations; (2) data gathering via questionnaire; and (3) follow-up with roundtable discussions in most of the selected countries.

The level of participation differed significantly among the selected countries. Therefore, the information available for this report is quite heterogeneous. On the one hand, very complete information was provided by some countries, whereas information from other countries was quite limited. This situation reflects the different degrees to which the problem of illicit drugs and driving is approached in the various countries. The economic resources of the individual countries constitute the most significant influence in the attention given to the problem.

The review shows that there is general agreement among the participating countries on the need to combat the problem of illicit drugs. All of the participating countries agreed to three relevant United Nations conventions and have incorporated those principles into their national laws. All of the countries thereby have agreed unanimously with the statement that road traffic without drugs is better than road traffic in which drug users are present. The first issue concerning drug driving is the lack of knowledge about the magnitude of the problem. This basic lack of knowledge is documented in the report by De Gier (1998) for the Pompidou Group.

The review of legal regulations concerning drug driving reveals that most countries provide sanctions for drug driving only in the case of actual impairment. In contrast to alcohol cases, the mere analytical presence of drugs is not subject to punishment in these countries. The necessity of subsuming the drug-driving problem under the general impairment approach (which prohibits the driver from operating a vehicle in any state of compromised fitness) leads to problems in law enforcement: Evidence of reduced fitness as a consequence of drug consumption is difficult to obtain and to prove. The same problems hold true for medications with psychoactive effects. In recognition of this difficulty, and due to the lack of defined limits for the variety of drugs, some countries have decided to introduce an analytical zero limit.

Most of the participating countries experience further difficulty relating to appropriate police powers for detecting drug drivers and obtaining sufficient evidence. In general, physical testing (blood and urine samples) can only be ordered if there is suspicion of an actual drug influence. Most countries do not allow biological testing without the person's consent; but in order to prevent the undermining of law enforcement, refusing biological testing is often subject to punishment. Thus, the effectiveness of drug-driving enforcement depends not only on unequivocal regulations about which drugs are prohibited at what concentrations, but also on clear-cut regulations for the police regarding proper procedures for obtaining evidence.

Two important ways to improve the effectiveness of enforcement appear to be possible. The first is to introduce screening devices for drug consumption (analogous to breath analyzers); the second is to implement drug recognition programme for police. Most of the current screening devices sample saliva, but some use urine or sweat. The most reliable screening results are obtained from urine tests, but they impose interpretation limits on the assessment of the actual state of impairment. In addition, the urine sampling procedure does not seem to be appropriate for field use. Saliva and sweat testing devices are still under development and have not yet reached an acceptable level of validity. Thus, there is currently no rapid, valid, feasible screening device. However, in lieu of such a device in the meantime, an interim aid is available: drug recognition programme for police.

Although the need for drug recognition programme is widely accepted in the participating countries, it is clear that significant differences will arise in how they would be developed and implemented. The modification and adaptation of programme already in place in the United States, where they were first developed and implemented, would be costly and subject to legal constraints if they were transferred wholesale for use in Europe. Therefore, the drug recognition programme is still only just beginning in some countries. Nevertheless, there is a clear, recognized need and a unanimous willingness throughout all of the participating countries to cooperate in the development of an appropriate European version of the drug recognition programme.

Relatively little is known about effective countermeasures against drugs and driving. All of the participating countries perceive prevention programme to be necessary and important adjuncts to controlling drug dealing and providing therapeutic programme for drug addicts. The differences among the countries are to be found less in the basic principles of those programme than in the design of special programme and in the degree to which they are implemented. In fact, the strength and success of these programme usually mirror the financial resources of the different countries. Further, prevention efforts have to confront the divided popular attitudes toward drugs and the various political approaches to drug problems. Beyond targeting drug use prevention, little effort has been expended to date to create special prevention programme targeting drug driving.

In some countries, deterrence measures have shifted from criminal or traffic law to the administrative regulations of driver license suspension and regranting. In all participating countries, drug driving can lead to license suspension. Regranting is often linked with far-reaching consequences for drivers, who have to prove their abstinence for longer periods of time and be subject to educational and / or therapeutic treatment. In some countries, the potentiality of administrative regulations for license suspension and regranting is used as an additional tool for combating drug consumption. Even if the drug use is not linked with actual road traffic activity, some countries nevertheless use the consumption or possession of drugs as an opportunity to re-examine the fitness of the user to drive. This practice is a clear and deliberate instrumentalization of traffic legislation for drug control.

Despite different legal codifications, all of the participating countries show a very similar position against drugs. The formal elements of drug offenses are the same in all countries. Unanimously, drug trafficking and dealing are subject to severe penalties. Special emphasis is also given to combating organized crime. On the basis of these observations, it is not possible to differentiate between more and less liberal countries.

Inter-country differences can be found only in the way in which individual countries treat consumption and possession of small amounts of drugs. Some countries focus more on harm reduction and therapy, while others stress deterrence.

These different attitudes regarding the drug consumer and / or addict are independent of the way a country handles its problem of drug driving. All countries have demonstrated the political will to put the potential right of the individual to consume drugs behind the public's right to safe road traffic. Therefore, all countries show a clear tendency to protect traffic safety by prohibiting any drug driving. There are no differences in the goal of drug-free traffic, but only in the actual efforts in practice to reach this goal.

1. Introduction and Objectives

In Autumn 1997, a concept paper addressing the problem of determining prevalence and the effects of psychotropic drugs among drivers in Europe was developed for the Pompidou Group of the Council of Europe. The paper identified a lack of reliable information about drug prevalence, and shortcomings in law enforcement's ability to identify the role such drugs play in highway crashes. The paper further suggested a multinational survey that would provide information about societal drug laws, as well as drugs-and-driving laws; police control activities; prosecution and court procedures; prevention activities; and accident and prosecution rates in selected nations. Following the approval of the concept paper, a questionnaire was designed that identified and sought information about each of these topics. A companion project was also approved; it involves a literature review of prevalence studies of illicit drugs in road traffic in selected European countries, which has been completed by De Gier (1998).

The objectives of the present study are therefore to:

- obtain an overview of existing and pending laws among selected European countries regarding use of illicit drugs among drivers;

- identify and compare the difficulties faced by police, prosecutors, and courts with respect to illicit drugs in road traffic; and

- identify and compare existing prevention measures, as well as currently proposed prevention / intervention programme.

2. Method

2.1 Project Procedure

The project imposed three phases of activity for data-gathering:

1) Identification of drug and alcohol specialists in agencies of justice, police, public health, and transportation, as well as in research organizations;
2) Data gathering via questionnaire; and
3) Follow-up with roundtable discussions, to obtain additional information perhaps not covered in the questionnaire and information about law enforcement experience, as well as to address specific drugs-and-driving issues.

All three steps were executed in twelve of the seventeen participating countries (see 2.2.): To start with the Permanent Correspondents of these countries within the Pompidou Group were asked to provide the names and contact information for relevant specialists in their Ministries of Health, Transportation, and Justice, as well as in national-level law enforcement agencies. Some respondents also named research specialists outside either government or regulatory agencies. The Permanent Correspondents submitted their lists and then a questionnaire was mailed to each specialist named. The completed questionnaires were subsequently returned to the project staff at the University of Würzburg, and the responses were entered into a database.

The specialists who had completed the questionnaires were subsequently invited to participate in roundtable discussions scheduled in their respective nations' capitals.

Five countries (see 2.2.) did not participate from the beginning but joined to a later date. In these countries, information was only gathered via questionnaire. Roundtable discussions could not be performed due to time constraints.

2.2 The Participating Countries

The twelve countries, from which completed questionnaires were received and in which subsequent roundtable discussions were conducted (June through October, 1998) are: Austria, Belgium, the Czech Republic, France, Germany, Italy, the Netherlands, Poland, Spain, Sweden, Switzerland, and the United Kingdom.

The five countries which joined later and in which data gathering was achieved only via questionnaire are: Denmark, Finland, Norway, Portugal and Luxembourg.

2.3 Definitions

The project was designed to compare information about substance use and the laws governing its use in each of the selected countries. Accordingly, relatively simple definitions were developed to establish a common basis for comparison, and were presented at the beginning of the questionnaire. The respondents were asked to familiarize themselves with these working definitions before proceeding with the questionnaire.

2.3.1. "Psychoactive substance"

Any substance that affects or alters the central nervous system. These are divided into three categories:

1) Medications. These are substances either prescribed by physicians or sold over the counter at pharmacies (OTC products), without prescription.

2) Legal drugs. Often called "recreational drugs," these substances affect the user's state of mind, but are legal to use. The most common legal drug is alcohol.

3) Illegal drugs. Substances that are not legally permitted. Different regulations exist for selling, possessing, and consuming these drugs. The term "illegal" is used in the context of either of two classifications:

    1. An activity or substance prohibited under criminal law that is prosecuted by courts and other institutions of justice

    2. An activity or substance prohibited by administrative law or regulations and is therefore enforced by police or other administrative agencies.

2.3.2. "Laws and regulations"

These may be formulated in one of three ways:

1) Within a specialized law or set of laws (for example, "Law against drug use"), separate from a general legal code and specifying the illegal substances (for example, Narcotic Substance Law).
2) As part of a general legal code (such as the penal code).

3) As applied to specific public activity, and therefore regulated only within the laws specific to those domains, such as motor vehicle laws for driving activities, and occupational laws for work activities.

Since these distinctions are sometimes difficult to make, the first set of questions was designed to classify the particular country's measures against illegal drugs.

2.4 The Questionnaire

The questionnaire for the survey of these countries included seven sections, with the following major topics and questions:

2.4.1. Classification of drugs as legal or illegal in general (non-traffic)

What are the specific legal consequences (if any) when a person is identified as selling, possessing, or having consumed cannabis, heroin, cocaine (including crack cocaine), alcohol, or other psychoactive substances? For each major type of illegal activity (i.e., selling, possessing, and consuming drugs), information was requested regarding the following aspects of the specific consequence:

3. Legal basis for the specific consequence: the relevant section or paragraph of the legal code

4. Type of offense: criminal (felony), or violation of administrative law

5. Legal sanctions or penalties: jail term, prison term, fines, and / or other penalty

6. Special aggravating conditions for activity: e.g., with underage persons, with intoxicated persons, near schools, in large quantities, etc.

7. Other consequences: e.g., driving privileges suspended, enrollment in substance abuse programme, confiscation of personal property, etc.

2.4.2. Drugs in road traffic

Are there any consequences when a driver is found to have been under the influence of one or more of the psychoactive substances (noted above), if the driver had been stopped for any of the following reasons:

8. During a police control event (such as a roadblock for law enforcement, random testing, or a traffic checkpoint) and has had a clean driving record up to that moment?
9. Because of unsafe driving maneuvers (e.g., zig-zagging or weaving, overtaking in a no-pass area), even though no accident has occurred?
10. Because an accident has occurred involving the driver, but the driver is not responsible for the accident?
11. Because an accident has occurred and the driver is responsible for the accident?

12. Do the legal sanctions or penalties differ under any of the following conditions?

13. Accident severity: whether the crash resulted in property damage, personal injury, or fatal injury

14. Substance concentration limits (such as blood alcohol concentration)

15. Substance offender status: whether a first-time substance offender, a second-time offender, etc. Negligent driver status: number and type of other driving violations, if any

16. Presence of multiple drugs in driver

17. Other special conditions

Are there other consequences such as license revocation and loss of insurance coverage?

2.4.3. Police control activities

A few questions were asked concerning police control activities (roadblocks for law enforcement, random testing, and traffic checkpoints) specifically focused on psychoactive substances.

18. The legal basis for detection procedures used in the police control activities

19. Frequency of such police control activities

20. Procedures at roadside if driver is suspected of impairment

21. Use of field tests involving special devices

22. Special drug enforcement training for police officers

23. Problems frequently encountered by police officers in the drugs-and-driving control measures.

2.4.4. Prosecution, conviction, and sentencing of cases involving drugs and driving

Twelve major questions were asked concerning each step (prosecution, conviction, and sentencing) in processing such cases, including:

24. Will a driver necessarily be arrested if detected as being under the influence of drugs?

25. Can the driver avoid prosecution in some way?

26. How much discretion does the prosecutor have in such cases?

27. What are the principal reasons for not prosecuting such cases?

28. Is “plea bargaining” possible in the court system?

29. What is the prosecution rate?

30. What difficulties do prosecutors repeatedly face?

An analogous series of questions regarding the court (and conviction and sentencing) was also included in this Section.

2.4.5. Prevention activities targeting drivers

A few questions were asked concerning prevention activities that focused specifically on drugs, drivers, and traffic safety. These questions focused on official efforts to address **the problems of drugs and driving**, as well as specific efforts in **prevention**. Information

concerning private institutions and organizations dedicated to the problem of drugs and driving was also requested.

2.4.6. Official statistics

A few questions were asked concerning the number of drugs-and-driving cases that come before the courts:

31. The arrest rate and the conviction rate for drivers found to be under the influence of drugs;

32. The percentage of drivers convicted of drugs-and-driving charges who actually go to jail or prison;

33. The number of such drivers who come before the courts each year;

34. How many persons are **arrested**, are **prosecuted**, and are convicted each year for driving under the influence of drugs; and

35. How many such cases result in sentences each year.

2.4.7. Political aspects and considerations regarding drug policy

The following topics addressed public opinion and the political aspects of drugs, focusing on general societal aspects, not on drugs and driving:

36. Prevailing public opinion regarding legal and illegal drugs;

37. Differences in opinion on drug policy among the political parties;

38. Whether political discussions about drugs are linked to political discussions about alcohol;

39. Whether there is a tendency toward liberalization of “soft drugs,” such as cannabis.

2.5. The Roundtable Discussions

After the completed questionnaires had been sent, by the twelve participating countries (see 2.2.) a small meeting was organized in the capital city to provide a personal follow-up to the questionnaire with the specialists who had worked on them. These meetings were structured as roundtable discussions, conducted by project personnel and generally following the topics as they appeared in the questionnaire. The roundtable participants were assured that no individual would be quoted in this overview or elsewhere. The roundtable discussions typically lasted about three hours.

The roundtable discussions were designed to confirm and extend the information provided in the completed questionnaires, clarify any points that had proven difficult to answer, and to obtain anecdotal information and a broader understanding of drugs-and-driving issues in each participating country. Throughout the meeting, particular attention was given to probing for possible differences and discrepancies between the written laws and regulations, versus the actual or informal practices and procedures used in the day-to-day real world. The roundtable meetings also provided the specialists in each country with a forum for identifying gaps in research, law, and / or enforcement that, if filled, would result in improved road safety.

At the conclusion of each meeting, participants were asked for their recommendations and a "wish list" of measures that would improve the current state of drugs and traffic safety in their countries.

2.6. Participation, Available Material, and Report Design

All twelve of the countries initially named by the Pompidou Group (see 2.2.), participated in the study, with the exception of Hungary, which had originally expressed interest in participating in the project. The withdrawal of Hungary provided room for Belgium to be included. Further, although Turkey had volunteered to participate, insufficient information was provided to be able meaningfully to include any of the Turkish data in the analysis. Five countries (see 2.2.) joined later, at the initiative of the European Commission.

The level of participation differed significantly among the selected countries. Even though a copy of the questionnaire was sent to an average of five experts identified in each of the twelve initially participating countries, sometimes only as few as one questionnaire was completed and returned. Since any given expert could not necessarily answer all the questions in all of the different areas of the questionnaire, significant response gaps were found in some questionnaires. Further, in some cases, not all of these deficits could even be removed at the particular roundtable discussions.

The experts who received the questionnaires were asked to send project personnel additional information, reports, or any publications that might be helpful. Some of the countries sent very extensive information, thus documenting the high level of official and scientific discussion and response in these countries. On the basis of this supplemental information, it was possible to fill some of the gaps in the questionnaire responses. Actually, the supplemental information was typically provided by those countries that had already demonstrated high quality and completeness in their questionnaire responses.

Accordingly, the information available for this report is quite heterogeneous across the countries. On the one hand, very complete information was provided by some countries, whereas information from other countries was quite limited. This differential completeness and quantity of information prevented a full presentation of the results in tables because there would be too many empty cells. Therefore, within each report section, only the relevant countries are mentioned and discussed for which the respective information was actually available.

Material in the following Results section (3) is based on analyses of the responses to the questionnaire, the information from the roundtable discussions, and the information from the supporting documents (e.g., official reports and publications) provided by the various specialists. The responses in the questionnaires were entered into a database to facilitate analysis and comparison of similarities and differences across the participating countries.

By necessity, a general overview must omit highly specific information stemming only from one particular country. Therefore, the report is presented in two major sections. The first section is the main report and contains a description of the methods, a summary of the results from comparisons among the seventeen countries, a discussion of the results, and conclusions. The second section is the Appendix in which the basic informations within each country is organized and presented as an individual, free-standing report. These individual country reports also include some of the unique information gathered at the roundtable discussions.

3. Results

Emphasis in this section is on examining the similarities and differences among all seventeen participating countries. The subsections below refer to the topics in the questionnaire and are presented in the same order, namely: (1) Legal regulations concerning drugs in general; (2) Legal regulations concerning drugs in road traffic; (3) Police activities; (4) Post-arrest processing: prosecution, conviction, and sentencing; and (5) Regulations for regranting driver licences.

3.1. Legal Regulations Concerning Drugs in General

A general consensus among all participating countries is the agreement on the necessity to use criminal law to fight illicit drugs. This consensus is based on the United Nations Conventions concerning narcotic drugs and psychotropic substances to which all of the project participants were signatories:

The Single Convention on Narcotic Drugs of 1961, as amended by the 1972 protocol,
The Convention on Psychotropic Substances of 1971,
The United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

In all countries, criminal sanctions cover the most common and prevalent substances: amphetamines (e.g., Ecstasy / XTC), cannabis, cocaine, hallucinogens (e.g., LSD), heroin, and psychoactive medications. In most of the countries, drug prohibition is located in a specific drug code. Only the Czech Republic, Norway and Spain, have incorporated the drug prohibition as part of their general penal codes. In Denmark, the general penal code contains additional, aggravating conditions for drug offences regulated in the “Euphoriants Act”. In Finland and Portugal also, drug prohibition is included in the general penal codes as well as in specific drug acts.

In general, every national drug law criminalizes the acts of selling, acquiring, and possessing drugs. However, differing approaches among the participating countries have been chosen with reference to drug consumption and drug possession for personal use only.

3.1.1. Distinction between different substance classes

Some countries have constituted different punishment levels for different substance types:

43. The United Kingdom differentiates among Class A, Class B, and Class C drugs. Class A drugs are cocaine, opium, and hallucinogens; Class B drugs are amphetamines, cannabis, and codeine; and Class C drugs include those in the benzodiazepine family. The range of punishment is highest for Class A drugs and lowest for Class C drugs.

44. Similarly, the Netherlands differentiates between List I substances (heroin, cocaine, amphetamines, and others) with higher punishment, and List II substances (particularly cannabis) with lower punishment.

45. Finland and Spain have instituted different punishment levels for substances causing serious harm to health and other substances.

46. Different punishment levels exist in Italy for heroin, cocaine, amphetamines, and LSD in one group, and cannabis and psychoactive medication in another. The same holds true for Denmark concerning aggravating conditions regulated in the general penal code.

47. Austria differentiates between “toxic drugs” (Suchtgifte) and “psychotropic substances,” which involve lower punishment levels for certain activities to some extent.

48. Sweden and Switzerland have not defined different substance classes. However, they provide for lower punishment in “petty cases”, having regard to the nature and the quantity of the drug involved and other circumstances. This can apply to small quantities of cannabis, for example.

49. By contrast, Germany makes no legal provision for lower punishment for soft drugs. Consequently, judges have the discretion to choose the sanction for each type of substance within the legal range of punishment.

The range of fines and prison sentences can be seen in the tables within each country report in the Appendix.

3.1.2. Consumption and possession for personal use

The extent to which a country exerts a strictly controlled, abstinence-oriented drug policy via therapy and reduction of harm can be defined by the way in which the law deals with drug consumption and possession for personal use. In this context, the crucial criterion is not the mere existence of a provision punishing consumption, but the actual intensity of law enforcement against those who consume, buy, and / or possess drugs for personal use only.

Of all the participating countries, only Finland, Norway, Portugal, Sweden and Switzerland punish the act of consumption. Luxembourg punishes consumption when occuring “in group” (i.e. more than one person). In Switzerland, however, the law provides for extensive opportunities for dismissal of cases, a practice that is widely and frequently used. This corresponds to the emphasis on therapy and reduction of harm in Swiss drug policy, and to the concentration of sanctions against dealers instead of consumers. In contrast, criminalization of drug consumption is to a large extent well enforced in Norway and Sweden.

Similar tendencies can be shown in the enforcement of criminal possession in cases involving small quantities for personal use only. A distinction can be made among:

50. Countries that expressly make an exception from punishment regarding possession for personal use — for example Italy and Switzerland. Similar regulations exist in the Czech Republic, with the exception of the possession of small amounts and in Spain, where possession is punishable only when it can be shown that a person was trafficking in drugs.

51. Countries that criminalize possession for personal use, but provide opportunities for dismissal (e.g., Austria, Germany, as well as Denmark and the Netherlands– the two latter ones allowing dismissal not as a matter of law, but from within the prosecution guidelines); and

52. Countries that have proposed lower sanctions for drug possession for personal use. The chief examples are Sweden, which has a “petty offense” designation linked to the quantity of the drug, and the United Kingdom, whose sentencing guidelines recommend only a fine for cannabis cases.

3.2. Legal Regulations Concerning Drug Driving

3.2.1. Impairment and analytical approach

All of the participating countries have traditionally pursued an “impairment approach” that imposes sanctions against drivers who are under the influence of substances and have an impaired ability to drive a vehicle. This impairment is difficult to prove, and thus, the countries face significant problems in law enforcement. Consequently, only a relatively small number of cases go to court in which impairment is obvious by evident driving errors or by crashing.

Germany was the first country that, in response to this gap in law enforcement, introduced a zero-tolerance law in August 1998 covering a wide range of common substances: amphetamines and designer amphetamines (MDE and MDMA), cannabis, cocaine, heroin, and morphine. Belgium (in April 1999) and Sweden (in July 1999) followed this “analytical approach” by also introducing zero-limits. Switzerland is considering the implementation of a zero limit; a legislative initiative is pending.

In Norway, courts try to compare the degree of drug influence with BAC-levels by evaluating the concentration level and the number of substances taken ; the sentence will then be determined according to the equivalent sentence for alcohol consumption.

3.2.2. Context of regulation and type of offense

Different national approaches are found regarding the allocation of the drug driving regulations in either the general penal codes or in a specific road traffic act, as well as to its qualification as an administrative or criminal offense. In the majority of countries, the regulations for drug driving are part of road traffic acts. Only in the Czech Republic, Finland, Poland, and Spain are the impairment regulations a part of the general penal codes. In Germany, the impairment regulation is part of the general Penal Code, while the analytical zero tolerance is regulated within their road traffic acts. Regarding type of offense, the following distinctions can be made:

53. Driving while impaired by drugs (without specific consequences) is a criminal offense in Belgium, Denmark, Finland, Italy, Luxembourg, the Netherlands, Norway, Poland, Spain, Sweden, and the United Kingdom. Consequently, it can be sanctioned by fine or a prison sentence. In law enforcement practice, however, a mere fine is the most common response to first-time drug offenders.

54. By comparison, drug driving (without specific consequences) is only an administrative offense in Austria, the Czech Republic, Portugal and Switzerland, but the sanctions do not necessarily exclude a prison sentence. Switzerland, in fact, allows a prison sentence up to 3 months (or up to 3 years, if another person has been seriously endangered) for an administrative offense of drug driving.

55. In Germany, the nature of the offense depends on whether the impairment regulation or the analytical regulation has been applied. The analytical zero-tolerance limit is an administrative sanction and carries only a fine; the impairment determination results in a criminal sanction.

Each legal system imposes more severe, criminal-type sanctions if the drug-impaired driving has specific consequences such as endangering, injuring, or killing another person. In the majority of countries, however, these specific consequences are covered by the general criminal provisions for negligent homicide or injury, and no regulations specifically address the death or injury of a person by a driver under the influence of drugs.

However, such regulations are in place in Luxembourg, in the Netherlands and in the United Kingdom. Austria has a regulation that sanctions negligent homicide or injury if alcohol and / or drugs are involved, although this regulation is not linked to traffic offenses. A specific criminal regulation addressing a drug-impaired driver's endangerment of a person can be found both in Austria and in Germany. In Portugal, drug driving is restricted to administrative consequences (i.e. fine and licence suspension) even when an accident with injury or death has occured.

3.2.3. Included substances

In most countries, regulations for impaired driving apply equally to alcohol as well as to other drugs, and include medications. The sanction is usually imposed for the impairment, regardless of the substance that has caused the impairment. Moreover, in some countries (e.g. Germany and Switzerland), impairment criteria include causes not restricted just to substance influence. Driving impaired by fatigue is one such example. In Denmark and Italy are there different articles for alcohol and drug impairment.

3.3. Police Activities

The enforcement of the drug driving laws depends on the legal and practical responsibilities of police to check drivers for their fitness to drive. While in alcohol cases police can rely on the quick and easy method of breath analysis, drug screening to date requires more complicated methods, particularly blood or urine testing.

3.3.1. Location of legal regulations

Countries differ in the ways in which police procedure at roadside controls is regulated. Many countries, for example Austria, Denmark, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, and the United Kingdom, have incorporated all important regulations concerning traffic controls in their respective road traffic acts. Consequently, these countries have a comprehensive regulation system containing sanctions for traffic offenses as well as describing police procedure for collecting evidence by biological testing.

In contrast, the procedural requirements for blood and urine testing in Finland, Germany and Poland are part of their general codes of judicial procedure. In Switzerland, the locus of the regulation differs, depending on whether the case involves alcohol or drugs. While breath and blood testing for alcohol is regulated in the Road Traffic Act, the requirements for blood and urine testing for drugs are subject to the various cantonal codes of judicial procedure, which can be sharply different, one to the other. However, a legislative initiative to adopt the drug-related regulations in the Road Traffic Act is pending. In Sweden, blood and urine testing is regulated in the general Code of Judicial Procedure, while for breath testing a specific act concerning breath analysis has been implemented.

The incorporation of sanctions for traffic offenses as well as of police procedure in the same code appears to provide a sound model for judicial uniformity and comprehensibility.

3.3.2. Legal provisions for breath testing

How well a nation balances the effectiveness of traffic law enforcement with drivers' rights can be demonstrated by the conditions it sets for breath testing, since these conditions indicate the scope of powers a nation offers its police forces in conducting roadside controls.

Some countries grant comparatively broad powers by allowing police to conduct random breath testing – i.e., not requiring any suspicion of impairment. This is the situation in Austria, Denmark, the Netherlands and Norway, for example.

In Switzerland, a legislative initiative for the implementation of random breath testing is pending. In contrast, the Czech Republic, Italy, and the United Kingdom require a police officer's suspicion of an alcohol-related impairment, or that at least the driver is involved in an accident or has committed a traffic offense. In Germany, there is no legal regulation for police breath testing at all, so that it can only be conducted on a voluntary basis. Although a breath test result can be used as evidence in a criminal procedure in Austria, Finland, Germany, Italy, the Netherlands, Norway, Portugal and the United Kingdom, breath testing can be used only as an initial screen in the Czech Republic and Switzerland.

The effectiveness of alcohol traffic enforcement depends on the sanctions that can be imposed on a driver who refuses giving a breath sample. In Austria, Italy, and the United Kingdom, refusal is punished by the same sanctions that apply in cases in which the alcohol limits are actually exceeded (in Austria, such an offense is treated as if the alcohol concentration had exceeded 1,6 per mille, which means stricter sanctions will apply than those assigned to the general limit of 0,5 per mille). This also includes license suspension.
These countries point out that the sanctions are based on the act of refusal itself, and should not be thought to be linked to actual driving performance – i.e., as a sanction resulting from suspicion. In Denmark, Norway and Poland, refusal will result in the ordering of a blood sample. The same applies to Switzerland, which plans – along with the pending introduction of random breath testing – to sanction refusals as if they were violations of the legal alcohol limit. In Portugal and Spain, refusal leads to criminal sanctions for disobedience. In the Netherlands, refusing the evidentiary breath test is a criminal offense. In the Czech Republic, refusal is sanctioned by a fine that is actually much lower than the fine for exceeding the legal alcohol limit; this practice has the consequence that the drunk driver has no incentive or reason to cooperate in breath testing. In Germany, because of the lack of an appropriate regulation, a driver does not have to fear any sanctions for refusing a breath test. However, if there already is suspicion of an alcohol concentration for other reasons, the driver will be compelled to give a blood sample.

3.3.3. Legal provisions for blood testing

Blood testing is the most common and effective instrument to detect drug or medication presence in drivers. Thus, the effectiveness of drug law enforcement depends on the legal conditions and restrictions for subjecting a driver to blood sampling.

There is international consensus that blood samples should only be taken if there is suspicion that a driver is under substance influence or – as acknowledged in Italy and the United Kingdom – has at least been involved in an accident or committed a traffic offense. In Belgium, a pending legislative initiative would allow blood testing for drugs if a driver's BAC exceeds the 0,5 per mille limit – regardless of further suspicion for drug influence. In Portugal, blood and urine testing for drugs can only be required in case of an accident with injury or death. According to new legislation in France, police must order biological testing for drugs in fatal accident cases.

However, individual nations approach the enforcement of blood testing differently. In some, the physical integrity of a person is respected so highly that blood testing cannot be enforced without the person's consent. This is the case in Austria, the Czech Republic, Italy, the Netherlands, Poland, Spain, and the United Kingdom, and – generally – Switzerland. However, these nations sanction refusal of blood testing in ways similar to sanctioning the refusal of breath testing. This means that in the majority of countries, a driver who refuses a legally required blood test for suspicion of drug impairment will be punished as if he or she were actually impaired. This practice imposes significant presssure on the driver to cooperate.

In Denmark, Finland, Germany, Norway and Sweden, blood testing can be enforced without the person's consent. In Switzerland, the same practice applies if the police officer can demonstrate that important reasons exist – which is the case in most drug driving occurrences.

The same national legal requirements that apply to blood testing generally apply to urine testing.

3.3.4. Legal provisions regarding blood / urine samples and their analysis

Across all nations, there is a general lack of binding legal regulation concerning the administration and analysis of blood and urine samples for drugs. Such regulation would ensure uniform nationwide analysis standards, as well as guarantee the quality of the laboratories. Switzerland, for example, is planning to adopt such laboratory and analysis standardization in its Road Traffic Laws; to date, only alcohol blood testing is subject to regulation there. Belgium has implemented uniform standards for blood and urine testing along with the introduction of the zero-limit. In other European countries, however, some quality control is achieved through recommendations of toxicologic and forensic societies, for example the Society for Toxicological and Forensic Chemistry (Gesellschaft für Toxikologische und Forensische Chemie), which conducts regular ongoing inspections (Ringversuche) to ensure the quality – on an international level – of drug analysis in body samples.

3.3.5. Police problems

When asked about the major problems police face in law enforcement against drug drivers, all countries pointed to the lack of knowledge and training in recognizing if a driver is under the influence of drugs. As shown above, all countries in general require that the driver must demonstrate possible drug influence (e.g., arousing suspicion because of deviant driving behavior) to justify a police officer's decision to request forensic blood and urine testing. Due to the inconvenience of conducting blood and urine tests, especially because a physician must be present, police will tend to refrain from ordering biological testing in cases in which drug influence is doubtful. Across all nations, the major obstacles in drug driving enforcement are the uncertainty of the police in assessing suspicion of drug impairment and then in deciding whether the long and expensive testing procedure appears to be warranted. To improve this situation, police officers generally favor more specific training, and further, the implementation of roadside drug screening. Nations' efforts to comply with these demands vary in intensity.

3.3.6. Police practice with screening devices

From an international perspective, the use of screening devices has not yet become common in drug driving enforcement. Whenever screening devices have actually been used, it has usually been only for experimental purposes.

Among the participating countries, however, only Belgium and Switzerland have implemented drug screening devices on a regular basis. In some Swiss cantons, sweat and urine screening has been conducted by traffic police. The majority of cantons, however, have abandoned the idea of screening at roadside because of the inefficiency of the existing devices. Further, police officers cite the problematic nature and inconvenience of obtaining urine or sweat samples from drivers at roadside. They also have experienced a very high rate of refusal in urine testing, exceeding that for blood testing. Belgian police uses urine analyzers.

In the United Kingdom, sweat and saliva screening have been tried out on an experimental basis. German police examines whether sweat testing is suitable. The Netherlands' traffic police have used sweat and urine screening for experimental purposes. Finland is planning to start an experimental initiative from summer 1999. The other participating countries have not yet used drug screening devices.

3.3.7. Drug recognition training for the police

Some countries have profoundly intensified efforts to train their police officers in recognizing drug drivers. Germany, for example, has developed a comprehensive education programme for traffic police officers that is designed for nationwide implementation and has also attracted international attention. In Belgium and Switzerland, traffic police receive regular training focusing on drug recognition. The United Kingdom is about to pilot Drug Awareness/Field Impairment training for police officers with a view to introducing it nationally. Finland is also planning to start a Drug Recognition Expert Training from summer 1999. In all other countries, drug recognition training is – if offered at all – restricted to part of the basic education each police officer must undergo.

3.3.8. Conclusions

On balance across all participating countries, efforts for improving law enforcement against drug drivers are relatively small. To date, most activity in addressing the problem of drug driving has been initiated in Belgium, Germany and Switzerland where zero-limit regulations have been adopted or are pending (see 3.2.1.). However, it can be expected that other national efforts to implement roadside drug screening will increase as soon as effective, affordable devices are introduced into the market.

3.4. Post-arrest Processing: Prosecution, Conviction, and Sentencing

Detection of drug impairment by police does not necessarily result in a judicial conviction, which depends instead on the discretion that prosecutors and judges exercise in such cases. Across all nations in this survey, there is a lack of statistical data regarding this question. The official statistics concerning convictions for traffic offenses usually do not differentiate between alcohol or drug impaired driving; thus, it is not known how many drug driving convictions occur in each nation. The exceptions are Denmark and Italy, which provide such judicial statistics.

Statistics about police reports of drug drivers, dismissals on prosecutors' decisions, and charges or indictments before courts either do not exist or – if they do exist – are kept for internal purposes only and are not open for public review. Thus, only theoretical assumptions can be made about the general scope of decision-making that a nation's legal system provides for its prosecutors and judges.

Different national approaches exist regarding prosecutors' discretion in deciding whether to prosecute or dismiss a case. Some nations (e.g., Austria, the Czech Republic, Denmark, Germany, Norway, Sweden, and Switzerland) use a "legality principle": – i.e., prosecutors are generally obligated to proceed with prosecution in each case, assuming sufficient evidence exists. However, these countries usually also allow prosecutorial discretion under certain circumstances, particularly in petty cases. In contrast, France and the Netherlands, for example, generally allow prosecutorial discretion, as does Germany in its administrative law cases to which zero limit offenses belong.

In practice, however, these different theoretical approaches do not lead to major differences in how laws are enforced. In petty cases, a prosecutor working under the legality principle can use his or her discretion; and in serious cases, a prosecutor theoretically having discretion will decide to prosecute, anyway. Althought plea bargaining is allowed in some countries (e.g., the Czech Republic, Italy, and the United Kingdom) it generally does not apply in drug driving cases because no lesser alternative to drug-impaired driving exists that could be substituted in a plea bargain.

3.5. Regulations for Regranting Driver Licenses

3.5.1. European Union law: the Council Directive of 29 July 1991 on Driving Licenses

The national regulations on driving licenses are influenced by the Council Directive of 29 July 1991 on Driving Licenses (91/439/EEC, Official Journal of the European Communities No. L 237/1), which all member states must implement. Regarding alcohol and drug consumption among drivers, the directive calls upon all members to provide regulations that prevent dangers in traffic safety from alcohol- and drug-impaired drivers. For this purpose, the directive in its appendix III (O.J. No. 237/ 23) demands that driving licenses shall not be issued to or renewed for applicants or drivers

- who are dependent on alcohol or unable to refrain from drinking and driving∗
- who are dependent on psychotropic substances or who are not dependent on such substances but regularly abuse them, whatever category of license is requested
- who regularly use psychotropic substances, in whatever form, which can hamper the ability to drive safely where the quantities absorbed are such as to have an adverse effect on driving. This shall apply to all other medicinal products or combinations of medicinal products which affect the ability to drive∗

3.5.2. Competence

In all countries, drug-impaired driving leads to suspension or even revocation of the driver's license; restrictions for regranting vary. In the majority of countries, the decision to suspend and / or regrant is up to the administrative licensing authorities, who can require the offender to undergo medical examination, including urine and hair testing, to determine his post-arrest drug consumption habits. Only in Belgium, Germany, Luxembourg and the Netherlands do courts play a major role in license suspension decisions. In Germany, if an offender is convicted of drug-impaired driving, the court will order license suspension and also determine the minimum suspension period to be implemented by the licensing authorities. Single offenses against the administrative zero limit, however, result in suspension ordered by the licensing authorities themselves. In France and Italy, license suspension decisions are the responsibility of the local prefect.

∗ This principle applies to Group 1 drivers only. Regarding Group 2 drivers, the Directive demands that „the competent medical authority shall give due consideration to the additional risks and dangers involved in the driving of vehicles covered by the definitions of this group". The vehicle types falling under Group 2 are defined in appendix III, sec. 1, 2 in connection with art. 3 of the Directive.

3.5.3. Suspension for drug driving

If a license holder has committed a traffic offense, the suspension procedure is regulated by comprehensive legal provisions. This guarantees uniform national practice and allows meaningful statements as to the suspension period and the administrative procedure for each national legal system (see Appendix for information on individual countries' procedures and suspension policies).

3.5.4. Suspension for drug consumption

Cases in which a license holder or applicant is a known drug user, but has not committed any traffic offense, are difficult. Due to the EU directive cited above, most countries can apply legal provisions determining that substance-addicted persons are not permitted to obtain a driver's license. However, differences exist with regard to the practical implementation of such provisions. Some countries, such as Italy and the United Kingdom, require every applicant to undergo a medical examination and to obtain a declaration from a family doctor that the person is fit to drive. In Spain, such examination includes psychological testing and is carried out by specialized medical institutions. In contrast, Germany requires a comprehensive medical examination only if signs of disease, addiction, etc., exist; compulsory medical testing is limited only to eye examinations. Austria requires a psychiatric examination if there is suspicion of alcohol, drug, or medication addiction.

The consequences of drug consumption for drivers who already hold a license are more difficult to impose because they depend on the information flow between courts and police on the one hand, and the licensing authorities on the other. Licensing authorities depend on information about a person's drug consumption or misuse when police or courts receive knowledge about such cases. Usually no definite regulations or criteria exist regarding this procedure, and official practice varies not only between, but also within, nations. In the course of its legislation reform on driving licenses (coming into effect January 1, 1999), Germany has implemented a regulation requiring police to inform licensing authorities about sign of impairment of driving fitness, including drug consumption. Such information will then allow licensing authorities to start a rigorous examination procedure and require every reported drug consumer to undergo medical or even psychological testing at his or her own expense.

A similar regulation can be found in Swiss law. The Swiss Narcotics Act provides that any official authority with knowledge of a person's drug addiction has to inform the licensing authorities. However, this is assumed not to be rigourously enforced in practice, since – according to the assessment of the experts participating in the project – the number of license suspensions would have to be much higher.

When they obtain such information, licensing authorities usually tend to begin a rigorous procedure against drug consumers, which may not necessarily lead to permanent suspension, but at least burdens the person with a long-lasting, expensive, and inconvenient examination. This measure effectively shapes general drug prevention policy, and reduces the unevenness of punishment gaps created by the implementation of impairment approaches.

4. Discussion

4.1. Drugs in General

This overview shows that there is general agreement among the participating countries on the need to combat the problem of illicit drugs. All of the participating countries have agreed to the United Nations conventions indicated on Page twelve and have incorporated those principles into their national laws. In addition to this formal uniformity in having comparable sanctions for drug dealing and consumption, all participating countries are confronted with the problem of having an increasing number of drug consumers. These countries are forced to search for a way to handle the problem pragmatically, especially regarding the use of cannabis. Obviously, it is not possible to make criminal a large portion of a country's youth without imposing serious consequences on society. This problem leads to:

- a differentiated approach, discriminating between different classes of drugs as more or less tolerable,
- a sharp separation between consumers and dealers, and
- different legal reactions to drug consumption according to the circumstances regarding where and how the drugs are used.

4.2. Drugs in Road Traffic

One of the major problems within this difficult field is the question of how to deal with drug driving. All countries agree unanimously with the statement that road traffic without drugs is better than road traffic in which drug users are present.

The first issue concerning drug driving is the lack of knowledge about the magnitude of the problem. To date, we do not have reliable information about the prevalence of drug driving, nor do we have solid knowledge about the accident risks introduced by drug consumption. Moreover, data regarding drug involvement in crashes are probably grossly incomplete and inadequate. Assumptions about drug presence and possible drug influence are difficult to prove at a crash site, because if a driver tests positive for alcohol (the first test that is usually administered), enough evidence then exists for legal processing. Therefore, drug tests are usually not additionally administered, because they are much more expensive, and positive results are much more difficult to interpret and the cases are thus much more difficult to prosecute (in most countries). The net result is that drug involvement in crashes is most probably greatly underestimated.

This basic lack of knowledge is documented in the report for the Pompidou Group by De Gier (1998). There is an essential need for epidemiologic research on the prevalence of major drugs among both crash-involved and non-crash-involved drivers. Without this knowledge, it will be difficult to convince authorities and the public that drug driving prohibition must be enforced and that the necessary countermeasures will also affect the average driver not involved in the drug scene.

4.2.1. Impairment vs. analytical approaches: Behavior or drug concentrations?

The review of legal regulations concerning drug driving reveals that, in the majority of countries, sanctions for drug driving depend on the evidence of reduced fitness as a consequence of drug consumption. This evidence is difficult to obtain.

Contrary to the situation with alcohol, where about 100 years of research have led to an impressive body of knowledge about the effects of the substance on all psychophysiological functions, the situation with drugs seems to be almost hopelessly complicated. There are many different substances, each of them with complex pharmacokinetic properties, unknown metabolic characteristics, broad effects on heterogeneous psychological functions, and unknown tolerance from habitual consumption. Thus, all legislation based on evidence that a drug was responsible for unfit driving finds itself in almost insoluble difficulties. This dilemma leads to the widespread practice of the courts to punish for alcohol or other offenses, even in cases where drug consumption was probably the cause of the driving violation.

The same problems hold true for medications with psychoactive effects. A wide variety of substances have main and/or side effects on various psychophysical functioning. Their complex pharmacology will not allow simple regulation based on concentration limits, nor by the definition of substance classes which are prohibited for driving. Given that millions of drivers are under the influence of critical medications and also that the performance of most of them is improved by the very medication prescribed probably makes the problem unsolvable. In recognition of this difficulty, most of the participating countries try to separate the problems of illicit and licit drugs, first trying to develop a solution for the illicit ones.

Recognizing the difficulties of an impairment approach to the problem of drugs, some countries have decided to introduce per se regulations with analytical limits for drug concentrations, analogous to blood alcohol concentration limits. However, the problem once again is how to set such a limit for each substance. To avoid the same problems as in the impairment approach, there is a clear tendency toward establishing a zero limit for drugs, as has already been introduced in Germany, Belgium and Sweden. The legal limit is set to that concentration which can be uniquely detected by toxicological methods. In fact, this is actually a zero limit with a built-in error tolerance.

Another difficulty arises at this point that hampers enforcement attempts to reduce drug driving. Concentration limits must be formulated with respect to a particular body fluid, be it blood, urine, saliva, or sweat. Blood concentrations are seen as the most relevant ones because these concentrations show the highest correlations with psychophysical functioning. Urine concentration of a drug is a measurement “backward in time”, indicating previous consumption. The distribution characteristics of many important substances from blood to saliva or sweat are as yet not fully understood. Therefore, to date, blood seems to be the most relevant specimen for determining an actual deterioration of performance caused by a drug, followed by urine – which normally cannot itself be used as legal evidence of actual impairment. Therefore, if presumed impairment by a drug is the basis of a zero-limit regulation, blood will be the only specimen with evidentiary power.

4.2.2. Voluntary vs. involuntary biological specimens: The right to refuse?

Further difficulty is experienced by most of the participating countries at this point. There are many different regulations governing the circumstances under which a driver can be required to give a blood or an urine sample. While some countries admit the administration of biological testing without the person’s consent (i.e., by physical force), the majority of countries require the person´s consent, but create pressure to cooperate by imposing sanctions in case of refusal. These different approaches are based on different assumptions about the constitutional rights of the individual, not only regarding physical integrity, but also regarding the prohibition against forcing a person to incriminate him- or herself through active cooperation in the blood / urine / breath sampling procedure. Usually, these sampling procedures only can be undertaken if there is sufficient evidence for an offense. However, because this evidence must be obtained by the police, the officers themselves have to take the responsibility for doing so, a situation that frequently leads to a very cautious, conservative practice – to avoid errors.

Thus, the effectiveness of drug-driving enforcement depends not only on unequivocal regulations about which drugs are prohibited at what concentrations, but also on clear-cut regulations for the police regarding proper procedures for obtaining evidence. Regulations that facilitate detection and evidence of drug driving will necessarily also burden the average driver – a price that must be paid if society wants effective enforcement of drug driving.

4.2.3. Desirable innovations: Screening devices and drug recognition programme

Two important ways to reduce the negative side effects and improve the effectiveness of enforcement appear possible. The first is to introduce screening devices for drug consumption (analogous to breath analyzers); the second is to implement drug recognition programme for the police. Most of the current screening devices sample saliva, but some use urine or sweat. The most reliable screening results are obtained from urine tests, but with interpretative limitations on the accuracy of assessing the actual state of impairment at the time the specimen was obtained. In addition, the urine sampling procedure does not seem to be appropriate for field use. Saliva and sweat testing devices are still under development and have not yet reached an acceptable level of validity. Thus, there is currently no rapid, valid, feasible screening device. However, in lieu of such a device in the meantime, an interim aid is available: drug recognition programme.

Although the need for drug recognition programme is widely accepted in the participating countries, it is obvious that significant differences will arise in how they would be developed and implemented. Current techniques in drug recognition training began in the United States nearly 20 years ago. Starting in the late 1970s at the Los Angeles Police Department, a programme was developed to train officers to become Drug Recognition Experts (DRE). In a series of controlled laboratory and field studies, this approach was refined to the Drug Evaluation and Classification (DEC) Programme, which yielded very promising results in the detection of drug drivers. The DEC programme is now a standardized, systematic method of examining a motorist suspected of impaired driving. There are seven broad categories of drugs that can be identified through the DEC process. A highly standardized training and certification programme has evolved with a three-phase programme of instruction: (1) the Pre-school, consisting of a two-day training event; (2) the DRE school, a seven-day event including 30 modules of instruction; and finally (3) Certification Training, in which a minimum of twelve complete examinations are administered under supervision and which requires approximately twelve0 hours of on-the-job supervision.

All of the countries participating in this study agree that a one-to-one transfer of the US programme would not be directly applicable for European countries. The adaptation of the American programme for use in each European country would, by necessity, be individually very costly – particularly because each country has a unique approach to law enforcement and a unique economy. In fact, only Germany and the United Kingdom have so far supported the development and implementation of a comprehensive DEC programme appropriate to that country's needs. Nevertheless, there is a clear, recognized need and unanimous willingness throughout the participating countries to cooperate on the development of an appropriate European version of the drug recognition programme. A subsequent problem will be the necessarily expensive implementation of such programme into the police domain. But programme efficiency can only be guaranteed if education of the officers is fundamental, thorough, and ongoing. Once again, the necessity of conducting and paying for these programme requires a societal consensus for effectively combating the drug problem in traffic.

4.2.4. Effectiveness of drug-driving deterrence

Although extensive knowledge regarding the effectiveness of specific countermeasures for alcohol and driving is available, relatively little is known about effective measures against drugs and driving. In fact, few relevant studies have been conducted to date. For example, do the classical countermeasures and instruments for deterring drink driving also apply to combating drug driving successfully? The typical drinking driver is quite different from the typical driver under the influence of drugs, many of whom are young people traveling long distances to attend special events such as rock concerts or raves; driving to local or distant discos; and driving with several passengers headed for the same destinations, with the intention of consuming drugs together, among other activities. Little is known about the extent to which young drivers are influenced by, or are even aware of, legal regulations, especially given that detection rates are so low. Little effort has been expended on understanding or addressing (not to mention solving) the problem of drugs and driving from the perspective of the most common drug consumer: the young user. There is a complete lack of research comparing and contrasting drugs-and-driving behavior, attitudes, and perceptions of sanctions in the different European countries, with different regulations and different levels of societal acceptance of drug use. Further, there is an indispensable need for research on the effectiveness of relevant countermeasures for drugs and driving. Such research would be most effective if conducted in conjunction with research on the prevalence of drugs and driving.

4.2.5. Drug-driving prevention programme

All of the participating countries perceive prevention programme to be necessary and important, in conjunction with controlling drug dealing and providing therapeutic programme for drug addicts. The differences between the countries are to be found less in the basic principles of those programme than in the design of special programme and in the degree to which they are implemented. In fact, the situation usually mirrors the financial position of the different countries. Prevention policy is also confronted with the divided popular attitudes towards drugs and the political approaches to drug problems. Despite basic and official rejection of drugs, there is a practical need to tolerate at least some degree of drug consumption. This willingness to tolerate some level of drug use, but reluctance to legalize it, makes it nearly impossible to address the problem of drug driving with the same effectiveness of relatively simple alcohol campaigns such as “If you drink, don’t drive.” The strategy of silently tolerating a drug in general and outside of the road traffic domain, but officially penalizing its use prior to or during driving, hinders the implementation of traffic-specific prevention programme with clear-cut recommendations for young people on how to handle drugs-and-driving situations.

4.2.6. Summary

The legal situation for detecting and penalizing drugs in road traffic is not very satisfactory throughout the participating countries. As a consequence of this situation there is a shift of deterrence from criminal or traffic law to the administrative regulations of license suspension and regranting. In all participating countries, drug driving leads to license suspension. Regranting is often linked with far-reaching consequences for drivers, who have to prove their abstinence for longer periods of time, mostly at their own expense. Educational programme are frequently obligatory, and therapeutic programme are occasionally obligatory for DUID convicted offenders.

In some countries, the potentialities of administrative regulations for license suspension and regranting are used as additional tools for combating drug consumption. Even if the drug use is not linked with actual road traffic activity, some countries nevertheless use the consumption or possession of drugs as an opportunity to re-examine the qualifications of the

user to drive a car. For example, in Germany, the court can refrain from punishing a person if only a small amount of a drug is found on the person. In such a case, criminal law thus waives the claim for punishment. Simultaneously, under administrative law, however, this person's driving license can be revoked, even though he or she never actually drove under the influence of drugs and his or her drug consumption was completely separate and independent from being on the road. This practice is a clear and deliberate instrumentalization of traffic legislation for drug control, because neither impairment nor endangering others by driving is the basic reason for the administrative act.

Despite different legal codifications, all of the participating countries show a very similar position against drugs. The formal elements of drug offenses are the same in all countries. Unanimously, drug trafficking and dealing are severely repressed. Special emphasis is given to combating organized crime. On the basis of these aspects, it is not possible to differentiate between more or less liberal countries.

Inter-country differences can be found only in the way consumption and possession of small amounts is treated. Some countries rely more on harm reduction and therapy, while others stress deterrence. In these terms, countries such as Switzerland and the Netherlands may be considered more liberal than others.

These different attitudes regarding the drug consumer and / or addict are independent of the way a country deals with the problem of drug driving. In all countries, the potential right of the individual to consume drugs has to take second place behind the public right to drive a car in safe road conditions. Therefore, all countries show a clear tendency to protect traffic safety by prohibiting any drug driving. There are no differences in the goal of drug-free traffic, but only in the actual, practical efforts to reach this goal. These efforts depend in large measure on the financial resources of the various countries.

5. Conclusions

Despite the existence of individual legal systems, individual states of economic health, and individual approaches to solving problems that present a tangible social cost to each of the participating countries in this project, several significant and urgent common themes have emerged from the survey. Without exception, the primary theme among the countries is that drugs seem to be everywhere in Europe, including the countries that did not participate in the study. Further, no country is immune from the effects of drugs among its young people.

These two basic considerations are central to the understanding of what the project was designed to achieve. Accordingly, project personnel have developed the following summary conclusions from all of the experts who answered the questionnaires, participated actively in the roundtable meetings, and provided subsequent information:

- There is a general willingness among the surveyed experts to believe that a drugs-and-driving problem does indeed exist on the roadways, despite the limited research findings to date.

- There is a need for epidemiologic research information on the prevalence of major drugs among both crash-involved and non-crash-involved drivers.

- There is a need for experimental research to determine the impairment levels of the major drugs.

- There is a need for an effective training programme for police officers regarding drug recognition, drug impairment, and drugs and driving.

- Among all countries is a clearly identified lack of adequate funding for: (1) effectively training police in drug recognition among drivers; (2) conducting essential research on drug prevalence among both crash-involved and non-crash-involved drivers; and (3) conducting essential research on driving impairment levels of the major drugs.

- There is a universally recognized need for the development of a valid, rapid, affordable, field test for the major drugs.

- There is a critical need for the systematic review of all studies of the effectiveness of police activities and countermeasures in combating and reducing drugs and driving.

- There is a need for well-designed, carefully implemented, and critically evaluated drugs-and-driving prevention programme.

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Appendix - Overview of the Legal Provisions, Difficulties Faced by Police, and Analysis of Prevention Attempts in Selected European Countries

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This Appendix is the second of two volumes in a project report entitled: **"Illicit Drugs in Road Traffic: Overview of the Legal Provisions, Difficulties Faced by Police, and Analysis of Prevention Attempts in Selected European Countries."** This project was sponsored by the Pompidou Group of the Council of Europe and was conducted in the following countries:

- **Austria, Belgium, the Czech Republic, France, Germany, Italy, the Netherlands, Poland, Spain, Sweden, Switzerland, and the United Kingdom,** which participated from the beginning,

- **Denmark, Finland, Norway, Portugal and Luxembourg** later.

In the twelve countries participating from the start, information was gathered in a three-step procedure:

- Identification of drug and alcohol specialists in agencies of justice, police, public health, and transportation, as well as research organizations;

- Data gathering via questionnaire; and

- Follow-up with roundtable discussions, as a way of obtaining additional information perhaps not covered in the questionnaire and information about law enforcement experience, as well as to address specific drugs-and-driving issues.

The level of participation differed significantly among the selected countries. An average of five questionnaires were sent to the various experts identified in each country, but sometimes only one questionnaire per country was completed and returned. Since any given expert could not necessarily answer all the questions in all the different areas of the questionnaire, significant gaps were found in the responses on some questionnaires. Further, in some cases, not all of these deficits could even be filled at the particular roundtable discussions. Therefore, in some tables of the following chapters, many of the cells are empty, indicating either that the respective information could not be obtained, or simply that there is no applicable answer to a question.

The experts who received the questionnaires were requested to send the project personnel additional information, reports, or any publications that might be helpful. Some of the countries sent very extensive information, thus documenting the high level of official and scientific discussion and response in these countries. On the basis of this supplemental information, it was possible to fill some of the gaps in the questionnaire responses. Actually, the supplemental information was typically provided by those countries that had already demonstrated high quality and completeness in their questionnaire responses.
Consequently, the information available for this report was quite heterogeneous. On the one hand, very complete information was provided by some countries, whereas information from

other countries was relatively limited. By necessity, the general overview of the Main Report typically omits highly specific information from each country.

In these five countries which joined later information was gathered only by a questionnaire. Due to time constraints, only one questionnaire per country was completed and returned. Since any given expert could not necessarily answer all questions in all different areas of the questionnaire, significant gaps were found in the responses on some questionnaires. Therefore, in some tables of the following chapters, many of the cells are empty, indicating either that the respective information could not be obtained, or simply that there is no applicable answer to a question. The experts who received the questionnaires were requested to send additional information, reports, or any publications that might be helpful. On that basis, it was possible to fill some of the gaps in the questionnaire responses.

The full report is presented in two major sections. The first section is the Main Report and contains a description of the methods, a summary of the results from comparisons **among** all seventeen countries, a discussion of the results, and conclusions. The second section is this Appendix, in which basic information **within** each country is organized and presented as an individual, free-standing report. These individual country reports also include some of the unique information gathered at the roundtable discussions.

Each of the following chapters contains, for each country, information stemming from all available sources: questionnaires, materials, and experts' opinions. The sum of this information provides a useful overview of each country, describing its approach to the problem of drug driving and the specific difficulties confronting its authorities.

To the extent possible, information obtained during each roundtable has been incorporated into the report, but not all of the information could be verified by project staff. Thus, it is possible that unofficial, personal perspectives appear in the Main Report and the Appendix. Nevertheless, this kind of information is also part of the public discussion on the drug-driving problem.

The Appendix is arranged alphabetically by country and contains information about each participating country's relevant drug laws, driving laws, law enforcement, prevention measures proposed or already in place, drug policy, and official statistics. As far as roundtable discussions were conducted, a summary of the roundtable discussion concludes the country's report.

For continuity and ease of reference, the same outline is used for all participating countries listed within this Appendix and generally follows the outline of the Main Report:

1. Legal Regulations Concerning Drugs in General
2. Legal Regulations Concerning Drugs in Road Traffic
3. Police Activities
   - 3.1 Police controls
   - 3.2 Standards for probable cause
   - 3.3 Standards for official physical evidence
   - 3.4 Testing devices
   - 3.5 Drug recognition training
4. Prosecution: Legal Provisions vs. Discretion of the Officials
5. Regulations for Regranting Driver Licences
6. Prevention
7. Official Statistics
8. Political Aspects and Considerations Regarding Drug Policy
9. Roundtable Discussion

1. Austria

1.1 Legal Regulations Concerning Drugs in General

On January 1,1998, Austria initiated legislation that superseded previous drug laws relating to narcotics, psychotropic substances, and precursors (that is, basic components or elements necessary for making drugs), called the "Suchtmittelgesetz" (SMG). The new law provides a specific, independent regulation for psychotropic substances and precursors. The new regulation was developed after Austria accepted the United Nations Convention on Psychotropic Substances of 1971, and the subsequent U.N. Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988. The list of individual substances covered under the new legislation regarding narcotics and psychotropic substances is contained in the ordinances of the Ministry of Labor, Health, and Social Affairs as, respectively, Ordinance on Narcotic Substances (Suchtgiftverordnung) and Ordinance on Psychotropic Substances (Psychotropenverordnung).

Table 1-1. Legal Consequences of Different Types of Involvement with Drugs1

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal			No offense
NARCOTICS				
Legal basis	§27, I SMG		§35 ff. SMG	No sanctions
Legal sanctions and penalties	**Prison:** max. 6 months, **or** **Fine:** max. 360 daily rates		(Preliminary) dismissal	
Aggravating conditions	§§27, II and 28, I-V **Prison:** max. 3 years for supplying to minors, or being a member of a gang, or possessing a larger quantity max. 5 years for selling a large quantity min. 1 year, max. 10, 15, or 20 for selling a large quantity, and membership in a gang, or being a gang leader			
PSYCHOTROPIC SUBSTANCES				
Legal basis	§30, I SMG		§30, II SMG	
Legal sanctions and penalties	**Prison:** max. 6 months, **or** **Fine:** max. 360 daily rates	**Prison:** max. 6 months, **or** **Fine:** max. 360 daily rates	Not punishable is medication containing psychotropic substance and if quantity is small	No sanctions
Aggravating conditions	§31, II SMG **Prison:** max. 5 years (for large quantity)	§31, I SMG (if aimed at trafficking) **Prison:** max. 2 years (for large quantity)		
PRECURSORS				
Legal basis	§32, II SMG	§32, I SMG		
Legal sanctions and penalties	**Prison:** max. 5 years (if person intended to produce large quantities)	**Prison:** max. 2 years (if person intended to produce large quantities)		

1 The fines shown in Table 1-1 and 1-2 are expressed in Austrian schillings.

The respective dangers of the three substance classes – narcotics, psychotropic substances, and precursors – are reflected in the level of punishment assigned to each class. If small quantities of a medication containing a psychotropic substance are found and are presumed to be for personal use only (i.e., used as medication), no punishment follows. Additionally, cases involving narcotics and psychotropic substances not contained in any medication can also be dismissed by prosecutors if it can be shown that the small quantity is for personal use only. In such cases, either the courts or the prosecutor can dismiss the case for two years on condition that the offender receives medical therapy, if indicated. At the end of two years, the case is reviewed in terms of the success of the medical therapy. If the offender has not completed the therapy and / or if the offender has committed a new offense during the two-year period, the case will be prosecuted.

Austrian drug law is based on the principle that each person is free to inflict harm upon himself, and that therefore prosecution for consumption only does not exist. Consumers, however, are prosecuted because of the wide interpretation of the term "possession." That is, possession can include what a person holds in his or her hand as an indication not only of consumption but also of presumed previous possession. Thus, the decriminalization of drug consumption in Austria can be shown to differ in a legal context from the criminality of drug possession. However, the consumer-possessor case often proceeds toward dismissal, under the conditions described in Table 1-1.

1.2 Legal Regulations Concerning Drugs in Road Traffic

Table 1-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	Administrative	Administrative	Criminal	Criminal
Legal basis	§5,I and §99, IB, StVO	§5,I and §99, IB, StVO	§ 89 StGB	§81, StGB (death), §88, III (injury)
Legal sanctions and penalties	**Limit: 0,5 per mille** (blood): **Fine:** 3,000 – 50,000, FSG **Limit**: **0,8 per mille** (blood; 0,4 mg/l breath): **Fine:** 8,000 – 50,000, StVO **Limit: 1,2 per mille** (blood; 0,6 mg/l breath): **Fine:** 12,000-60,000, StVO **Limit: 1,6 per mille** (blood; 0,8 mg/l breath): **Fine:** 16,000 – 80,000, StVO	**Fine**: 8,000 – 50,000		With death resulting: **Prison:** Max. 3 years With injury resulting: **Prison:** Max. 6 months **or Fine:** 360 daily rates
	DRUGS			
Type of offense	Does not exist	Administrative	Criminal	Criminal

Legal basis		§5,I; §99, IB, StVO	§ 89 StGB	§81, StGB (death), §88, III (injury)
Legal sanctions and penalties		**Fine:** 8,000 – 50,000		With death resulting: **Prison:** Max. 3 years With injury resulting: **Prison:** Max. 6 months **or Fine:** 360 daily rates

StVO = Straßenverkehrsordnung, or Road Traffic Act
FSG = Führerscheingesetz / Licence Act
STGB = Strafgesetzbuch / Penal Code

The basic provision relating to drink- and drug-driving is §5, I, StVO, which prohibits driving a motor vehicle while being impaired by alcohol or drugs. The sanctions are established in §99, StVO, and have administrative, not criminal implications. That is, prosecution and sentencing are under the jurisdiction of administrative authorities, not the courts.

Regarding **alcohol**, impairment is assumed to exist at 0,8 per mille. However, the law recognizes additional limits:

- Under the FSG (Licence Act), a small fine can be imposed for drivers whose BACs are above 0,5 per mille.

- Drivers with BACs between 1,2 and 1,6 per mille will be sanctioned with higher penalties than those at 0,8 per mille.

No legal limit exists regarding **drugs**.

In addition, traffic accidents per se – as a result of drug and / or alcohol impairment – are not specifically addressed in the Penal Code, although sanctions in such cases are governed by the general provisions against negligence or recklessness that leads to injury or death (§81, §88 III Penal Code). However, if drugs and / or alcohol are involved, the sanctions are more severe.

Endangerment of a person by drink- or drug-driving is subject to sanctions as established by the section of the Penal Code (§89) that addresses traffic-specific regulations relating to concrete dangers caused by drink- or drug-impaired drivers.

1.3 Police Activities

1.3.1. Police controls

Police have the power to stop a driver during a routine control, even when the driver is not behaving suspiciously. The control allows examination of the person's fitness to drive and the safety of the vehicle. These powers are regulated in the Road Traffic Act (StVO), as well as in the Police Security Act (Sicherheitspolizeigesetz).

The extent of police stops is largely under local control in large communities and cities. Smaller communities tend to have fewer controls by local police because of the more familiar relationship of the police to the population. Thus, authorities in larger jurisdictions will conduct police controls in smaller communities, thereby avoiding the involvement of local police in potentially long-term difficulties between drivers and themselves.

1.3.1. Standards for probable cause

Random breath testing for alcohol has been allowed in Austria since 1995, under §5, II of the Road Traffic Act. If a driver refuses to take the breath test, it is assumed that the driver's BAC exceeds 1,6 per mille, and the appropriate sanctions will be applied (fine, licence suspension, and psychological examination). It is important to emphasize that the sanction is based on the act of **refusing,** and is not linked to a police suspicion of impaired driving due to a BAC level that exceeds the legal limit. The latter position is considered of questionable constitutionality under Austrian law, because it would base punishment on mere suspicion. Drivers who fail to provide breath samples for provable physiological reasons will not be administratively sanctioned for refusing to complete the breath test.

1.3.2. Standards for official physical evidence

Breath testing. Breath test results are accepted as evidentiary in administrative and criminal procedures, and thus the results do not have to be confirmed by analysis of a blood sample. Blood sampling is considered a personal invasion and is used only in cases in which drivers are not able to provide a sufficient breath sample.

Blood sampling. The Road Traffic Act (§5, IV a, IX) allows a blood sample to be taken if the driver is suspected of being impaired by either alcohol or drugs, but the sample may not be taken by force. Again, refusal will result in fines equal to those imposed if the BAC were to have exceeded 1,6 per mille; the sanctions also apply in cases in which a driver has refused to submit to a blood test for drugs.

Austria differs from Germany and the United Kingdom, for example, in not allowing forcible blood testing. Like several other countries involved in this study, Austria recognizes a level of personal sanctity that does not permit physical invasion of a human body by force. For more information about the differences in relevant legal bases between countries such as Austria and Germany, see the report on **Germany** in this Appendix.

Further, a driver can be required to submit to a medical examination if he or she is suspected of being impaired – under the same provisions described above relating to blood tests.

1.3.4. Testing devices

No field test devices for drug presence are being used in Austria, nor are they allowed even for experimental purposes. In addition, there is no urine testing in Austria, under the Road Traffic Act.

Austria has no nationally standardized procedures for analyzing forensic evidence. However, forensic experts who testify in court are required to hold certain minimum professional qualifications. Administrative procedures, which account for most cases of alcohol- and drug-related driving impairment, do not have minimum requirements for experts. Quality control of the evidence does exist to the extent that body samples are subject to the directives and recommendations for processing as established by international organizations such as the Society for Forensic and Toxicologic Chemistry.

1.3.5. Drug recognition training

Drug recognition training exists as an element of basic police training, as well as in traffic-specific training.

1.4. Prosecution: Legal Provisions vs. Discretion of the Officials

The principle of “legality” – the idea that prosecutors are required to proceed with a case if a sufficient body of evidence indicating (drug) impairment exists – applies in both administrative and criminal proceedings. No “plea bargaining” is possible in Austria.

1.5. Regulations for Regranting Driver Licences

The Licence Act and the “Health Ordinance” that accompanies it govern the regranting of driving licences that have been revoked for reasons relating to drug and alcohol impaired driving. A traffic offense committed by a driver under the influence of drugs and / or alcohol implies unreliability in traffic and therefore usually results in suspension of the licence. The decision to regrant a licence is based on a determination of the driver’s presumed reliability in traffic (§ 7 Licence Act). The procedure for suspending and regranting the licence is covered under §§24 ff. of the Licence Act. The law recognizes both limited and unlimited suspensions. Limited suspensions are removed when a driver successfully completes a psychological and medical examination. If the suspension period exceeds 18 months, the driver will additionally be required to pass a new driving examination.

Licensing authorities – not the courts – govern the suspension and regranting of licences, even if the offender has been convicted for a traffic offense in court. This approach differs with that of Germany, for example, whose courts handle both criminal convictions and licence suspensions. The basis for this difference is the consideration in Austria that licence suspension is not a punishment as much as it is a protective measure for the population, as was mentioned by the experts at the roundtable discussion.

Suspensions for first-time drug offenders not having committed a traffic offence are handled on a case-by-case basis. Usually, convictions for offences against the “Suchtmittelgesetz” (Drug Act) lead to a licence suspension for lack of reliability or physical aptitude (§§ 7, 8 Licence Act).

The majority of drug consumers not involved in traffic offences are handled according to an informal system whereby the arresting authority (for example, the police) that has detected the driver’s drug consumption or possession will inform the licensing authorities.
The Licence Act is currently under review. A reform proposal was passed in March 1999 to make the regulation system easier and clearer.

1.6. Prevention

For a long time, Austria has not engaged in drug prevention programme, and for lack of epidemiological information, does not recognize a significant drug-driving problem. However, educational countermeasures, as offered by the Kuratorium for Traffic Safety, do address the presumed problem of drugs-and-driving.

Despite the lack of standardized approaches to the prevention of drug problems, future prevention measures are expected to focus on the different conditions under which drug problems arise. Therefore, drug prevention programme are designed for presentation in schools, and discotheques.

1.7. Official Statistics

Like many other countries in this study, Austria does not have specific statistics about drug involvement in traffic accidents. Statistics on convictions do not separate alcohol involvement from that of other drugs. The Austrian Ministry of the Interior does, however, have statistics about police controls in which breath alcohol is tested and driver licences are subsequently suspended:

- In 1997, 45,786 breath alcohol tests were conducted, resulting in the suspension of 48% of the driver licences.

Statistics regarding the number of cases in which drugs were found via police controls, blood sampling, or traffic accidents were not provided.

In the minutes of the 3rd meeting (September 1998) of the European Commission DG VII Working Group on Alcohol, Drugs and Medicines, and Driving, an Austrian report was cited that had presented traffic safety results of Austria's reduction of the legal BAC limit from 0,8 to 0,5 per mille. Compared to the same period in 1997, the first six months of 1998 showed:

- Alcohol-involved accidents dropped 15.8%;
- Alcohol-involved fatalities dropped 32.6%; and
- Alcohol-involved injuries dropped 20.3%.

1.8. Political Aspects and Considerations Regarding Drug Policy

The Austrian population generally has concerns about drug problems, but has little specific knowledge about their scope. Political themes in recent years have suggested stronger laws against drug activity. Even so, popular thinking traverses a wide range of opinion, from humanitarian preventive approaches – such as addiction prevention, therapy instead of prosecution, and minimization of risk – to extremely repressive measures. Liberalization of drug laws is propounded only within a few restricted circles.

According to some experts participating at the roundtable meeting, the major political parties have the following differences in their approaches to the drug problem in Austria: Conservatives prefer a higher tolerance against alcohol and stronger measures against illegal substances. Social Democrats also support a general strengthening of measures against the consumption and possession of illegal substances. Liberals, however, advocate the liberalization of some illegal substances, and support the so-called Marijuana Lobby that consists of Green Party members, young Social Democrats, and other smaller groups.

Discussions about alcohol and drugs are linked together to the extent that some attempts are made to focus on demonstrable dangers of alcohol, which pushes the discussion of drugs into the political background. For the most part, the dangers of alcohol are compared to those of cannabis.

Another point of discussion at the roundtable meeting was, that the lack of knowledge or research about the drug driving problem is the major handicap in finding adequate solutions. There are no significant studies about the dangers of drugs in traffic, and no improvement in this level of knowledge is expected in Austria. One of the reasons for this phenomenon, according to some of the experts, is that it is easier to close one's eyes to the problem than it is to determine the extent of the problem and develop solutions to it.

They also concluded that research possibilities are constrained because the international drug conventions do not in general allow routine research in illegal drugs.

1.9. Roundtable Discussion

The discussion focused on the new Austrian Drug / Narcotics Act of 1.1.1998 ("Suchtmittelgesetz"), which has implemented a specific set of regulations for psychotropic substances. In addition to providing a detailed explanation of the legal regulations concerning drugs in general and police powers in traffic enforcement, the participants discussed the harsh suspension or revocation penalties against drug users who hold driver's licences.

The partcipants also discussed the lack of research regarding drug issues, because of legal constraints. This lack of knowledge, they said, hampered the development of reasonable ways of dealing with the drug problem – in general as well as in road traffic.

2. Belgium

2.1. Legal Regulations Concerning Drugs in General

Involvement with drugs is regulated in the Law of 24/2/1921, as amended by the law of 9/7/1975. According to participants at the roundtable discussion, the law contains a schedule of illicit drugs that is linked to the United Nations list of common illicit drugs (heroin, cocaine, cannabis, amphetamines, designer amphetamines, LSD, etc.) and also applies to psychoactive medications. Sanction levels are the same regardless of the type of substance; that is, possession of a psychoactive medication that has not been prescribed by a doctor carries the same penalties as those for possession of an illicit drug.

Table 2-2. Legal Consequences of Different Types of Involvement with Drugs2

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal	Criminal		No offense
Legal basis	Law of 24/2/1921, as amended by the law of 9/7/1975			No sanctions
Legal sanctions and penalties	**Prison:** 3 months to 5 years, **and** **Fine:** 200,000 to 20,000,000			
Aggravating conditions	**Prison:** 5-10 years (for activity resulting in an incurable illness, permanent disability of a person, or activity with minors (> 16 years old) **Hard labour:** 10-15 years (for cases involving a death, or if the person was a gang member) **Hard labour:** 15-20 years (for cases involving a death, if the person was a gang leader, or if there was activity with minors (≤ 16 years old)			

Belgian law punishes selling and possessing as criminal offenses, but not the consumption of drugs by an individual consuming alone. According to the roundtable discussion, consumption in groups is subject to legal sanctions. The term “group” is defined as more than one person. According to the roundtable participants, alternatives to incarceration exist for certain types of offenders. These are determined on a case-by-case basis. Further, the participants added that any items used to conduct drug trade, as well as any profits from the selling of drugs, are subject to confiscation by the relevant authorities.

Possession of small quantities for personal use. If a person is found with a quantity of drugs that is small enough to be presumed for personal use, no sanctions usually apply, although the roundtable experts said that it is possible to prosecute for possession.

2 The fines shown in Table 2-2 and Table 2-2 are expressed in Belgian francs.

2.2. Legal Regulations Concerning Drugs in Road Traffic

Table 2-2. Legal Consequences for Drugs in Road Traffic.

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Legal basis	Federal Roadways Law	Federal Roadways Law	Federal Roadways Law	Federal Roadways Law
Legal sanctions and penalties	**Limit: 0,5 per mille** Fine: 5,000 – 100,000 BEF **Limit: 0,8 per mille** Prison 15 days – 6 months, or Fine: 40,000 – 400,000 BEF	Prison 15 days – 6 months, or Fine: 40,000 – 400,000 BEF	Prison 15 days – 6 months, or Fine: 40,000 – 400,000 BEF	Prison 15 days – 6 months, or Fine: 40,000 – 400,000 BEF
	DRUGS			
	"Zero-Limit" (with analytical detection limits)	**Criterion:** Driving in a manner similar to that of someone driving under the influence of alcohol		
	Prison 15 days – 6 months, or Fine: 40,000 – 400,000 BEF			

Alcohol. The current limit is 0,5 per mille (blood), under the Federal Roadways Law, and is assessed by breath testing. If a person's BAC exceeds 0,8 per mille, higher penalties apply, even if no accident resulted. The sanctions are at the discretion of the judge in criminal proceedings. Drivers with BACs between 0,5 and 0,8 per mille must wait at least three hours or provide negative test results before they are released from custody. If the BAC is greater than 0,8, the duration is six hours. If, at the end of the waiting period, the test is still positive, a new period of three or six hours starts, depending on the alcohol level.

Drugs. In addition to the regulation against driving "in a manner that appears to be similar to drunk driving" which refers to cases of evident driving impairment, Belgium has introduced a zero-limit regulation for specific drugs, taking effect from April 1999. The zero-limit applies to the following substances: (1) THC; (2) amphetamines; (3) MDMA, MDEA, and MBDB; (4) morphine; and (5) cocaine or benzoylecgonine.

The new law also defines analytical detection limits, i.e. those minimum concentrations that must be present in order to consider the test result "positive": (in blood) THC 2 ng/ml; amphetamines, MDMA, MDEA, MBDB 50 ng/ml; morphine 20 ng/ml; cocaine/benzoylecgonine 50 ng/ml. It should be noted, that the analytical detection limits are regulated in the law itself and not – as is the case with the German and Swedish zero-limits – left upon the forensic and toxicologic experts. Regarding these analytical detection limits, the term "zero-limit" may be misleading.

The sanctions for violating the new law are of criminal character; their range can be seen from the table.

2.3. Police Activities

2.3.1. Police controls

The regulations for detection procedures during traffic controls are included in the Federal Roadways Law, which pertains nationwide. Roundtable participants emphasized that police controls are not conducted on a random basis, but are always based on a specific reason. The primary purpose of police controls is to limit the significant flow of drug trafficking between the Netherlands and Belgium. Even though no random police stops occur, if police suspect a driver of being impaired by drugs or alcohol, the driver is stopped.

2.3.2. Standards for probable cause

Usually during police control procedures, the search for drugs constitutes just one item. However, specific controls are conducted on weekends among drivers leaving discotheques and other sites where concentration of people and presence of drugs are expected to be high. Most frequent police controls are conducted during the weekends or at special events.

2.3.3. Standards for official physical evidence

In addition to introducing the zero-limit for drugs, the new law contains precise regulations concerning the physical evidence in drug-cases. If a driver shows visual signs of drug influence (e.g. pupil alterations), urine testing will be conducted. If the urine test shows a positive result, blood testing will be ordered. Not only regarding blood (see 2.2 the new law provides analytical detection limits for urine sampling. If a driver refuses urine testing, a positive result will be assumed.

2.3.4. Testing devices

Belgian police use urine analyzers for field testing at traffic controls. This method is somewhat problematic, however (see Drug recognition training and Identified problems**,** below). With the new law, the importance of urine screening will increase with the new law.

2.3.5. Drug recognition training

In order to enforce the new law effectively, Belgian police received drug recognition training. The police officer`s ability to detect visual signs of drug influence is very important as urine testing requires suspicion of drug influence (see 2.3.3.).

2.3.6. Identified problems

According to the roundtable participants and the questionnaire repsonses, the significant problems faced by police in drug-driving controls were:

- drivers are not always able to provide urine samples for testing, and
- police must use caution in ensuring the driver’s privacy during urine testing.

2.4. Prosecution: Legal Provisions vs. Discretion of the Officials

“Plea bargaining” – admitting to a lesser offense and taking that penalty – is not possible in the Belgian court system. Under the new law, the court will convict a person of drug driving if a blood test is positive, although roundtable participants added that a person can challenge the results of blood analysis in court.

2.5. Regulations for Regranting Driver Licences

Committing an alcohol- or drug-driving offense will lead to a licence suspension with special requirements for restoring the licence. The decision to suspend and regrant a licence rests with the judge in a criminal proceeding. According to the roundtable participants, the judge can take into consideration the offender's need to use a car to get to his workplace, the level of intoxication or impairment, and other factors. Supporting this information is De Gier (1993; p. 38), who reports that suspension and reinstatement of driver licences are decided upon by the court. The exact procedure to reacquire the licence depends on the decision of the medical advisor.

There is no further specific information about the licence regulations for drug consumers or addicts in general. According to De Gier, p. 38, licence applicants must fill in a form and declare "that they do not regularly use any medicinal drugs, like hypnotics or tranquilizers or any other psychotropic substances and that they have not been treated in the last five years for abuse of alcohol, medicinal or illicit drugs." The form warns that untruthful statements will be penalized.

Several levels of licence suspension are possible in Belgium, according to the roundtable participants. Police effectively suspend a driver's licence if the driver has tested positive for alcohol and is detained for the 3 or 6 hours (and, in some cases, another 6 hours) before being released back onto the road. With the new law for drugs, if a urine test is positive or cannot be carried out, or if he refuses the test, a driver can be prevented from driving for 12 hours. After this period, a new test is carried out, with a new period of 6 hours of driving interdiction if the test is positive. Once the criminal proceeding is under way, the prosecutor can summarily suspend the licence for 15 days. The judge can suspend the licence for up to 1 year or permanently. Drivers whose licences are not permanently suspended must pass a driving examination before their licences can be regranted.

2.6. Prevention

Drug-specific prevention campaigns for drivers exist in Belgium and are described below in the Roundtable Discussion section. According to the roundtable participants, Belgium has both active and passive safety programme regarding the use of drugs. Regarding medications, the participants were not certain to what extent the warnings in the package inserts affect traffic safety and to what extent they are supplemented by pharmacists when the medications are dispensed. The warnings in the package inserts were generally considered to contain too little information to have a significant effect.

Belgian insurance practice has, to a certain extent, a preventive effect. See Roundtable Discussion section for further information.

Anecdotally, the roundtable participants reported a few private initiatives by Belgian breweries to encourage responsible driving, particularly among young drivers. The larger breweries also market soft drinks, so their campaigns are not viewed as entirely altruistic. In the past three years, the Kiwanis Club has also devoted time and funding to drug prevention campaigns, according to the roundtable participants. The participants concluded that alcohol abuse prevention has been most effective at the community level, and that community-based models are therefore most likely to succeed for drug abuse prevention, as well.

2.7. Official Statistics

See Meulemans, **Belgian Toxicology and Trauma Study,** for a variety of statistical information regarding drugs and driving in Belgium and Luxembourg. Conviction rates for drug driving were not available.

2.8. Political Aspects and Considerations Regarding Drug Policy

There is a clear political will to address the problem of drugs and traffic safety. Thus, the government strongly supported the BTTS study and started drafting a law on drugs and driving soon after its conclusions became known. The Secretary of State for security is supporting different EU initiatives on drugs and driving, e.g. a study by Dr. De Gier and the DG VII ROSITA project.

At the time of the roundtable discussion, the Coalition government was opposed to legalization of drugs, although some members reportedly are advocating a moderate position toward possible legalization of "soft drugs." A Parliamentary commission has determined that cannabis poses the lowest risk to consumers, but it has not determined any further steps toward legalization of that drug.

2.9. Roundtable Discussion

Belgium stands out among European nations in its attempt to study and solve problems of drug driving. The Belgian Toxicology and Trauma Study, a report submitted by the Belgian Society of Emergency and Disaster Medicine, the Toxicological Society of Belgium and Luxembourg, and the Belgian Road Safety Institute, provides a comprehensive view of the use of alcohol, medicines, and illegal drugs among drivers involved in traffic accidents and admitted to hospitals between January 1995 and January 1996.

Much of the information obtained in the roundtable discussion is presented in the preceding sections. However, the roundtable discussion also provided an opportunity for participants to discuss their real-world observations and to address related matters not covered in the questionnaire.

The roundtable discussion also explored the commonly identified problems among the other countries in this Council of Europe study, with participants supporting the general desire for a rapid, reliable field test for drugs of impairment among drivers. Further, roundtable participants discussed the implications of Belgium's lack of an ongoing programme of police controls, such as roadblocks at its borders. With neighboring Netherlands offering major ports to and from the North Atlantic and with relatively relaxed drug policies in effect there, Belgian concern with cross-border drug trafficking is substantial.

Belgium has instituted several active and passive **drug safety awareness programme**. One of these involves making a prescription drug user aware of risks involved in operating machinery or driving. It will start in spring 1999. Another stems from the Belgian insurance industry: if a policyholder is cited for drunken driving, without an accident resulting, insurance premiums for that driver do not rise. If, however, an accident has resulted from drunken driving, the driver's premium rises **and** the driver has to reimburse the insurance company for any damage resulting from the accident. Other programme to encourage zero tolerance for drugs among driving patrons of discotheques and bars have begun, but no data are yet available regarding their effectiveness. These programme have been designed to involve bar and discotheque owners in cooperating with officials in the zero-tolerance initiatives.

Data from the Belgian Toxicological and Trauma Study suggest that the incidence of road traffic crashes resulting in injury or death has declined (p. 94) — perhaps due to changes in traffic rules and higher safety awareness. This study is reviewed in De Gier (1998, pp. 12-14).

3. Czech Republic

3.1. Legal Regulations Concerning Drugs in General

The legal regulations for involvement with drugs are included in the general Penal Code. There is no drug-specific law. The provisions apply to all relevant substances, in particular heroin, cocaine, amphetamines and medications with psychoactive effects. Additional substances subjected to criminalization can be found on the "list of narcotic and psychotropic substances." The sanction levels are the same for all substances covered by the law. Regarding medications, legal consequences will not be imposed if a person is found with a psychotropic substance prescribed by a doctor.

Table 3-1. Legal Consequences of Different Types of Involvement with Drugs[3]

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal	Criminal	Criminal	
Legal basis	§ 187, Penal Code	§ 187 a, Penal Code (when quantity of drug is "bigger than small")	§ 187 a, Penal Code (when quantity of drug is "bigger than small")	
Legal sanctions and penalties	**Prison:** max. 15 years **Fine:** 2,000 – 5,000,000	**Prison**: max. 5 years **Fine**: 2,000 – 5,000,000.	**Prison**: max. 5 years **Fine**: 2,000 – 5,000,000.	No sanctions.
Aggravating conditions				

Possession of Small Quantities for Personal Use. Before the reform of the drug legislation with effect of 1.1.1999, possession was not sanctioned if it could be shown to be for personal use only, independent of the quantity. In practice, however, it was very hard to prove that a person's drug possession was not exclusively restricted to personal consumption. This aspect of the law was exploited by dealers. Thus, the decriminalization of drug possession for personal use has been subject to a major reform.

According to the reform regulation, possession results in punishment if the quantity is "bigger than small". The definition of this term is strongly discussed. According to recommendations of the Ministry of Health and the Ministry of Interior this definition refers to the average daily quantity of the specific drug for personal use.

3.2. Legal Regulations Concerning Drugs in Road Traffic

Since there are no analytical limits for drug drivers, proof of impairment is required in each case. In practice, this is seldom achieved, according to the roundtable participants. The most important and decisive means of evidence is the medical examination.

3 The fines shown in table 3-1 and Table 3-2 are expressed in Czech koruna (crowns).

Table 3-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
ALCOHOL				
Type of offense	Administrative	Criminal	Criminal	
Legal basis	§ 30 Misdemeanour Act (Law No. 124/1993)	§ 201 Penal Code (Law No. 65/1994)	§ 201 Penal Code	
Legal sanctions and penalties	Limit: 0,0 per mille (blood) (in practice 0, 2 per mille) Fine: max. 10, 000 Suspension of driver licence: max. 1 year	Fine: max. 15, 000 Suspension of driver licence: max. 2 years Second offenders: Fine: min. 15, 000 Prison: 1 year Suspension of driver licence	Fine: min. 40,000 according to damage Prison: max. 8 years Suspension of driver licence.	
Type of offense	Criminal			
Legal basis	§ 201 Penal Code			
Legal sanctions and penalties	Limit: 1,0 per mille Fine: max. 15, 000 Suspension of driver licence: max. 2 years Second offenders: Fine: min. 15, 000 Prison: 1 year Suspension of driver licence			
DRUGS / MEDICATIONS				
Type of offense	No analytical limit	Administrative	Criminal	
Legal basis		§ 30 Misdemeanour Act	§ 201 Penal Code	
Legal sanctions and penalties		Sanctions not explicitly determined	Fine: min. 40,000 according to damage Prison: max. 8 years Suspension of driver licence.	

3.3. Police Activities

3.3.1. Police controls

Powers for traffic controls are constituted in the Law on protection from alcohol and drug abuse (Law No. 40/1995) and in the Road Traffic Act (Law No. 12/1997), which pertain nationwide.

3.3.2. Standards for probable cause

Breath tests can be required only if there is a **suspicion** of alcohol influence. Czech law does not allow the police to conduct random breath tests. Refusing a breath test results in a penalty of up to 15,000 koruna and a suspension of the driver licence for up to 2 years. A positive breath test result alone cannot be used as evidence in the subsequent procedure; it needs to be confirmed by a blood test and a medical examination.

3.3.4. Standards for official physical evidence

In the case of any suspicion of impaired driving, police can ask the driver to submit to a blood test. In drug suspicion cases, the police can also order urine and saliva testing, but procedures are not specified by law. Blood tests cannot be taken by physical force. Refusal will be sanctioned with a fine of 5,000 to 15,000 Czech koruna, the suspension of the driver licence for up to 2 years and – according to the roundtable discussion – can also result in a jail term.

The maximum fines for refusing breath or blood testing are relatively low and are not comparable to the ones used in cases of actual impairment (see table above). Thus, according to the roundtable participants, they are not an adequate measure to compel the driver to submit to the test. In practice, this appears to be a significant problem because it encourages refusals.

A repeated comment during the roundtable discussions focused on the ongoing problem of the relatively high cost of blood analysis. Particularly because the Czech Republic has an emerging economy and resources are limited, efficiencies in forensics have not yet developed fully to keep pace with the growing market in illicit drugs and with drug use. The roundtable participants said some irregularities exist between police and health officials in how forensic laboratory work is carried out. For example, it is not always guaranteed that an authorized person is available to perform blood analysis following a traffic accident in which drug influence is suspected in the driver. It is also not always clear who pays for the analysis.

Czech police currently have no power to arrest a driver who is suspected of impaired driving but not involved in an accident.

3.3.4. Testing devices

No screening devices are in use by police.

3.3.5. Drug recognition training

Every police officer receives some drug recognition training within the basic police education, which lasts at least 6 months. Officers working in “drug enforcement” receive additional special training, although it was not clear if this also applies to traffic police.

3.3.6. Identified problems

As described above, one of the main problems reported by police is their inability to enforce blood tests. Another problem is the lack of uniform standards for the analysis of biological samples for drugs. Recommendations of the Czech Society of Forensic Medicine and Forensic Toxicology exist, but they are not binding. Finally, lack of funding for forensic verification of drug presence in drivers involved in crashes was a major identified gap in effective law enforcement of drug laws.

The Ministries of the Interior, Justice and Health have launched an initiative to improve law enforcement against drug drivers by legislative changes and financial support for laboratory equipment, detection devices and police training.

3.4. Prosecution: Legal Provisions vs. Discretion of the Officials

Due to the legality principle, the extent of the prosecutor`s discretion is very limited. Depending on the nature of the offense and on the person / the personal circumstances of the offender, the prosecutor may abandon or dismiss the case. This occurs most often among occasional drug users, persons without a criminal record, or persons who are willing to accept treatment procedures.

Plea bargaining is possible in the Czech court system, especially regarding minor cases. However, it is rarely used in drug cases. For sentencing, the court`s discretion ranges within the variety of sanctions specified by law (e.g. probation, fine, prison, treatment procedures, licence suspension). Most cases are settled within one year following detection by police.

3.5. Regulations for Regranting Driver Licences

In cases of drunk or drug driving, driver licences will be suspended. It was not clear which procedures are used in regranting driver licences.

3.6. Prevention

See Section 0, Political Aspects and Considerations regarding Drug Policy, and Section 0, Roundtable Discussion, below.

3.7. Official Statistics

According to the Judicial Statistics for 1998 (current as of July) there were 1,250 convictions for driving under the influence of alcohol and 2 convictions for driving under the influence of drugs.

At the roundtable discussion, Transport Research Centre representatives said that 60% of the fatalities on the roadways in the Czech Republic involve alcohol.

The Czech Republic offers a distinct advantage over many other European countries to the extent that it distinguishes between alcohol and drug driving convictions, as reported in the Judicial Statistics. For further information about statistics, see Section 0, Roundtable Discussion, below.

3.8. Political Aspects and Considerations Regarding Drug Policy

Public opinion tends to be liberal toward drug use. The general principle in current Czech drug policy is “harm reduction” instead of abstinence. Prevention and treatment programme are funded well, but funding for research is considered minimal.[4]

The discussion about reform regulation for drug possession for personal use represents the general mood: Supporters point to the high costs of treating drug addicts, whereas critics argue that each person has a right to harm him- or herself.

4 This information was derived from the roundtable meeting, and differs somewhat from the answers in the questionnaire.

In the opinion of the experts answering the questionnaire and attending the roundtable discussion, the profound articulation of this right (referring even to general human rights) is a reaction to the opening of the boundaries toward the West. Roundtable participants also said that arguments for liberalization of drug policies focused on human rights issues, rather than "community-mindedness."

Different opinions about drug policy exist across all parties, and reflect attitudes that are commonly associated, respectively, with liberal and conservative parties in other European countries.To some extent, the political discussion about drugs is linked to the discussion about alcohol. The liberal lobby uses the argument that the legal consumption of alcohol should form the basis for the liberalization of the consumption of other drugs and for the right to possess drugs for personal use.

3.9. Roundtable Discussion

The roundtable discussion in Prague provided a significant opportunity for Czech officials and researchers to describe logistical problems among health officials and law enforcement in their respective efforts to reduce the Czech Republic's incidence of drug driving. For example, researchers were not among the chief beneficiaries of a recent drug prevention funding programme totaling 15 million Czech koruna, the participants said. The funding was given primarily for distribution of needles, education programme regarding safe methods for injection of drugs, and prevention education programme.

The roundtable discussion also provided the opportunity for Transport Research Centre activity to be described. The Transport Research Centre has been active in gathering statistical information, developing and promoting safety inspections of vehicles, encouraging improvements in road construction, and educating police officers in recognizing signs of impairment. One of the chief benefits of the roundtable meeting was the discussion of innovations in road safety in the Czech Republic. As of January 1999, a Ministry of Transport guideline will link inspection of vehicles to driver licensing, for example.

Although the Czech Republic provided perhaps the most comprehensive set of official statistics regarding drug-related convictions, drug involvement in traffic fatalities is difficult to assess, the roundtable participants said. The reason for this gap is that the cause of death on an autopsy report is often listed as "loss of blood," or another reason that would not necessarily link the fatality to drug involvement.

Roundtable participants in the Czech Republic generally agreed that an integrated programme of traffic safety, drug research, and forensic coordination with law enforcement would be key to reducing what is perceived to be an increasingly serious incidence of drug driving.

4. Denmark

4.1. Legal Regulations Concerning Drugs in General

The legal basis for controlling the illicit distribution of drugs is contained in the Euphoriants Act of 1955, with subsequent amendments. Pursuant to sections 1 and 2 of the Act, it is a criminal offence to import, export, sell, purchase, supply, receive, manufacture, process or possess euphoriants. In such cases special permission is required. The substances defined as euphoriants under the Act are listed in an Order issued by virtue of this Act; it is regularly revised in step with new euphoriants entering the illegal market. Section 3 lays down that the penalties for violation of the Act shall be a fine, simple detention or imprisonment for up to two years. The Act does not provide for special aggravating circumstances which may increase the penalty, nor does it distinguish between hard drugs (cocaine, heroin, amphetamines) and softer drugs (cannabis, marihuana). In their practice, however, the courts differentiate between types of drugs when imposing a penalty, regarding traffic in cannabis and marihuana more mildly than offences involving other hard euphoriants. In a Circular on prosecution in cases concerning violation of euphoriants legislation, the Chief Public Prosecutor recommends that the police should settle cases involving possession of small quantities of cannabis by dismissing the offender with a caution. In general, possession of hard drugs for own consumption will be settled by the imposition of a fine. In the autumn of 1996 the Minister for Justice proposed an amendment to the Euphoriants Act which would increase the penalty for offenders who possess small quantities of hard drugs apparently for their own consumption but which they intend to sell

The Danish Criminal Code contains provisions for regulating grave drugs offences. Section 191 singles out professional drugs crime. The aggravating circumstances leading to more severe sanctions is transfer of, in particular, hard drugs to a large number of persons or for substantial remuneration. The penalty is imprisonment for up to six years, which may be increased to ten years if the transfer involves large quantities of particularly dangerous drugs. Under extremely aggravating circumstances, the penalty may be increased by up to fifty per cent of the maximum penalty.

Under the Danish Administration of Justice Act, a number of criminal procedure methods may be implemented in connection with investigating drugs offences; these include the regulations on arrest (section 69), custody (section 70), telephone tapping and bugging (section 71), and search and seizure (section 73 and part of 75b).

4.2. Consumption, possession and sale

In the case of a first offence, an offender will be entered into the Central Criminal Register for possession or consumption. In the case of a subsequent offence, the offender will usually be liable to the penalty of a fine of DKK 2,000, and with imprisonment in the case of street-level sale. The penalty for traffic in drugs will be imprisonment in cases involving quantities that are not regarded as insignificant. This does not, however, apply to cases involving occasional transfer of cannabis without remuneration, distribution of small quantities of cannabis to friends, and sales of cannabis in isolated cases for a small charge. Such cases are normally settled by the imposition of a fine or by simple detention, depending on the nature of the offence.

Table 4-1 Legal Consequences of Different Types of Involvement with Drugs

	Selling	Possessing	Small quantities for personal use	Consuming
Cannabis				
Type of offense	Criminal			
Legal basis	Law on euphoriant drugs §3,1, cf. §1 in order on eup. drugs §27,1, cf. §2 list A No.1 and criminal code §191			
Legal sanctions and penalties	**Prison:** from 7 days to 6 years **Fine:** no fixed amount **Others:** Possibility of suspended sentence, very seldom including community service. Persons aged 15-18 probably more often get a suspended sentence, although the law would in principle handle the case as for grown-ups			
Aggravating conditions	Yes: If handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.	Yes, if possession with the purpose of handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.		
Other consequences	Confiscation of the car used for transport of drugs. A suspended sentence may include a condition concerning .rehabilitation against drug use. Disqualification from driving if the person is dependent of drugs.			
Heroine and Khat				
Type of offense	Criminal			
Legal basis	Law on euphoriant drugs §3,1, cf. **§1**, in order on eup. drugs §27,1, cf. §2 **list A** and criminal code §191			
Legal sanctions and penalties	**Prison:** from 7days to 10 years **Fine:** no fixed amount **Others:** Possibility of suspended sentence, very seldom including community service. Persons aged 15-18 max 8 years, and they probably more often get a suspended sentence, although the law would in principle handle the case as for grown-ups			

Aggravating conditions	Yes: If handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.	Yes, if possession with the purpose of handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.		
Other consequences	Confiscation of the car used for transport of drugs. A suspended sentence may include a condition concerning .rehabilitation against drug use. Disqualification from driving if the person is dependent of drugs.			
Cocaine, including crack cocaine, Amphetamines, crude opium and pure morphine				
Type of offense	Criminal			
Legal basis	Law on euphoriant drugs §3,1, cf. **§2** in order on eup. drugs §27,1, cf. §3 **list B** and criminal code §191			
Legal sanctions and penalties	**Prison:** from 7days to 10 years **Fine:** no fixed amount **Others:** Possibility of suspended sentence, very seldom including community service. Persons aged 15-18 max 8 years, and they probably more often get a suspended sentence, although the law would in principle handle the case as for grown-ups			
Aggravating conditions	Yes: If handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.	Yes, if possession with the purpose of handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.		
Other consequences	Confiscation of the car used for transport of drugs. A suspended sentence may include a condition concerning .rehabilitation against drug use. Disqualification from driving if the person is dependent of drugs.			
Medications with psychoactive effects				
Type of offense	Criminal			
Legal basis	Various paragraphs in law on euphoriant drugs and order on eup. drugs and criminal code §191			

Legal sanctions and penalties	**Prison:** from 7 days to 6 years **Fine:** no fixed amount **Others:** Possibility of suspended sentence, very seldom including community service. Persons aged 15-18 probably more often get a suspended sentence, although the law would in principle handle the case as for grown-ups			
Aggravating conditions	Yes: If handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.	Yes, if possession with the purpose of handling over to a big group of persons with profits or to children. The quantity of drugs also plays a role.		
Other consequences	Confiscation of the car used for transport of drugs. A suspended sentence may include a condition concerning .rehabilitation against drug use. Disqualification from driving if the person is dependent of drugs.			

4.2. Legal Regulations Concerning Drugs in Road Traffic

Table 4-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	Criminal			
Legal basis	Danish Road Traffic Act, §53			
Legal sanctions and penalties	**Limits (BAC):**	**Sentence:**	**Withdrawal of licence:**	
	First time, without aggravating circumstances			
	.051 - .080%	DKK 4000,-	-	
	.081 - .012%	Fine*	Conditional	
	.121 - .150%	Fine*	1 year, unconditional	
	.151 - .200%	Fine*	2 years, unconditional	
	.201 - .250%	14 days imprisonment	2½ years, unconditional	
	.251 -	20 days imprisonment	2½ years, unconditional	
	First time, with aggravating circumstances			
	.051 - .080%	DKK 5000,-	Conditional	
	.081 - .012%	Fine*	Conditional	
	.121 - .150%	Fine*	1 year, unconditional	
	.151 - .200%	14 days imprisonment	2½ years, unconditional	
	.201 - .250%	20 days imprisonment	3 years, unconditional	
	.251 -	30 days imprisonment	3 years, unconditional	
	Second time, without aggravating circumstances			
	.051 - .080%	DKK 5000,-	-	
	.081 - .012%	10 days imprisonment	3 years, unconditional	
	.121 - .200%	14 days imprisonment	5 years, unconditional	
	.201 - .250%	20 days imprisonment	5 years, unconditional	
	.251 -	30 days imprisonment	5 years, unconditional	
	Second time, with aggravating circumstances			
	.051 - .080%	DKK 8000,-	Conditional	
	.081 - .012%	14 days imprisonment	3 years, unconditional	
	.121 - .200%	20 days imprisonment	5 years, unconditional	
	.201 - .250%	30 days imprisonment	5 years, unconditional	
	.251 -	40 days imprisonment	5 years, unconditional	
	If Drunk driving within the period of driving disqualification then the sentence wil be raised by 10 days imprisonment.			
	Third time, without aggravating circumstances			
	.051 - .080%	DKK 8000,-	Conditional	
	.081 -	Min. 30 days imprisonment	10 years, unconditional	
	If Drunk driving within the period of driving disqualification then the sentence wil be raised by 10 days imprisonment.			
	***Size of fine is normally 4% of yearly income.**			
Special conditions	Depending on recidivism (see above)			
				Eventually additional penalty for other traffic violences

Other consequences	Suspension of driving licence (see above)	Suspension of driving licence (see above), eventually with reduced conditions for car insurance/personal belongings
	ILLEGAL DRUGS and PRESCRIBED PSYCHOACTIVE DRUGS	
Type of offense	Criminal	
Legal basis	Danish Road Traffic Act, §54	
Legal sanctions and penalties	No fixed penalty. Varies from fine to jail or prison up to 1 year. To be settled individually from case to case. Eventually suspended sentence including, e.g. rehabilitation (criminal code §56) Eventually reduction for persons under 18 (Criminal code §84)	
Special conditions	In case of recidivism	
		Eventually add. penalty for other traffic violence
Other consequences	Eventually withdrawal of driving licence in case the person is dependent of drugs, cf. order on driving licence §38 Eventually conditional or unconditional suspension of driving licence varying from 6 months to lifetime, depending on the past	
		Eventually with reduced conditions for car insurance/personal belongings

4.3. Police Activities

4.3.1. Police controls

According to the Danish Road Traffic Act, applicable nationwide:

- Under §77, the police may stop a vehicle and have it inspected for defects and may check that the driver fulfils the conditions laid down in this Act for driving the vehicle.

- Under §55, The police may at any time order a person driving a vehicle to take a breath test. The police may hold a person in order to have laboratory specimens of such person´s blood and urine taken if there is cause to suspect such person of having committed an offence under §53 (drunk driving) or §54 (driving under influence of drugs).

If the driver refuses to take the breathalyser test, this will be handled as a suspicion.

4.3.2. Standards for probable cause

Normally the driver is asked to conduct a breath test, see 4.3.1 above. In case this breath test shows an illegal value, the person is arrested. In case the test is not illegal, an estimate concerning the state of the person is made, and the police officer decides whether the person should be arrested, eventually on suspicion for impairment by other drugs than alcohol. This decision is taken exclusively by the police officer on the spot.

No special emphasis is given to drugs. This is a consequence of having no possibility to provide screening tests at the road side.

4.3.3. Standards for official physical evidence

Regarding alcohol, a positive breath test or a suspicion will be followed by blood sampling.
If the police roadside officer suspects driving under the influence of drugs, blood and urine samples are collected.

4.3.4. Testing devices

No equipment for roadside screening test of drugs other than alcohol is available in Denmark.

4.3.5. Drug recognition training

Police officers do not receive any specific training in Denmark.

4.4. Prosecution: Legal Provisions vs. Discretion of the Officials

In Denmark, if a driver is suspected by the police to be under the influence of alcohol or drugs, the person will always be arrested because his freedom of movement will be restricted, either in connection with bloodtest, or if he/she has to be brought in front of a doctor, into a hospital or into a police station.

The person is under legal protection when arrested.

There is no general possibility of avoiding prosecution.

The prosecutor will only withdraw the accusation in case where the basis for the accusation will disappear. That is, if there is no certain evidence for detection of drugs resulting from the blood test. Then, if an illegal amount of alcohol is proved, the case will only include charge of driving under the influence of alcohol. Following this practice, the charge of driving under the influence of drugs will be abandonned.

There is no possibility of formal “plea bargaining” in Denmark.

4.5. Regulations for Regranting Driver Licences

(Information not available)

4.6. Prevention

There is no special remedial or treatment project or programme in Denmark.
(Information regarding any preventive information campaigns not available.)

4.7. Official Statistics

In 1997, 9.439 persons were arrested. This figure includes drunk drivers as well as drivers under the influence of drugs. From these, 8.743 were convicted.

Regarding convictions for driving under the influence of drugs the available statistics for the past five years are as follows:

Year	Number of drivers without accidents	Number of drivers involved in an accident with or without personal injury
1993	108	64
1994	98	66
1995	103	54
1996	99	77
1997	88	68

4.8. Political Aspects and Considerations Regarding Drug Policy

In recent years there has been increased focus in Denmark on socially vulnerable and socially marginalised groups, and there has been political and professional debate about possible actions for supporting these groups of people, including drug abusers. In light of this, responsibility for treatment of drug abusers has been firmly placed in the counties. Responsibility has been concentrated here for psycho-social efforts and methadone substitution.

At the same time, while a decline in young people's interest for experimenting with drugs and less recruitment to heavy drug abuse could be observed during the last half of the 70s and first half of the 80s, the picture changed from the last half of the 80s. There was a new wave of amphetamines and more people became heroin abusers. During the 90s the use of amphetamines has been the same as at the end of the 80s. A continued expansion of heroin abuse can be observed among marginalised groups and also among more well-functioning young people. It is possible to speak of social double recruitment to heroin abuse. Concurrently with the anchoring of heavy abuse, there are signs of renewed fascination of young people by "new substances" such as extacy and cocaine.

5. Finland

5.1. Legal Regulations Concerning Drugs in General

Table 5-1. Legal Consequences of Different Types of Involvement with Drugs

	Selling	Possessing	Small quantities for personal use	Consuming
Narcotic drugs and illegal use of psychotropic substances				
Type of offense	Criminal	Criminal		Criminal
Legal basis	Narcotic act 1289/93; Penal code 50 chapter:1§ Severe: 2§	Penal code 50 chapter: 1§-2§		Penal code 50 chapter: 1§-2§
Legal sanctions and penalties	**Prison:** max. 2 years **Fine:** not specified	**Prison:** max. 2 years **Fine:** not specified		**Prison:** max. 2 years **Fine:** not specified
Aggravating conditions	In severe cases: 1 to 10 years prison.	No		No

In the application of penalties, no distinction is made between drugs. However, Finnish law contains the concept of “very dangerous drug”, which refers to a narcotic drug, which may cause death by overdose or serious damage to health
On the other hand, sentencing can be waived for addicts undergoing treatment.

5.2. Legal Regulations Concerning Drugs in Road Traffic

Table 5-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ILLEGAL DRUGS and PSYCHOACTIVE DRUGS			
Type of offense	Criminal			
Legal basis	Penal Code 23:3§			
Legal sanctions and penalties	**Normal**: fine (depending on income, min. 20 Fmk) or imprisonment, max 3 months **Severe**: minimum 60 day fines, max 2 years If the sentence is conditionnal, always fines in addition			
			According to traffic law if injury has been caused	
Special conditions	If high concentrations, more **severe** consequences			
Other consequences	According to administrative regulations: driving privileges suspended, changes in insurance coverage, requirements for restoring licence to driver.			

5.3. Police Activities

5.3.1. Police controls

According to the Coercive criminal investigation means act 1987/450, chapter 6/3§, applicable nationwide, the police can perform control activities.

In Finland, above 1 million breath tests are carried each year. Intensive control weeks are organised nationwide once or twice a year; more often regionally, depending on needs.

5.3.2. Standards for probable cause

Suspicion by the police.

5.3.3. Standards for official physical evidence

Regarding alcohol, the results of a precision alcometer or of a blood test are valid as evidence.

For other drugs, if a police officer suspects the driver is impaired, blood (and urine) samples are taken and analysed in the laboratory.

According to the Coercive criminal investigation means act 1987/450, chapter 6/3, a blood test can be taken even without the will of the driver.

5.3.4. Testing devices

No field test devices for drug presence are currently available in Finland (starting in summer 99, in the framework of the ROSITA EU research project).

5.3.5. Drug recognition training

Police officers receive some education for drug enforcement as part of their basic training. In addition, Finland is planning to start a Drug recognition expert system' training in 1999.

5.3.6. Identified problems

A repeatedly reported difficulty is to distinguish the drugged drivers from other impairment.

In this respect, according to traffic Law /section 76 (90-676) police is allowed to interrupt driving if the driver is impaired, even if the reason cannot be identified, and also if there is reason to suspect that the driver is guilty for aggravated hazard to traffic or driving under the influence of drugs.

5.4. Prosecution: Legal Provisions vs. Discretion of the Officials

Arrest. If a driver stopped for a police control activity (e.g., roadblocks for law enforcement, random testing, and traffic checkpoints) is detected to be under the influence of drugs, he/she will be interrupted. He/she will be arrested in severe cases and in drugs and driving cases.

Prosecution. In Finland, the discretion that a prosecutor will have in deciding whether or not to proceed with a case involving drugs and driving is very limited (in approximately 1-2% of cases). It might happen only in cases where medication is prescribed, or if no impairment has been detected.

A major difficulty faced by prosecutors is to show that the used drugs have impaired driving ability and been a danger for traffic safety.

Conviction and sentencing. In Finland, the court has a lot of discretion in convicting persons prosecuted for driving under the influence of drugs; it makes decisions about punishment, according to the evidence.
However, in many cases where both alcohol and drugs have been found, the punishment can be due only to alcohol. Therefore - the exact rate is unknown - it seems that quite many drugs and driving cases remain unpunished.

“Plea bargaining” is not possible in Finland.

The length of time between arrest and sentencing usually varies between 2 and 8 months.

5.5. Regulations for Regranting Driver Licences

Driving licence suspension is regulated under § 76-77 of the Traffic Law.
Pilot studies on rehabilitation courses for drink-drive offenders have been done. In 1999, a regular system is starting at state level.

Regarding drug-drive offenders (about 1300 cases a year), rehabilitation programme have been started in November 1998– not yet much experience.

5.6. Prevention

Regarding driving and medications; a Campaign was run in 97 for pharmacies.

5.7. Official Statistics

Alcohol: the most recent annual statistics indicate that in 1998, approximately 20.000 drivers were arrested and convicted for drink-driving.

Drugs: during the last few years, there has been a significant increase of the number of persons arrested each year for driving under the influence of drugs (1993: 931, 1994: 878, 1995: 739, 1996: 1010,1997: 1241, 1998: 1300). The corresponding rate of conviction is not known because, if alcohol is combined with drugs, the case is counted as drink-driving.

5.8. Political Aspects and Considerations Regarding Drug Policy

In Finland, the majority of the population and all political parties are against drugs.
Even if the political discussions about alcohol and drugs are often linked, the proposed strategies are separate.

There is no tendency toward liberalisation of “soft” drugs.

6. France

6.1. Legal Regulations Concerning Drugs in General

According to information obtained during the roundtable meeting, French regulations are designed to view drugs in society in the context of how they are used, not how they are defined (i.e., as “legal” or “illegal”). Thus, a drug with medical applications and benefits would be considered to be legally used if it has been prescribed by a doctor or at a hospital, for example. However, if it were obtained through unauthorized means, someone using the same drug could be processed for illegal use of the drug. For this reason, a table showing legal consequences of different types of involvement with drugs is not presented.

6.2. Legal Regulations Concerning Drugs in Road Traffic

Table 6-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	0,5 per mille = “simple” (administrative?) offense; 0,8 per mille = criminal offense		Criminal	
Legal basis	Road Traffic Act (Code de la Route)			
Legal sanctions and penalties	**Limit: 0,5 per mille** Assignment of 6 points to the driver licence and fine **Limit: 0,8 per mille** Jail, fine, and licence withdrawal		Presupposed that driver has knowledge of the risks	
	DRUGS / MEDICATIONS			
Legal sanctions and penalties		Same as for alcohol		

The French Road Traffic Act (Code de la Route) does not allow any person to drive a motor vehicle while being incapable of driving – for whatever reason, including being under the influence of alcohol and /or other drugs. Regarding alcohol, there is an additional analytical limit (0,5 per mille and 0,8 per mille; see Table 6-2).
Responses to the questionnaire did not provide specific information about the exact regulations for alcohol and drug driving or the resulting sanctions.

6.3. Police Activities

6.3.1. Police controls

There is no specific legal basis for detection routines concerning drug driving. The legal situation outlined below pertains nationwide.
No information has been given about whether police can conduct random breath tests, i.e. without any suspicion of alcohol influence (at checkpoints, etc.).

6.3.2. Standards for probable cause and official physical evidence

Police can conduct a blood test for drug detection under the following circumstances:

- in a case of obvious severe impairment, but the alcohol breath test is negative or below the legal limit (0,5 per mille) (this is the procedure for “evident impairment”);

- in a case of an infraction (traffic offense) or an accident (“putting somebody in danger”); or

- in a case in which drugs are found in the car or on the driver (“infraction of narcotic law”).

Under the same circumstances as presented above, a medical examination or another type of biological test can be ordered. In practice, however, biological testing of drivers is only ordered in case of an evident impairment or a severe accident. The detection procedure based on “infraction of narcotic laws” is not applied in practice in the field of driving safety. (taken from the initial point)

According to an amendment to the Road Traffic Act (Code de la Route) which came into force in June 1999, the police must launch an investigation for drugs in every fatal accident case. This investigation includes medical examination and biological testing. In case of refusal, criminal sanctions will be imposed.

The aim of the new law is to improve knowledge about the effects of drugs on traffic safety and thus to provide the scientific background for a political discussion about changes in drug driving legislation.

The expert responding to the questionnaire pointed out that the provisions for biological testing cited above aim at traffic safety and not primarily at prosecution. At the roundtable discussion, participants said that unless drug use is obvious, a positive alcohol test on a driver would result in processing based only on the presence of the alcohol. Processing does not continue if the alcohol test is negative and the driver appears not to be impaired. However, if the alcohol test is negative, but the driver appears to be impaired, a medical test can be ordered and processing can continue.

6.3.4. Testing devices

Such devices are not in use for drug detection.

6.3.5. Drug recognition training

In France, police are trained to focus on prevention (e.g., school programme), but the training does not aim at practical traffic enforcement work. Prevention training is offered to 300-500 officers nationwide. Overall, drugs in traffic are not considered as a main problem yet by traffic police. The attention is still focused on alcohol.

6.3.6. Identified problems

If the results of a breath test show the driver has exceeded the legal limit, usually no additional testing for drugs will be ordered. The administration of blood tests for drug detection in drivers is restricted to a small number of cases – usually those involving fatal accidents with several victims and severe financial or criminal consequences. In less serious cases, successful detection does not occur because of the lack of training in drug recognition and because of the resulting lack of motivation and the uncertainty of police officers to pursue such cases.

6.4. Prosecution: Legal Provisions vs. Discretion of the Officials

In France, prosecutors have complete discretion in deciding to prosecute a case.

- The main reasons for not prosecuting drugs-and-driving-cases are the following:

- Difficulties exist in proving the relationship between drug influence and accident risk – i.e., proving impairment.

- Detection of low levels of a drug makes it difficult to prove impairment or cross detection with allowed drugs.

- It is often preferred, under the general narcotics laws, that the offender submit to therapy, rather than be prosecuted.

- A driver's lack of knowledge about the risks of drugs in traffic safety hinders a criminal verdict for "endangering another person."

- There is a lack of official data concerning drugs and driving in France.

- There is a lack of police training in detection procedures and, thus, a lack of reliable evidence gathered at the scene.

The courts' sentencing discretion ranges within the minimum and maximum penalties. When issuing a sentence, courts will consider if the driver has caused injuries and is a repeat offender. Courts will have to find an adequate combination of sanctions for the traffic offense and sanctions for general narcotics law offenses, e.g., if the driver also possessed drugs.

Plea bargaining is not possible in the French legal system.

The length of time between police detection of driving under the influence of drugs and conviction by court ranges between one and six months; in alcohol cases, a conviction can follow the offense immediately.

6.5. Regulations for Regranting Driver Licences

According to De Gier (1993, p. 41), a driver suspected of being under the influence of a substance and who has caused a serious accident or committed an offense against the Road Traffic Act can be ordered by the local "Prefet" to be examined by a "medical commission." (Each Department in France has such a Commission. In 1993, there were three commissions in each of the 90 French Departments; each commission consisted of two physicians.)

The Medical Commission may consult experts and then advises the Prefet on endorsing or suspending a person's driver licence and the conditions for reinstating it (e.g., the driver might have to provide evidence of successful treatment in the case of drug dependency).

Driving licences may be refused to any person who is addicted to euphoriants or other psychotropic drugs, or who is not temperate in the use of alcohol. Every applicant has to fill in a form and sign a statement that he has no history of psychiatric, neurologic, or physical incapacity. Family doctors do not have to issue any declaration of fitness to drive.

6.6. Prevention

The potential of various drugs' roles in traffic safety has been detailed in a report to the French Prime Minister (Lagier, 1996). The report takes an original approach and – among other things – explores the chemical "biotransformations" and interactions of drug families. The report asks the question: Is there a correlation between individual behaviors (resulting from the use of alcohol and / or drugs) and the risk of traffic accidents, to the extent that an epidemiological path can be identified?

Even though the question has not yet been fully answered, France has many informal small-scale prevention campaigns against drugs in traffic.

6.7. Official Statistics

Alcohol. The most recent annual statistics (1996) indicate that at alcohol checkpoints, 132,238 drivers were found to be over the legal limit. This makes about 1.6 % of the total control number (8,000,000). The conviction rate among drivers found with illegal BACs is about 98%.

Drugs. The number of driver arrests for drug driving is very low (fewer than 10, thus far). The same applies to the number of prosecutions for drug driving. Only three cases have been tried within the past year (see 6.9.).

6.8. Political Aspects and Considerations Regarding Drug Policy

According to the roundtable participants, most French people are presumed not to be well informed about the role of drugs in driving behavior. Popular discussion, however, focuses on the use of drugs in combination with alcohol in driving performance, and is linked to the current interest in cannabis and the legal sanctions regarding its use. Government policy has consistently followed an "alcohol first" orientation as a focus of its concern about social costs. Drugs and medications are only recently (within the past 2 years) beginning to receive the same kind of attention.

The roundtable discussion also addressed the few differences among political parties in their attitudes toward drugs and driving. Members of the Green Party and the Socialist Party as a general rule are more inclined to favor relaxation of laws regarding the use of cannabis. However, the possibility of liberalizing laws regarding "soft drugs" is still not yet imminent, because of a common understanding that consumption of amphetamines and cannabis is increasing, and that this increase in use might have deleterious effects on road and workplace safety. It is interesting to note that the recently completed Project of Law (presented in the French Senate during the 1997-1998 session) on drugs and driving was a multi-partisan effort.

6.9. Roundtable Discussion

Discussion topics were wide-ranging and were punctuated with anecdotal accounts of real-life circumstances and legal cases, and included information about current and pending legislation regarding drugs-and-driving, and discussion of recent French studies.

During the roundtable discussion, it was emphasized that French drug law enforcement centers around how drugs are **used**, rather than on how they are **defined**. That is, whereas one country might prosecute for simple possession of an "illegal drug," a person found with that drug is more likely to be prosecuted in France under the accusation of having "illegally **used**" the drug. The discovery of a psychotropic substance on a person who does not hold a prescription for the substance will likely result in a legal proceeding, because the lack of a prescription constitutes illegal use. This current code of law is under discussion in the French Parliament, and the outcome of any proposed changes is uncertain. The French government has changed between April 1996, when a specific proposal was introduced to the National Assembly, and now. Although there is no drug recognition expertise training for French police officers, new legislation being considered would, among other things, allow a police officer to arrest a driver for "reasonable suspicion" of being under the influence of drugs, thus giving the officer the legal ability to order a blood test to obtain biological proof of the driver's having used a drug illegally. As with Spain, a perceived "endangerment of others" is a primary reason for a police officer to take action in a circumstance involving a driver who appears to be either driving while intoxicated or under the influence of drugs.

The participants pointed out that three people have been prosecuted to date for drugs-and-driving offenses in France. Two of the offenders were fined for road violations and had their driver licences suspended, but not for drug violations (again, because there is no specific law against drugs and driving). The third offender's case involved a death. He received 1 month in jail for driving under the influence of cocaine, a fine for a road violation, and had his licence revoked for 6 months after he was released from jail.

Participants also cited a recent French study on the prevalence of drugs of abuse among drivers involved in traffic accidents. The study examined drivers and non-drivers admitted to emergency departments throughout France. The study concluded no causal relationship between drugs and accidents. However, the relatively significant proportion of cannabis and opiate use in young people, whether drivers or non-drivers in this sample, was determined to have potentially serious implications for road traffic safety in France (Marquet et al., 1998).

7. Germany

7.1. Legal Regulations Concerning Drugs in General

The law regulating involvement with drugs is the Betäubungsmittelgesetz (BtMG, Narcotics Act) and it uses the general term "Betäubungsmittel" for narcotic substances. The listed substances are defined in the appendices of the law and, in particular, cover all substances named by the UN Single Convention on Narcotic Drugs of 1961 and the Convention on Psychotropic Substances of 1971 (see § 1, IV, BtMG). The law appendices differentiate between three substance categories, according to the extent to which the substances are subject to regulation (requirements for allowances, etc.):

- **Appendix I**: non-negotiable substances (nicht verkehrsfähige)
- **Appendix II**: negotiable, but non-prescribable substances (verkehrsfähige, aber nicht verschreibungsfähige)
- **Appendix III**: negotiable and prescribable substances (verkehrsfähige und verschreibungsfähige)

In particular, the following substances are included in the appendices:

- **Appendix I** includes LSD and MDMA
- **Appendix II** includes d-cocaine, and Δ^9-tetrahydrocannabinol
- **Appendix III** includes amphetamines, cocaine, methadone, morphine, opium, benzodiazepine (and other drugs with the suffix "-zepam").

Table 7-1. Legal Consequences of Different Types of Involvement with Drugs.[5]

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal			
Legal basis	§29, I, no.1, BtMG	§29, I, no.3, BtMG	§29, V, §31a, BtMG	No sanctions
Legal sanctions and penalties	**Prison:** max. 5 years, **or** **Fine:** max. 360 daily rates	**Prison:** max. 5 years, **or** **Fine:** max. 360 daily rates	Dismissal	
Aggravating conditions	**Prison:** min. 1 year if selling commercially or if inducing a minor <18 to sell. **Prison:** min. 2 years, if seller is part of a group and death of a person results. **Prison:** min. 5 years, if seller is part of a group and was found with large quantities.	None		

5 The fines shown in Tables 7-1 and 7-2 are expressed in German marks.

The German Narcotics Act punishes selling and possessing, but not consuming drugs. The sanctions do not differentiate among the three substance categories.

Regarding possession of small quantities for personal use, the procedure can be dismissed, either by prosecutors or by court (§29 V, 31a, BtMG). In 1994, the German Constitutional Court ruled that cannabis cases should be dismissed on a regular basis. Consumers will not normally be prosecuted for the assumption of previous drug possession. This is due to a restrictive definition of the legal term "possession." Possession will not be presumed when the consumer is just holding the drugs in hand for immediate consumption (the same applies to buying or otherwise acquiring).

7.2. Legal Regulations Concerning Drugs in Road Traffic

Table 7-2. Legal Consequences for Drugs in Road Traffic.

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	Administrative	Criminal		
Legal basis	§24a, I, StVG	§316, StGB (impairment presumed at 1,1 per mille BAC)	§315c, I, 1a, StGB (impairment presumed at 1,1 per mille BAC)	§222, StGB (death resulting) §229 StGB (injury)
Legal sanctions and penalties	**Limit:** 0,5 blood (0,25 mg/l breath) **Fine:** max. 1,000 **Limit:** 0,8 blood (0,40 mg/l breath) **Fine:** max. 3,000 DM **Suspended licence:** 1-3 months	**Prison:** max. 1 year, **or** **Fine:** max. 360 daily rates	**Prison:** max. 5 years, **or** **Fine:** max. 360 daily rates	Death resulting: **Prison:** max. 5 years **or** **Fine:** max. 360 daily rates Injury resulting: **Prison:** max. 5 years, **or** **Fine:** max. 360 daily rates
		Revocation of driver licence		
Type of offense	Criminal			
Legal basis	§316, StGB			
Legal sanctions and penalties	**Limit:** 1,1 blood **Prison:** max. 1 year **or** **Fine:** max. 360 daily rates, **and** **Revocation of driver licence**			

DRUGS / MEDICATION		
Type of offense	Administrative	Same as for alcohol
Legal basis	§24a, II, StVG	
Legal sanctions and penalties	**Limit:** Zero in blood (regarding medications only, if user does not have a prescription) **Fine:** max. 3,000, **and** **Suspended licence**, 1 to 3 months	

StVG = Road Traffic Act; StGB = Penal Code
§24a, StVG is a traffic-specific regulation providing administrative sanctions for drunk and drug drivers exceeding legal limits.
§§315c and 316, StGB are traffic-specific regulations in the general Penal Code. These regulations impose sanctions for driving while impaired by alcohol or other drugs.
§§222, 229 StGB are general provisions for negligence or recklessness resulting in injury or death (fahrlässige Tötung/Körperverletzung).

7.3. Police Activities

7.3.1. Police controls

Traffic controls are conducted, with varying intensity, according to local, timing, and target group focus. There are no quotas to be met. In general, the search for drugs constitutes one item within the general traffic control procedure. Although a driver suspected of being under the influence of drugs might be taken to a hospital or to a physician for blood (or other types of) testing, the driver will not otherwise be arrested.

Alcohol. There are two legal limits in administrative law: 0,5 per mille in blood, which has recently been introduced; and the prior limit of 0,8 per mille. Each carries different sanction levels.

Drugs and medications. In administrative law, a zero limit (in blood) for drugs in road traffic has recently been introduced. However, this only applies to specific substances defined in an appendix to the law. Currently, this list includes: cannabis, heroin, morphine, cocaine, amphetamines, and designer amphetamines (e.g., MDE and MDMA). The prohibition excludes substances that have been consumed in accordance with medical prescription.

7.3.2. Standards for probable cause

Regarding alcohol, the 1,1 per mille limit has been developed by legislation to establish the assumption of impairment, even if no other evidence is available that would demonstrate impairment; in such cases, criminal sanctions apply. Criminal provisions rarely apply in cases involving impairment from drugs and medications, because in practice, impairment is very difficult to prove.

7.3.3. Standards for official physical evidence

The regulations cited below pertain nationwide. Police can stop vehicles on a random basis for traffic controls, according to §36, V of the Road Traffic Ordinance.

Breath tests. In German law, there is no legal regulation for breath tests. Thus, breath testing can only be conducted with the driver's consent and no sanctions can be imposed in case of refusal. German law has allowed breath testing for evidentiary purposes only recently.

Blood and urine tests. The legal requirements for blood and urine testing are regulated in the Code of Judicial Procedure, §81a. Biological testing can be conducted only if there is suspicion that the driver has been under the influence of alcohol or drugs. In this case, blood testing can be enforced, and the person may not refuse. Urine tests, however, cannot be forced, because of the perceived significant risk of bodily harm (in this case, "force" implies the use of a catheter), and the law does not provide any sanctions if the person refuses.

There are no legal requirements for the administration and analysis of breath, blood, or urine tests, but there are guidelines that have been worked out by all German states and thus apply nationwide.6

A significant difference exists in the legal basis for obtaining evidence among alcohol- and drug-impaired drivers in Germany, compared to similar drivers in several other countries participating in the study – for example, Germany's neighbor, Austria.

Germany differentiates between active testing procedures – such as breath testing, which depends on a driver's willingness to provide a breath sample – and passive testing procedures, such as blood sampling. Blood sampling is considered a passive procedure, because it does not require a person's consent or cooperation and can be taken by force. German law recognizes that active procedures place a higher burden on the offender because cooperation can actively contribute to the driver's self-incrimination. Thus, refusing a breath test is not punishable in Germany, and forcible blood testing is allowed – at least to the extent that a police officer can show that the driver appeared to be impaired and that a procedure such as drawing blood was defensible.

7.3.4. Testing devices

Pilot studies have been conducted thus far with a sweat screening device in three areas: the states Baden-Württemberg and Sachsen-Anhalt, and most recently in the city of Munich.

7.3.5. Drug recognition training

The Federal Highway Research Institute (Bundesanstalt für Straßenwesen) has developed a drug recognition training programme for police officers concerned with traffic enforcement. This programme is based on the American DEC / DER programme (see **Main Report**) and has already been implemented in half of the German states. Nationwide adoption of the programme is planned.

7.3.6. dentified problems

The main problem faced by police is the difficulty in obtaining any evidence that a driver is under drug influence, due to the lack of suitable roadside screening devices.

6 „Richtlinien über die Feststellung von Alkohol-, Medikamenten- und Drogeneinfluß bei Straftaten und Ordnungswidrigkeiten sowie für die Sicherstellung und Beschlagnahme von Fahrausweisen" (RiBA)

7.4. Prosecution: Legal Provisions vs. Discretion of the Officials

Prosecution: If evidence exists that a driver is under the influence of drugs, prosecution cannot be avoided as a matter of principle. Regarding the prosecutor's discretion, a distinction has to be made between criminal and administrative offenses. In criminal law (applied to impaired driving according to §315c, I, 1a, and §316 of the Penal Code), the principle of "legality" applies. The prosecutor may make an exception in petty cases, and decline to proceed against the alleged offender. In contrast, administrative law (applied in cases of mere substance "influence," according to §24a, II of the Road Traffic Act) acknowledges the prosecutor's discretion. The biggest difficulty faced by prosecutors in proceeding with drugs-and-driving cases is showing how the evidence proves drug-induced impairment.

In German law, "plea bargaining" is not possible.

Sentencing: The court`s sentencing discretion ranges between the minimum and the maximum sanction levels provided by law. If the offender has already suffered extremely onerous consequences (e.g., the drug-impaired offender's family died in a car accident he or she caused), the court may choose not to assign a punishment.

7.5. Regulations for Regranting Driver Licences

Drug Offenses Committed in Traffic. Criminal traffic offenses committed by a driver under the influence of alcohol or drugs will normally lead to revocation of the driver's licences for at least 6 months and up to 5 years. In some cases, the period can extend to the driver's lifetime, as a way of preventing future danger by the driver (§§69, 69a of the Penal Code). The law states that drivers with criminal traffic offenses are unreliable in traffic and therefore must have their licences revoked in almost all cases. In these cases, the court (and not the licensing authorities) will decide upon the revocation within the criminal sentence.

Regranting the licence is possible if the offender takes a new driving test, although this is not always required. Offenders with a BAC with 1,6 per mille or more will be required to submit to a medical-psychological examination. The same provision is assumed to apply in rare drug cases in which the drug influence is considered profound enough to prove impairment and thus a criminal conviction could be made.

If a person is found to be driving under the influence of drugs, but no criminal conviction occurs (e.g., because actual impairment cannot be proven), licensing authorities will decide whether the licence is to be revoked, according to the provisions of the Road Traffic Act and the Licence Ordinance (Fahrerlaubnisverdnung, FeV). The licence will be withdrawn if the driver is proven to be drug addicted.

According to legislation implemented January 1, 1999, (changes in the Road Traffic Act and the introduction of the Licence Ordinance), a withdrawal will also generally occur when the driver has simply consumed drugs (other than cannabis), without being proven to be a drug addict. Regarding cannabis, withdrawal of the licence will not occur unless it can be shown that the person is a regular user or uses it while driving (see Annex 4 of the new FeV). Testing the driver's consumption habits is achieved with a medical examination (especially hair and urine testing) and /or a psychological examination. Compared to the former law, the new Licence Ordinance speficially regulates the testing procedure against drug drivers (§14, FeV), and thus makes the procedure clearer than what it was under the pre-existing law.

Drug Offenses Not Committed in Traffic. If licensing authorities obtain information about a person's drug consumption, they will begin the same procedure as mentioned above (i.e., hair and urine testing to prove abstinence from drug use). In order to ensure that licensing authorities receive information about a person's drug consumption, the new version of the Road Traffic Act (§2, XII, StVG) contains a provision requiring police to inform the licensing authorities about any suspicion of a person's lack of fitness to drive – including known drug consumption.

7.6. Prevention

Drug prevention programmes are the responsibility of each German state. Prevention and education activities for drug drivers exist, but there is no uniform national programme.

7.7. Official Statistics

German Judicial Statistics documents do not distinguish between convictions for alcohol or drug impaired driving. A distinction is made in the Accidental Statistics, however. According to this document, in 1996 there were 44,357 accidents involving alcohol, in comparison to only 891 accidents committed under the influence of drugs.

7.8. Political Aspects and Considerations Regarding Drug Policy

No information was provided about this topic, and it was not discussed in detail at the roundtable meeting.

7.9. Roundtable Discussion

The discussion focused on the recent implementation of the analytical zero limit for drugs and the treatment of drug consumption cases in licence law. The participants also discussed the basic contents of the international drug conventions and their implementation of, and influence on, national drug policies.

8. Italy

8.1. Legal Regulations Concerning Drugs in General

Involvement with drugs is regulated in Law No. 309/90 ("Consolidation Act on Drugs," according to the response in the questionnaire). The Act covers all relevant substances such as heroin, cocaine, amphetamines, LSD, opium, and cannabis, as well as medications with psychoactive effects.

Table 8-1. Legal Consequences of Involvement with Drugs[7]

	Selling	Possessing	Small quantities for personal use	Consuming
Type of offense	Criminal		Administrative	No sanctions
Legal basis	Law 309/90, Secs. 73, 74, & 80	Law 309/90, Secs. 73, 74, & 80	Law 309/90, Sec. 75	
Legal sanctions and penalties heroin, cocaine, amphetamines, LSD, opium	**Prison:** Min. 8 years, max. 20 years, **and** **Fine:** 50,000,000 to 500,000,000	**Prison:** Min. 8 years, max. 20 years, **and** **Fine:** 50,000,000 to 500,000,000	See information below, immediately following table	No sanctions
Legal sanctions and penalties cannabis, psychoactive medication	**Prison:** Min. 2 years, max. 6 years, **and** **Fine:** 10,000,000 to 150,000,000	**Prison:** Min. 2 years, max. 6 years, **and** **Fine:** 10,000,000 to 150,000,000	See information below, immediately following table	No sanctions
Legal sanctions and penalties Alcohol sold to persons < 16 years old	Under Penal Code 689, 691			
Aggravating conditions	No information supplied			

The Italian Drug Act punishes the selling and possessing of drugs (unless the possession is for personal use only). The Act provides different sanction levels for "hard drugs," such as heroin, cocaine, amphetamines, LSD, and opium; and "soft drugs," such as cannabis and psychoactive, medications.

Possession of Small Quantities for Personal Use. Drug possession for personal use is not punished by the Act. However, it may lead to administrative sanctions. See **Roundtable Discussion**, below, for information regarding fluctuations in definitions of "possession."

Alcohol. Selling alcohol to persons under 16 years of age is punishable.

7 All fines shown in Tables 8-1 and 8-2 are expressed in Italian lire.

8.2. Legal Regulations Concerning Drugs in Road Traffic

Table 8-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	Criminal	Criminal		
Legal basis	Art. 186, New Road Code	Art. 186, New Road Code		
Legal sanctions and penalties	**Limit:** 0,8 per mille (blood)			
	Prison: max. 1 month, **or** **Fine:** 500,000 to 2,000,000**, and** **Suspension of driver licence:** 15 days to 3 months (1- 6 months for recidivists within one year)	**Prison:** max. 1 month, **or** **Fine:** 500,000 to 2,000,000**, and** **Suspension of driver licence:** 15 days to 3 months (1- 6 months for recidivists within one year)		
	DRUGS			
Type of offense		Criminal		
Legal basis	No limit	Art. 187, New Road Code		
Legal sanctions and penalties		**Prison:** max 1 month, **or** **Fine:** 500,000 to 2,000,000, **and** **Suspension of driver licence:** 15 days to 3 months (1 – 6 months for recidivists within one year)		

Alcohol. The 0,8 per mille limit is incorporated in an additional law referring to Art. 186, New Road Code[8] (Art. 379 of the Italian Law 495/1992). Recently, an institutional working group suggested lowering the limit to 0,5 per mille in order to adjust to the European average level.

Drugs. According to Art. 187 of the New Road Code, driving a motor vehicle in a state of physical and mental impairment caused by the use of a narcotic (stupefiant) or other psychotropic substance ("in condizioni di alterazione fisica e psichica correlate con l'uso do sostanze stupefacenti o psicotrope") is forbidden. Regarding **medications,** the experts point out that no consequences occur when the driver is able to prove that their use has been prescribed by a physician.

8 Italian Law 285/92; also translated as Rules of the Road.

Accidents. There is no specific information about the applicable legal sanctions if an accident happens. It is assumed, however, that this is punished by the general provisions of the Penal Code on negligent or reckless driving resulting in injuries to or the death of another person, without special emphasis on traffic accidents. (Articles 186 and 187 of the New Road Code mention that their sanctions apply only if no crime of a more severe nature has been committed).

Further consequences for drivers under the influence of alcohol and drugs include mandatory additional insurance coverage and – if suitable – enrollment in treatment programme.

8.3. Police Activities

8.3.1. Police controls

The legal regulations cited below pertain nationwide. Regions, provinces, and municipalities have no additional legislative jurisdiction. The powers for detection routines and procedures used in police control activities regarding drugs and psychoactive substances are constituted in the New Road Code (and – additionally – in the Consolidation Act on Drugs) as well as in the Criminal Code. Italy belongs to the group of countries that have incorporated all traffic relevant regulations (sanctions, as well as roadside procedure and testing requirements) into a single act of law. Thus, the New Road Code is a significant step toward clarifying and unifying the law.

Specific tests for drugs are conducted only if the driver shows evidence of impairment. Otherwise, the search for drugs constitutes just one item within the general police control procedure. There are more than 40,000 roadblocks for alcohol sobriety checks per year; these occur primarily on Friday, Saturday, and Sunday nights.

8.3.2. Standards for probable cause

Beyond the actual act of detaining a driver while he or she completes required tests, police will not arrest the driver. However, the driver's car may be brought to a public or private garage (Art. 186/3 and 187/4).

8.3.3. Standards for official physical evidence

Breath tests. According to Art. 186 of the New Road Code, police can require a driver to complete a breath test for alcohol if:

- an accident has occurred ("incidente"), or
- there is suspicion that the driver is impaired by alcohol ("in stato di alterazione psico-fisica derivante dall`influenza dell`alcool").

Suspicion of the influence of alcohol arises particularly after a positive breath test result. Refusing a legally required breath test will be punished with the same penalty that would apply if the driver were to have a positive BAC exceeding the legal limit ("in stato di ebrezza") – that is, a prison term up to one month and a fine of 500,000 to 2,000,000 lire. The breath test result can be used as evidence in a criminal procedure. A subsequent blood test is not necessary, but can be required.

Blood and urine tests. The requirements for biological testing are constituted in Art. 187 (regarding narcotics or psychotropic substances) and Art. 186 (regarding alcohol) of the New Road Code. They are the same as for breath testing, with the single modification that police must have a **reasonable** suspicion that a driver is **under the influence** of a substance other than alcohol, prior to compelling a test for drugs. Beyond that, there are no specific requirements for the administration of blood and urine testing, which is conducted by a physician at a public medical center. Neither blood nor urine tests may be conducted by physical force. Obtaining blood from deceased persons is possible, but only under the supervision of the medical examiner. Italy allows only external examination of the human body, and procedures such as blood testing are considered an invasion of personal privacy (for further information about voluntary and forced blood testing, see the relevant discussion in **Austria** and **Germany**).

The refusal of a legally required blood or urine test will be punished with the same sanctions as those applied if a driver refuses a breath test (see above). Roundtable participants added that the judge ultimately decides whether the request to draw blood constitutes a violation of personal privacy. The participants also said that if a driver survives an accident and refuses a blood test, but the driver's urine indicates the presence of cannabis, the driver will be charged on the basis of a road traffic violation, but not a drug violation.

8.3.1. Testing devices

Police does not use field tests for drug screening in Italy.

8.3.2. Drug recognition training

Traffic policemen receive some training in road traffic drug enforcement during the six-month specialization courses required for Traffic Police personnel. This specialized training is given to approximately 10% of the national police force.

8.3.3. Identified problems

The main problem faced by police officers in drugs-and-driving control measures is the lack of portable devices for drug screening. They also face difficulties in handling breath analyzers, which are heavy and difficult to use.

Another problem mentioned by the experts refers to the adequacy of police procedure in cases in which no accident has resulted, but in which police suspect a driver of drug impairment to the extent that biological samples can be defensibly ordered. At the moment, efforts are underway to make the procedure more efficient.

8.4. Prosecution: Legal Provisions vs. Discretion of the Officials

Regarding prosecution, if enough evidence exists for prosecution, the prosecutor does not have any discretion in deciding whether to proceed with a case involving drugs and driving; in such cases, processing in criminal court is obligatory. However, the prosecutor does have discretion in recommending appropriate penalties, once a case has been heard and decided, according to the roundtable participants.

Plea bargaining is possible in the Italian court system.

Regarding sentencing, the court`s discretion in determining the sentencing sanctions or penalties ranges within the minimum and maximum limits fixed by law (for example, under the New Road Code).

Roundtable participants further added that judges' discretion can take several forms: they can postpone sentences of up to 2 years, and can reduce punishments for first offenders, for example. In challenging the position of the prosecutor, an accused offender is able to bring a toxicologist to the proceeding to challenge the quality of the biological sampling procedure. The judge, however, has his own toxicology consultant with whom he can confer.

8.5. Regulations for Regranting Driver Licences

Under Art. 186/3 and 187/4 of the New Road Code, a drugs-in-traffic offense will lead to a suspension of a driver licence for at least 15 days and up to 3 months. Repeat offenders will lose their licences for a longer period (1 month to 6 months) if they have committed an offense within the previous year. In addition to this, there is a special regulation in Art. 187/3, concerning the medical examination for possible drug drivers: By order of the local "prefetto" (prefect), suspected drug drivers will have their licences supsended while they complete a medical examination and until the results are determined. The prefect's knowledge about each drug driver is guaranteed by the provision that a drug-positive biological sample result must immediately be transferred to him by the police (Art. 187/2).

Regranting the licence after suspension requires another medical examination, with urine screening. If the result is drug-negative, the driver licence will be regranted for one year, after which another medical examination is to be conducted; if the result is also drug-negative, the licence will be granted for a limited period again, and so on.9 The driver licence may even be revoked, particularly in cases involving repeat offenders. In such cases, other special requirements for restoring the licence apply. Further information about Italian drug law and traffic safety is derived from De Gier (1993, p. 45), and is presented below:

- A driver's licence may be refused to any person who is addicted to narcotics or other drugs, or who misuses alcohol.
- A driver's licence applicant's physician must fill out a form whenever a driver licence is issued or renewed, with declarations pertaining to the applicant`s mental and physical condition, including the use and abuse of drugs.

- In addition, a medical examination by a special physician, with a focus on the applicant`s driving fitness, is required. A psychological examination is not necessary, but may be conducted.

- Driver licences are normally valid for either 5 or 10 years.

- If the licensing authorities are notified about a person`s drug misuse or dependency, licence restrictions will be determined, following the medical examination and a urine test for drugs.

8.6. Prevention

Researchers and institutions have recently begun to address the drugs-and-driving problem. Consequently, national and official studies or reports are still in progress. Treatment programme for drivers found under the influence of drugs are conducted by public or private addiction treatment facilities.

9 De Gier; Driving Licences and Known Use of Licit or Illicit Drugs, November 1993, p. 45.

8.7. Official Statistics

The following official statistics were provided:

- During 1997, 16,155 drivers were reported to judicial authorities for driving under the influence of alcohol (1996: 16,089).

- During 1997, 1,066 drivers were reported to judicial authorities for driving under the influence of drugs (1996: 978).

- Figures for prosecution and conviction rates do not exist. However, statistics about police activities do exist, but only in the context of "repression of drug crimes," which is presumed to embrace all types of drug activity.

- Italy is unusual among the participating countries in being able to provide statistics that differentiate between alcohol and other drugs among drivers.

8.8. Political Aspects and Considerations Regarding Drug Policy

The debate about handling the drug problem is still in progress in Italy. Public opinion is divided on the question about the use of legal drugs. Regarding illegal drugs, public opinion tends to favor liberalizing laws against soft drugs such as cannabis; however, no prevailing opinion exists yet. The roundtable participants noted that a disproportionate number of individuals are in jail for cannabis-related offenses, and that because of this overcrowding problem, political agendas are beginning to address reducing the criminalization of certain types of drug use. Differences in opinion about drug policy arise within single political factions, more than among the political parties.

8.9. Roundtable Discussion

The meeting in Italy was held during a period of political and economic change. In fact, the meeting occurred one day after the government of Romano Prodi, a center-leftist, had ended, and was replaced by that of a former Communist, Massimo D'Alema. Further, a new Minister of Health was installed the day prior to the roundtable meeting, which was conducted in the Ministry of Health. Despite the turbulence within the country's various ministries, a governmental working group has been addressing problems of drugs and driving in Italy; together, the members of this working group constituted the roundtable participation at the meeting in Rome. The meeting atmosphere was one of cordiality, with an ever-present undercurrent of mutual interest in broad topics, outside each person's profession, relating to drugs and driving.

The political climate in Italy is often in a state of flux, and changes in the law typically result in a fluctuating history of the success or failure of new laws to remain on the books. For example, a drug law passed in 1990 that defined "possession" was revoked in 1993. As of October 1998, no legal definition existed for "possession," and court cases involving drugs are therefore relegated to the individual judge to decide on the level of the offense and its penalty. Further, this lack of a definition of "possession" is complicated by an earlier guideline established by the Ministry of Health that determined that one month's supply of cannabis for personal use, for example, was an amount that could be considered reasonable for "consumption" and was therefore not punishable. However, the Ministry of Health no longer establishes such guidelines, which are now under the aegis of the Ministry of Justice.

Political issues about law enforcement appear to focus on questions about the possible de-criminalization of drugs; as one participant said, “Too many people are in jail for cannabis,” so political agendas often contain proposals for reducing or otherwise changing criminal penalties for drug-related offenses.

Driving under the influence of drugs (DUID) is a criminal offense in Italy, but blood testing for drugs is not performed as often as it is for alcohol, and thus the number of DUID convictions is relatively low. In Italy, blood testing on humans requires informed consent, which is not always easy to obtain — especially if an accident has resulted and a driver is unconscious. However, urine testing, while not producing biological information as reliable as blood, does not require consent. Therefore, in a case involving a driver suspected of being under the influence of drugs and who has been involved in a crash, the driver might refuse a blood test, but will then be compelled to produce a urine sample. However, even if the urine sample is positive for THC, for example, the judge can penalize the driver only on the basis of a violation of road traffic law, not on the basis of drug presence – because the presence of the THC was not proven with the requisite blood test. However, if a blood test is positive for drugs, the judge can sentence the driver to at least two criminal penalties: (1) driving under the influence of drugs, and (2) endangerment to others. Without the blood test, only the second penalty pertains, with fewer consequences than if both pertained.

As in many other countries, if a driver in Italy is involved in an accident and refuses to submit to a blood alcohol concentration test, the judge will assess the highest penalty based on the assumption that the driver’s BAC was above the highest limit specified by law.

Italian investigators are currently testing alternatives to blood tests, which are considered an invasion of a person’s privacy. For this reason, sweat and saliva collection methods are currently being tested for validity and feasibility. Roundtable participants said noninvasive screening devices, such as a sweat test, are a desirable scientific development, but that their usefulness in legal proceedings is still in question. Nevertheless, the results from the devices can be combined with clinical information about a driver, and can thus provide additional supporting information about the facts of a possible drugs-and-driving incident.

The roundtable participants agreed that a reliable test for polydrug use would be extremely useful in law enforcement of traffic safety. Further, if police and health service personnel interacted more closely with one another – both politically and in the field – roads would be safer from drivers who are under the influence of drugs, according to several members of the roundtable discussions.

9. Luxembourg

9.1. Legal Regulations Concerning Drugs in General

Involvement with drugs is regulated in the Law of 19/02/1973, as amended. The Law also applies to psychoactive medications. Sanction levels are the same regardless of the type of substance; possession of a psychoactive medication that has not been prescribed by a doctor carries the same penalties as those for possession of an illicit drug.

Table 9-1. Legal Consequences of Different Types of Involvement with Drugs

<table>
<tr><th></th><th>Selling and possessing in order to sell</th><th>Consuming and possessing for personal use</th></tr>
<tr><td>Type of offense</td><td colspan="2">Criminal</td></tr>
<tr><td>Legal basis</td><td colspan="2">Law of 19/02/1973, as amended</td></tr>
<tr><td rowspan="2">Legal sanctions and penalties</td><td>Prison: 1 year to 5 years, and
Fine: 20.000 to 50.000.000 LUF</td><td>Prison: 3 months to 3 years, and
Fine: 10.001 to 400.000 LUF</td></tr>
<tr><td colspan="2">Probation community services: 40 to 240 hours</td></tr>
<tr><td>Aggravating conditions</td><td>Prison: 5-10 years (for activity resulting in an incurable illness, permanent disability of a person, or activity with minors (< 18 years old)
Prison: 15-20 years if a gang member
Hard labor: 15-20 years (for cases involving a death, or if the person was a gang member)
Hard labor: life sentence for cases involving the death of a minor (<18 years old)</td><td>None</td></tr>
<tr><td colspan="2">N.B.: extenuating circumstances:
prison may be reduced below the legal limit or not be applied at all.</td></tr>
<tr><td>Other consequences</td><td colspan="2">- Driving licence suspended;
- Confiscation of personal property;
- Enrollment in a substance abuse programme;
- Restrictions on association with other drug addicts.</td></tr>
</table>

Luxembourg law punishes selling and possessing as criminal offenses; consumption in-group is subject to legal sanctions, the term “group” being defined as more than one person. Alternatives to incarceration exist for certain types of offenders. These are determined on a case-by-case basis. Further, any items used to conduct drug trade, as well as any profits from the selling of drugs, are subject to confiscation by the relevant authorities.

9.2. Legal Regulations Concerning Drugs in Road Traffic

Table 9-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ILLEGAL DRUGS and PSYCHOACTIVE DRUGS			
Type of offense	Criminal			
Legal basis	National Highway Code, art. 12 and 13			
Legal sanctions and penalties	**Prison**: from 8 days to 3 years **Fine**: from 10.001 to 200.000 LUF			
			- causing injury to a person (prison: 8 days - 2 months / fine: 20.000 - 200.000) - causing death of a person (prison 3 months - 2 years) / fine: 20.000 - 400.000)	
Other consequences	driving privileges suspended, requirements for restoring licence to driver.			
			Changes in insurance coverage	

Currently, there is only one regulation against driving in a manner that appears to be similar to drunk driving. Any evident impairment from alcohol, drugs, or medications, as observed by police, results in incrimination. In practice, offenders have some latitude in challenging the observations of the police officer. It is the judge in a criminal proceeding that ultimately decides on culpability and subsequent sanctions.

9.3. Police Activities

9.3.1. Police controls

The regulations for detection procedures during traffic controls are included in the National Highway Code, which pertains nationwide.

9.3.2. Standards for official physical evidence

Blood Tests and urine tests. Blood tests and urine tests for drugs may be ordered if the police officer suspects that a driver involved in a traffic accident is impaired by drugs.

9.3.3. Testing devices

Do not exist.

9.3.4. Identified problems

Lack of appropriate testing devices for drug screening at the roadside.

9.4. Prosecution: Legal Provisions vs. Discretion of the Officials

“Plea bargaining” – admitting to a lesser offense and taking that penalty – is not possible in the Luxembourg court system. The court will convict a person of drug driving if a blood test is positive, although the person could challenge the results of blood analysis in court.

9.5. Regulations for Regranting Driver Licences

Committing a drug-driving offense may lead to a licence suspension with special requirements for restoring the licence. The decision to suspend and regrant a licence rests with the judge in a criminal proceeding. The judge can take into consideration the offender's need to use a car to get to his workplace, the level of intoxication or impairment, and other factors. The exact procedure to reacquire the licence depends on the decision of the judge.

9.6. Prevention

No such programme launched yet but being thought of in relation with the planned introduction of a penalty point system for driving licences.

9.7. Official Statistics

Conviction rates for drug driving are not available. However the Belgian Toxicity and Trauma Study conducted by Meulemans is a useful source for a variety of statistical informations regarding drugs and driving in Belgium and **Luxembourg**.

9.8. Political Aspects and Considerations Regarding Drug Policy

No information transmitted.

10. The Netherlands

10.1. Legal Regulations Concerning Drugs in General[10]

The law regulating the involvement with drugs is the Opium Act of 1928. The included substances are divided into two categories that represent the distinction between hard and soft drugs as a basic principle of Dutch drug legislation: List I and List II substances. List I particularly includes heroin, cocaine, and amphetamines. List II includes cannabis, among others. In addition, both lists include medications with psychoactive effects. For example, benzodiazepines such as diazepam and nitrazepam are included in List I.

Table 10-1. Legal Consequences of Different Types of Involvement with Drugs[11]

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal			Non-offense
LIST I SUBSTANCES				
Legal basis♦	Art. 2, Sec. 1b	Art. 2, Sec. 1c		No consequences
Legal sanctions and penalties	**Prison:** (up to 8 years) **and / or** **Fine:** (up to 100,000)	**Prison:** (up to 4 years) **and / or** **Fine:** (up to 100,000)	**Prison:** (up to 1 year) **and / or** **Fine:** (up to 10,000)	
Aggravating conditions	**Fine**: max. 1,000,000, if drug value exceeds 25,000			
LIST II SUBSTANCES				
Legal basis♦	Art. 3, Sec. 1b	Art. 3, Sec. 1c		
Legal sanctions and penalties	**Prison:** max. 2 years, and /or **Fine**: max. 25,000		Non offense	
Aggravating conditions	**Fine:** max. 100,000, if drug value exceeds 6,250			

The Opium Act does not provide specific minimum penalties. Thus, the general minimum penalties apply — for prison sentences: 1 day; for fines: 5 guilders. The Opium Act punishes selling and possession of drugs, but not consumption of drugs. The sanction levels differ between List I and List II drugs, and are assessed on the basis of perceived relative danger. Thus, sanctions for List I drugs are more severe.

Possession of small quantities for personal use. The law provides lower sanction levels for possession of small quantities for personal use only, regarding both List I and List II drugs. Except for cannabis, there is no legal definition of a "small quantity." Regarding cannabis, the law sets a limit at 30 grams. This amount was confirmed by the roundtable participants.

10 Some of the responses in this section have been supplemented by information adapted from Sagel-Grande in: Kreuzer, Handbuch des Betäubungsmittelstrafrechts, 1998, pp. 1444 ff.

11 The fines and drug values shown in Table 10-1 and Table 10-2 are expressed in Dutch guilders.

♦ These provisions refer to offences committed with intent. If intent cannot be proven, lower penalties apply.

Further definitions regarding what amounts constitute a “small quantity” are presented in the prosecution guidelines of the law. These guidelines also recommend the type of cases in which the standard should be dismissed. According to the guidelines, a small quantity is one consumption unit — meaning 1 pill, 1 dose, or <0.5 grams. Regarding List I drugs, the guidelines recommend dismissing the standard in small-quantity cases, thereby leaving a wide gap between the penalties for that offense and the maximum penalties for small-quantity cases as defined in the Opium Act. Regarding cannabis, the guidelines recommend dismissal of cases in which the person has less than 5 grams. For cases in which possession is between 5 and 30 grams, a fine of 50 to 150 guilders is recommended.

Prosecutorial discretion formed the basis for the existence of “coffee shops” in the Netherlands, where cannabis is sold and can be consumed without legal prosecution. Due to these institutions, there is widespread misunderstanding that cannabis has actually been **legalized** in the Netherlands. However, selling and possessing cannabis is still illegal (as with any other drug), but it will not be prosecuted when such activity occurs in “coffee shops” which meet with strict requirements with regard to (non-) advertisement, prohibition of sale to underage persons etc.

10.2. Legal Regulations Concerning Drugs in Road Traffic

Table 10-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
Type of offense	Criminal			Criminal
Legal basis	Art. 8, 176: WVW 1994		Art. 8, Art. 5 WVW 1994	Art. 8, Art. 6, 175 WVW 1994
Legal sanctions and penalties: ALCOHOL	**Limit**: 0,5 blood (0,22 mg/l breath) **Prison**: max. 3 months, **Fine**: max. 10,000		**For making unsafe driving maneuvers:** **Prison:** max. 4 months, **Fine:** max. 15,000	**Prison:** max. 9 years (homicide), max. 3 years (injury), **Fine:** max. 25,000
Legal sanctions and penalties: DRUGS / MEDICATIONS	None exists	As with alcohol	As with alcohol	As with alcohol

The sanctions for drunk or drug driving are regulated in the Road Traffic Act of 1994 (WVW), and are criminal in character.

Alcohol. For alcohol cases, there is a legal limit of 0,5 per mille in blood (0,22 mg/l in breath). The experts’ answers do not appear to indicate any differentiation between this limit and the regulation regarding evidence of impairment. Because of the 0,5 per mille limit, impairment is presumed not to exist at readings below 0,5 per mille – to the extent that it would constitute an offense. There are prosecution guidelines for recommending sanction levels (fine or imprisonment) for first-time DUI offenders not involved in an accident, depending on their BAC. Prosecution guidelines also allow police and prosecutors to settle the case by imposing a fine (“transaction offer”), for example:

BAC 0,54 – 0,80	**Fine**: 390 – 550 guilders, in case of a transaction offer by police or prosecution	**Fine**: 600 guilders, when it comes to a procedure before court
BAC 1,31-1,50	No transaction offer possible	**Fine**: 1,350 guilders imposed by court + 6 months' licence suspension on probation

Drugs. No legal analytical limit applies to drugs. Instead, proof of impairment must be established by the circumstances in each case. Impairment without any further consequences is regulated by Art. 8 of the WVW. Impairment with additional unsafe driving maneuvers is regulated by Arts. 5 and 8 of the WVW.

An accident due to impairment in which another person has been injured or killed is regulated by Arts. 6 and 8 of the WVW. Thus, the Netherlands has – in contrast to most other countries – a traffic-specific regulation addressing injury or death due to impairment by a substance. In most other countries, this falls under the general (that is, non-traffic) regulations for negligence or recklessness resulting in injury or death of another person. The sanctions for injury or death in an accident caused by a person impaired by a substance exceed those applying to accidents caused by other reasons. In a non-substance case, the maximum prison sentence is 1 year, if injury is involved; 3 years, if death is involved; and a maximum fine of 10,000 guilders. This contrasts with cases in which alcohol and / or drugs have impaired a driver: the maximum prison sentence in a case in which a person was injured is 3 years; 9 years if a death resulted; and the fine maximum is 25,000 guilders.

10.3. Police Activities

10.3.1. Police controls

Police procedures at roadside are also regulated in the Road Traffic Act of 1994 (WVW; Arts. 160 ff.). Thus, the Netherlands belongs to the group of countries that embrace both:
(1) sanctions against alcohol- and / or drug-impaired driving, and (2) detection methods – within a uniform traffic act. The following regulations apply nationwide:

The frequency of sobriety checkpoints varies among different police regions. In the Amsterdam region, for example, sobriety checkpoints are conducted about 5 times a week. In some other regions, they are limited to a few times a year. Nationwide, an estimated 500,000 drivers per year are tested at random for alcohol presence.

10.3.2. Standards for probable cause

In traffic controls, there is no systematic search for drug presence. Checkpoints for drug use are virtually non-existent. Generally, a search for drug use is conducted only if a driver is suspected of being impaired, and the alcohol test was negative.

10.3.3. Standards for official physical evidence

Breath tests. Art. 160 of the WVW enables police to conduct routine breath screening tests at roadside. That is, police do not need evidence of impairment before conducting such a test. Refusal is sanctioned as a criminal offense.

Blood tests. A blood test (as well as an evidentiary breath test) can only be required if there is suspicion that the driver is impaired by alcohol or other substances (Art. 163 of the WVW). Suspicion is presumed valid if a breath screening test is positive.

In the Netherlands, a blood test cannot be taken by physical force. However, refusing the blood test (or an evidentiary breath test) is a criminal offense and will – in cases of alcohol suspicion – result in sanctions that would apply to BAC levels from 2,11 to 2,50 per mille. That is, a fine of 2,200 guilders will be assessed, as will a probationary prison term of 2 weeks, plus 9 months' suspension of the driver's licence. If a non-evidentiary, preliminary breath screening test had been administered (but the evidentiary test subsequently refused), the screening result will be used as evidence in the legal proceeding. Blood samples may only be taken by testing devices approved by the Forensic Laboratory of the Ministry of Justice. These devices are subjected to regular testing for quality control.

10.3.4. Testing devices

In 1997, the Institute for Road Safety Research (SWOV), in co-operation with several police regions, conducted a field test using sweat wipes and urine analyzers in some selected areas of the country. Beyond experimenting with such devices in these pilot projects, police do not use sweat wipes or urine analyzers. In case of suspicion of an impairment caused by substances other than alcohol a bloodtest can be ordered by the police to confirm drug presence in a driver.

10.3.5. Drug recognition training

So far, there are no specific training courses for police officers concerning drug recognition at roadside. According to the roundtable participants, the primary question among traffic police at the scene of accidents is whether alcohol was involved – mainly because proof of impairment by drugs is difficult to claim in court.

10.3.6. Identified problems

Police officers report that they are not skilled at detecting drivers under the influence of drugs in road traffic, nor do they have adequate screening devices for use at roadside. Further, they criticize the limited capacity and efficiency of the Forensic Laboratory of the Ministry of Justice to analyze blood samples for presence of illicit drugs.

10.4. Prosecution: Legal Provisions vs. Discretion of Officials

Arrest. A driver suspected of impaired driving will not be arrested, but police will impose a temporary driving ban on the driver for up to 24 hours.

Prosecution. If there is suspicion of drug-impaired driving, the driver will be subject to legal proceedings. Refusing a blood test will not help the driver, since refusal is sanctioned as a criminal offense, as well. In contrast to many other countries, Dutch criminal law is based on the principle of prosecutor's discretion . Thus, it is up to the prosecutor to decide if the case will proceed. The prosecutor's decision depends on the quality and quantity of the evidence. In addition, prosecutors have the power to avoid bringing the case to court by imposing a fine (and possible other sanctions) in low BAC cases and minor drug offenses. These are termed "transaction offers." Transaction offers can also be issued by police, but with less discretion and only under a prosecutor's control. In practice, however, it is unusual for prosecutors to decide not to proceed with a case if a police report for drug driving exists. This is due to the fact that police confer with the prosecutor about such cases before they issue their reports.

Conviction and sentencing. The court's sentencing discretion ranges between a conviction "without punishment" to the maximum penalties specified in the law. "Without punishment" cases are those in which the natural consequences of the incident impose a hardship on the offender – for example, if the offender's children were killed in an accident caused by the offender. The Dutch law does not recognize plea bargaining.

10.5. Regulations for Regranting Driver Licences

Alcohol. Regarding alcohol, the suspension is regulated in the prosecution guidelines (mentioned above). It ranges between 6 months on probation (for BACs from 1,31 to 1,50 per mille) to 12 months (for BACs over 2,5 per mille). If the driver caused an accident, the suspension time can range up to 5 years. The suspension is imposed by the criminal court. Either as an alternative or as an auxiliary punishment, the driver may be required to participate in an Educational Countermeasures to Alcohol (EMA) course. This is decided by the Ministry of Transport as an administrative measure. The course lasts 3 days and is at the driver's expense. If the BAC exceeded 2,1 per mille, if the driver is a repeat offender, or if he or she caused a serious accident, the driver must submit to a medical examination. If the medical examination indicates that the person is unfit to driver, the driver licence can be declared invalid. A new licence will be issued only after a recommended time period elapses and a new driving examination is completed successfully. In 1997, 8,475 drivers took the EMA course; 3,559 were referred for medical examinations, according to the experts responding to the questionnaires.

Drugs. Drivers can lose their licences in drug cases, too. Since the prosecution guidelines do not specifically address drug cases, each suspension is decided on a case-by-case basis. In practice, few licence suspensions result from drug driving, because actual impairment caused by drugs is difficult to prove. In 1997, 70 drug driving cases resulted in the initiation of legal proceedings. A total of 18 other cases were reported by the police, but not enough evidence was provided to initiate administrative investigation by the Ministry of Transport, according to the experts responding to the questionnaire.

No educational programme comparable to the EMA exist for drug drivers.

The application for a driving licence must include a declaration by the applicant stating whether or not he is suffering from any disability..., including the use of licit or illicit drugs. However, there are no consequences whatsoever for not declaring impairing circumstances, and applicants are not required to produce a declaration by the family doctor to confirm their statements. Regarding the latter aspect, there were reform plans in 1993 recommending involvement of family doctors in endorsing the applicants` statements.

Driving licences are usually valid indefinitely (concerning Group 1 drivers). If the licensing authorities are notified by a person's drug misuse or dependency, e.g. by a conviction according to the Opium Act, the decision of whether or not a person is fit to drive has to be taken by the medical adviser to the licensing department, sometimes after a medical examination.

10.6. Prevention

Research projects and prevention campaigns addressing the problem of drug driving are well known in the Netherlands. In the autumn of 1997, SWOV, in cooperation with Traffic Test and Deltalab, carried out a pilot study investigating drug and alcohol use among Dutch motorists during weekend nights. The results of this study have been published (see 10.7., Official Statistics).

The Netherlands Institute of Mental Health and Addiction (Trimbos Institute) is preparing a prevention campaign against drug use in general and especially targeting drugs and driving. The campaign will be jointly financed by the Ministry of Health and the Ministry of Transport. According to the roundtable participants, a “healthy schools and substances” programme is in place, as are occasional television and radio campaigns for responsible use of alcohol and drugs. Information on the effects of remedial or treatment programme is available only for alcohol.

10.7. Official Statistics

No information was provided about prosecution and conviction rates, other than the alcohol and drug statistics provided above. However, the 1997 SWOV study on weekend nocturnal drivers revealed, that 8.1% tested positive for drugs in urine, with five of six cases involving illegal drugs. Especially among the sample of 18- to 25-year old male drivers, 17.5% tested positive (see De Gier, 1998).

10.8. Political Aspects and Considerations Regarding Drug Policy

The majority of Dutch people are against drug use and consider drugs to be dangerous, according to the responses in the questionnaires. However, according to the roundtable participants, the population is not as well informed as it could be about the question. A growing number of people support the decriminalization of cannabis, of which possession and dealing has carried penalties for the past 20 years – even though marijuana can be purchased in designated “coffee shops” throughout the Netherlands. There is no current movement to extend the liberalization to further drugs. Although there are slight differences in opinion about drug policy among the different parties, there is general popular support for the major principles of the national drug policy. Political discussion about drugs is, to a certain extent, linked to discussions about alcohol. This discussion has not led to a totally integrated approach to all psychotropic substances, however.

10.9. Roundtable Discussion

Known across the Northern Hemisphere for its relatively liberal posture toward cannabis, and because of its key geographic location within Europe (linking the North Sea and the United Kingdom with major traffic corridors in Northern and Central Europe), the Netherlands offers a unique study opportunity for the role of illicit drugs in traffic safety.

Discussion at the roundtable focused on: (1) a National Police roadside survey of illicit drugs and how its results were expected to compare to a similar study in the United Kingdom, (2) the cross-border challenges presented when people drive to the Netherlands to obtain drugs that are considered illicit in their home countries, and (3) the relative success of social infrastructure in dealing with drug problems. In addition to discussing some of the findings from the roadside survey, roundtable participants also described changes in enforcement of various traffic laws, due in part to reorganization of the police forces in the 1990s.

Roundtable participants said they did not believe that a single “ideal” drug policy exists in any European country, but that the Netherlands had taken a largely pragmatic approach in not pursuing prosecution for possession of small quantities of cannabis. Even so, the country is interested in the potential harm that drugs might cause on Dutch roadways, and thus is interested in designing studies that would investigate seriously and fatally injured drivers. Multiple drug use is widely presumed to exist, but epidemiological studies have not yet determined to what extent it exists. The roundtable participants also identified the need for a reliable field test for drugs at roadside.

11. Norway

11.1. Legal Regulations Concerning Drugs in General

Table 11-1. Legal Consequences of Different Types of Involvement with Drugs

	Selling	Possessing	Small quantities for personal use	Consuming
Amphetamines, designer drugs, heroine, cannabinoids, cocaine, LSD and other illegal drugs on the narcotics list				
Type of offense	Criminal	Criminal		Criminal
Legal basis	Penal Code, §162	Penal Code, §162		33, §24, Medicine Law
Legal sanctions and penalties	**Prison:** from 2 weeks to 15 years **Fine:** minimum 120 €			**Prison:** from 2 weeks to 3 months **Fine:** minimum 120 €
Aggravating conditions	If selling to children, increasing quantities, repeated offences, sentences may be prolonged.	Prolonged sentences – increased fines with larger quantities.and/or repeated offences		Increased fines, prolonged sentences, at repeated offences
Medicinal drugs with active substances on the narcotics list (e.g. benzodiazepines, opioides)				
Type of offense	Criminal, when not prescribed	Criminal, when not prescribed		Criminal, when not prescribed
Legal basis	Penal Code, §162, drugs use law			
Legal sanctions and penalties	**Prison:** max. 6 years **Fine:** minimum 120 €	**Prison:** max. 6 years **Fine:** minimum 120 €		**Prison:** max. 6 years **Fine:** minimum 120 €
Aggravating conditions	Selling to children, increasing quantities, repeated offences - fines may increase, sentences prolonged	Fines may increase, sentences prolonged with larger quantities and repeated offences		Fines may increase, sentences prolonged, at repeated offences

The level of punishment is depending on the amount of substances involved, the doses of intoxication and the number of lethal doses.

11.2. Legal Regulations Concerning Drugs in Road Traffic

Table 11-2. Legal Consequences for Drugs in Road Traffic.

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	Criminal			
Legal basis	Road Traffic Act, §22.1			
Legal sanctions and penalties	If BAC between 0.5 and 1.5 per mille: fine (appr. 1 month wage), conditional imprisonment and withdrawal of driving licence (normally for 2 years). If BAC higher than 1.5 per mille: unconditionnal imprisonment, fines and 2 years withdrawal of driving licence. If repeated offence or other criminal offence sentences are unconditionnal even between 0.5 and 1.5.			
	ILLEGAL DRUGS and PRESCRIBED PSYCHOACTIVE DRUGS			
Type of offense	Criminal, if driving under the influence can be proven			
Legal basis	Road Traffic Act, §22.1			
Legal sanctions and penalties	**Prison**: min.: 2 weeks, max. 1 year **Fine:** min.1 month wage			**Prison**: min.: 2 weeks, max. 3 years **Fine:** min.1 month wage
	Depending of repeated offence degree of influence or other circumstances			

Concerning drug driving cases, the sentences or penalty is connected to the degree of influence. The court either ask for if the degree influence by drugs, can be compared with a BAC > 0,5 o/oo but below 1,5 o/oo, or equivalent to BAC above 1,5. This evaluation of the degree of influence, made written by the expert witness statement (in some cases the expert witness also has to meet in court), is based on information from the clinical examination taken at the time of blood sampling, police report and the analytical results,e.g. number of drugs detected, concentration levels. If influence by drugs is comparable to BAC > 1,5o/oo, unconditional imprisonment, fine and driving licence is withdrawn for at least 2 years. If the degree of influence by drugs is comparable to 0,5<<BAC<< 1,5, fines and conditional imprisonment. Repeated offence and other criminal offence can give rise to increased fines and prison sentences. In the case of repeated offence, the driving licence is withdrawn for ever.

If driving under the influence cannot be proven, and if illegal drugs –and/or psychoactive drugs (not prescribed) have been detected in blood/urine – the driver can be sentenced according to the narcotic use law §162.

11.3. Police Activities

11.3.1. Police controls

The Road Traffic Act (§22.1) permits the police to perform random breath alcohol testing without suspicion. Signs of possible impairment are required for further investigation of influence by other drugs.

11.3.2. Standards for probable cause

Breath testing is used for alcohol. Other drugs are based on evaluation by the police. If a police officer suspects the driver is impaired, the following procedures are conducted at roadside: observation of general appearance, breath test, presence in the car of syringes, pills, or other equipment connected to drug use, observation of pupils and other special signs.

11.3.3. Standards for official physical evidence

A positive breath test will be followed by evidential breath test, or blood sampling. The breath test results itself cannot be used in court as an evidence.

If the driver refuses to take a breathanalyser test, blood samples are collected – can be taken by force if necessary.

If the police roadside suspects driving under the influence of drugs - and the the suspicion is maintained by the chief jail officer on duty - blood and urine samples are collected, combined by a clinical examination by a physician, according to the the Road Traffic Act.

11.3.4. Testing devices

No field test devices for drug presence are being used in Norway.

11.3.5. Drug recognition training

Police students at Police Academy receive some education for drug enforcement (10 – 20 hours) on a systematic basis This programme has however been included recently. For other police officers, with older education, special courses are offered on voluntary/mandatory basis. In 1998: 400 such police officers received a course with special training for drug enforcement

11.4. Prosecution: Legal Provisions vs. Discretion of the Officials

In Norway, the discretion that a prosecutor will have in deciding whether or not to proceed with a case involving drugs and driving is very limited. It might be the case only if, based on clinical examination, analytical results, and expert witness statement, impairment has not been sufficiently documented

No “plea bargaining” is possible in Norway.

11.5. Regulations for Regranting Driver Licences

(Not available)

11.6. Prevention

Regarding medications, the labelling of psychoactive drug package with the red triangle as well as information from doctors and pharmacists have been developed in Norway.

11.7. Official Statistics

Alcohol: the most recent annual statistics indicate that in 1998, approximately 1.000.000 alcohol road side screening tests have been conducted in Norway. In total, for the same year, 1.800.000 drivers were evaluated for possible impairment (alcohol and/or drugs) often in connexion with other traffic control (speed, technical control). Those figures should be compared with a population of 4.3 million inhabitants including appr. 2.750.000 driving licences.

Drugs: during the last few years, there has been a significant increase of the number of persons arrested each year for driving under the influence of drugs (1994: 2828, 1995: 3342, 1996: 3205,1997: 3743, 1998: 4400). Approximately 45% of those being prosecuted.

11.8. Political Aspects and Considerations Regarding Drug Policy

In Norway, the majority of the population is against legalisation of illegal drugs. The main part of the population claim that alcohol or psychoactive drugs should not be combined with driving.

There are differences of opinion but the differences are individual and do not follow political parties.

12. Poland

12.1. Legal Regulations Concerning Drugs in General

The Law of 24 April 1997 on Counteracting Drug Addiction relates directly to non-prescription narcotics and psychotropic substances, and precursors (which the law defines as "any natural or synthetic substance which may be converted into a narcotic drug or a psychotropic substance, or may be used for their manufacture") not classified as poisons. The law also established the Council for Counteracting Drug Addiction, which is charged with advising the Council of Ministers within the Polish government on issues relating to drug use and addiction.

Table 12-1. Legal Consequences of Different Types of Involvement with Drugs

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal	Criminal		
Legal basis	Law Counteracting Drug Addiction, Arts. 43, 44	Law Counteracting Drug Addiction, Art. 48, §1-3	Law Counteracting Drug Addiction, Art. 48, §4	
Legal sanctions and penalties (narcotics or psychotropic substances, and precursors)	**Prison**: min. 6 months, max. 8 years, **and** **Fine**	**Prison**: min. 1 year, max. 3 years, **or** "restriction of liberty," **or** **Fine**		
Aggravating conditions	**Prison**: min. 1 year, max. 10 years **and** **Fine** (for selling a "considerable quantity")	**Prison**: max. 5 years **and** **Fine** (for possessing a "considerable quantity")		

Polish law on drugs focuses on preventing the illegal production, cultivation, and trade of narcotics, psychotropic substances, and precursors. For example, poppy and hemp may be cultivated, but only by businesses authorized by local authorities (the Voivodes) to supply the pharmaceutical, food, and textile industries (Arts. 32 ff.). The sale and possession penalties embrace appliances used in the illegal production of drugs, importation and exportation, and supplying (presumably without the exchange of money or other trade media; see Art. 41). Although consumption per se is not addressed as an offense, a person who simply supplies another person with narcotic drugs or psychotropic substances, or "incites them to use such drugs or substances," can be imprisoned for up to 2 years, and receive "restriction of liberty or fiscal penalty." If the other person is a minor, the prison sentence is up to 5 years (Art. 45). If it can be shown that the person supplied someone else with the same drugs "for the sake of proprietary or personal benefits," the offender can be imprisoned for at least 1 year and up to 10 years. If the other person is a minor, the penalty for the offender is a minimum sentence of 3 years, although in "case of lesser weight, the perpetrator is liable to the penalty of imprisonment for a term not exceeding 2 years, restriction of liberty, or fiscal penalty" (Art. 46).

Further, anyone who "collects" narcotics, psychotropic substances, poppy sap, or poppy straw "with the objective of taking possession of such items," is governed under the Criminal Code for theft of property, regardless of the value of stolen property (Art. 50).

According to roundtable participants, legal procedures are as follows: once a drug is seized, the police officer takes the evidence to the prosecutor, who files the case with the court. When the case is heard, the offender is allowed to have three people testify on his or her behalf. The prosecutor recommends a penalty, and the judge then decides whether to follow the recommendation. The participants said that approximately half the time, the judge decides not to follow the recommendation, and usually establishes a lower penalty.

The new law contains language specifically aimed at organized crime, which constitutes a concern among the Polish police; in fact, 11 Polish National Police divisions to combat organized crime now exist throughout the country.

11.2. Legal Regulations Concerning Drugs in Road Traffic

A 1969 law prevails with regard to alcohol and driving. If a person is found with a BAC of 0,2 to 0,5 per mille, the driver is cited for a traffic offense and is given a jail sentence of at least 6 months and up to 3 years. If an accident was the basis for the police stop, the case goes to court as a criminal offense, and the penalty can be imprisonment for at least 1 year and up to 10 years.

The 1997 law does not specifically address the role of drugs in driving. The sanctions for driving under the influence of alcohol or drugs are constituted in the (general) Penal Code. There is no separate offense for driving under the influence of drugs; in fact, the provision applying to drunk driving applies in practice also to drugs. “Drugs” are defined, according to the response to the questionnaire, as “other substances having similar effect” (as alcohol). A significant hindrance to traffic police is that no mechanism exists to check for drugs in traffic. The legal limit for driving under the influence of alcohol is 0,2 per mille in blood.

Driving under the influence of alcohol / drugs is punished “by court,” according to the questionnaire. A “municipal court” decides on the suspension / revocation of the driving licence, however.

According to the roundtable participants, Polish police may stop a driver at any time, for any reason. The police officer does not have to prove later that the person was acting erratically as a justification for the stop. As with many other countries, a breath test for alcohol is considered the first line of investigation; if the test is positive, proceeding with blood tests to confirm drug presence is considered unnecessary. Blood tests are, however, compulsory if a police officer requests it of a driver.

In practice, Polish law sometimes makes it nearly impossible to prosecute a driver for drug presence, because some circumstances exist in which drugs might have been involved in an accident, but no police report will be filed on the case. These circumstances include incidents in which a driver hits a tree, involving no other vehicle but his own. If two cars are involved in an accident, a police report is filed, but only the damage is reported and penalty points are assessed to one or both drivers because of traffic violations, not because of drug involvement. If a breath test is administered in such a situation and one or both drivers test positive for alcohol, the case proceeds as an alcohol-involved incident, and no confirmatory drug test is ordered. However, the police report can record observed behavior, which might lead to further sanctions when the case is decided in court. And finally, if a police officer actually sees drugs in a car, the drugs can be confiscated and taken to court as evidence of possible drug involvement, particularly if an accident was the reason for the police intervention in the first place.

If a motor vehicle accident involves a death, a hit-and-run incident, or other aggravating conditions such as the fact that the driver was tested to be drug-positive, a new law, which went into effect January 1, 1999, allows the judge to set a punishment that is 50% higher than that provided for in the prior Penal Code. Because of the uncertainties of the specific analytical limits and penalties at the time this report was prepared, the table showing legal consequences for drugs in road traffic is not presented here.

12.3. Police Activities

The legal provisions relevant for police control measures pertain nationwide.

12.3.1. Police controls

Sobriety checkpoints for alcohol are conducted during the weekends. Specific drug controls are generally not conducted. As stated above, a police officer may stop a motorist at any time, without a specific reason.

12.3.2. Standards for probable cause

Breath tests. Breath tests can be conducted as a routine measure, but in practice are administered when the police officer believes the driver might be under the influence of alcohol. If a driver refuses a breath test, the driver will be asked to give a blood sample. A positive breath test result can be used as evidence in a subsequent criminal procedure. It can, of course, also be used as a reason for a subsequent blood test.

Blood and urine tests. The legal requirements for the administration of evidentiary blood and urine tests by a physician are provided for in the Code of Criminal Procedure.

12.3.3. Standards for official physical evidence

Although the responses to the questionnaire and the roundtable participants' comments differ somewhat on the question of blood tests, it appears that a driver may not refuse to take a blood test. As was described in the section on legal consequences of drugs in road traffic, a police officer needs to provide as much evidence as possible for a drug conviction – including any confiscated drugs that might be found in a vehicle that has been stopped. Roundtable participants explained that prosecutors and police normally have a close working relationship, and that prosecutors can ask police officers to produce more evidence to convict before proceeding with a case. If further evidence cannot be obtained, the case is usually closed.

12.3.4. Testing devices

Police do not use any screening devices for drug enforcement on roadside, although breath analyzers are used for alcohol.

12.3.5. Drug recognition training

So far, traffic policemen have not received any special training on drug enforcement.

12.3.6. Identified Problems

The response to the questionnaire revealed that drug driving is not considered a problem in Poland because drugs-and-driving cases infrequently come before the courts. However, the roundtable participants acknowledged that because Poland recognizes that it is a crossroads for drug trafficking between Eastern and Western Europe, drugs in road traffic are likely to exist. They assumed that many traffic police officers could cite anecdotal information from their own experiences in observing erratic driving behavior, but confirmation of actual drug involvement cannot be shown. Without adequate enforcement mechanisms specifically for drugs, the participants said, Polish police enforce the general traffic laws to the extent allowed by law – that is, testing drivers for alcohol presence first.

12.4. Prosecution: Legal Provisions vs. Discretion of the Officials

In determining the sentencing sanctions or penalties, the courts are limited to the range of legal provisions in the Penal Code. Within this range they determine the sentence regarding the circumstances of the case and the damage. As was mentioned above, judges have and exercise discretion in assessing penalties. The roundtable participants agreed that judges tend to err on the side of caution in assessing penalties and fines, and are more likely to be lenient with offenders than the full extent prescribed by law.

Appeals are possible in Poland. If a person is not satisfied with the determination of the District Court, he may proceed to the Regional (Voivodship) Court, to the Court of Appeal, and ultimately to the Supreme Court.

12.5. Regulations for Regranting Driver Licences

No information was provided about regranting of driver licences.

12.6. Prevention

Prevention activities (for example, in schools and through public awareness campaigns) address the drug problem in general and do not specifically focus on drug driving. This can be explained by the fact that drug driving is not perceived as a problem in Poland. However, alcohol and road traffic is a topic within driver education courses for teenagers. Roundtable participants acknowledged that young drivers are particularly at risk because of the relatively higher incidence of drug use among that population. Past practices of not acknowledging problems (for example, if a school principal disavows any knowledge of a drug-related incident at the school) are changing toward more openness, the roundtable participants added.

Roundtable participants also mentioned the establishment in 1997 of a narcotics bureau within the police force. Officers assigned to the bureau receive special training for undercover operations – again designed to fulfill the purpose of new laws to curb trafficking in and production of narcotics and psychotropic substances. For further information about this topic, see Section 9, Roundtable Discussion.

Poland has no remedial or treatment programme for drug drivers. Private institutions and organizations dedicated to the problem of drugs and driving do not exist.

12.7. Official Statistics

In 1997, the most recent year for which statistics are available, 222,804 motions were sent to magistrates' courts against drivers for exceeding the legal alcohol limit. It is not known how many of these would have been included under the suspicion of a probably "influence of drugs," for which there is no analytical limit.

Beyond these statistics, no information is available because statistical data relating to the questions in the questionnaire are not collected.

12.8. Political Aspects and Considerations Regarding Drug Policy

In public discussion, there is no identifiable tendency toward liberalization of "soft drugs" such as cannabis. On the contrary, the tenor of the discussions implies that the abuse of drugs (including alcohol) is recognized as a serious problem in Poland. This is a publicly perceived problem, and is at odds with the official police and governmental positions that drug abuse is not a problem – as demonstrated in the relatively low number of drug-related convictions. Nevertheless, alcohol problems are widely recognized to exist.

Among the political parties, there are no serious differences in opinion about drug policy.

12.9. Roundtable Discussion

Like other Eastern European economies, Poland suffers from a lack of resources to fund research in drug prevalence generally; thus, the extent of actual drug presence among drivers is unknown. Nevertheless, participants at the roundtable discussion demonstrated that Poland stays current with research in other countries, while identifying its own unique set of circumstances in developing its own drug policies. As a crossroads between Eastern and Western Europe, illicit drugs are both imported into and exported from Poland, giving it a reputation as a significant marketplace. This concern, that illicit drug use and trafficking in Poland is not a matter involving only the Polish population, punctuated the discussion, particularly in terms of the role of Polish police in enforcing the law.

13. Portugal

13.1. Legal Regulations Concerning Drugs in General

Table 13-1. Legal Consequences of Different Types of Involvement with Drugs

	Selling	Possessing	Small quantities for personal use	Consuming
cannabis, heroine, cocaine, amphetamines				
Type of offense	Criminal	Criminal		Criminal
Legal basis	Art. 21, n°1; 24 Dec-Lei n° 15/93 de 15/9	Penal Code, art. 40;41		Penal Code, art. 40;41
Legal sanctions and penalties	**Prison:** from 4 to 12 years	**Prison:** from 1 month to 1 year **Fine:** 10 to 120 days (fines are expressed as days in prison)		**Prison:** from 1 to 3 months **Fine:** 10 to 30 days. (fines are expressed as days in prison)
Aggravating conditions	If selling: -to children; -in large quantities; -trying to obtain high financial rewards; If the dealer is a doctor, a chemist or any other kind of health professional; If the dealer is a member of any international crime organisation; Etc.			

13.2. Regulations Concerning Drugs in Road Traffic

Table 13-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	Criminal or violation of administrative law, depending on BAC.			
Legal basis	Road Traffic Code, art. 81			
Legal sanctions and penalties	If BAC higher than 1.2 g/l: the driver is punished with a jail sentence between 6 months and 2 years; if BAC is below 1.2 g/l, the driver is only subject to administative sanctions (suspension of the driving licence for a period between 1 month and 1 year if the BAC is not over 0,8 g/l and for a period between 2months and 2 years if the BAC is higher)			
	Cannabis, cocaine, opiates, amphetamines			
Type of offense	In Portugal, the police cannot stop a driver, on the suspicion that he could be under the influence of some drug. He can only be prevented from driving on the accusation of dangerous driving.		violation of administrative law	
Legal basis			Road Traffic Code, art. 81	
Legal sanctions and penalties			- Fine from 40.000 PTE to 200.000 PTE; -Withdrawal of driving licence from two months to two years	

13.3. Police Activities

13.3.1. Police controls

Detection controls for drivers are regulated under the Road Traffic Code. They cover both alcohol and illicit drugs ("estupefacientes" or "psicotrópicas"). However, the portuguese law does not allow the detection of drugs in police control activity, therefore, it is only applied to drivers and pedestrians involved in a fatal or injury accident.

13.3.2. Standards for probable cause

Breath testing is used for alcohol.

Regarding other drugs, *only in case of fatal or injury accidents*, drivers and pedestrians must pass a physical evaluation made in a hospital and if the doctor suspects that they are influenced by drugs, he can require an evidentiary blood and urine analyses.

13.3.3. Standards for official physical evidence

A positive breath test will be followed by evidential breath test, or blood sampling. The breath test results itself cannot be used in court as an evidence.
If the driver refuses to take a test, he incurs in a crime of qualified desobedience

13.3.4. Drug recognition training

None

13.4. Prosecution: Legal Provisions vs. Discretion of the Officials

The new legisation, in force since 1 February 1999, provides for drug controls only in cases of fatal or injury accidents. There are no results yet available.

13.5. Regulations for Regranting Driver Licences

Information not available.

13.6. Prevention

Non existant.

13.7. Official Statistics

Alcohol: During 1997, in Portugal, 51.904 alcohol test were done by the police and from those 1.798 drivers were above the legal limit.

Drugs: legislation recently modified, no figures available yet

13.8. Political Aspects and Considerations Regarding Drug Policy

In Portugal, the social disapproval about drug traffic seems to be a common opinion for most of the people.

Although the society tends to tolerate drug users and deal with them as patients, the drug consumption without penalties is out of question.

All political parties agree with the importance of the drug phenomenon (problem). The Socialist and the Social Democratic Parties, each one in its own way, approve the incresing tendency towards liberalisation. They also approve the growing tolerance towards drug users and tend to apply not so heavy sanctions for those who buy and use drugs.
The Christian Democratic Party, on the other hand, stands for the idea of punishement for buyers and drug users.

The link between driving under the influence of drugs and alcohol exist only from the legislative and implementation point of view, when criminal police treats these subjects.

14. Spain

14.1. Legal Regulations Concerning Drugs in General

Regulations concerning involvement with drugs are found in the Code Penal, which is a general criminal law act. In Spain, there is no drug-specific law act. The Code applies to toxic drugs, narcotic substances, and psychotropic substances. The experts mentioned that the legal provisions apply to "all kinds of drugs," and no specific list was given. However, medications with psychoactive effects are not covered by the legal provisions.

Table 14-1. Legal Consequences of Different Types of Involvement with Drugs

	Selling	Possessing	Small quantities for personal use	Consuming
Type of offense	Criminal	Criminal		
Legal basis	Section 368, Code Penal	Section 368, Code Penal		
Legal sanctions and penalties	If substance causes serious harm to health: **Prison:** min. 3 years, max. 9 years, **and** **Fine:** max. 2 times the value of the drug Other cases: **Prison:** min. 1 year, max. 3 years, **and** **Fine:** max. 2 times the value of the drug	Only if person was trafficking	No sanctions	No criminal sanctions, **however**, administrative sanctions apply if the event occurs in a public place. Consumption is generally assumed not to exceed 50 grams of cannabis, or 8 grams of cocaine or heroin.

The Spanish Penal Code punishes selling and possessing, but not consuming drugs. The regulations apply to toxic drugs, narcotic substances, and psychotropic substances. The legal sanctions provided for in the code do not differentiate among these groups. A distinction is made between substances causing serious harm to health, and other unspecified substances. Substances causing serious harm to health require more severe penalties.

Possession is punishable only if it aims at trafficking. Thus, if a person can demonstrate that the amount – no matter how large – he or she possesses is for personal use, no sanctions will follow. Although consumption cannot be punished under the Code Penal, consumption can lead to administrative sanctions, according to regulations established by a city's council (administrative law) when consumption occurs in public places.

14.2. Legal Regulations Concerning Drugs in Road Traffic

The legal consequences of driving under the influence of alcohol and drugs are regulated in the Code Penal (CP; Art. 379 CP) and therefore have criminal character. Art. 379 Code Penal provides for sanctions if someone drives a motor vehicle under the influence of toxic drugs, narcotic substances, psychotropic substances, or alcohol.

The legal limit for alcohol is 0,8 g/l (blood) or 0,4 mg/l (breath). Lower limits exist for commercial drivers, bus and taxi drivers, etc.

Regulations for traffic safety are covered in the Traffic and Road Safety Act of 1990, which was amended in 1992 with Traffic Regulations, and in 1994 with Offense Regulations and the current blood alcohol limit.

Table 14-2. Legal Consequences for Drugs in Road Traffic [12]

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL AND DRUGS (including toxic drugs, narcotic substances, and psychotropic substances)			
Type of offense	Criminal	Criminal		
Legal basis		Art. 379 CP, driving under the influence of ...		
Legal sanctions and penalties	**Alchol limit:** 0,8 blood (0,4 mg/l breath) **Prison:** Max: 6 months or **Fine:** 5,000 pesetas (Does not exist for drugs)	**Detention:** 8-12 weekends or **Fine:** Min. 3 months, max. 8 months, and 200-50,000 pesetas per day **Suspension of driver licence:** 1 – 4 years		

14.3. Police Activities

Legal provisions for police control activities are found in the Road Traffic Act, Arts. 20 ff.. They pertain nationwide.

14.3.1. Police controls

According to Art. 20, police can conduct detection routines at roadside; further, according to the roundtable participants, the checkpoints can be random.

Sometimes a drug search constitutes just one activity within the general control procedure. However, in most cases, controls are conducted for specific drugs. General control procedure normally includes a check for appropriate driver and vehicle identification, vehicle safety, terrorist activity, and presence or influence of drugs and alcohol.

Sobriety checkpoints are conducted every day with specific emphasis on the weekends. More than one million breath alcohol controls are conducted each year.

14.3.2. Standards for Probable Cause

Under Arts. 20 and 28, breath tests and other body samples can be required only under the following circumstances:

12 The fines shown in table 14-1 and 14-2 are expressed in Spanish pesetas.

- The driver is behaving in an erratic or suspicious manner;
- The driver has violated a regulation of the Road Traffic Act;
- The driver has been involved in an accident and appears to have been responsible for it; or
- Under preventive control situations.

14.3.3. Standards for Official Physical Evidence

Body samples may not be taken by physical force. However, refusing a legally required sample for the purpose of alcohol / drug detection is a criminal offense according to Art. 380 of the Code Penal (severe disobedience) and will lead to criminal sanctions.

Besides the provision cited above, specific legal requirements do not exist for the administration of blood and urine tests by a physician. However, according to the roundtable participants, a stopped person has a right to a medical examination. Drugged drivers are likely to ask for such an examination, because if a driver can be shown to be under the strong influence of a combination of both alcohol and drugs, or if it can be shown that the person does not have a full understanding that he or she is doing something against the law, these constitute mitigating circumstances in the law, and the outcome of the driver's legal proceeding might be improved. (See Section 14.9, Roundtable Discussion for further information about Spanish attitudes toward persons addicted to drugs and alcohol.)

If police suspect a driver is impaired, the driver will be detained for testing and the car will be seized for the duration of the impairment.

14.3.4. Testing devices

Field tests for drug screening are not in use.

14.3.5. Drug recognition training

Several types of police forces in Spain are involved in drug enforcement: local police, regional police, and the Guardia Civil (Civil Guard). According to the roundtable participants, the jurisdiction of the National Police are the cities, and the Guardia Civil enforces the law in towns and communities with fewer than 25,000 inhabitants. Both agencies, however, have the same missions. Within the Guardia Civil, for example, all officers receive a 14-hour training session for drug enforcement. The Guardia Civil has 72,000 members, of whom 8,000 are assigned to traffic enforcement. Thus, although training does exist, it is not extensive and is not specifically keyed to enforcement of drug driving. The roundtable participants added that the main focus of police training is investigation, not recognition of drug involvement in traffic.

14.3.6. Identified problems

The main problem reported by police is the lack of a drug screening device for use at roadside.

14.4. Prosecution: Legal Provisions vs. Discretion of the Officials

According to the roundtable participants, the judge has the ultimate authority and therefore considerable discretion in determining the sentence of a person found guilty of various drug and traffic offenses. The range of penalties can be wide and thus the articulation of mitigating circumstances is considered important during legal proceedings.

The roundtable participants also emphasized that there are three ways in which police can stop a person for possible use of drugs in road traffic: (1) via observation of erratic driving behavior, (2) if an accident has occurred, or (3) at a control point. Spanish law permits testing, but no rapid screening device exists for use at roadside. Spanish police have 72 hours to complete their reports following an arrest, during which time they can request a medical examination order from a judge.

An outline of a legal proceeding was also presented by the roundtable participants:

- Following an incident, the police have 72 hours to send copies of their report to a judge.
- The judge considers the report and makes a determination about whether the matter should proceed to trial.
- If there is insufficient reason for a criminal trial, the file is returned to the traffic or other administrative department for possible sanctions.
- If a trial is to proceed, a hearing with a prosecutor begins and the defense lawyer brings all of the available evidence on behalf of his client to the judge. The hearing therefore involves only three people: the defense lawyer, the prosecutor, and the judge.
- At the trial, the police officer must confirm the report he has submitted to the judge. The police officer is considered a technical witness, as are any physicians who performed analysis of body samples.
- Police, prosecutors, and the judge usually support each other's positions, and cross-examination is possible by the defense lawyer.
- If the case does not appear to be clear-cut, it can be sent to an administrative department for review and possible sanctioning.

14.5. Regulations for Regranting Licences

Under Art. 379 of the Code Penal, a criminal offense will lead to a suspension of a driver's licence for at least 1 year, up to 4 years. This consequence is determined by Art. 379 of the Code Penal itself.
The roundtable participants said that if a person arrested for a drug-related offense is not driving at the time of the arrest, the driver's licence will not be suspended or revoked.

Further information from De Gier (1993, pp. 46 ff.) includes the following observations about Spain: According to the Spanish Road Traffic Act a driving licence may be refused to any person who is addicted to euphoriants or other drugs or who is not temperate in the use of alcohol. A licence already granted may be confiscated under the same circumstances. The Courts will require an offender whose licence has been revoked for DUI to undergo a series of medical and psychological tests to provide proof that he is no longer abusing the drug. Every applicant for a driving licence must undergo a medical and psychological examination in specialized medical traffic centres (Centros Medico y Psicotecnico, CMP).

The CMPs are private practices of physicians and psychologists and they notify the licensing authorities if the applicant has been found to be unqualified to drive a vehicle safely. The Spanish CMP-model for testing driving fitness is unique in Europe and can significantly contribute to promoting traffic safety and preventing health care problems.

14.6. Prevention

Several relevant prevention activities that target drug drivers have been developed by the Ministry of Health. These activities are also presented in cooperation with local corporations and regional authorities.

Drug labeling laws for pharmaceutical drugs exist, but are of questionable effectiveness, according to the roundtable participants. Although labels on drugs might advise the patient not to drive, doctors and pharmacists are not required to advise patients further about possible dangers of driving while taking certain drugs.

Treatment programme do exist in Spain, and the successful completion of the programme by offenders is monitored carefully. Treatment centers supply judges with reports that include information about the progress of the patient. Any infraction while a person is under treatment will result in an end to the treatment and commencement of the punishment set by law. If a person successfully completes the treatment, the judge can then waive the punishment. If the treatment center reports no significant progress for the offender, the judge can re-order a new round of treatment.

14.7. Official Statistics

The following information about **alcohol** controls was given:

- In 1997, 1,398,855 alcohol tests were conducted, of which 49,459 were alcohol positive and resulted in arrests.

- In addition, the roundtable participants said that in the past year, 8 people have been arrested for drugs in road traffic.

- The roundtable participants provided other information regarding the current number of heroin addicts (70,000) and cocaine users (50,000) under treatment in Spain.

14.8. Political Aspects and Considerations Regarding Drug Policy

Generally speaking, Spanish society rejects drugs, considers that drug addicts need treatment, and calls for strong action against dealers and traffickers. Roundtable participants reported that a recent survey indicated that between 20% and 35% of the population favors the legalization of drugs such as heroin. Although they recognize that heroin is dangerous, they also recognize that the costs of heroin's criminalization are high, and that legalization would reduce the influence of organized crime in Spain. Roundtable participants also said that popular opinion is that most drug offenses are related to heroin, as opposed to any other drug.

There is a clear contrast in attitude as to legal or illegal drugs. Public tolerance regarding alcohol is high. A link between alcohol and drugs is made by specialists more than by the general public. Nevertheless, a wide perception exists that young people are abusing alcohol to the extent that society generally favors the prohibition of alcohol sales to underage persons.

There are no significant differences in opinion about drug policy to be observed between the two major parties (Popular Party/PP and Party Socialist Spanish Worker/PSOE). Both parties share the idea of curbing the consumption of alcohol and other drugs, especially among young people, of helping drug addicts and their families, and of pursuing drug trafficking. The PP puts more accent on enforcing laws against drug trafficking and money laundering, while the PSOE points to the necessity of consent among all parties and the participation of society through an Advisory Council.

The United Left political group (including, among others, the Communist Party) has a clearly different point of view. They ”affirm that the western countries confront the topic” from an “occultism” point of view and call for repealing the international agreements exclusively aimed at drug prohibition and for leaving the current repressive politics. They demand the abolition of the prohibition against consumption as well.

The expert points out to a general tendency towards decriminalization of drugs (apparently not restricted to “soft drugs”) supported by key figures within the academic, literary, certain media, legal, and political circles. Some of them have supported the writing directed to the General Secretary of the UN, in response to the recent Special Session on Drugs that took place at UN headquarters.

14.9. Roundtable Discussion

Spain has strict laws against selling and possessing drugs, with prison terms up to 9 years and certain fines equal to three times the street value of the drugs found on the person. Nevertheless, like many other countries, it suffers from an inadequate ability to enforce the laws, particularly among drivers. Testing for drug presence is difficult and time consuming.
Anecdotally, the roundtable participants cited situations that commonly result in few arrests and fewer convictions. Even without proof of drug presence, a driver who behaves erratically, such that he or she poses a danger to others, is subject to arrest for this “endangerment.” In fact, the roundtable participants emphasized that a drug abuser is considered an ill person, and is therefore arrested primarily if it can be shown that the abuser is chiefly engaged in selling drugs or is risking another person’s safety.

The roundtable participants said the police need an accurate, fast, reliable roadside test for drug presence. In addition, they would like to see changes in regulations regarding licence renewal, such that a drug test could be administered at the time of renewal. Because drug addicts are not allowed to drive, this measure was perceived to be an effective measure for reducing drugs in road traffic. The law enforcement participants were particularly interested in strengthening laws that would allow more control over deliveries of money in Spain – as a way of reducing drug trafficking.

15. Sweden

15.1. Legal Regulations Concerning Drugs in General

The law regulating involvement with drugs is the Narcotic Drugs Punishments Act (NDPA) of 1968 (Narkotikastrafflag, Swedish Code of Statutes 1968:64), which is a drug-specific criminal law act. The law uses the generic term "narcotic drugs" for a wide variety of substances. In Section 8 of the Act, "narcotic drugs" are defined as "any medicinal product or goods injurious to health with strongly addictive properties or goods which can easily be transformed into goods with such properties and which:

1. on such grounds are subject to control under an international agreement to which Sweden is a party, or

2. have been declared by the Government to be considered as narcotic drug according to law.

Item (1) relates to the Single Convention on Narcotic Drugs of 1961, the 1972 Protocol Amending that Convention and the Convention on Psychotropic Substances of 1971 to which Sweden is a signatory. Item (2) refers to the Ordinance on the Control of Narcotic Drugs (Swedish Code of Statutes 1992:1554 and 1993:784, including a substance list in Annex 1).[13] Thus, all substances covered by the conventions and the national ordinance are subject to the Narcotic Drugs Punishments Act. This particularly includes drugs such as cannabis, heroin, cocaine, LSD, ecstasy, and amphetamines, as well as medications such as benzodiazepines (diazepam, and other drugs with the suffix –zepam), morphine, and others. In addition to the Narcotic Drugs Punishments Act, there are two other important drug laws: The Smuggling of Goods Act (1960:418) and the Act on the Control of Narcotic Drugs (1992:860). However, they do not contain regulations concerning sanctions for selling, possessing, and consumption of drugs – the focus of this report.

The Swedish legal system punishes selling, possessing, and consuming narcotic drugs.[14] The Act does not provide for different punishment levels for specific substances or classes of substances. All sanctions apply to "narcotic drugs" in general. However, Section 2 (petty offenses) provides for a lower punishment level depending on the nature and the quantity of the drug and other circumstances. This is assumed to refer to small quantities of less dangerous, "soft" drugs, such as cannabis.

Regarding small quantities for personal use, Swedish law is somewhat ambiguous. In its previous version, the Narcotic Drugs Punishments Act, Section 2 ("petty offenses") provided that only a fine is to be imposed if the offense consisted only of the personal use of a drug.[15] However, this provision is no longer valid.

The actual Act does not contain any specific provisions for mitigation or dismissal for either consumption cases or possession for personal use cases. However, those cases still fall under Section 2 ("petty offenses"), which in its original version provided for a lower punishment level not only with regard to the nature (see above), but also with regard to the quantity of a drug. Nevertheless, neither a complete dismissal nor other form of discretion by prosecutors is possible in such cases.

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13 See Current Swedish Legislation on Narcotics, Ministry of Justice, 1997, p. 21.

14 According to A. Solarz, Drug Policy in Sweden (date uncertain, but assumed to be ca. 1987), the criminalization of consumption was introduced "recently."

15 This implies that the regulation applies only to consumption cases, not to cases involving possession for personal use. See Current Swedish Legislation, Ministry of Justice, 1990, p.7.

The report by Solarz[16] mentions that according to a major ruling by the Chief Public Prosecutor about the application of drug laws, a decision was made to break with earlier practice and make possession of even the smallest quantities of drugs subject to prosecution – which in practice meant an extension of the punishment domain.

Fine or emprisonment are the typical sanctions recommended by the Narcotic Drugs Punishments Act. However, alternative sanctions exist, such as conditional sentences, probation, and surrender to special care (for treating a person's drug problem). Experimental programme has been initiated that involve intensive supervision with electronic monitoring, and community service.

Regarding alcohol, selling it in Sweden can be illegal. There is only a retail firm that is allowed to sell alcohol: the state-owned joint-stock company, Systembolaget. Wholesale firms are allowed to sell alcohol only by special permits.

The sanctions for selling alcohol are not regulated in the Narcotic Drugs Punishments Act, but in the Act Concerning Alcohol (Alkohollagen, 1994:1738). The sanctions also carry criminal penalties. Finally, specific laws exist that provide legal sanctions against the sale of anabolic steroids (Dopinglagen, 1991:1969) and psychoactive medicine (Medicinlagen, 1992:859). The sanctions range from a simple fine to a maximum prison sentence of 2 years.

Table 15-1. Legal Consequences of Different Types of Involvement with Drugs[17]

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal			
ALCOHOL				
Legal basis	Act Concerning Alcohol			
Legal sanctions and penalties	**Prison:** Min. 14 days, max. 2 years; **or** **Fine:** 450-150,000 Grave offense: **Prison**: Max. 4 years	No sanctions	No sanctions	No sanctions
NARCOTIC DRUGS				
Type of offense	Criminal	Criminal		Criminal
Legal basis	NDPA Section 1 ff.	NDPA Section 1 ff.		NDPA Section 1 ff.
Legal sanctions and penalties (NDPA Section 1)	**Prison:** Min14 days, max. 3 years			**Prison:** Min.14 days, max. 3 years
"Petty offense" (NDPA Section 2)	**Prison:** Min. 14 days, max. 6 months, **or Fine**: 450 – 150,000			**Prison:** Min. 14 days, max. 6 months, **or** **Fine**: 450 – 150,000

16 Drug Policy in Sweden, p. 346

17 The fines shown in Tables 15-1 and 15-2 are expressed in Swedish kroner (crowns).

"Grave offense" (NDPA Section 3), for professional activities, large quantities, dangerous drugs	**Prison:** Min. 2 years, max. 10 years		**Prison**: Min. 2 years, max. 10 years

15.2. Legal Regulations concerning Drugs in Road Traffic

Table 15-2. Legal Consequences for Drugs in Road Traffic.

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL AND DRUGS			
Type of offense	Criminal	Criminal	Criminal	
Legal basis	RTOA, Section 4 (drunk driving)		RTOA, Section 4a (gross drunk driving)	No information
Legal sanctions and penalties	drunk driving: **Limit for alcohol:** 0,2 per mille (blood) for alcohol **Zero limit for drugs** **Prison:** Min. 14 days, max. 6 months**, or Fine:** 450 – 150,000 gross drunk driving; RTOA, Section 4a **Limit for alcohol:** 1,0 per mille (at court's discretion) No limit for drugs **Prison:** Max. 2 years **Revocation of driver licence**	**Prison:** Min. 14 days, max. 6 months**, or Fine:** 450 – 150,000 "Serious intoxication," regardless of any limit **Prison:** Max. 2 years **Revocation of driver licence**	**Prison**: Max. 2 years	

The law constituting legal sanctions for driving under the influence of alcohol or drugs is the Swedish Road Traffic Offenses Act (RTOA) of 1951 (Lag Om Straff För Vissa Trafikbrott; Swedish Code of Statutes 1951:649), which – as the name implies – is a traffic-specific act. There are two offenses: **drunk driving** and **gross drunk driving** (RTOA Sections 4 and 4a).
A driver is sentenced for **drunk driving** if:

- the concentration of alcohol in the blood exceeds 0,2 per mille, or
- the person has no narcotic substance in the blood, except for medications that have been consumed in accordance with prescription (zero-limit)

- it can be assumed that the driver was so intoxicated by alcohol or other drugs that he or she could not drive the motor vehicle in such a way as to ensure safety.

A driver is sentenced for **gross drunk driving** if:

- the blood alcohol concentration exceeds 1,0 per mille, or

- the driver has otherwise been seriously intoxicated by alcohol or "other drugs" (this term applies to all kinds of drugs or medications that have no side-effects on driving ability); or

- the driver has driven the motor vehicle in such a manner that there was an obvious danger for traffic safety.

The zero-limit for drugs was introduced from July 1999. It applies to all narcotic substances covered by the Narcotic Drugs Punishments Act (see 5.1.), but makes an exception for medications that contain narcotic substances and according to prescription. Proof of driving impairment is required regarding these medication cases.

The responses in the questionnaires did not cite any applicable regulations for cases in which a driver has caused an accident under the influence of alcohol or drugs. It is thus assumed that the general offenses of negligence and reckless driving resulting in an injury or death to another person would apply; these provisions are found in the general Penal Code. There is an English translation of the Swedish Penal Code[18] which has not been delivered by the experts, though.

In addition to citing Section 4 and 4a RTOA, one of the experts cited articles or sections of the KKL and Brb legal codes: §§ 16, 22, 23 KKL and 3:7 Brb.

15.3. Police Activities

The legal regulations described below pertain nationwide.

15.3.1. Police controls

Police control activities constitute just one portion of the overall activity of Sweden's police. Different kinds of traffic controls exist. They can range from brief checks by two police officers to major controls, planned in advance and involving several police officers. Controls are not conducted solely for specific drugs. In 1996, the most recent year for which data are available, 1,329,000 drivers in Sweden were subjected to traffic controls.

15.3.2. Standards for probable cause

The police power to stop vehicles in traffic is incorporated in the Police Act of 1984. Despite the lack of information about the range of these powers, it can be assumed that, like many other European jurisdictions, Swedish police can stop vehicles randomly and at will, without having to provide proof that the driver was driving erratically or in a manner that would lead the officer to suspect drug or alcohol influence.

18 See Svensson, Criminal Justice Systems in Sweden, p. 12.

15.3.3. Standards for official physical evidence

Breath alcohol tests. An act addressing breath analyzer testing (Swedish Code of Statutes 1976: 1090) defines the conditions under which a test can be taken. A driver who refuses the breath alcohol test will be taken to the police station for a compulsory blood test. The breath screening test is not considered evidentiary, according to the roundtable participants, but results from an evidentiary breath alcohol device are considered valid.

Blood and urine samples. The conditions under which a biological investigation can be required are constituted in the Swedish Code of Judicial Procedure (Swedish Code of Statutes 1951:649 and 1993:1408). According to this code, such an investigation (blood, urine) may be required if there is reasonable suspicion that an offense has been committed under the Road Traffic Offenses Act.

Eye examination. Along with the legislation introducing the zero-limit for drugs, the Swedish police received the power to conduct eye testing on car drivers that are suspected of drug influence, for example. The eye examination covers measuring the pupils reaction to light etc.

15.3.4. Testing devices

Currently, there are no drug screening devices for drug drivers being used.

15.3.5. Drug recognition training

Most Swedish police officers do not receive any special training in detecting drug drivers. At the roundtable meeting, participants said they had heard anecdotes from police officers in which they suspected drivers of being under the influence of drugs, but they did not have sufficient grounds (clear evidence of the driver's inability to operate the vehicle safely, for example) by which they could reasonably proceed with a legal process. Swedish police do have training in detecting alcohol involvement in driving. See discussion in **Actual arrest** (section 15.4)**,** below.

15.3.6. Identified problems

The main problem reported by the police is their difficulty in detecting the influence of drugs other than alcohol. If a police officer has the suspicion that a person is under the influence of any drug other than alcohol, he is not able to intervene unless it could be proved that the person's **ability to drive safely** was impaired.

15.4. Prosecution: Legal Provisions vs. Discretion of the Officials

Actual arrest. A driver suspected of having committed an offense under the Road Traffic Offenses Act can be detained at the police station for biological testing and questioning for not more than 12 hours – unless the driver is subsequently arrested on a prosecutor's pre-trial detention order.[19] Roundtable participants emphasized that a police officer cannot issue a charge against a driver unless the officer actually witnesses the driving behavior. For example, at a police checkpoint, where a car is already at a stop, an impaired driver may escape detection because the officer has not actually seen the driver operate the motor vehicle by the time the check is made.

19 Svensson, Criminal Justice Systems in Sweden, p. 28.

Roundtable participants also said that even if the police officer cannot prove that the driver drove in a potentially unsafe way, but still has reasonable suspicion that the driver might be under the influence of drugs other than alcohol, the driver will be charged with violation of the Drug Act, which states that the use of illegal drugs is punishable.

After the initial arrest, the sequence of legal proceedings in Sweden is:

- preliminary investigation
- prosecution
- main hearing, and
- the final decision.

Prosecution. The prosecutor decides whether to initiate the preliminary investigation and whether to prosecute. The preliminary investigation is initiated when someone is reasonably suspected of having committed a crime. Prosecution proceeds when the prosecutor determines that sufficient grounds exist for finding the suspect guilty of a crime, such as drunk driving; at that point, the prosecutor has an absolute duty to bring the matter to court, according to the roundtable participants. If the prosecutor does not believe the suspect could be found guilty, the prosecutor is not likely to proceed with the case.

The difficulty repeatedly faced by prosecutors in drugs-and-driving cases is that they must prove that the driver was so much under the influence of the substance that the driver could not operate the motor vehicle in such a way as to ensure safety. That is, the prosecutor has to prove that the level and type of impairment were such that driving safety could not be assured. According to the roundtable participants, because the laws do not specifically address drug driving, cases typically result in a driver's being sentenced for drug use, not for drug driving.

The public prosecutor has the right to arrest a person by executing a pre-trial detention order. Such an order is issued only if the person is reasonably suspected of a crime that can be punished with imprisonment for at least one year, and that there is the risk that he or she will escape from the proceedings, destroy evidence, or otherwise hamper the investigation or commit further crimes.[20] For the required punishment level of at least one year, only drivers suspected of gross drunken driving can be detained.

Conviction and sentencing. If the Court finds that the accused has, beyond a reasonable doubt, committed a drunken driving offense, he should be convicted.

Plea bargaining is not possible in the Swedish legal system.

With regard to sentencing, the Court has discretion within the range of punishment. The Court first has to determine the type of punishment (imprisonment, fine, or alternative sanctions such as probation, treatment, etc.). The applicable principle in this determination is that imprisonment is considered a more severe punishment than either fines, conditional sentences, or probation. The Court must then determine the punishment level (for example, the number of years of imprisonment). The applicable principle is that the penalty should be in proportion to the gravity of the crime and the person's culpability, and not with regard to general preventive considerations. The emphasis on proportion instead of prevention is a result of the 1989 reform of the sanctions system. The length of time between arrest for a drunk driving offense and conviction varies from case to case.

20 Svensson, Criminal Justice Systems in Sweden, p. 28.

Roundtable participants also said that if a person does not complete a treatment programme when ordered in lieu of a prison term, the prison term will be implemented.

15.5. Regulations for Regranting Driver Licences

A driver who commits a drunk driving or a gross drunk driving offense (Section 4, 4a RTOA) will have his or her driver's licence revoked. Regranting of the licence is possible if doctor issues a certificate showing that the person has no drug problem. An offense against the Narcotic Drugs Punishments Act may also lead to a revocation of the driver's licence.

15.6. Prevention

At the roundtable discussion, participants said that police activity is primarily focused on reducing the sale of drugs, and to a lesser extent on prevention activities. However, a recent commission was established to focus on drug problems at rave concerts. The commission reflects a further focus by the government to identify young drug abusers as soon as possible, so as to avoid the creation of a large subpopulation of drug abusers. In this respect, the participants said that police were more likely than social authorities to identify young drug abusers at an earlier stage in the development of their abuse.

The roundtable participants emphasized that Sweden is interested primarily in guaranteeing the good health of its citizens. As a result, treatment programme are available that are designed to reduce drug dependence and return users to society. In fact, some programme have shown an unusual degree of innovation, including sending abusers on physically challenging sports trips.

Information is available in Solarz (pp. 350 ff.), although it must be interpreted cautiously because of it relative age. Public opinion in Sweden is very strong regarding legalization of drugs. The country's drug problem has been the subject of lively debate there since the end of the 1960s. Many motions were passed on this issue between 1968 and 1986, mainly resulting in tougher control measures. However, Sweden has a strong undercurrent of treatment and information policies. Most of these initiatives were proposed between 1984 and 1985, when statistical data indicated a decrease in drug criminality and drug use. In 1985, further restrictions were added to the drug legislation.

According to the roundtable participants, pharmaceutical drugs carry warning labels relating to drinking and driving. Doctors also have the duty to report to authorities the names of patients who show signs of drug abuse. Generally, the roundtable participants thought, patients are well informed with regard to pharmaceutical drug use and driving.

15.7. Official Statistics

Roundtable participants said that an estimated 90% of the cases reported to the prosecutor complete prosecution. Additionally, an estimated 10% of alcohol and drug convictions in Sweden are among women.

15.8. Political Aspects and Considerations Regarding Drug Policy

Sweden's political agenda does have alcohol and drugs as a highly placed item. Roundtable participants said that liberal politicians tend to favor treatment interventions, and conservative politicians prevention measures. The political parties generally do not differ widely in their attitudes toward legalizing drugs: they are primarily against liberalization measures.

According to the roundtable participants, Sweden perceives its chief threat from Poland and other Eastern European countries that are separated from it by water. “We can’t keep the borders closed,” said one participant.

15.9. Roundtable Discussion

Sweden’s geographical position and its traditional mix of social conservatism and political liberalism make it a target drug market for the emerging economies of nearby Eastern Europe. Controlling its borders to drug traffic, while opening its borders to diversified business influences, are challenges for law enforcement officials and policy makers alike.

Roundtable participants said that if police are called to the scene of an accident, their first priority is to assure that no further injuries occur – that is, they try to assure road safety for other drivers who might be approaching the scene of the accident. As is the case in many other European countries, if a driver is found at the scene of the accident to have exceeded the legal alcohol limit, no further tests for drug presence are completed, since the alcohol test is evidentiary and sufficient to convict the driver of drunk or gross drunk driving.

Roundtable participants also discussed the practice of some drivers who have had their licences revoked or suspended and who then drive without a licence. Those drivers recognize that the fine, if they are caught driving without a licence, is relatively low. To combat this tendency, it is now possible for a driver’s licence to be taken away from the owner of a car that has been loaned to a driver without a licence.
Finally, the participants spoke generally about measures they believed would reduce the drug and drug-driving problems in Sweden. In addition to the desire for a reliable drug detection device for use at roadside, the suggestions included universally available, affordable “Smart Card” driver licences that would double as alcohol and drug interlock devices with a driver’s automobile.

16. Switzerland

16.1. Legal Regulations Concerning Drugs in General

The legal sanctions for involvement with drugs are regulated in the Bundesgesetz über die Betäubungsmittel und die psychotropen Stoffe (Betäubungsmittelgesetz, BetmG, "Narcotics Act") of 1951. The included substances are specified in the law itself (Art. 1). This provision defines "narcotic substances" as addiction-causing substances and products of the morphine, cocaine, and cannabis families of drugs. The law also names specific substances in particular (distinguishing between raw materials such as opium, poppy straw, coca leaves, marijuana leaves, Wirkstoffen, and substances having a similar effect as the ones named above. In addition, the law names addiction-causing psychotropic substances that are equated with narcotic substances:

- hallucinogens such as LSD and mescaline;
- amphetamines and amphetamine-like substances;
- barbiturates and benzodiazepines; and
- substances having a similar effect as the ones named above.

A list of all substances falling under these provisions is kept at the Ministry of Health.

Table 16-1. Legal Consequences of Different Types of Involvement with Drugs[21]

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal	Criminal		Criminal
Legal basis	Art. 19, BetmG	Art. 19, BetmG	Art. 19b, BetmG	Art. 19a, BetmG
Legal sanctions and penalties Drugs: narcotic substances and equated psychotropic substances	**Prison:** Min. 3 days, max. 3 years; **and / or** **Fine:** 1 – 40,000	**Prison:** Min. 3 days, max. 3 years; **and / or** **Fine:** 1 – 40,000	No sanctions	**Prison:** Min. 1 day, max. 3 months; **and/or** **Fine:** 1 – 5,000 **Alternatives:** Dismissal; Refraining from punishment; Warning
Aggravating conditions (large quantities, high profit, gang)	**Prison:** Min.1 year, max. 20 years; **and/or** **Fine:** Max. 1 million	**Prison:** Min.1 year, max. 20 years; **and/or** **Fine:** Max. 1 million		

The sanctions provided in the Narcotics Act do not differentiate between different kinds of drugs. They refer to narcotic substances in general (including equated psychotropic substances). The code punishes selling, possessing, and consuming drugs. However, it provides for exceptions that constitute a wide range of decriminalization of these actions when committed for personal use.

21 The fines shown in Table 16-1 and Table 16-2 are expressed in Swiss francs.

According to Art. 19b, every act that can be shown to have been committed for preparing for a person's own drug consumption (i.e., buying, possessing, etc.) is not punishable, if only small quantities are involved. The act of consumption itself is generally punishable according to Art. 19a. However, in "petty cases" (presumably soft drug cases, and / or those involving small quantities, and / or those involving first-time offenders), the procedure is dismissed, or the court will refrain from punishment. The same procedures apply – independent of the "pettiness" of a case – when the offender submits to medical care. The latter represents the "therapy instead of punishment" principle. In practice, the majority of consumption cases are treated as petty cases and thus, few convictions occur.

In summary, it should be noted that at first glance, Swiss legislation seems to be more stringent than most other countries because it has criminalized consumption of drugs. On closer examination, however, this cannot be confirmed because of the wide range of possibilities for prosecutors and judges to dismiss or drop the case. In fact, this practice implies a more liberal attitude in comparison to many other countries. The decisive criterion for judging drug legislation as more liberal or more stringent must not be seen just in the existence of a provision officially criminalizing drug consumption. Instead, the decisive criterion is the existence of a range of possibilities for dropping the cases of drug consumption or possession for personal use only. This principle in effect recognizes a right to do possible harm to oneself while not doing harm to others. Such possibilities can be constituted either by law (as done in the Swiss Narcotics Act) or by prosecution practice (for example, British prosecution guidelines).

Alternatives to conventional sanctions for drug offenders include refraining from punishment, expelling from the country (for non-Swiss persons), and submitting oneself to a medical care institution.

16.2. Legal Regulations Concerning Driving in Road Traffic

Table 16-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL			
Type of offense	Administrative	Administrative	Administrative	Administrative
Legal basis	Art. 31, II; 91, I SVG; Art. 2,I, II VRV	Art. 31, II; 91, I SVG; Art. 2,I, II VRV	Art. 31, II; 90, II; 91, I SVG; Art. 2, I, II VRV (requires serious danger for others by gross violation of traffic rules)	Art. 31, II; 90, II; 91, I SVG; Art. 2, I, II VRV
Legal sanctions and penalties	**Limit:** 0,8 per mille (blood) **Prison**: Min. 3 days, max. 3 years; **and/or** **Fine:** Max. 40,000 **Suspension of driver licence:** Min. 2 months	**Prison**: Min. 3 days, max. 3 years; **and/or** **Fine**: Max. 40,000 **Suspension of driver licence:** Min. 2 months	**Prison**: Min. 3 days, max. 3 years; **and/or** **Fine**: Max. 40,000 **Suspension of driver licence:** Min. 2 months	**Prison**: Min. 3 days, max. 3 years; **and/or** **Fine**: Max. 40,000 **Suspension of driver licence:** Min. 2 months

	DRUGS			
Type of offense		Administrative	Administrative	Administrative
Legal basis	Does not Exist	Art. 31, II, 90, I SVG, Art. 2, I VRV	Art. 31, II, 90, II, SVG; Art. 2, I VRV (requires serious danger for others by gross violation of traffic rules)	Art. 31II, 90II, SVG; Art. 2,I, VRV
Legal sanctions and penalties		**Prison:** Max. 3 months **and/or** **Fine:** Max. 5,000 **Suspension of driver licence:** Min. 1 months	**Prison:** Min. 3 days, max. 3 years; **and/or** **Fine**: Max. 40,000 and **Suspension of driver licence**: min 1 month	**Prison:** Min. 3 days, max. 3 years; **and/or** **Fine**: Max. 40,000 and **Suspension of driver licence**: min 1 month

The legal provisions for driving under the influence of alcohol or drugs are provided in the Strassenverkehrsgesetz (SVG, Road Taffic Act) and the Verkehrsregelverordnung (VRV, Ordinance on Traffic Rules). The VRV regulations augment and clarify the SVG in many ways.

So far, legal sanctions for drug driving can only be imposed if there is proof of an impairment. The SVG does not expressly mention drugs. Drug driving is covered by the overall phrasing: “A person who is drunk, fatigued or not able to drive for another reason is not allowed to drive a motor vehicle” (Art. 31 II SVG). The VRV instead expressly addresses drugs and medications: “A person who is not able to drive a motor vehicle due to fatigue, influence of alcohol, medications or drugs...” (Art. 2 II VRV). The term “drugs or medications” is not further defined.

It appears that the sanctions for drug driving are less than those for drunk driving. The sanctions are equal to those for drunk drivers only in the case of a drug-impaired driver posing serious endangerment to another person (Art. 90 II SVG). The experts pointed out, however, that in cases of driving under the influence of drugs, such endangerment will usually be assumed.

Accidental injury or death to another person due to substance influence is sanctioned by the general provisions in the Penal Code for negligence or recklessness resulting in an injury. There are no specific regulations in the traffic codes.

Currently, a reform of the Road Traffic Act (SVG) is under preparation and legislative debate has begun. One of the major objectives of the debate is the introduction of analytical limits for drugs and medications.

The sanction level will be adjusted to the one applicable to alcohol – a prison sentence from 3 days to 3 years and / or a fine of up to 40,000 Fr, without involving serious endangerment of others.

Another reform proposal is the introduction of the 0,5 per mille limit for alcohol. This reduction in the alcohol limit is supposed to go along with changes to the schedule of sanctions in alcohol cases. It is generally considered that the current sanctions for exceeding the 0,8 per mille limit would be disproportionately harsh for 0,5 per mille offenders.

16.3. Police Activities

For the most part, the provisions for police control activities are incorporated in the Road Traffic Act (Strassenverkehrsgesetz, SVG), the Ordinance on Traffic Rules (Verkehrsregelnverordnung, VRV), and the Licence Ordinance (Verkehrszulassungsverordnung, VZV). These provisions pertain nationwide and primarily regulate how detection routines are conducted, how breath alcohol tests are administered, and the requirements for blood tests in alcohol cases. These laws do **not** provide regulations concerning the requirements for biological testing in **drug** cases. Instead, this matter is subject to the procedural codes of Switzerland's 26 cantons. The cantonal regulations differ to varying extents. The experts find this situation very ineffective and dissatisfying, since it prevents a uniform, nationwide strategy against drug drivers. Thus, this matter has also been subjected to the reform debate. Because of this, the draft of the new Road Traffic Act provides procedures for blood testing as well as for preliminary screening methods (especially urine and saliva) in drug or medication cases.

The following shows the actual provisions as well as the reform proposals.

16.3.1. Police controls

Routine controls can be conducted on the basis of the general preventive mission of the police. Only in three cantons are there specific regulations concerning traffic controls.

Major traffic checkpoints are conducted up to about 10 times per year. Smaller control activities are conducted much more frequently. They happen throughout the entire day, both spontaneously and when a police officer notices erratic driving behavior.

16.3.2. Standards for probable cause

Breath tests. Breath testing can be required if indications exist that the driver is under the influence of alcohol (Art. 55 II, SVG; 138 III, VZV). Breath testing is only for screening purposes and requires confirmation by a blood test. If a driver refuses to take a breath test, a blood test will be ordered.

The reform proposal allows routine breath testing of any driver, without regard to indications of alcohol intoxication (e.g., suspicious driving behavior). Refusal will be sanctioned by the same penalties as are applied with actual intoxication, including the suspension of the driver's licence (see above). A blood test may also be conducted.

16.3.3. Standards for official physical evidence

Blood and urine tests. In alcohol cases, a blood sample can be required (Art. 138 II, VZV) if the driver shows signs of intoxication. If a breath screen shows alcohol concentration less than 0,6 per mille, a blood test will not normally be conducted (Art. 138 III). Generally, blood samples require the person's consent and may not be conducted by physical force (there might be broader powers in individual cantons, however). Refusal to submit to the blood test or the subsequent medical examination will carry the same penalties – including suspension of the driver's licence – as those in cases of actual intoxication (Art. 91 III, SVG; Art. 138 IV, VZV). However, given important reason, a blood sample can be taken by physical force (Art. 138 V, VZV). "Important reason" is assumed, for example, if an accident has occurred, such that blood testing would proceed for medical reasons. The experts pointed out that in practice police can have a wide range of discretion in claiming a reason is "important."

Regarding **drug or medications cases**, the requirements for blood and urine testing depend on the provisions and procedures established by the relevant cantons (see above). It can be assumed, however, that such testing generally requires signs of actual influence.

According to the reform proposal, blood testing as well as preliminary screening (especially through urine and saliva) can be required if there are signs of driving impairment from the use of drugs or medications. Refusal to be tested will be punished with the same sanctions applied to incidents of actual impairment through drugs or medications, including suspension of the driver's licence. Blood tests can be conducted by physical force in serious cases, especially those in which an accident has occurred. In addition, the reform proposal calls upon the Bundesrat to pass regulations for the administration of breath, blood, and preliminary screening samples, as well as for the additional medical examination in drug and medications cases (that is, procedures are described regarding the extraction procedure, analysis, quality control, etc.). Such regulations currently exist only for alcohol (Art. 138 ff., VZV). Regarding drugs and medications, currently only recommendations by the Justice and Police Departments exist (Eidgenössisches Justiz- und Polizeidepartement, 1.1.1995).

Arrest. If the driver shows signs of not driving in a manner that ensures the safety of others, police have the power to confiscate the driver's car and bring the driver to a medical center for biological testing. The driver will usually not be detained or otherwise held in custody beyond the period involved for the testing.

16.3.4. Testing devices

In some cantons police use sweat screening devices and / or urine screening devices. The legal requirements governing these tests are regulated in each canton's procedure codes. The majority of cantons are ideologically moving away from roadside screening, since the existing devices have not proved efficacious (particularly with regard to the most consumed drug, cannabis). A major problem in using screening devices is the inconvenience of taking sweat and urine samples, both for the police officer and for the driver. This is particularly the case in embarrassing situations in which the driver must give a urine sample at roadside in the presence of a police officer. Cantons that have tested urine sreening have faced an extremely high number of refusals. Swiss experience indicates that drivers are more willing to give blood than to give urine.

16.3.5. Drug recognition training

Every policeman engaged in traffic enforcement receives regular education courses in recognizing signs of drug and medication influence.

16.3.6. Identified problems

The most significant problems faced by Swiss traffic police are the following:

- The detection of drugs in the vehicle and the subsequent attempts to prevent the driver or passengers from discarding the drugs before they are confiscated;
- Accurately classifying drugs found in the vehicle;
- Accurately recognizing symptoms of alcohol, drug, and medication influence;
- Difficulty in obtaining the timely medical services of a competent physician; and

- The impossibility of administering a written questionnaire to confirm an offender's significant intoxication.

16.4. Prosecution: Legal Provisions vs. Discretion of the Officials

Prosecution. If evidence of impairment from drugs exists, prosecution will generally proceed. Neither the offender nor the prosecutor is able to prevent this. Only in very petty cases (e.g., no demonstrable impairment) do prosecutors have the opportunity to dismiss the case. A dismissal is also possible if the driver can show he has suffered extraordinary hardship from the incident, such that additional penalties would not serve any further useful purpose (for example, if the driver caused an accident in which his children were killed).

Conviction. Prosecutors and judges usually do not face any difficulties in processing and convicting drug cases. The judge usually issues a sanction order (Strafmandat), which is rarely subject to objection.

Sentencing. Sentencing discretion ranges within the sanction levels of the relevant provisions. The court's discretion is guided by the mitigating circumstances and aggravating conditions specified in the Penal Code (Art. 63 ff.). If the offender is addicted to drugs, the court can order commitment to an appropriate medical facility.

The length of time between apprehension of a driver under the influence of drugs and the driver's conviction differs from case to case.

16.5. Regulations for Regranting Driver Licences

Drugs in traffic. The consequences of drunk driving and drug in road traffic are regulated in Art. 14, 16, and 17 of the SVG. A drunk- or drug-driving offense leads to a suspension of the driver's licence for at least one month in drug cases, and at least two months in alcohol cases (referred to as "Warnungsentzug"). For repeat alcohol offenders (those who repeat an offense within five years), the suspension will last for at least one year. No corresponding regulation exists for drugs, but see reform proposal below.

If it appears that the driver is addicted to alcohol or another substance, the licence will be revoked for an indefinite period (at least one year), and will be regranted only if the driver can show he or she is not longer addicted (referred to as "Sicherungsentzug"). The detailed requirements for regranting the licence (urine and / or hair testing, new driving exam, etc.) are subject to the discretion of the licensing authority.

The suspension periods are subject to reform proposals, too. According to Art. 14 ff. of the new SVG, the minimum suspension time will be three months for drunk drivers (if the BAC exceeds 0, 8) as well as for drug drivers. For repeat offenders meeting the definition above for both alcohol and drugs, the suspension will be at least 6 months.

Drugs in general. The Narcotics Act provides that any official authority who receives knowledge of a person's drug addiction, should inform the licensing authorities (Art. 15 VI, BetmG). The same applies to private doctors who have knowledge of a patient's drug addiction (Art. 14 IV SVG). The same applies to police who have filed reports for drug offenses. In practice, not every drug offender detected by police is reported to the licensing authorities. Otherwise – as the experts pointed out – the number of licence suspensions and /or revocations would be much higher (see section 16.7 Official Statistics). No standardized procedure exists with regard to the notification duties of police in drug cases. In any case, however, the licensing authorities are notified if a conviction for an offense against the Narcotics Act occurs.

Participants of heroin substitution programme have to relinquish their licences during the course of treatment. The same is **not** compulsory for participants in a methadone project.

16.6. Prevention

Specific prevention programme exists in Switzerland. For example, the placard initiative, “No drinks – no drugs – no problem” is well known, although no data yet exist regarding these initiatives’ effectiveness.

16.7. Official Statistics

The only statistical information given under this section is the number of suspensions or revocations of driving licences per year:

- In 1997, 427 licences (85 of which belong to drivers involved in an accident) were suspended or revoked for violations of driving under the influence of drugs or medications.
- For alcohol, the number was 15,491 (4,275 involving an accident).
- For drug addiction, 1,615 licences were suspended or revoked.
- For alcohol addiction, 668.

16.8. Political Aspects and Considerations Regarding Drug Policy

The Swiss drug policy is based on four basic principles (“fourfold approach to drug policy”):

- Prevention (considered the most important strategic element);
- Therapy (Switzerland’s programme supplying heroin addicts with prescription amounts of the drug are exceptional throughout Europe);
- Harm Reduction; and
- Law Enforcement

In principle, the federal strategy considers all psychotropic substances on a universal basis. There are efforts to establish an “Addiction Law” that would include all psychotropic substances, including alcohol.

The current drug policy is supported by a majority of the people. Across the political parties, there are different attitudes and political movements. In contrast to the typical framework in which liberal and socialist parties support drug liberalization agendas, the federal government is strictly against liberalization.

Two important plebiscite initiatives have attempted to change the direction of Swiss drug policy, each addressing the drug problem from an extreme:

- The “Youth without drugs” initiative calls for a strict, abstinence-oriented drug policy that contains elements of strict control, prevention, and therapy. It seeks to prohibit medical prescription of narcotics, namely heroin. In September 1997, this initiative was overwhelmingly rejected (70%) by voters.

- On the opposite end, the “Droleg“ initiative proposed the decriminalization of drug use and possession, as well as purchase for personal use. In November 1998, this initiative was also overwhelmingly rejected (74 %) by voters.

With the rejection of both extreme initiatives the Swiss people proved not only wide acception of the fourfold approach to Swiss drug policy but also to the federal strategy to reach their goals.

16.9. Roundtable Discussion

Switzerland’s ongoing interest in the problem of drugs in traffic was reflected in the experts’ responses to the questionnaire and in their collective enthusiasm at the meeting. As in many other countries, Switzerland’s law enforcement community is frustrated by its inability to prove that drugs impair driving ability, although anecdotal evidence exists that there is a drugs-and-driving problem in the country.

17. United Kingdom

17.1. Legal Regulations Concerning Drugs in General

The law regulating involvement with drugs is the Misuse of Drugs Act 1971, which is a drug-specific criminal law act. The act differentiates between Class A, Class B, and Class C drugs. The classes contain lists of substances that are grouped according to their relative dangerousness to the user. The substances covered by each category are classified in an appendix to the Act.[22]

Examples of substances covered by each class:

- Class A: cocaine, opium (whether raw, prepared, or medicinal), LSD, psilocylbin
- Class B: amphetamines, cannabis (and cannabis resin), codeine
- Class C: bromazepam, other drugs ending in -zepam (i.e., benzodiazepines)

Table 17-1. Legal Consequences of Involvement with Drugs[23]

	Selling	**Possessing**	**Small quantities for personal use**	**Consuming**
Type of offense	Criminal	Criminal		No sanction
Legal basis	Misuse of Drugs Act 1971	Misuse of Drugs Act 1971		
CLASS A DRUGS (cocaine, opium, LSD, psilocylbin, etc.)				
Legal sanctions	Summary offense: **Prison:** 6 months; **and / or Fine** On indictment: **Prison:** life **and / or Fine**	Summary offense: **Prison:** 6 months **and / or Fine** On indictment: **Prison:** 7 years **and / or Fine**		
CLASS B DRUGS (amphetamines, cannabis, codeine, etc.)				
Legal sanctions	Summary offense: **Prison:** 6 months **and / or Fine** On indictment: **Prison:** 14 years **and / or Fine**	Summary offense: **Prison:** 3 months **and / or Fine:** 2,500 On indictment: **Prison:** 5 years **and / or Fine**	Sentencing guidelines recommend a fine for cannabis	
CLASS C DRUGS (bromazepam, other benzodiazepines)				
Legal sanctions	Summary offense: **Prison:** 3 months; **and / or Fine:** 2,500 On indictment: **Prison:** 5 years **and / or Fine**	Summary offense: **Prison:** 3 months; **and / or Fine:** 1,000 On indictment: **Prison:** 2 years **and / or Fine**		

Class A drugs carry the most severe punishments; Class C drugs the most moderate ones. The punishment levels cited in the table represent the maximum penalty. The Act does not provide for minimum penalties. According to the sentencing guidelines, cases concerning

22 (Schedule 2, p. 725 ff.)

23 All fines shown in Table 17-1 and Table 17-2 are expressed in British pounds. Information has been derived from the Misuse of Drugs Act, Appendix, Schedule 4, pp. 735 ff.

Class A and Class B drugs are normally to be tried "on indictment" – that is, they are sent to the Crown Court for trial, and are not be tried summarily before the Magistrates' Courts. The Misuse of Drugs Act provides sanctions for supplying and possessing of drugs, but not for consuming drugs.

The Act does not address small quantities for personal use, but the sentencing guidelines developed by the courts do. According to the sentencing guidelines, a fine is recommended for possession of cannabis when only small quantities are involved for personal use.[24] However, no provisions are stated regarding the possibility of suspension or dismissal of the case. Prison is advised only for recidivists. Although no definition was found in the material delivered by the experts for the limit of a "small quantity / low amount," the roundtable participants said that the Law Lords had determined that a small quantity is defined as "what fits in one's hand."

17.2. Legal Regulations Concerning Drug Driving

Table 17-2. Legal Consequences for Drugs in Road Traffic

	Analytical limit (No proof of impairment required)	**Impairment** (No resulting accident or injury)	**Impairment** (Endangerment of a person is demonstrated)	**Impairment** (Resulting in accident or injury)
	ALCOHOL AND DRUGS			
Type of offense	Criminal	Criminal	Criminal	Criminal
Legal basis	RTA 1988/5; **Limit for alcohol only:** 0,8 per mille (blood); 0,107 (urine), 35 micrograms/100 ml (breath)	RTA 1988/4.1	No regulation	RTA 1991/3 for causing a death while impaired or exceeding the legal limit
Legal sanctions and penalties	**(Alcohol only:)** **Prison:** Max. 6 months; **or** **Fine:** 5,000 **Suspension ("disqualification") of driver's licence:** Min. 12 months; recidivists longer	**Prison:** Max. 6 months; **or** **Fine:** 5,000 **Suspension ("disqualification") of driver's licence:** Min. 12 months; recidivists longer		**Prison:** Max. 10 years **Fine:** No limit **Suspension ("disqualification") of driver's licence:** Min. 2 years; recidivists longer

The legal consequences of driving under the influence of alcohol or drugs are entirely regulated as crimes in specific traffic laws: the Road Traffic Acts of 1988 and 1991. The acts do not provide for minimum sentences. The impairment-based regulations require proof that the driver is unfit to drive because of alcohol or drug influence. The term "drugs" is defined as any intoxicant other than alcohol (RTA 1988/11).

17.3. Police Activities

The measures governing police procedure at roadside and in the subsequent legal proceedings are regulated in the Road Traffic Act of 1988. Both the legal sanctions for driving under the influence of drugs and the legal means for obtaining evidence are thus integrated within the same legal body.

24 Chapter 9, Penalties for Drug Offences, p. 9/2

Regulations concerning police control procedure cited below apply to England and Wales. The regulations in Scotland and Northern Ireland are similar to the English and Welsh procedure, but are not identical.

17.3.1. Police controls

Police have the power to stop any motor vehicle for a routine control without any specific suspicion (RTA 1988/162). The search for drug use constitutes just one activity in general police roadside enforcement. Occasionally, specific checks for drugs are conducted. Checks for drivers under the influence of alcohol are conducted throughout the year, with special emphasis on the summer and Christmas periods.

17.3.2. Standards for probable cause

Breath tests. Police have no powers to conduct random breath tests. “Sobriety checkpoints” are therefore not allowed. Breath tests (for screening or evidence) can be required only under the following conditions (RTA 1988/6):

- The police officer suspects that the motorist has been drinking;
- The motorist has committed a traffic offense; or
- The motorist has been involved in an accident.

Refusing a breath test without a reasonable excuse is punishable with the same sanctions as those for exceeding the legal limit (RTA 1988/6). This is also assumed to include licence suspension, although it is not specified in the law materials presented for this report.

17.3.3. Standards for official physical evidence

Blood and urine tests. Blood and urine samples can be required under the same conditions as breath tests (RTA 1988/7). In addition, the police physician must support the police officer’s suspicion that the driver’s behavior might be caused by alcohol or drugs. If the physician cannot detect any impairment, a sample may not be required. The decision whether to take a blood or an urine sample is made by the police officer after consultation with a medical practitioner. The samples are analyzed in a forensic science laboratory (the Forensic Science Service in England and Wales).

Blood tests are not taken by physical force, since the RTA provides for sanctions in case of refusal. Refusing an appropriately ordered blood or urine test without a reasonable excuse is again an offense punishable by the sanctions mentioned above.

No information was provided about national guidelines or recommendations guaranteeing a uniform procedure in extracting and analyzing the samples. Further, the RTA does not provide for any powers to conduct roadside drug recognition field tests.

17.3.4. Testing devices

Intense research efforts have been implemented for the development of roadside screening devices. Two devices were under consideration at the time of the roundtable discussion; one was a sweat test, and the other a saliva test. Four police forces (three in England, one in Scotland) have recently conducted roadside trials to evaluate the practicability and acceptability of these devices.

17.3.4. Drug recognition training

The formal education of police officers in recognising the signs of a drug driver is virtually non existent in the United Kingdom at present. However, at the roundtable meeting, participants said that the reason for lack of training was a failure to recognise the magnitude of the problem. Where drug driving was suspected, the cost of following up a case could also be a constraint in some cases. Drug Recognition Training and Field Impairment Testing were being developed for intended use by police in combination with effective roadside screening devices, when such equipment becomes available.

17.3.5. Identified problems

The main problems in drugs-and-driving control measures reported by the police are:

- difficulty in recognizing the signs of a drug driver;
- no effective roadside drug screening device; and
- time delays in attendance of police physicians at police stations and the rapidity with which the effects of some drugs wear off.

17.4. Prosecution: Legal Provisions vs. Discretion of the Officials

Arrest. Police can arrest a driver without a warrant (RTA 1988/6 [4]): (1) as a result of a positive breath test on the driver; (2) if the officer has reasonable cause to suspect that the proportion of alcohol in that person's breath or blood exceeds the legal limit; or (3) if that person has failed to provide a breath specimen when required to do so and the officer has reasonable cause to suspect that the driver has alcohol in his or her body.

A driver who is required to provide a sample of blood, urine, or breath may afterward be detained at police station until the officer determines that the person is no longer impaired by alcohol or drugs, at that the person's alcohol concentration is not above the legal limit (RTA 1988/ 10). The purpose of this kind of arrest (conducting the blood testing, etc.) is to help guarantee traffic safety. It should not be interpreted as a "traditional" arrest of a person for the duration of the entire legal procedure (i.e., until conviction).

Prosecution. If both the police officer and the phsycian have determined impairment and if this is confirmed by positive blood sample, the prosecution will proceed. There are no means for the driver to avoid this proceeding. Thus, the only reasons for not prosecuting drugs and driving cases are:

- not enough evidence exists for a determination of impairment;
- the blood test was negative for drugs;

"Plea bargaining" is not possible in drugs-and-driving cases because there is no lesser alternative to "driving whilst unfit through drugs" that could be substituted in a plea bargain. The only scope for the defendant is to plead guilty and hope for a reduced sentence.

17.5. Regulations for Regranting Driver Licences

Drugs in general. Although no specific written information was provided about outcomes of a non- driving drug consumer, the following information has been extracted from DeGier (1993; pp. 51 ff.): According to the RTA (1988/92) a driving licence may be refused to any person who is addicted to euphoriants or other drugs, or who is not temperate in the use of alcohol.

Each applicant for a driving licence must sign a declaration whether he is suffering of any disability likely to be a source of danger to the public. This includes drug abuse or impairing medications. If such disability rises after the licence was granted the driver must notify the authorities. On request, the applicant's family doctor has to make a declaration pertaining to a person's medical condition.

If the authorities are notified of a person's drug misuse or dependency, a driving licence which is valid for one year may be issued after an interview with a physician and provided urine drug screening proves negative. Repeat screening is required every year for five years. If a urine drug test proves positive for drugs, the driver is suspended for one year (except for cannabis: six months). (These procedures were introduced in 1991 in anticipation of the EU Council Directive of 1991 about issuing of driving licences and determination of a person's fitness to drive).

The report does not contain information about the conditions under which police and courts notify the licensing authorities about drug consumption cases and the frequency of such notifications.

Drugs in road traffic. Convictions for offenses, according to RTA 1988/4 and 5, lead to disqualification from driving and / or suspension of a driver's licence for at least 12 months. This term may be extended up to 10 years for recidivists. In case of an accident involving the death of a person (RTA 1991/3), the minimum suspension period will be 2 years.

17.6. Prevention

There are no specific prevention efforts addressing the problem of drugs and driving, although the roundtable participants did discuss media campaigns against drink driving. However, because of the British field studies, government officials developed an awareness campaign in early 1998, when the Roads Minister issued a press release in which she revealed that the "scale of illicit drug use among people who have been killed in road accidents has increased considerably over the last decade."

17.7. Official Statistics

No statistical information was provided regarding prosecution and conviction rates for persons arrested, prosecuted, and / or convicted for driving under the influence of drugs. The reason for this lack of information is that the existing statistics do not differentiate between alcohol and drug cases. However, like most other European countries, the United Kingdom reports that the number of known drug cases is small compared to alcohol cases.

The experts provided the following figures, referring to 1997:

- 750,000 breath tests conducted;
- 20,000 blood samples presented to the Forensic Science Service for alcohol analysis; regarding drug analysis the figures are as follows: 1995-1996: 1,266; 1996-1997: 1,304; 1997-1998: 1,863;

- 108,000 official legal procedures were conducted in the past year (for alcohol and drugs), resulting in:

- 96,000 convictions (for alcohol and drugs), and

- 6, 400 prison sentences (for alcohol and drugs).

17.8. Political Aspects and Considerations Regarding Drug Policy

There is public and political concern that illegal drug consumption may cause road casualties. However, there is little discussion or acknowledgment that legal drugs can be a problem as well.

The drink-driving limit is under review in the United Kingdom, and comparisons are being drawn between the absolute quantitative, analytical nature of the anti-drink driving law and the more qualitative, behavioral nature of the anti-drug driving law. There is also a view that if roadside alcohol testing is possible, then a similar procedure should be possible for other drugs.

The prevailing public opinion regarding legal and illegal drugs depends largely on the drugs under discussion. Society supports harsh penalties for substances such as heroin and cocaine, and a more liberal posture toward cannabis. Opinion polls have shown that a small majority favor decriminalization of cannabis possession. Only slight differences on drugs exist between the major parties (Tories and Labour). Another party, the Liberal Democrats, have been more active in calling for a Royal Commission on Drug Use.

17.9. Roundtable Discussion

Britain is conducting a 3-year study on the incidence of drugs in road accident fatalities. An interim report on the first 12 months of data was issued in January 1998. The first half of the study (18 months) was due to be completed shortly after the roundtable discussion, which was held June 11, 1998, in London.

A new pilot feasibility study involving roadside trials conducted by the police was started in the Spring of 1998 to assess the field suitability and motorist acceptance of two methods of measuring drug presence. The drug screening devices involve: (1) collecting a specimen of sweat from the forehead of a driver, and (2) collecting a specimen of saliva from a driver.

Because of the unusually progressive nature of the British interest in drug screening studies, the roundtable discussion focused on some of the preliminary findings from the participants' work, particularly as it relates to field-testing the devices.

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“The relation between drug use, impaired driving and traffic accidents" - The results of an Investigation carried out for the European Monitoring Centre on Drugs and Drug Addictions (EMCDDA), Lisbon

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Professor J. CROWLEY

Our presentation concerns a study recently completed on behalf of the EMCDDA based in Lisbon. The study was formerly completed by the Health Research Board under contract to the EMCDDA; the Health Research Board in Dublin created a small team to do the study. We were asked to do a literature review; in other words, to try to scan to see what everybody else has written, in a relatively neutral, detached, and objective way. The period of the study was in the latter half of 1998. It extended into the early part of 1999. The study is not original, and I should also like to acknowledge, at a very early stage, how useful we found the work of Professor Krüger and Dr De Gier, among others. Our work is based entirely on available literature, much of which is contained in a detailed bibliography of a report to be published by the EMCDDA. The detailed bibliography contains an entire listing of what we came across and the literature review contains a commentary on some of the more important documents. We are neutral on policy recommendations and concentrated mainly on laying out the evidence from the literature. Today, we shall like to make some observations, which I hope will be useful for the very important task ahead.

There is an increasing concern across the EU member states and further afield regarding the connection between drug use, which is the use of licit medication, drug abuse, as in the use of illicit material, and the role that this plays in road traffic accidents. We all drive, and at a personal level, we say “what is coming towards me, is it somebody who has been drinking, or is it somebody who has some unknown attitude and impairment effects, because of medication in one form or another?” The concern is shared uniformly throughout the world. A debate on drug testing has also begun, raising the following question: “how do we check drivers?” The problem is, of course, that there are already in place extensive procedures for checking people for alcohol. This field is much more established, and as it turns out, much more defined. When it comes to drugs, the problem is that the effects are combinatorial, not fully understood, and there is interaction with alcohol. From the legal point of view, if there is to be a legal code on existence, there is a great challenge of measurability and of accuracy of interpretation. There are two particular foci of concern: the first is the side effects of licit drugs, which are used by everybody for medication purposes; and the second is the effect of illicit drugs, which are used, if I may use that term, for recreational purposes. Therefore, three stages of analysis emerge: the first is actually identifying the various effects of consuming different drug types, by different dosage amounts. The second is to link these effects with the human being's ability to drive, meaning the ability to perform various complicated tasks that we all take for granted when it comes to being in control of a vehicle. The third stage is the link between driving skills and any impairment to the skills that result from taking drugs and the tendency towards road accidents. There exists a large literature on that subject, and yet, in spite of that, it is still a challenge. Evidence concerning the effects of different drugs on driving skills is mainly experimental and laboratory-based at this stage, and there are difficulties in extending that into the general population of traffic. It is very difficult, for obvious reasons, to intervene in real-life driving. This is also true of simulators, although there are some good simulators available and many people feel that there is some future in this particular area in trying to gauge the impact of different levels of drug usage on driving skills.

Yet, even with simulators, there are ethical problems in administering certain amounts of drugs to subjects, to study their behaviour. Problems arise when generalising from the field studies available.

In general, the test procedures in the context of driving are still in their infancy. They are mainly offshoots of procedures that surround alcohol testing. Issues regarding methodology, economics, ethics and legality of various testing procedures must be considered and remain to be solved.

In the field of epidemiology, the relationship between alcohol and driving has been the subject of extensive research for many years, and has now settled down into a well-defined field. Clear results have emerged, people can now quote numbers and levels and incidences quite accurately. That is not the case yet for other drugs. In the field of medicinal drug usage, ambiguity still prevails whether some of the accident effects are actually caused by the medication or by the underlying causes of the medication; the classic example being somebody suffering from hay fever, taking antihistamines or other medications to bring the problem under control. Is sneezing, for example, which inevitably interrupts a person's concentration, a cause of the basic problem or is it directly connected to the treatment? It is often hard to compare the data from experiments and other studies with reference groups. Certain factors may occur in any event in the remainder of the driver population, so it is necessary, as Dr De Gier well pointed out, to uncover the additional incremental effects of these medications on the behaviour of those who have had accidents, rather than the driving population as a whole. A very significant fact is combinations with alcohol; drug traces in crash victims are often mixed with alcohol or other drugs and it is very difficult to isolate the specific effect, the incremental effect of a drug on top of the effects of alcohol.

Following our review of the literature, it is clear that volunteers and the people who tend to co-operate in performance tests, tend to be young, healthy, and non-drug-abusing volunteers. Therefore, they tend not to be representative of the general driving population. The post-drug administrative performance of these subjects is likely to be different between healthy volunteers and the sort of people who, in real life, are either patients or drug abusers. The timing of the testing turns out to be quite critical in that the testing is often fairly soon, or immediately after drug administration, so only the relatively immediate effects are demonstrated, and some of the more subtle side effects may be missed. Care needs to be taken regarding the construct validity of tests; at a European level, a great deal of work could be done on that subject to try to set an agenda and some of the ground rules for a series of experiments, which perhaps could be carried out simultaneously in a European research programme. There is also a need for well-conceptualised theories and paradigms underpinning basic models of driving behaviour, which are still very much lacking. Without these, it is very difficult to create a framework into which findings from various experiments can be inserted.

Finally, before I hand over to Dr Courtney, I would like to make some general comments about the simulation tests. We have not, we may be wrong, come across any simulator capable of representing every aspect of the driving act simultaneously; it is usually just a simplification. The artificiality of the situation when using a simulator undoubtedly affects one's motivation; it is not real and not based on actual conditions when driving at night, raining or when the driver is tired, which may all affect the results. Only the more automatic processors are associated with driving, such as those listed here: lane positioning, distance negotiation — all can be studied with ease. Difficulties arise regarding some of the more subtle attitudinal aspects, as well as some ethical issues, even in testing a human being's reaction to Doomsday crash situations under a variety of scenarios. There are also ethical issues preventing the administration of high doses of drugs to subjects, and therefore the results may not adequately represent the effects when “real” users are taking actual amounts.

I am now going to hand over to Dr Courtney, who is going to take you through a brief summary of some of the headline effects of the different substances that we have come across.

Dr Richeal COURTNEY

The evidence regarding behaviour under the influcence of alcohol can be summarised in a few sentences. Impairment, as already stated, has been correlated with definite levels of alcohol, so there is no need for me to go into this. Simulator and on-the-road experiments generally show that alcohol has deleterious effects on a range of driving skills, including break reaction time, collision frequency, lane control as well as on cognitive skills, such as risk-taking appreciation, decision making and planning. The causal effects of alcohol on impaired driving are very well established. Therefore, as has already been said, it has been possible to enact legislation based on a valid classification system, although this is not the case yet for other drugs. Again, the impairing effects of alcohol are generally potentiated by the presence of other drugs.

This is a short summary of the evidence in the literature regarding methadone. Experiments suggest that in naïve individuals, acute methadone administration gives dose-dependent reduction in reaction time, visual function and processing. However, significant psychomotor impairments were seldom evident for non-naïve subjects. The field studies showed that methadone did not feature prominently. In general, the effects of the opiates were slight compared to other drugs, such as benzodiazepine. As is the case with numerous drugs, methadone can potentiate the deleterious effects of alcohol. Experimental field studies suggest that methadone does not result in sufficient driving impairment to designate users as unfit.

Now, on to cannabis. Overall, experimental studies showed that cannabis does not significantly impair basic perceptual mechanisms. Cannabis impairs more subtle aspects of perceptual performance. For instance, attention and short-term memory, and these typically at higher dosages. Most experimental studies used low doses of cannabis, for obvious reasons. This does not reflect the dosages that could be ingested by heavy marijuana users. Field studies also indicated that cannabis was one of the most prevalent drugs in fluid samples taken from drivers. It was also complicated by the fact that alcohol was present as well. When mixed with alcohol, cannabis is much more likely to be a risk factor than if cannabis is consumed alone. The experiments often showed little consistency, even when similar dosages were given similar tasks. The sedating effects of these drugs may cause some impairment on psychomotor tests. However, field studies revealed that benzodiazepines are the most frequently detected licit drugs in all driver populations.

Interestingly, some authors have concluded that using benzodiazepines approximately doubles the risks of motor vehicle accidents; the risk being higher for drivers over sixty-five. Combining alcohol with benzodiazepines results in an added impairing effect on psychomotor performance. Another interesting finding in the literature was that some benzodiazepine tranquillisers might impair driving skills in the first weeks of treatment. However, the effects dissipated with continued use. Here is a crisp summary of the evidence concerning antihistamines. The experiments in the literature suggested that the peripherally active antihistamines were less likely to have impairing sedative effects than the centrally active ones. In general, the use of peripherally acting antihistamines is not likely to result in impaired driving performance. Antihistamines, which were slow to cross the blood / brain barrier, and thus produce tolerance without central effects are likely to have little deleterious effect on skill performance. However, the centrally active first generation agents commonly cause greater performance detriments compared to the newer, non-sedating second-generation antihistamines.

A little addendum as medical practitioners: doctors would recommend that their patients try the second-generation antihistamines. In good medical practice, the older generation antihistamines would not really have much use. Fields studies seldom suggest that antihistamines are causative factors in traffic accidents, as alcohol was also present.

As regards antidepressant medications, experiments suggested that antidepressants could have both beneficial and detrimental effects on psychomotor performance. They suggested that antidepressants might impair performance in healthy subjects taking the drug for a week or more. However, patient performance may actually improve as the result of the drugs relieving their depressive symptoms. Much more needs to be known about the effects of depression on driving abilities. A lot more research needs to be done in this area, and this is perhaps something the workshops could take up. No clear picture regarding antidepressant levels in drivers, responsible for accidents, has been compared to the wider driving population. However, yet again alcohol comes into the picture as an additive; yet, in the literature, we found that, where alcohol is combined with antidepressants, especially the more sedative ones, the worst impairments are generally seen in the initial phase of treatment, diminishing after prolonged treatment.

Regarding amphetamines: experiments suggest that at lower dosages, amphetamines have few effects on cognitive functioning, but at higher doses, risk-taking increases and responses become inappropriate. Lower dosages may actually enhance some psychomotor tasks. There was insufficient evidence to implicate amphetamine use specifically in traffic accidents, largely due to a lack of controlled studies. Only a few studies have directly examined alcohol / amphetamine interaction, but the results are somewhat contradictory. It is likely, however, that high dosages of amphetamines increase the impairing effects of alcohol. In general, there may be subjective positive stimulant effects with amphetamine use. These same effects, especially at higher dosages, could result in personality changes, leading to impaired driving. Regarding the relation between drug use and traffic accidents connected to ecstasy and other synthetic drugs, there is a very sparse literature available on MDMA, and other synthetic drugs; much more research is required to increase the understanding of this topic. Ecstasy tablets often comprise numerous potentially toxic constituents, the combined effects of which are largely unknown. There is very little evidence concerning the effects of GHB, ketamine, PCP, phentanol, and the abused diet drugs on driving abilities. Interestingly, as one would expect really, they have not been frequently detected in the field studies. Given the known side effects of these drugs, especially the perception-altering effects of some of them, noticeably PCP and phentanol, it is likely that they constitute a danger to driving.

Professor J. CROWLEY

We have attempted to over-simplify the position on these different drugs to demonstrate that, unlike alcohol, there is a family, or menu of different drugs. The effects are less defined, there are non-linearities, there are positives and negatives, and there are unknowns. There are combinatorial effects between the drugs, any of the drugs and alcohol, the latter still tending to dominate. In conclusion, this is a rough outline of the existing legal situation in the European countries. All member states have legal provisions for prohibiting driving under the influence of psychotropic substances, besides alcohol, in their traffic codes. However, there is no specific criterion in many cases related to specific drug types, the extent of usage, or the type of influence. Although legislation limits alcohol, no limits are given for drugs at present since there is insufficient evidence to define safe levels; since 1994, European pharmaceutical package inserts must contain a statement concerning the potential deleterious affects of the particular drug; but it will be some time before even this piece of legislation extends to cover all medications. One possible approach would be to give much more emphasis to police force training, so that the police become very knowledgeable and sharp in observing and spotting behavioural changes in suspects.

This particular thrust has been favoured in the US and has proved inexpensive and relatively productive. Standard drug testing of biological fluids generally consists of immuno-acid screening followed by gastro-chromographic maspetrometric conducted on a urine sample.

There are, at present, no roadside drug test kits in common usage, but there are several possibilities coming up on the inside track: one is a drug-wipe device, which has the benefit of being non-invasive, and is based on either sampling sweat or saliva from subjects, especially when testing for cannabis and other substance. Saliva testing is another possibility, a lollipop technology has been developed, which can detect cannabis or amphetamines or any other substances listed there. As mentioned earlier, there are techniques involving hair-test samples.

My overall, final impression, as we finish this literature review for the EMCDDA, is that alcohol continues to remain the biggest problem. The impact of drugs is often in the context of being used in combination with alcohol, which, in a sense, means that by catching somebody for alcohol abuse, one may also be catching many of the people who are involved in drug abuse. The incidents of drug abuse without alcohol seems to be a less problematic challenge. There is undoubtedly need for more experimental work and more epidemiological investigation, all the time homing down and fine tuning the precise impacts of the target drugs, the ones that one now sees as the most significant ones, especially when insisting on the matter from a secure legal point of view. Not all the impacts of drug use are negative. In the case of antidepressants, for instance, a person may actually drive better with the medication than without. It may well be that licit drug users can be approached or the problem of licit drug use can be tackled through the avenue of pharmaceutical package warnings, by getting at these licit drug users through the medical profession. It is an obvious channel of communication with this particular part of the problem. It has been said that it may well be that many of the users of illicit drugs, especially those who do not drink simultaneously, may not actually drive much. Therefore, this may also be an avenue of inquiry. Much work is needed to develop practical, in other words applicable, economic, in the sense that governments will be happy to fund and afford the techniques, not too invasive in view of the population at large, and especially from the point of view of the police legally reliable, roadside testing methods.

The Legal framework for efficient roadside testing

by Ms Melanie Mettke, University of Munich, Germany

1. Introduction

Law enforcement depends on police detection of legal offenders. Therefore, a major objective of the Council of Europe study on Illicit Drugs in Road Traffic has been to find out what range of powers each of the participating nations offers its police officers in order to detect alcohol or drug-influenced drivers.

As the Council of Europe study has shown, most European countries have grounded their "drug driving" legislation on the so-called impairment approach, that is, drug driving can only be sanctioned if there is evidence of an actual impairment caused by the drug. This evidence is difficult to achieve, which leads to great gaps in punishment.

In reaction to this unsatisfying situation, some countries think about aggravating their drug driving legislation by introducing zero-limits which only require certain cut-off values (analytical approach). Germany has already done so, other countries, as for example Belgium, are about to follow. However, a zero-limit will only make our traffic more drug-free, if police are able to detect drug-influenced drivers. For this purpose, police must receive drug-recognition training as well as screening devices for roadside testing.

From a legal viewpoint it has to be considered that screening devices will only fulfil their purpose, i.e. make detection easier, if police do not face major legal restrictions in using them. And this might appear to be a problem in many countries, as the following examples will show.

2. Relevance of screening devices under the impairment and under the analytical approach

(Illustration 1)

At first, it is useful to clarify the role of screening devices for the enforcement of impairment regulations on the one hand and analytical (zero-limit) regulations on the other hand.

As mentioned, sanctions under the impairment approach depend on the court being convinced beyond reasonable doubt that the driving ability has been impaired by the drug, that the driver has been unfit to drive. Courts tend to be very strict when considering the evidence of impairment. Besides chemical analysis of body fluids and medical examination they usually demand that the driver must have committed driving mistakes, or, at least, must have shown another evident behavioural disorder, for example not being able to walk straight, speak clearly and so on. Usually, this kind of evidence can only be presented by the police officer who has controlled and observed the driver on roadside.

The conclusion to be drawn is that regarding impairment regulations police detection is not the major problem. Courts will only convict if there has been an evident behavioural disorder, and an evident behavioural disorder is quite easy for police to detect. In other words: if there is an offence, it will appear as such quite obviously. Instead, the major problem under the impairment approach is the judicial and legislative restrictions which only a small number of "drug drivers", namely those with evident disorders, are addressed by the law.

Of course, in practice it often occurs that drug influence is not detected by the police although there are evident behavioural disorders, usually because the police only starts an alcohol investigation and neglects other possible interpretations, such as drug influence.

So it would be wrong to conclude that screening devices (as well as drug-recognition training) are not needed in these cases. They can help police to confirm an already existing suspicion and to focus attention on drugs instead of on other explanations for the driver´s behaviour. But they are not crucial for gaining suspicion.

Consequently, under the impairment approach the implementation of roadside drug screening would not lead to an overwhelming increase of conviction rates, because courts will only acknowledge that small number of cases where the driver has shown an evident behavioural disorder.

The situation appears to be completely different with the analytical approach, such as zero-limit regulations. Under the analytical approach, the legislative and judicial requirements for a conviction are lowest. Every driver with any amount of drug in his body falls under the legal provisions, regardless of any behavioural disorder. But how is the police supposed to detect a drug-influenced driver if he shows neither driving mistakes nor other evident behavioural signs? This is where screening devices have their crucial function.

Consequently, each country thinking about introducing a zero-limit toleration / law must provide for an improvement of the detection situation in two respects:

1. Practical detection situation: the police must receive training and efforts must be placed into developing reliable roadside screening devices.

2. Legal frame: Police must receive sufficient legal powers to apply roadside screening in an effective way.

Of course, at the present time, no country has specific legal provisions governing the use of roadside drug screening, as such devices are not yet available for use on a regular base. But some day in the future, they will. It is interesting to examine, therefore, how legal regulations for roadside drug screening should be drafted in order to guarantee effective police detection, and how they will appear in different nations.

An indication for future regulation of drug screening can be drawn from the way in which a nation has regulated alcohol screening by breathalysers. Such regulations do exist in almost all nations.

3. Regulations for roadside testing and the conflict between police efficiency and constitutional rights

(Illustration 2)

The basic difficulty in setting up a balanced regulation system for roadside screening lies in the conflict between effectiveness of police enforcement work on and the constitutional rights of the drivers, which include utmost freedom from physical infringements by the police.

When considering law enforcement efficiency, police should face no major legal restrictions in using tests, that is,the police should be able to use them whenever it seems to be appropriate and drivers should have no option to refuse.

When considering the drivers` costitutional rights, there should be legal regulations that guarantee that only law-breaking drivers are affected by police controls and that law-abiding drivers are — for the most part — let free.

Correspondingly, there are two extremes of possible regulations:

The one extreme is to admit police controls and roadside testing on a random base, that is, without any suspicion or other restrictions of situation. This would mean that the decision which driver to test is entirely left to the police officers discretion.

The other extreme is to admit roadside testing only when there is substantiated suspicion that the driver is under substance influence. This requires behavioural or physical signs or disorders.

Within those extremes there are interim steps, especially:

- admitting roadside testing against any person involved in an accident, not requiring a specific suspicion, or

- admitting roadside testing at roadblocks on special occasions, for example roadblocks at night-club events.

The decision of which frame to choose depends on each nations legal tradition and its interpretation of the conflict described above. Thus, the Council of Europe's Study has shown that there are some major national differences regarding police powers to conduct roadside alcohol testing.

4. Regulations for roadside alcohol testing

(Illustration 2)

The following shows the steps of an alcohol testing procedure and how they are regulated in different nations.

1. Stop the driver

The first step in traffic controls must be to stop the driver. As far as our information reaches, most nations allow police to stop drivers on a random / routine basis, that is. without any suspicion or other restrictions, just in order to have a simple look at the driver, his license, or his car. Of course, the power to stop a driver does not include the power to conduct breath testing. It only enables police to have a first look at the driver for detection of suspicious behavioural or physical signs.

2. Breath testing

The police powers for ordering breath testing differ extremely between nations.
While some nations admit random breath testing, others demand that police must already be suspicious of alcohol influence. Some nations have chosen a middle solution: a suspicion is not necessary. Breath tests can also be conducted in special situations or occasions, such as involvement in an accident (that is, all persons involved in the accident can be tested, not only those who have probably caused the accident).

3. Consequences in case of refusal

Breath tests cannot be conducted by physical force. They depend on the co-operation of the driver who has to give a sample of his breath. The efficiency of police work depends on the consequences of refusing the required breath test. If no consequences or only minor consequences occur, refusals would be provoked.

The most efficient way to avoid refusals is to impose the same sanctions as would apply in case of alcohol influence. Illustration 2 shows the countries in which this is the case. The strictest regulation can be found in Austria which sanctions refusal like an alcohol concentration of 1.6 – even though the standard alcohol limit is 0.5 and 1.6 is a limit for higher sanctions.

Another approach to avoid police efficiency being affected by refusals is through the use of mandatory blood sampling — as is the case in Switzerland.

Problems face the Czech Republic, which imposes sanctions for refusal but on a much lower level than sanctions for a proven alcohol influence. This provokes refusals.

A special situation exists in Germany. The German police has no written legal power to conduct breath testing, and thus, breath testing can only be done with the driver´s consent. By law, a driver who refuses to co-operate would not face any consequences. But so far, the German police relies on the goodwill of the drivers who usually do not even know that they are not obliged to co-operate, and this works very well in practice.

4. Blood sampling

Regarding the requirements for ordering blood samples, the situation is similar across all nations. Blood samples can never be taken on a random base. There must be suspicion, or at least, as in the United Kingdom, accident involvement. This bases on two grounds:

a. Unlike roadside tests (breathalysers), which also act as preventive measures, that is, preventing danger for others by immediately stopping a substance-influenced driver from continuing his journey, blood samples can only be used for prosecution purposes. Moreover, investigation methods for prosecution purposes naturally require a suspicion that an offence has been committed.

b. The second reason for requiring a suspicion is that all nations highly appreciate the physical integrity as a basic constitutional principle and thus set up stricter restrictions for testing procedures with physical infringements than for those which do not touch upon physical integrity, like breathalysers.

5. Administration of blood sampling by physical force?

In contrast to breath testing which depends on the driver´s co-operation, blood sampling can, if necessary, be conducted by physical force, against the driver´s will.

The majority of countries concerned, however, do not allow the use of physical force; blood testing is dependent on the driver´s co-operation and the driver can refuse. The reason for this again is the high value placed on physical integrity and consideration or an offender's dignity. Both are constitutional principles in these nations.

But, of course, refusing is not free of consequences. As already shown above, most nations help themselves by imposing the same sanctions for refusal as would apply in the case of proven alcohol influence.

Thus, in the outcome, it does not make any difference for the driver if blood sampling can be forced or if he has the right to refuse. In the end, he will receive his sanction, anyway.

5. Conclusions with regard to drug testing

To summarise, major differences between nations exist regarding the conditions under which roadside alcohol testing is permitted (random testing versus testing only in case of suspicion).

What does this all mean for drug screening?

The more restrictions a nation imposes for breath testing, the more restrictions it will presumably impose for drug testing. In other words: a country which does not permit random breath testing will definitely not permit random drug testing.

This causes a problem. As described above, the major difficulty in the enforcement of analytical regulations, which by their nature do not require behavioural disorders, is the detection of drug-using drivers. Screening devices are crucial in order to gain a suspicion for further methods, particularly for blood sampling. But if drug screening itself depends on an already existing suspicion, it can be no help in gaining the suspicion.

The conclusion is that drug screening can only improve the detection situation, if it is not bound to the requirement of suspicion. In many countries, however, the legal basis for such broad testing powers does not seem to exist.

But also regarding those countries who admit random breath testing, the question arises if they would allow parallel powers for drug screening.

Alcohol and drug-screening methods are not entirely comparable regarding proportionality and affection of drivers` constitutional rights for the following reasons: alcohol testing is broadly accepted among the population and does not impose any meaningful physical or moral burden on the driver. The situation is different regarding drug tests. Some of the presently available drug-screening methods impose a much higher burden on the driver. In particular, sweat and urine testing requires a complicated and inconvenient testing procedure and also touches on a personal feeling of shame. Also, it has to be considered that by ordering drug screening, the police suggest that the driver has been involved with drugs and thus with illegal activities. This also makes the testing procedure more embarrassing for the driver than in the case of alcohol as alcohol consumption is socially approved.

These considerations demonstrate that, when comparing both procedures, it would be much more difficult to justify random drug testing than it is to justify random alcohol testing.

All these aspects must accompany discussions on implementing analytical limits for drug-using drivers.

Illustration 1

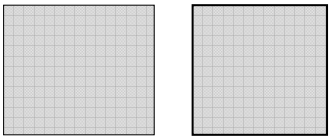
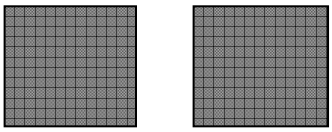
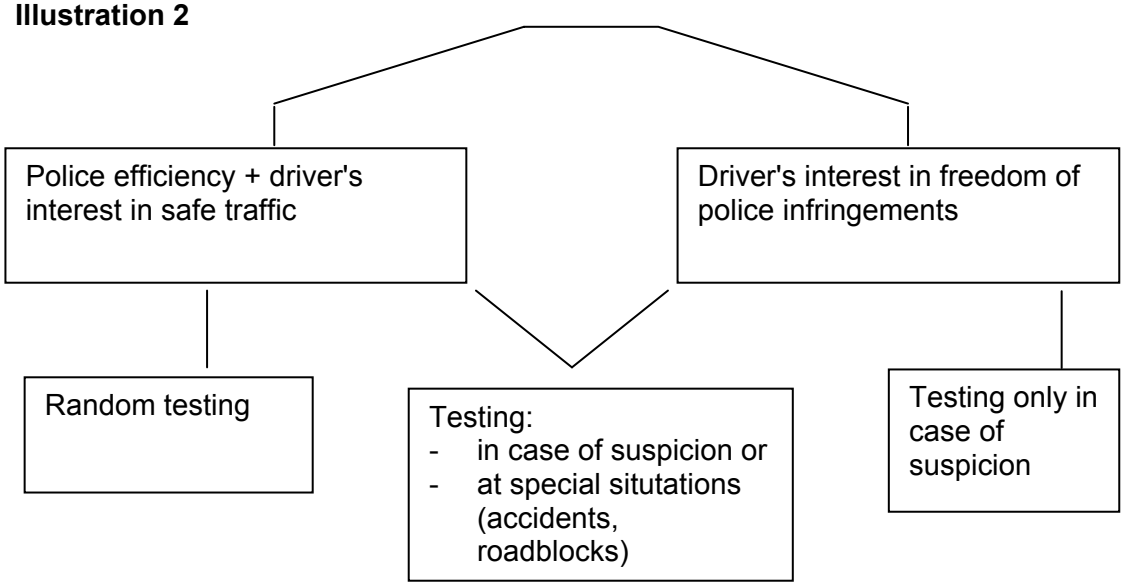
	Impairment approach		**Analytical approach (zero-limit)**
		All drivers under the influence of drugs 	
Legislative and judicial requirements	• Chemical analysis • Medical examination • Behavioural disorders		• Only chemical analysis
Police detection	Easy to detect, screening devices only supporting function		Difficult to detect, screening devices crucial function

Illustration 2



Steps of a roadside testing procedure			
Stopping driver	On a random base *most countries*		
Ordering breath testing	On a random base *Austria, The Netherlands, (Germany)*	On suspicion + accident involvement *Italy, United Kingdom*	Only in suspicion *Czech Republic, Switzerland*
Reaction to refusal of breath testing	Severe sanctions/as if under alcohol influence *Austria, Italy, Spain, United Kingdom, The Netherlands*	Mandatory blood sample *Poland, Switzerland*	Low/no sanctions *Czech Republic, Germany*
Ordering blood testing	On a random base *none*	On suspicion + accident involvement *France, United Kingdom*	Only on suspicion *Rest*
Enforcement of blood testing/reaction to refusal	Physical force admitted *Germany, Sweden, Switzerland (exceptional)* Severe sanctions/as if under alcohol influence *Austria, Italy, Spain, The Netherlands, United Kingdom*		Low sanctions *Czech Republic*

As not for all countries complete information was available, the illustration only cites a choice of countries for each aspect.

Road traffic and drugs: introductory report about legal provisions, difficulties faced by police, and analysis of prevention attemps in selected European countries

by Prof. Hans-Peter Krüger, University of Würzburg, Germany

The following paper provides an overview of the results of a study conducted by the research group of Krüger, Perrine, Mettke, Huessy, and Schöch. The full report[25] comprises one portion of the conference materials. This paper addresses:

- the objectives and design of the study;
- the results concerning legislation from the perspective of drugs in society and the perspective of drugs in traffic;
- the main problem areas relating to the drug problem in traffic; and
- a short summary with conclusions that should be discussed during this symposium.

Objectives and design of the study

The study addresses illicit drugs and road safety. The term “drug” has no standard definition among the different countries. However, the most commonly understood meaning is “psychoactive substance,” which is defined as a substance that affects or alters the function of the central nervous system. This occurs via:

- medications, either prescribed by physicians or sold over the counter;
- legal drugs such as alcohol; and
- drugs that are not legally permitted, or that are otherwise used illegally.

Here, we will use the term “drug” in the sense of illegal drugs. However we are aware that most of the problems mentioned in this paper will also hold true for psychoactive substances generally.

The study by the research group tries to provide information about:

- existing and pending laws among selected European countries regarding the use of illicit drugs among drivers;
- difficulties faced by police, prosecutors, and courts with respect to illicit drugs in road traffic; and
- prevention measures.

The twelve participating countries were: **Austria, Belgium, the Czech Republic, France, Germany, Italy, the Netherlands, Poland, Spain, Sweden**, **Switzerland,** and **the United Kingdom**.

The project involved three phases within each of the twelve participating member states:

1 see Krüger's report page…

- identification of drug and alcohol specialists in agencies of justice, police, public health, and transportation, as well as research organisations;
- data gathering via questionnaire; and
- follow-up with roundtable discussions in each of the selected countries.

The study is a significant part of the initiative and the ongoing efforts of the Pompidou Group at the Council of Europe to combat drug driving. The project personnel greatly appreciate the creative support of the Pompidou Group Secretariat. Also, the survey would not have been possible without the willingness of many people to contribute to this wide-ranging effort, by answering the questionnaires and / or by participating at the roundtable discussions. We are especially grateful to these individuals, whose participation made each roundtable fruitful, informative, and unique.

In the meantime, the questionnaire has been adopted by the DG VII of the European Union and was sent to countries of the EU that had not taken part in our study[25a].

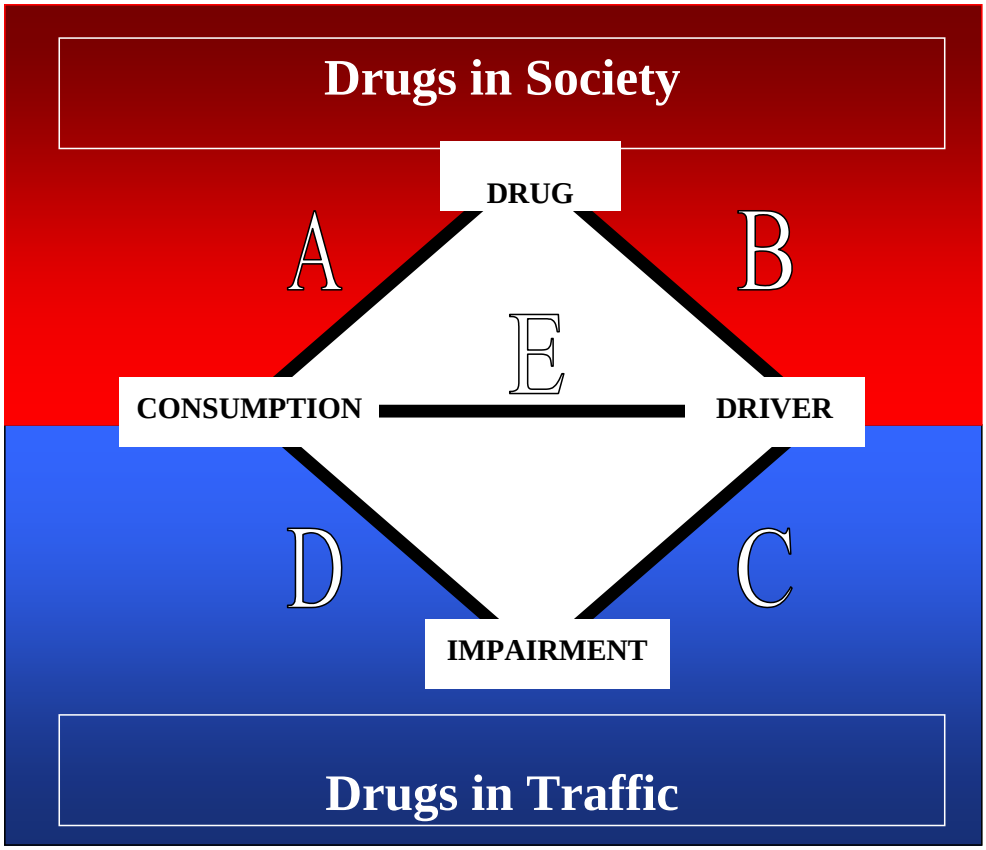
Results concerning legislation

The legal regulations should be divided into two categories:

1. legal regulations concerning drugs in general and their use in society, and
2. regulations concerning drug driving. Later on, it will be shown that these two domains are not independent from one another. The following figure shows the critical targets of legal regulations and the different aspects of each problem area, identified here by letter and discussed in detail in this section.

[25a] The definite versions of the report (pp. 62) and of the Appendix (pp.86) comprise supplementary information concerning five additionnal countries.

Figure 1. Graphic model showing interrelations of drugs in society and in traffic, in terms of critical targets of legal regulation regarding the drug, the driver, consumption, and impairment aspects in five crucial problem areas.



Drugs in society

Problem area A: legal regulations against drugs

Concerning the problem domain "drugs in society," there is a general consensus among all countries that the fight against illicit drugs is founded in criminal law. All of the participating countries have agreed to the respective United Nations conventions and have incorporated those principles into their national laws. Special emphasis is given to combating organised crime. Thus, in a very formal sense, there is no difference among the countries at all. In particular, the sanctions against drug dealing are very comparable.

However, most countries are confronted with the problem of having an increasing number of drug consumers. These countries are forced to search for ways to handle the problem pragmatically, especially regarding the use of cannabis. Obviously, it is not possible to make a large portion of a country's youth criminal without imposing serious consequences on society. This problem leads to:

- a sharp separation in legal consequences between consumers and dealers,
- discrimination between different classes of drugs as being more or less tolerable,
- differentiated determination of the specific quantity of drug tolerated for possession (from a certain number of grams to "what fits in one's hand"); and

- different legal reactions to drug consumption, based on the circumstances of where and how the drugs are used.

Large differences exist in the way in which these exceptions are legally regulated. Most countries do not punish consumption. Some allow dismissal in the case of possession of small quantities for personal use. Others recommend only small fines in “petty cases”.

Thus, with regard to those pragmatic exceptions to the general rule, the formal homogeneity between the countries breaks up into a quite heterogeneous dealing with the drug problem — more specifically, the cannabis problem — giving the impression of more or less liberal solutions all over Europe.

Another important influence on the way in which countries address the drug problem stems from the economic resources of a country. Fighting the drug problem is very expensive and requires well-educated police forces, a high standard of toxicological testing, and well-planned and carefully implemented prevention programme. By virtue of their not being able to meet the costs of an efficient drug-fighting programme, the Eastern European countries are especially forced to take a more liberal position, but they do this against their will. Co-operation with and support from the other countries are clearly needed.

Problem area B: using traffic law as a tool for combating drugs

In some countries, the potentialities of administrative regulations for license suspension and regranting are used as additional tools for combating drug consumption. Even if drug use is not linked with actual road traffic activity, some countries nevertheless use the consumption or possession of drugs as an opportunity to re-examine the qualifications of the user to drive a car. For example, if only a small amount of a drug is found on a person in Germany, the court can refrain from punishing the individual. In such a case, criminal law thus waives the claim for punishment. Simultaneously, under administrative law, this person’s driving license can be revoked, even though he or she never actually drove under the influence of drugs and his or her drug consumption was completely separate and independent from being on the road. This practice is a clear and deliberate instrumentalization of traffic legislation for drug control, because neither impairment nor endangering others by driving is the basic reason for the administrative act.

Drugs in traffic

All countries agree unanimously with the statement that road traffic without drugs is better than road traffic in which drug users are present. From the perspective of traffic legislation, the aim of the regulation is the existence of traffic in which nobody avoidably endangers another person. In the case of psychoactive substances, this aim leads to a series of questions:

Problem C: Should only the impairment be punished, subsuming drugs under other detrimental influences?

Problem D: Should a certain drug concentration be punished, assuming that this level causes detrimental effects in the “average driver”?

Problem E: Should drug consumption in conjunction with traffic activity be punished?

Problem area C: the impairment approach

Regarding the basic aims of traffic legislation, this approach is the most straightforward one. Independent of the reasons that led to impairment, the driver is prohibited from operating a vehicle in any state of compromised fitness. All of the countries provide sanctions against driving in the case of actual impairment. Therefore, in all countries, it is possible to sanction drug driving under conditions in which impairment is proven. The grounds for penalizing the driver is the state of impairment, not the presence of the drug. From a legal point of view, this is a “clean” solution with no impact on the constitutional rights of the person and with no need to refer to the problems of drug consumption. As an internal standard of traffic legislation, the impairment approach is also independent of the public discussion about drugs.

Problem area D: the concentration limit approach

The basic handicap of the impairment approach is the fact that evidence of reduced fitness as a consequence of drug consumption is difficult to obtain and to prove. In earlier times, we had the same situation in the case of alcohol-induced impairment. But about a hundred years of research have led to an impressive body of knowledge about the effects of alcohol on all psychophysiological functions. This knowledge yielded the bases for setting **per se alcohol limits**, above which a driver is assumed to be impaired, and law enforcement does not have to prove the behavioural impairment in each individual case. The establishment of limits for alcohol concentration could therefore be scientifically established and justified, thereby creating the basis for effectively handling the problem of drink driving in the general population.

In the case of drugs, however, the situation seems to be almost hopelessly complicated. There are many different substances, each of them with complex pharmacokinetic properties, unknown metabolic characteristics, broad effects on heterogeneous psychological functions, and unknown tolerance from habitual consumption. Thus, all legislation based on evidence that a drug was responsible for poor driving performance presents itself with almost insoluble difficulties. This dilemma leads to the widespread practice of the courts to punish for alcohol or other offences, even in cases where drug consumption was probably the cause of the driving violation.

The same problems hold true for medications with psychoactive effects. Their complex pharmacology will not allow simple regulation based on concentration limits, or regulation based on the definition of classes of substances prohibited for driving. Given that millions of drivers are under the influence of necessary medications and also that the performance of most of the drivers is improved by the very medication prescribed, the problem is most likely not solvable.

The per se concentration limit approach is attractive to the extent that scientific justification of the limits is available. Only in the domain of traffic legislation can one substitute individually proven impairment with reasonably assumed impairment.

Problem area E: the zero limit approach

Recognising the difficulties of an impairment approach to the problem of drugs, some countries are attempting to introduce **zero-limit-regulations** for drug concentrations. To avoid the problems of the impairment approach, and lacking scientific justification for any limit, there is a tendency in some countries toward establishing a zero limit for drugs, as was introduced first in Germany. The legal limit is set to a concentration that can be uniquely detected by toxicological methods. In fact, this is actually a zero limit with a built-in error tolerance.

Another difficulty arises at this point. Concentration limits must be formulated with respect to a particular body fluid — be it blood, urine, saliva, or sweat. Concentration limits in blood are seen as the most relevant ones because these concentrations show the highest correlations with psychophysical functioning. Drug concentrations in urine provide measurement "backward in time", indicating previous consumption. The distribution characteristics of many important substances from blood to saliva or sweat are as yet not fully understood. Therefore, to date, blood seems to be the most relevant specimen for determining an actual detriment in performance caused by a drug, followed by urine – which normally cannot itself be used as legal evidence of actual impairment. Therefore, if presumed impairment by a drug is the basis of a zero-limit regulation, blood will be the only specimen with evidentiary power.

At this point, the two issues of dealing with the problem of drugs in society and of drugs in traffic fall together. The inability to detect and prove impairment reliably lead to the same zero-limit solution as in the case of regulations penalising people for drug use "wherever you can find it".It is not our aim to evaluate this result. But it must be evident that a regulation apart from the impairment approach cannot be a model for the legal treatment of licit drugs, such as medications.

Problem areas in fighting drug driving

The study reveals a group of problems linked with drug driving, its detection, and prosecution. All of these problems present constraints involving:

1. legal provisions (either absent or too narrowly defined to be effective),

2. practical problems experienced by police at the grassroots level,

3. medical and toxicological shortcomings, and / or

4. absent or ineffective prevention efforts.

Therefore, the best way to demonstrate those problems may be to pursue a single case of drug driving, beginning with the problem of how such a driver is detected, and ending with the question: under what conditions should his license be regranted? These steps — and in the same manner, the problem areas — are displayed in Table 1.

Table 1. Flow diagram showing the procedures, questions, and problems in the steps of processing a suspected drug driver, from detection to medical examination to prosecution

Domain	Procedures	Questions	Problems
DETECTION	Traffic	Control mode? Random block allowed?	Police strategy and tactics
	⬇		
	Selecting one driver	Suspicion necessary?	Constitutional rights
	⬇		
	Field testing	Behavioural tests? Instrumented test? Which specimens?	Differential experience Drug recognition programme
	⬇		
MEDICAL EXAMINATION	Testing by the physician	Behavioural tests? Toxicological methods?	Experience of the physician Standardisation
	⬇		
PROSECUTION	Immediate consequences	License suspension? Seizure of the car?	Legal regulations
	⬇		
	Further consequences	Severity of punishment? Discretion? License revocation? Non-penal consequences (e.g., insurance costs)?	Effectiveness of legal measures

Police strategies

The first and primary problem is to detect the drugged driver. Which police strategies are efficient? Is it, for example, a good idea to apply the successful experiences and strategies used with drink driving?

A number of studies have shown that drugs are common among adolescents and young adults whose lifestyles are closely tied to popular culture. The typical drinking driver is quite different from the typical driver under the influence of drugs. Many of these latter drivers are young people travelling long distances to attend special events such as rock concerts or raves; driving to local or distant discos; and driving with several passengers headed for the same destinations, with the intention of consuming drugs together.

Given these lifestyles, police detection strategies must be shown to be effective. What is the typical pattern of a drug driver's trip? When does the trip take place? Which types of cars are used? Does such a trip typically involve single drivers or cars with passengers? Although the exchange of experiences among the traffic police from different countries has begun, it needs to be intensified, especially between eastern and western European countries. Such working groups should also include experts who are not in law enforcement.

The problem of field testing

Once the police stop a driver, the officer typically experiences further difficulties in detecting the level of intoxication and obtaining sufficient evidence for a successful prosecution. There are many different regulations governing the circumstances under which a driver can be required to give a blood or urine sample.

While some countries allow biological testing without the person's consent (the test is forcibly administered), the majority require specific consent. However, these countries create pressure on drivers to co-operate by imposing sanctions in case of refusal.

These different approaches are based on different assumptions about the constitutional rights of the person. Such rights might be based on the assumption that preserving the physical integrity of the person is of paramount importance, or they might be based on the assumption that a person cannot be forced to incriminate him- or herself by actively co-operating in providing a sample. Usually, however, these sampling procedures can be undertaken only if there is sufficient evidence that an offense has been committed, so-called "probable cause". However, because the police are the ones who must obtain such evidence, the officers themselves have to take responsibility for doing so. This situation frequently results in very cautious, conservative practice — as a way to avoid errors. The same holds true for police procedure in testing behaviour impairment at the roadside.

Thus, the effectiveness of drug-driving enforcement depends not only on unequivocal regulations about which drugs are prohibited at what concentrations, but also on clear-cut regulations for the police, regarding proper procedures for obtaining evidence. Regulations that facilitate detection and evidence of drug driving will necessarily also create burdens for the average driver who does not use drugs – a price that must be paid if society wants effective enforcement of drug driving.

Two important ways to improve the effectiveness of enforcement appear possible. The first is to introduce screening devices for drug consumption (analogous to breathalysers); the second is to implement drug recognition programme for police. Most of the current screening devices sample saliva, but some use urine or sweat. The most reliable screening results are obtained from urine tests, but they impose interpretation limits on the assessment of the actual state of impairment. In addition, the urine sampling procedure does not seem to be appropriate for field use. Saliva and sweat testing devices are still under development and have not yet reached an acceptable level of validity. Thus, there is currently no rapid, valid, feasible screening device for use in the field. In the meantime, however, an interim aid is available in lieu of such a device: drug recognition programme for police.

Although the need for drug recognition programme is widely accepted in the participating countries, it is clear that significant differences will arise in how they would be developed and implemented. The modification and adaptation of programme already in place in the United States, where they were first developed and implemented, would be costly and subject to legal constraints if they were simply transferred wholesale for use in Europe. Therefore, the drug recognition programme is still only just beginning in some countries. Nevertheless, there is a clear, recognised need and a unanimous willingness throughout all of the participating countries to co-operate in the development of an appropriate European version of the drug recognition programme.

Problems with medical examination and toxicological procedures

The next problem area is reached when the suspected driver confronts the forensic physician. In some countries, strong efforts are in place to develop and evaluate standard procedure and protocol for the medical examination, including the selection of appropriate behavioural tests and meaningful observations of the driver's behaviour. Here, a common effort among all European countries toward such standardisation would be highly desirable. Comparable efforts have been undertaken in the field of toxicology. That is, currently two initiatives by the EU have been made that would standardise toxicological procedures and quality control of the laboratories that examine drugs in body fluids. Despite this positive beginning, more still needs to be done.

A new and interesting problem has arisen in some of the countries that have recently developed improved police training procedures for detecting drugs. With the increase in training, the number of drivers detected with drugs has increased. However, when the suspected drivers appear before forensic physicians who have had less training in drug detection, the physicians have failed to detect the same symptoms as the officers and have concluded that such drivers were “not impaired”. This happens particularly in rural regions where no specially trained physicians are available. Thus, improved training techniques for police officers should also be taught to forensic physicians.

Problems in prosecution

Immediate consequences

The effectiveness of deterrence is founded on three bases:

1. certainty (of detection),

2. celerity (of reaction), and

3. severity (of consequences).

Apart from the lack of certainty, police officers often complain that they are unable to proceed with processing a driver they know to be under the influence, because of the time it takes to obtain a result from toxicological testing. There are few legal regulations available — for example, for preliminary suspension of the license or seizure of the car — that allow processing based alone on behavioural signs of impairment or based alone on positive results from a screening device.

Further consequences

Detection of drug impairment by police does not necessarily result in a judicial conviction, which depends instead on the discretion that prosecutors and judges exercise in such cases. Across all nations in this survey, there is a lack of statistical data regarding this question.

Statistics about police reports of drug drivers, dismissals of prosecutors’ decisions, and charges or indictments before courts either do not exist or — if they do exist — are maintained for internal purposes only and are not available to the public. Different national approaches exist regarding prosecutors’ discretion in deciding whether to prosecute a case or to dismiss it. Some use a “legality principle”, whereby prosecutors are generally obliged to proceed with prosecution in each case, assuming sufficient evidence exists. However, these countries also allow prosecutorial discretion under certain circumstances, particularly in petty cases. In contrast, other countries not using the legality principle generally allow prosecutorial discretion.

In practice, however, these different theoretical approaches do not lead to major differences in how laws are enforced. In petty cases, a prosecutor working under the legality principle can use his or her discretion and, in serious cases, a prosecutor who theoretically has discretion will decide to prosecute anyway.

Often more important than the punishment itself are the consequences of license revocation, suspension, and regranting. In all countries, drug-impaired driving leads to suspension or even revocation of the driver’s license; but restrictions for regranting vary. In the majority of countries, the decision to suspend and / or regrant is up to the administrative licensing authorities, who can require the offender to undergo medical examination, including urine and hair testing for post-arrest determination of his pre-arrest drug consumption habits.

Often, license regranting is conditional upon a prerequisite of “proven abstinence” across a long period of time and assumes that drug consumption and participation in road traffic are incompatible. This is in obvious contrast to alcohol, where the assumption that “controlled drinking” — in which drinking is separated from driving — is possible and allows for regranting of the driver license.

Prevention

Last, but not least, the problem of prevention must be emphasised. The basic question here is: do the classical countermeasures and instruments for deterring drink driving also apply to combating drug driving successfully? The typical drinking driver is quite different from the typical driver under the influence of drugs. Little is known about the extent to which young drivers are influenced by, or are even aware of, legal regulations, especially given that detection rates are so low. Very little effort has been expended either on understanding or addressing (not to mention solving) the problem of drugs and driving from the perspective of the most common drug consumer: the young user. There is a complete lack of research comparing and contrasting drug-driving behaviour, attitudes, and perception of sanctions in the different European countries.

Prevention policy is also confronted both by the divided popular attitudes towards drugs and the political approaches to drug problems. Despite basic and official rejection of drugs, there is a practical need to tolerate at least some degree of drug consumption, especially cannabis. This willingness to tolerate some level of drug use, but reluctance to legalise it, makes it nearly impossible to address the problem of drug driving with the same effectiveness of relatively simple alcohol campaigns such as “If you drink, don’t drive”. The strategy of silently tolerating a drug in general and outside the road traffic domain, but officially penalising its use prior to or during driving, hinders the implementation of traffic-specific prevention programme with clear-cut recommendations for young people on how to handle drugs-and-driving situations.

Summary

To conclude a paper that identifies many problems and deficiencies, we want to emphasise some points that have been discussed throughout all of Europe.

Drugs seem to be nearly everywhere in Europe.

No country is immune from the effects of drugs on its young people.

There is a general willingness among the surveyed countries to counteract the drug-driving problem.

There is a clear and distinct willingness to co-operate on this issue across the fields of law, law enforcement, medicine, and public policy.

In order to achieve goals in reducing drug driving, less developed countries seem to expect support from more developed countries.

There is unanimous agreement that drug driving is a Europe-wide problem that should be solved on a common European basis.

The Belgian legislation on Drug Driving

by, Mr Claude Gillard, Criminal legislation department,
Ministry of Justice, Belgium

Driving while in a drunken-like state, resulting from the use of drugs or medication was already banned under section 35 of the Belgian Road Traffic Act. However, the act specified neither the type of substances to which it referred, nor their level of concentration or screening methods. Furthermore, under general criminal drug legislation, drug use alone, unlike drug possession, is not an offence.

Consequently, problems were encountered with drug checks, particularly when carried out on people leaving discos and in the case of drug tourism where people cross over into the Netherlands in order to use illicit drugs and then drive back to Belgium, but without taking any drugs with them. In cases such as these, drug screening, notably in the form of urine testing, can only be carried out on a voluntary basis.

A bill was drawn up in an attempt to overcome these problems. In order to allow for any future changes in detection methods, the types of substances covered and their concentration levels, it provided that such matters would be governed by implementing orders. However, this approach was rejected by the legislation division of the Belgian Conseil d'Etat which held that, given the strict interpretation of criminal law, the types of substances, concentration levels and screening methods must be defined in the act itself.

Moreover, the bill would not have have resolved a number of problems of a more practical nature, concerning, for example:

- the use of medication;
- the codeine contained in certain syrups;
- the possibility of testing positive as a result of passive drug-use;
- the fact that, depending on the kind of test, concentration levels can vary significantly according to when the test is carried out; and
- patients receiving morphine treatment.

In order to deal with these problems and forestall certain objections expected from parliament, a preliminary scientific study was carried out and incorporated in its entirety in the document submitted to parliament, and an exhaustive presentation of the study preceded the parliamentary debate.

Thanks to this preliminary scientific approach, the bill passed through parliament unanimously without any amendments, which is rare with drug-related issues.

Belgian drug-driving legislation is therefore henceforth governed by the act of 16 March 1999 which came into force on 9 April 1999.

The main features of the act are as follows:

1. Banned substances

- THC (ie. active ingredient found in cannabis)
- Amphetamines, including MDMA, MDEA, MBDB
- Morphine
- Cocaine

2. Screening methods

- Battery of visible tests (eg. eye pupils);
- Only if the external test results are positive: immuno test based on urine analysis. The act establishes an obligation to submit to the test, with refusal taken as a positive result;
- Only if the external and immuno tests are positive: blood test

3. Concentration levels

The act is based on the zero-tolerance principle. The levels defined in it are consequently detection levels.

4. Measures taken

- Twelve-hour driving ban, renewable by six-hourly periods
- immediate disqialification ordered by the courts in cases of, for example, dangerous driving
- in the event of disqualification from driving, the courts are obliged to make reinstatement subject to proof of abstinence.
- sentencing:
- Fifteen days' to six months' imprisonment
- fines ranging from FB 4,000 to FB 400,000 (100 to 10,000 euros).

5. Rules of application

A royal decree promulgated on 4 June 1999 and published in the *Moniteur Belge* of 8 June 1999 establishes standards for the batteries of external tests and defines the official procedure for taking blood and urine samples.

An approval procedure is also under way with respect to urine tests and the laboratories authorised to analyse blood samples.

Problems in Legislation against drugs when Benzodiazepine are included

by Mr Hans Laurell, Swedish National Road Administration, Sweden

I will be talking about even more recent legislation than the Belgian one, because our new law in Sweden was passed by our parliament on 25 March of this year. I would like to apologise for the title of my presentation, I realised only too late that benzodiazepines are not a special problem in this respect. All the prescribed drugs represent the same types of problems, so I do not want to especially point to benzodiazepines.

Sweden has for many years, which will be implement on 1 July of this year, a law making it very difficult, especially for the police to have a driver who is under the influence of drugs, prosecuted and convicted. We have had that law for many years; but about six years ago, a case arose, where a woman was stopped in a random checkpoint; when the police talked to her, they found that she was behaving very strangely. They found no traces of alcohol, so they suspected other drugs. She was taken for an analysis, where they found the highest recorded level of amphetamines they had seen so far. As it turned out, she was acquitted for drug driving. She was sentenced for having used illegal drugs, but not for drug driving. This started a process whereby the government nominated a committee to propose a new legislation in this field. We realised that the burden on the police was too heavy. It was almost impossible to get anyone prosecuted and sentenced for drug driving. Proof had to be given that the driver's behaviour was unsafe.

On 25 March of this year, the parliament passed a new law; this new law states that a person who drives a motor vehicle or a tram, after having consumed beverages containing alcohol, to the extent that the concentration of alcohol during or after the journey, reaches a minimum of 0.2 ml in the blood or 0.10 mg/l on the breath is to be sentenced for drunken driving and threatened with a maximum of months imprisonment. According to Paragraph 8 of the Narcotics Act, a person driving a motor vehicle or a tram after having consumed narcotics, to the extent that during or after the journey there is any narcotic substance in the blood, can be prosecuted. This is, however, not applicable if the narcotic substance was taken following a prescription by a doctor or any other qualified issuer of a medical prescription. A person will also be sentenced for drunken driving, according to Paragraph 1. If the driver has otherwise been seriously intoxicated by alcohol or by other drugs, or if a driver has driven a motor vehicle in such a manner that traffic safety was put in obvious danger. We have introduced a zero tolerance legislation for substances that are listed as narcotics; this list of course, also includes a number of licit drugs, such as benzodiazepines. The penalty for such an offence is normally a fine, the maximum penalty is a six-month imprisonment. But we very seldomly see prison sentences being carried out for drunken driving. We do have something that is called “gross” drunken driving, which is defined as driving with a blood / alcohol concentration exceeding 0.1% or 1.0 ml of alcohol in the blood; the usual penalty there is imprisonment for one month in the case of a first offence, and if no accident was caused. The fines in the latter case are related to income, the intention being to hit the rich as hard as the poor. Licence revocation is almost always the case, especially when above 0.3 ml. This is not part of the penal system, it is an administrative action which is taken for the sake of road safety. The fines or the imprisonment come as a totally separate issue. This legislation has not taken effect yet, it will take effect from 1 July.

The legislators realise that this new law will create a number of problems. But they also realise that, at this stage of the game, these problems cannot be avoided. It is very difficult to word the legislation differently to avoid these problems. Here are a few of them. The fact that we make an exemption for the people who are using legally prescribed narcotic drugs means that we will still be dealing with limits, as the zero tolerance law was intended to do away with all discussion about different limits for different drugs.

We will still be in that predicament; if, for example, a prescription says that a patient is supposed to take 100 ml of a certain drug three times a day, and he has a certain concentration in his blood, we have to determine whether we are talking about overdose or not. These limits will have to be defined by our central laboratory.

The detection of certain drugs is also a problem. For example, LSD can only be detected in urine and this law specifies that we are only dealing specifically with blood, since blood can detect the influence of a drug on the central nervous system. The detection of substances, such as morphine can, if detected in the blood, also be mistaken for codeine. We also have a problem of detection by the police out on the road. We have random breath testing for alcohol in our country, any policeman can stop any car driver at any time and request a screening breath sample. If their suspicions are aroused, but they find no traces of alcohol, they can continue and start screening for other drugs. The law states that, if they have a certain level of suspicion, they can use eye inspection, looking at eye movement and pupil size. If this test gives them further reason to suspect drug driving, they go on to blood testing. As has already been stated, straight zero tolerance would create serious problems for patients whose driving performance is not affected due to the development of tolerance, who are using these drugs for health reasons and who might be worse off if they did not take the drug. We need to make an exemption because their mobility might be severely reduced. But the exemption is not valid for those who use the drug without a prescription or who overdose. It is up to the driver to use it responsibly.

Clinical drunken driving will always be punishable irrespective of the drug taken, even if the driver has a valid prescription. If the driver displays signs of being impaired by the drug, he may be charged and convicted. The doctors have an obligation by law to inform the patient about how the drug may interact with driving or other safety-related activities. But we know, of course, that many doctors do not oblige for various reasons: they may not have the time, or do not want to drive the patient away from using the drug. The responsibility always rests with the driver. The fact that one person may be punished for something that another person has not been punished for can pose ethical problems.

The one without the prescription might not be impaired by the drug, but he will still be sentenced. We have a two-tier system in our country, drunken driving and gross drunken driving. We have not yet defined a level, whereby we will have gross drugged driving. This again takes us back to the police and their observations from the behaviour of the driver. The law has not changed very much in this instance. The technical detection level of various drugs will vary from drug to drug; this will be defined, not by law, but by the central laboratory making the analyses. It could be argued that the law should include all drugs that are marked as potentially hazardous in traffic.

At the moment these are drugs only listed as narcotics. The driver must have some awareness that the drug could impair his driving performance. It might then be possible for someone to claim that he had felt so bad, that he had to ask another person to give him something to cure him, with no information whatsoever on the drug taken. The legislators are aware of these problems, but have not, as yet, come up with a better solution. We have to see how the law works and judge what the real problems will be after 1 July of this year.

Amendment of the Federal Road Traffic Act

by Mr Christian Buschan, Federal Police Office, Switzerland

In Switzerland, more adequate steps will be taken in the future to ensure that person unfit to drive because they are under the influence of alcohol, drugs or medicines are kept off the road.

Being unfit to drive should be classified as a serious violation of road traffic regulations, with compulsory suspension of the driving licence, irrespective of whether this is the consequence of the use of alcohol, drugs or medicines.

The administrative penalties applicable to drink driving (suspension of driving licence) will be increased. In order to establish that a driver has an alcohol level of between 0.5 and 0.79%, compulsory breathalyser tests will be authorised, even where there are no grounds for suspecting that the driver is under the influence of alcohol.

Now that every driver must expect one day to be tested for drink driving, there is a simultaneous need to increase general preventive measures.

As in the case of drink driving, the Federal Council (government) must be able to lay down minimum concentrations of drugs or medicines in the blood above which persons are unfit to drive, within the meaning of the road traffic legislation. The list of these substances will be drawn up in close consultation with scientific circles. It is quite possible that for certain substances, such as heroin and cocaine, a zero tolerance level will be introduced.

As a general rule, repeat offenders will be increasingly severely punished.

On 31 March 1999, the Federal Council transmitted a “Message” to parliament concerning the amendment of the Road Traffic Act. In Switzerland, this signifies that the legislative proposals have already been approved by a majority of the cantons and the various parties represented in parliament, and the relevant national organisations. The legislative proposals therefore have a good chance of getting though parliament.

Summary of the proposed changes to the law:

1. Driving a vehicle under the influence of alcohol with a blood alcohol level of between 0.5 and 0.79% constitutes a moderately serious violation of the Road Traffic Act and will result in automatic suspension of the driving licence for a minimum period of one month, provided that no administrative penalty has previously been imposed;

2. Driving a vehicle under the influence of alcohol with an alcohol level above 0.8% and / or driving under the influence of drugs or medicines constitutes a serious violation of the Road Traffic Act and will result in automatic suspension of the driving licence for a minimum period of three months, provided that no administrative penalty has previously been imposed;

3. The police will have the power to conduct systematic breathalyser tests, even when there are no grounds for suspecting that the driver is under the influence of alcohol. Since this does not constitute an infringement of the inviolability of the person this procedure is also justified in the case of persons who have consumed little or no alcohol;

4. Blood and urine tests: the Federal Council may issue regulations laying down the acceptable limits for psychotropic substances;

5. Principle of increasing penalties for repeat offenders: drivers who repeatedly breach the road traffic regulations will be punished more severely. A scale of minimum administrative penalties will be established at federal level, based on the seriousness of the offence committed, and the number and seriousness of road traffic offences committed in the preceding two years[26]. These penalties will be increased in stages, up to suspension of the driving licence for an indefinite period in the case of repeated offences. For example: drink driving with a blood alcohol level of 0.7% will incur:

    - suspension of the driving licence for a minimum period of one month, provided that no administrative penalties have been imposed in the preceding two years; or

    - suspension for a minimum period of four months if the driving licence has been suspended during the preceding two years for an alcohol level of 0.9%.

Drink driving with a blood alcohol level of 0.9% will incur:

- suspension of the driving licence for a minimum period of three months, provided that no administrative penalties have been imposed in the preceding five years; or

- suspension for an indefinite period[27] if the driving licence has been suspended on two occasions in the preceding five years for drink-driving with a blood alcohol level of 0.9%.

26 In the case of serious road traffic offences, the period is extended to five years

27 Once the driving licence has been suspended for ten years, following an application from the individual concerned the authorities of the canton of residence may review this decision, if it is established that the circumstances that gave rise to the decision in force no longer apply.

Driving under the influence of psychotropic substances in the new Portuguese legislation

by Ms Maria Adelaide Núncio, General Directorate for Road Traffic, Portugal

In Portugal, the existing laws related to driving under the influence of alcohol or drugs are comprised in the Road Traffic Code, in the Decree-Law no. 24/98 and in the Administrative Rule no. 1006/98 of 30 November 1998.

According to the law, only drivers and pedestrians involved in traffic accidents, resulting in fatal or personal injuries, are submitted to medical tests in order to find if they were driving under the influence of any of the four drugs itemised.

As we have, as yet, no evidential tests for drugs, we only use blood and urine analyses that are very expensive, which is why we were obliged to limit the tests to people involved in traffic accidents.

On the other hand, since many psychotropic substances are present in some medications, in the initial phase the legislation only includes marijuana, cocaine, opioids and amphetamines, and a table of the minimum permissible concentration.

We intend, in one or two years from now, to revise this legislation according to the information obtained with the application and to include other substances and some medication the use of which is not advisable to drivers.

The method to detect the presence of psychotropic substances is outlined below:

The driver or pedestrian suffering from injuries resulting from traffic accidents, as well as those with no injuries but involved in the same accidents, must be transported by the police to a public hospital and be examined by a physician.

If, after the preliminary medical examination, the physician concludes that he is found to be under the influence of any of the listed substances (marijuana, cocaine, opioids or amphetamines) he must be submitted to the medical examination typified by law. After this second examination, if the physician concludes that the person is not under the influence of any drug, he fills in a copy and sends it to the police, to be enclosed with the court proceedings, if any takes place.

If the physician concludes that the examinee is under the influence of any of those substances, he must collect samples of blood and urine and must do a laboratory examination.

When the results of this examination are above the level of concentration proscribed by the law, the hospital must send a blood and urine sample to the forensic institute, which will do a new toxicological analysis.

By acting this way, we hope for uniform proceedings; but only toxicogical analyses made by a forensic institute are the basis for the judicial proceedings.

The biological samples sent to the forensic institute have only a code number and no personal identification, in order to ensure the confidentiality of the process.

Thus, for the time being, the police has no direct intervention in the control process of driving under the influence of these substances: their task is only to ensure the transport of the persons involved in traffic accidents to hospitals, in order to submit them to the clinical examinations foreseen by law.

SUPERVISING THE PSYCHOTROPIC SUBSTANCES

ONLY

Persons involved in traffic accidents with fatal or persons injuries — Article 9 of the Decree Law 24/98 from 30 October 1998.

The control entity takes the driver or the pedestrian in the above-mentioned accident to the Emergency Room, even if he is not hurt.

a. The physician verifies if the person in question is under the influence of psychotropic substances. If he is not, he must let the person go.

b. If the physician suspects that the driver or pedestrian is under the influence of any psychotropic substances, he must submit him to a medical examination.

After the medical examination:

a. If the suspicions are not confirmed, the physician informs the control entity

b. If the suspicions are confirmed, the physician collects a blood and urine sample.

The first tests are made in the hospital laboratory and serve to detect the minimum quantitative active ingredients.

a. If the tests reveal a quantity below the minimum proscribed by law, the physician submits a report to the control entity.

b. If the result is equal or superior to the legal limit, the doctor sends the biological samples and the requisition (without any identification) to the forensic institute, in the correct envelope by courier.

The Forensic Institute makes the toxicologial examination and obtains a positive or negative result based on the minimum quantitative active ingredients.

In any case, the result is sent in a sealed bag to the control entity that had previously taken the examinee to the hospital.

This envelope is kept in the bag until the control entity delivers it to the hospital.

The bag is later on sent back to the control entities, that supplies them with new test tubes, envelopes and stamps.

Prevalence, epidemiology and risk assessment: perspectives for illicit and licit drugs.

by Dr Alain Verstraete, Laboratory of Clinical Biology-Toxicology,
University Hospital Gent, Belgium

Introduction

Despite the general assumption, supported by a number of studies, that drugs impair driving, many questions remain:

- How many people take drugs and drive?
- How long after intake do drugs exert a negative influence? Does tolerance develop?
- In what percentage of accidents are drugs involved? How big is their contributory role in accidents, in addition to other factors?
- Is there a minimal dose / blood concentration?
- What are the trends in drug-abuse and driving: increase, evolution in the implicated drugs, and so on?
- Are there differences between countries and regions?
- What are the effects of combining different types of drugs or combining drugs with alcohol?
- What impact does legislation on drugs and driving, and its enforcement have on the number of accidents?

Answers to these questions are important in order to help governments decide which measures will have the highest impact on traffic safety and to convince the public that the measures taken, which can have adverse influences (cost, police- and driver-time wasted,) are justified.[1]

In order to estimate the implication of illicit drugs on road accidents, several approaches are possible, falling into two categories: experimental and epidemiological studies.

Prevalence and epidemiology

Information on the influence of drugs (illicit and medicines) on driving performance and accidents comes from different types of studies:

Experimental controlled studies, where the drug (in different dosages, compared to placebo and a positive control) is given to volunteers and their psychomotor performance and / or driving ability is measured (in the laboratory, in driving simulators and / or on the road). These studies are ethically difficult to perform with illicit drugs but provide essential information. These studies will not be discussed here.

Surveys of drivers, in which biological samples are taken (blood, urine, saliva, and sweat) and analysed for drugs.

These studies can be categorised into different groups, according to the selection of the subjects:

a. roadside tests: where a representative sample of the driving population is analysed

b. studies of injured drivers or subjects

c. studies of fatally injured drivers or subjects

d. studies of drivers suspected of driving under the influence of drugs and or alcohol

e. re-analysis studies (analysis of drugs in blood samples taken for the determination of alcohol) also fall in this category.

A further subdivision can be made if all drivers or only drivers who have caused an accident are included.

Further analysis of survey data: these types of studies are mostly descriptive, that is, giving information on the percentage of drivers in the studied population who were exposed to a drug. However, a comparison of the percentages in roadside surveys and injured or killed drivers can show an over-representation of drivers who were tested positive for drugs, thus suggesting a causal role. Sometimes, further analysis of the data can provide information on the contributory role of drugs in accidents.

This is possible by comparing the results of the study group (such as a driver injured in an accident) to a control group (such as matched drivers). One such study was performed in 1977 by Honkanen et al., who compared the presence of drugs in the blood of drivers and matched controls. Psychotropic drugs were found in 5% of injured drivers and 2.5% of controls while alcohol was detected in 15% of injured drivers and 1% of the controls.[2]

Currie et al.[3] compared blood results for benzodiazepines and tricyclic antidepressants in drivers responsible and not responsible for an accident. In the responsible group (n = 163), 18 drivers were positive for benzodiazepines, 6 for tricyclics and 4 for both drugs, while in the non-responsible group (n = 66), one driver had benzodiazepines in his blood and one driver had tricyclics ($X^2=8.1$, $p < 0.0045$).

A recent collaborative case-control study in France,[4] (Marquet et al.) compared injured drivers in emergency departments to non-trauma patients. After adjustments in age and sex distribution, the apparent difference in the prevalence of cannabinoids was not statistically significant ($p = 0.054$), except in females ($p = 0.02$).

In the Belgian Toxicology and Trauma Study (BTTS), no control group was used, but the mortality rate in the different groups was compared: it was 3.3% in drivers who were tested negative for drugs and alcohol, 4.6% in drivers who were above the legal limit (0.5 g/l) for alcohol, 5.6% for the drivers who were tested positive for drugs and 8.6% in the drivers who were tested positive for both alcohol and drugs. The relative risk of 2.56 suggests a clear synergistic interaction between alcohol and medication / illicit drugs, since a merely additive effect would have led to a relative risk of 1.60.

Another possible analysis is the *responsibility analysis*

Its purpose is to determine the responsibility, or culpability, of drivers killed in road traffic accidents, in order to establish if drug use by drivers contributes to accident causation.

Only two studies will be mentioned. The first is the study by Drummer et al. on 1,045 killed drivers.[5] Responsibility was determined after review of eight mitigating factors in the absence of the results of drug analysis. An index of responsibility was determined using pre-determined scoring guidelines. Drivers were then grouped into one of three categories: guilty, contributory and not guilty. The proportion of guilty drivers (culpability ratio) was then calculated.

Results: the percentage of drivers in whom various drugs were found is as follows: alcohol 36% (9% alcohol and drugs), cannabis 11%, amphetamines and stimulants (3.7%), benzodiazepines (3.1%) and opiates 2.7%.
Responsibility analysis: 73% of drivers were considered guilty, 18% not guilty. Drivers tested positive for alcohol, stimulants, opiates, benzodiazepines and miscellaneous drugs showed a higher guilt ratio. The cannabis-only group had a smaller (0.6) but not significantly, ratio. In all but two cases, the metabolite THC-COOH was measured, but the cases in which THC was found were deemed not guilty.

The relative risk for the different groups of drugs (all cases, cases where only the drug was positive, and cases where the drug was positive together with alcohol) are given in the table. A * means that the results are statistically significant.

Drug group	% positive	Relative risk (all cases)	Relative risk (drugs only)	Relative risk (drugs and alcohol)
Drug free		1.0		
Alcohol	36%	6.0*		
Cannabis	11%	1.6	0.6	5.6*
Stimulants	3.7%	2.7*	1.6	8.7
Opiates	2.7%	5.0*	2.3	2.9
Benzodiazepines	3.1%	5.8*	1.9	9.5*
Misc. Drugs	5.6%	4.0*		8.7

Drivers with a drug concentration in their blood higher than could be regarded as “low therapeutic” tended to be found guilty. All drivers considered to have a drug concentration much higher than could be regarded as “reflecting therapeutic use” were either guilty or contributory to the accident. Drivers in whom more than one drug was detected in their blood were invariably found to be responsible for the accident.

In the US, Terhune et al. examined 1,882 fatally injured drivers (who died within four hours of the crash) using a method of responsibility analysis to assess the causal effect of drugs in accidents. This study showed that the responsibility rate increased for drivers who were positive for alcohol > 1 g/l. The authors also found that the responsibility rate for drivers with THC in their blood decreased compared to the drug-free control group. In contrast, the responsibility rate for amphetamine-positive drivers was higher than the drug-free group. Crash responsibility rates increased significantly as the number of non-alcohol drugs in a driver increased. The responsibility analysis suggested little relation between drug use and crash risk, but the sample sizes were small. There appeared to be some potential for increased crash risk when certain drugs were combined with alcohol.[6]

Pharmaco-epidemiological studies

Definition:

Studies where the incidence of traffic accidents in people who take drugs is compared to a control population.

Examples

Skegg et al. found in 1979 that patients who had received a prescription for minor tranquillisers had a 5.2-fold (Confidence interval (CI): 2.2 – 12.6) higher risk of being involved in an accident. People taking any kind of drug were twice more likely to be involved in an accident.[7]

In a study of elderly drivers (≥ 65 yrs) in Tennessee, Rat et al. found that the relative risk of injurious crashes caused by current users of any psychoactive drug was 1.5 (CI 1.2-1.9). This increased risk was confirmed for benzodiazepines (1.5, CI 1.2-1.9) and cyclic antidepressants (2.2, CI 1.3-3.5). For these drugs, the risk increased with dose and was substantial at high doses: 2.4 (CI 1.3-4.4) for >= 20 mg of diazepam, and 5.5 (CI 2.6-11.6) for >= 125 mg of amitriptyline.[8]

From 1990 to 1993 in Quebec, Hemmelgarn compared 5579 elderly (67-84 yrs) drivers involved in crashes and 13256 controls. For short half-life benzodiazepines intake, the adjusted rate of crashes within the first week was 1.45 (CI: 1.04-2.03), for continued duration for up to 1 year, it was 1.26 (CI: 1.09-1.45). There was no increased risk after initial or continued use of short half-life benzodiazepines.[9]

In Oster et al.'s study which was performed in Massachusetts, 4,554 persons (aged 18-64 years) who had been prescribed benzodiazepine tranquillisers were compared to 13,662 matched controls who had been prescribed drugs other than benzodiazepines. The probability of an accident-related intake of these substances was higher during the months following the prescription of a benzodiazepine. Persons who had filed three or more prescriptions in the six months following the start of the therapy had a significantly higher risk (2.64, CI 1.15-6.04) of an accident than those who had only one prescription. After controlling for age, sex and prior use, a two-fold (2.09, CI 1.27-3.42) risk of accident was found.[10]

In Washington state, Leveille et al. conducted a population-based matched case-control study of older drivers (> 65 yrs) who were involved in injurious crashes during 1987 and 1988. There were 234 cases and 447 controls. Compared with non-users, current users of cyclic antidepressants had an adjusted relative risk (RR) of 2.3 (CI 1.1-4.8). Opioid analgesic use was also associated with an elevated crash risk (RR 1.8, CI 1.0-3.4). There was no evidence of dose-related effect with either class of drugs. Current use of benzodiazepines and histamines had little association with increased risk.[11]

A study in Saskatchewan by Neutel in 148,000 people who had received a benzodiazepine and 98,000 controls, showed an odds ratio (OR) of hospitalisation within four weeks after the prescription was filled of 3.9 (CI 1.9 to 8.3) for persons taking benzodiazepine hypnotics and an OR of 2.5 (1.2-5.2) for those using benzodiazepine anxiolytics. Within two weeks after the prescription was filled, the OR's were 6.5 (CI 1.9-22.4) for hypnotics and 5.6 (1.7-18.4) for anxiolytics. After one week, the OR's were even higher, but the confidence limits were wide. The highest risk groups were the youngest age group (20-39 yrs) and males. No significant increase in OR's was noted for anticonvulsants, antidepressants and antipsychotics.[12]

In another study, Neutel compared the risk of injurious traffic accidents in older (60+) and younger adults. The population under study consisted of 225,796 persons above 20 years of age with a first benzodiazepine prescription and 97,862 controls. New benzodiazepine users increased their risk of injurious traffic accidents within the first four weeks at an OR of 3.1 (1.5-6.2), persons under 60 had an OR of 3.2 (1.3-8.1) while older people had an OR = 2.8 (1.0-8.4). For individual benzodiazepines, flurazepam showed the largest increase in risk at OR = 5.1, followed by triazolam (3.2), diazepam (3.1) and lorazepam (2.4). Stratified for age, the OR was 6.1 for the under 60s and 3.4 for the over-60 group.[13]

In Scotland, Barbone et al. performed a within-person case crossover study of drivers aged 18 and older. Out of 19,386 drivers involved in a road accident in the study period, 1,731 were users of tricyclic antidepressants, benzodiazepines, selective serotonin reuptake antagonists (SSRI) or other psychoactive drugs. The OR was only increased for benzodiazepines (1.62 CI 1.24-2.12), not for antidepressants (OR 0.93) or SSRI's (OR 0.85) nor any other psychoactive drugs (0.88). Use of intermediate half-life was not significantly associated with risk of road-traffic accident. The risk associated with benzodiazepines use decreased the older the driver was, and greater when alcohol was positive. A dose-response relation was evident with benzodiazepines. The increased risk was significant for long half-life drugs used as anxiolytics (OR 2.03, CI 1.41-2.93) and for zopiclone (OR 4.0, CI 1.31-12.2). He calculated that in the UK, 1,577 accidents, of which 110 of them were fatal could be prevented if users of anxiolytic benzodiazepines did not drive.[14]

Pharmaco-epidemiological studies are extremely useful, as they provide insight into the relative importance of different types of drugs. In other words, which detected drugs contribute to a significant traffic safety problem.[15] These studies have some limitations, such as their lack of assessment of medication compliance and the interval before driving, medical conditions and use of alcohol and other medications.[16] Unfortunately, this type of study is much more difficult to perform for illicit drugs.

More studies are needed to answer the questions mentioned in the introduction, but much care must be given to the design of the study. Different experts identified several problems:

- Many studies are not published in the scientific journals and are not easy to access. More effort should be made to publish these studies, which would have the additional advantage of being reviewed by peers.

- Roadside surveys are expensive to perform, with many analyses for a limited number of positives and some inconvenience for the public being tested, so they are seldom performed. One should choose a sample of drivers carefully, so as not to over-represent the population driving at night. These surveys bring very useful data, when they can be compared to studies on injured or killed drivers.

- Another problem is the cost and lack of standardisation of sampling, analysis (and cut-offs) of body fluids, with consequently, a rather limited screening.

- The lack of comparability of studies between the different countries is mostly the result of different selection of the studied population and analytical strategies.

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The need for clinical assessment for the detection and confirmation of driving under the influence of drugs or medicaments

by Prof. Georges Lagier, Professor of Pharmacology (Paris VII University),
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I thought that it would be useful, at this seminar, to put the case for clinical assessment in detecting and / or confirming driving under the influence of drugs or medicines. So that is what I intend to do now.

To begin with, I have to say that, since I have been involved in this area, I have always been struck by the frequent confusion, sometimes in the same statement or even in the same sentence, between the term “illicit drugs” and the term “illicit use”, which to my mind is more accurate. Illicit use can apply to both the use of illicit drugs (drugs authorised only for the treatment of illnesses) and the abuse of chemical substances which are authorised but diverted from their normal use (such as abuses of medicines or the use of solvents such as trichlorethylene or ether). I do not think that there is much difference between someone taking heroine and someone taking thirty benzodiazepine tablets at once. The problem is knowing what is normal where the use of psychotropic medicines or drugs are concerned (the expression “normal use of drugs” might raise eyebrows but it must not be forgotten that, in France for example, drugs such as morphine or methadone are used as medicines). Nor should we overlook exposure, by accident or in the course of one's work, to chemical substances which may occasionally cause problems, for example when driving.

It is important, therefore, to distinguish between different kinds of use and to try to define them. Is it a case of abuse? Or of illicit use? Is it a case of “normal” use, of a medicine for example? The definition of use requires a clinical approach, and in some cases access to an individual's medical file. I thought it was vital to stress this, as we cannot gloss over the definition of use, hiding behind a simplified vision which demonises the use of illicit drugs and beatifies the use of medicines (with the “baddies” on one side and the “goodies” on the other).

The limitations of blood tests are also evident. Of course, blood tests are important and certainly the most reliable of all tests. They are more reliable than saliva or urine tests or even tests on hair follicles. But even with blood tests, there are tremendous difficulties in establishing reliable correlations between blood tests and clinical assessment. In contrast to alcohol, problems in the drugs field are far from being resolved.

They are far from being resolved because there is an extraordinary diversity of substances, and new products are constantly appearing. At present we are witnessing a boom in synthetic drugs and even the arrival of substances such as ketamine, gammahydroxybutyrate or phencyclidine, as in the United States. These substances are causing the emergence of new, little known-problems.

In addition, the pharmacokinetics of these products are far more complex than those of alcohol. Alcohol is an absolutely exemplary case, in terms of both its great simplicity and rarity, since the pharmacokinetics of the other substances are generally first-order. This is the rule for toxicologists and pharmacologists but it is also more complicated than the zero-order pharmacokinetics applying to alcohol. There is considerable variation both within and between individuals. Tolerance may be built up. A person might begin a week by taking one amphetamine pill and take a hundred pills a day by the end of the week, with no greater effect than the first day.

Withdrawal phenomena are also possible and may result in people having minimal blood levels while in a state of agitation or lassitude. It cannot be said, therefore, that the correlations between blood levels and behaviour are absolutely clear-cut. And let us not forget product combinations, which obviously increase the risk while driving, and of course combinations with alcohol. All that to say that we are not in a good position to make simplistic assumptions on the basis of blood levels.

The logical consequence of all this is that it is impossible to determine dangerous and non-dangerous levels in all cases, as has been the practice for alcohol for several decades.

Moreover, we are faced, in France for example, with a dual necessity — both scientific and legal. Judges need to know exactly how the subject behaved and do not content themselves with a simple urine test, especially if they have attended seminars like the one today. Any toxicologist or pharmacologist will say the same thing. For the time being, therefore, scientific and legal expert opinions are necessary on a case-by-case basis, taking account of both clinical and biological aspects and defining the type of use (Has the product been taken for treatment purposes? Has the substance been abused? How did the subject obtain the substance? For how long has the subject been using it? and so on). There is a scientific need, then, for a global assessment, which will seek to draw correlations between clinical and biological aspects and also attempt to analyse the circumstances of the accident. To do so, it will be necessary to compare clinical analysis, biological analysis and “accidentology”. It is obvious that the expert will then have to understand the legal consequences of his opinions, so that future expert opinions can be gradually improved.

It is logical, then, that we should focus on illicit use (in practice, abuse) rather than the concept of illicit drugs. And in that case we should prefer the term “illicit use” to “drugs”. After all, the concept of drugs stretches to both products whose use is illicit and products whose use is considered “normal”, such as methadone and morphine when used as medicines.

Let us not forget that behavioural assessment is very valuable owing to its sensitivity. If new products are involved, for example, detection using behavioural assessment is reliable and inexpensive. Even so, relevant, solid and easily applicable criteria must be identified. And while behavioural assessment is less costly, biological analysis is nevertheless necessary. Once again, what is important is to establish correlations and compile full accidentological, clinical, biological and legal files which will be analysed as a whole.

As far as detection is concerned, urine tests can be used. But you will all know that it is sometimes difficult to induce a subject to urinate and obtain a sample, particularly if they have suffered trauma. Saliva can also be used, or sweat and, as a last resort, blood. But we should remember that, for the time being, blood tests are very expensive. It is all a question of method and also purpose. If research teams and laboratories were encouraged to develop tests and techniques that were easy to use, considerable progress might well be made in this field.

As regards confirmation, clinical confirmation must include documentation on the subject's behavioural antecedents and possibly entail access to their medical file. Obviously, biological confirmation is an absolute necessity. *A priori* it could use blood testing since this is the most reliable medium, but hair samples could also be useful, with a view to defining product use (checking for occasional or regular use). In the future we will be increasingly reliant on saliva, sweat and hair for defining use.

On this point, France is moving in the right direction. The European directive of 1991 gave rise to a White Paper prepared by the Prime Minister in 1996. It is true that the resulting law, passed in March 1999, concerns only fatal accidents but extending it to all accidents entailing physical injury could be reasonably envisaged at a further stage. If we want our fellow citizens to be sensible on the roads, let us be sensible ourselves in practising and combining clinical and biological examinations. The implementing regulations for the new French law are in progress. The principles adopted (although we still do not know how this will be applied in practice) are as follows: clinical tests and confirmation of detection, with all the tests probably carried out by doctors; biological detection and confirmation tests will be carried out by “approved” analysis laboratories.

Mention is made of the notion of global clinical and biological assessment (to which I would add the terms “accidentological” and “legal”). In particular, there is provision, again within the framework of the law's implementation, for an epidemiological study recording all the cases reported in France, so that we might draw relevant conclusions from this phase which would help both the French government and the harmonisation of measures within the European Union.

“Marijuana and driving — risk assessment through experimental research”

by Dr Jan Ramaekers, University of Maastricht, The Netherlands

I will present some experimental driving studies that have been conducted at Maastricht University. This is a programme that was started about ten years ago, by Dr Hendrik ROBE**.** The programme consisted of two phases; the first phase involved three driving studies that aimed at investigating the effects of single doses of marijuana, the second phase of the programme was aimed at detecting the effects of marijuana in combination with alcohol.

Today, I want to present the results of the first phase found by Mr Hendrik Robe. Some of the results have become available from the second phase and we can now investigate their interaction. Our aim was to determine the relationship between inhaled THC doses and driving ability, and to compare them to those of a social dose of alcohol — an alcohol dose being in most countries below the legal limit — as well as to investigate whether the combined effects of THC and alcohol reduce or increase driving performance.

Before I come to the results, I would like to spend some time on the experimental methods of detecting abuse for all of these studies. These are standardised driving tests that take place in normal traffic conditions on a normal highway; there are actually two separate tests. The first one resembled a highway-driving test; its main parameter is lateral position variability during a one-hour test. What is measured there is the viva motion of the car.

The second test is what is called a "car-following” test. What is measured there, is more or less controlled information processing. We measure the reaction time of a subject to speed accelerations of a leading vehicle. It is hard to see, but it is a test conducted on a real highway; we have an instrumented vehicle that we can use for that purpose, with a camera mounted on the top of the roof. The function of that camera is to monitor the white line delineation of the road; thus, we are able to continuously register the position of the car relative to the white middle line. The task of the subject is simple. He is instructed to operate the vehicle at a constant speed of 95 km/h, and to stay in the right-hand traffic lane, unless he needs to overtake another vehicle. These are the two principles: constant speed of 95 km/h and staying in a straight line. The test lasts for a total of one hour and 90-100 km. The subject is not sitting alone in the vehicle, he is accompanied by a licensed driving instructor, who has access to dual controls and in charge of safety during the whole journey. So, in case the subject becomes unsafe on the road, the driving instructor will automatically stop the test and take over the wheel.

I will now give two examples of what the test actually measures. The first covers a car weaving through the right-hand traffic lane, but able to keep exactly within the boundary. We then measure the position of the car relative to the white middle line, four times per second. We gather this information during one hour and calculate the average lateral position. Then we calculate, for every data point, the difference between the actual position and its mean lateral position taken over the whole ride. That information provides us with our main parameter, which is the standard deviation of lateral position. This is a weaving index, in other words the amount of control a subject has over his own vehicle. In my first example, the hypothetical person has been driving or operating this vehicle with a standard deviation of 35 cm. That person would just be able to keep his car within the right-lane boundary; in the second example, the person can no longer visibly do that, and he exceeds the line. In this hypothetical example, the standard deviation of the lateral position, the weaving, would increase by 5 cm. A small increase in this example actually represents something significant in real traffic conditions.

The second test is a car-following test, and the main parameter of this test is the reaction time to speed and deceleration of a leading car, and how this is measured. There are two cars which are basically the same and we measure the speed of both cars, the speed of the leading car is operated by an experimenter, following a pre-set path of speeds. It starts at 90 km/h and within a fixed period of 50 seconds, drops to 80 or 70, to go back to its normal speed again. The instructions to the subject sitting in the following car are to copy and match the speed of the leading car. Both speed signals are stored in the computer and sent over from one car to the other by telemetry; these signals are then used and analysed by the Fourier test to actually calculate reaction time.

Now something about the subject characteristics. We used recreational uses of cannabis; all subjects entered had a history of marijuana use, but were not highly addicted, although I would describe them as users. They would use marijuana two or three times a month; all subjects were physically and psychologically fit, their age was between 21 and 40 years, and, of course, all had a driver's licence and they all admitted that they had been driving under the influence of cannabis before they participated in our study. That was one of the inclusion criteria. Lastly, they all had Dutch nationality.

The first study result I would like to present is one that was conducted by Hendrik Robe and it compared ascending doses of marijuana, containing both active drugs and placebo and administered at each level according to a random double-blind cross-over design. We had three levels: at the first level, subjects were treated with marijuana placebo, and a week later, with 100 mgr of THC. At the second level, they would again receive a placebo treatment and the next week a higher dose of marijuana (200 mgr); at the third level, they would receive a placebo, plus, a week later, 300 mgr/kg of body weight, of THC. The schedule was as follows: we started with the car following test, between 45 and 75 minutes post-smoking; subsequently, we conducted a highway-driving test, which lasted about an hour, and we then again conducted the car following test.

Before the start and at the end of these driving tests, we asked the subjects to subjectively rate the perceived amount of “high” that they had felt at that time; as you might expect, this was a dose-related feeling; the perceived “high” was about 30% of their maximum perceived “high” during the low dose of marijuana (100 mgrs) and this increased after taking 200-300 mgr. It is worth mentioning, I think, that when smoking the high dose, 300 mgrs, all subjects indicated that this resembled more their normal experience when smoking marijuana. Therefore, the amount of marijuana would be comparable to their normal habits. Naturally, when we asked the same at the end of driving test, about three hours later, the perceived amount of “high” had reduced.

Now the results of the highway-driving test. What we were looking for here, is deviation of lateral position relative to placebo, that is, the absolute values with an active dose minus those found in the placebo treatment. We found a dose-related effect, the effect of marijuana at the lowest dose (100 mgr) was small and incremented an actual deviation of about 1 cm. The 200 gr. dose showed a slightly higher (about 1.8 cm) and after 300 mgrs, the increment was the highest, about 2.8 cm. The analysis revealed that only the two higher doses were statistically significant or different from the placebo. It also indicated that the effect was dose-related. What is also important here is that, if you were to compare this increment to similar data that we obtained from healthy volunteers who had been drinking alcohol, you could conclude that the increment of the higher dose was slightly more than that of the road / alcohol concentration of 0.5. So when speaking of the clinical relevance of these results, one should say that the effects, in our examples at least, are mild or moderate. Looking at the results of the car-following test, interestingly, we did not find any effect of THC dose on the subject's reaction time to a decremention of the speed of the leading vehicle. Neither for the low dose, nor for the average dose or the highest dose.

The second study that I would like to present is somewhat different; it is a balanced design, a six-way double blind placebo-controlled and cross-over design; here we compared a placebo marijuana and 200 mgrs of marijuana alone or in combination with a low dose of ethanol, the dose here being 6.7 gr./ kg body weight. The schedule was as follows: the subjects drank alcohol at 7 o'clock at night, one and a half hours later they smoked their dose of marijuana, and a half hour after that, the subjects then performed their car-following test and their highway driving test.

Here again, in the results of the highway driving test, we are not looking at different scores, but at absolute values, at all six relevant treatment conditions. We consider the double placebo treatment, placebo-marijuana and placebo-alcohol, which were used as the reference for all the other tests; this was followed by a 1,000 mgr and a 2,000 mgr dose of marijuana. The same marijuana treatment was applied in combination with an alcohol dose.

All active treatments were statistically significantly different from the double placebo treatment. It is interesting to note the effects of the low 100 mgr. marijuana dose, and the 200 mgr. dose and the single alcohol dose in comparison to placebo. What is most interesting is that the combinations of alcohol and marijuana reduced the ability of the subject to operate a vehicle.

This indicates that the effects of marijuana and alcohol are actually additive. You can see a small effect of alcohol and if you combine it with 100 mgr. of THC, you can see it increase, and if you combine it with 200 mgr., you can see that the increase is even higher. This is interesting, because we have just concluded that the single effects of marijuana, or the effects of alcohol, at low doses, are minor. However when combined, these effects do increase the deviation by about 6 cm. In comparison to other results from previous studies, this is comparable to some heavy sedating hypnotics, like fluorezepine, which was mentioned several times in epidemiological research. In conclusion, the two small doses, when put together are, in our example, very dangerous.

Now, again the results of the car-following test. As before, we find that there is not very much effect from the marijuana, as none of the single doses were significantly different from the placebo, nor was the small dose significantly different from the placebo; as indicated above, the blood / alcohol concentration during the driving test was at the beginning 0.47; it then dropped to 0.34. These are very low blood / alcohol concentrations. The only difference you could actually find was in a combination of the high dose of 200 mgr. of marijuana and alcohol. That gave us a significant increase in reaction time as compared to the placebo treatment. So again, the combination of both small doses would lead to a reduction of the driving ability of the subjects in our study.

Now to the conclusions of the studies. Marijuana impaired the driving performance of recreational users in a dose-related manner, the effect of each of these marijuana doses alone on their user's driving ability was relatively mild, and only slightly worse than those observed in the blood / alcohol concentration of 0.5 mg/ml, the legal limit. Marijuana did not increase the adverse effects of alcohol on driving performance, but, and this is the main conclusion, the combination of low doses of marijuana and the same dose of alcohol did, however, severely impair driving performance of recreational users to a degree previously observed in healthy volunteers treated with benzodiazepine hypnotics.

Standardisation of police reports and analytical procedures for drug testing in body fluids

by Prof. Manfred R. Möller, Institute of Forensic Medicine,
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A new law came into force in Germany in August 1998: the zero limit for certain illicit drugs. It has already been discussed in “Legal Aspects”, Working Group A1 of this seminar. I want to talk about the practical consequences and changes of the police tasks, as well as the laboratory work, that has been going on since then.

There is no doubt that the signs of impairment by drug abuse and / or pharmaceuticals are, in most cases, less visible than those by alcohol, although the effects on driving capabilities can be much stronger. At the moment, there exists neither appropriate procedures nor legislation, compared to alcohol cases, where signs of impairment do not need to be discussed when the measured breathalised alcohol concentration is over the defined legal limit. Therefore, procedures are necessary in order to facilitate the work of the police officer taking the decision as to whether to order blood sampling. The physician taking the blood sample often inspects the subject half an hour or an hour later, and the effects of the drugs may no longer be visible. The laboratory results bear equal weight in the judge's decision on penal sanctions, especially in cases where the zero-limit law is involved, rather than impairment. Consequently, the following points are important:

1. The police officer must work with a standardised procedure when documenting his observations and for answering questions of importance in court.

2. The police officer must have test devices to facilitate his decision to take action (blood / urine sample), or to let the subject go.

3. Accepted laboratory procedures and / or defined cut-offs for the drug determination in blood must be made available.

In the summer of 1997, the police training programme, presented in Section A2 by Dr Sabine Joó, was started in the Saarland and the checklist (Fig.1) was introduced nationally. Together with each blood sample, police observations on driving manoeuvres, driver behaviour when stopped and examined by a police officer, and visible signs of impairment, are documented. They can later be used in court, together with the medical examination and the laboratory results of the blood analysis taken by the expert witness, when making his statement on the subject's fitness to drive.

However, the police officer's report is vital in the detection of the subject's impairment to drive. The higher the threshold given by the law and the courts for the signs of impairment in a subject, the less often the police officer will decide to take a blood sample. Better training brings about more cases, particularly more positive cases.

Meanwhile, since the beginning of the police training programme in 1997, we have the results of more than 500 cases (357 with detailed police report and laboratory results) in our institute, where drivers suspected by the police of being under the influence of drugs (more than 50% of the cases with a detailed police report are from one single operational unit of police officers). We can make a list of drugs and drugs combinations which are currently “in”. Most subjects are multi-drug users (two-thirds use cannabis with alcohol and / or other stimulants). As soon as we have sufficient single drugs users, we will try to correlate certain vegetative, motorical and psycho-pathological signs of impairment with specific drugs.

In Fig.2, observed signs of impairment are listed in cases where only cannabis without or with low BAC (< 0.03%) and with higher BAC (> 0.03%, mean 0.08%) could be detected. Only a few signs / sign combinations will be characteristic to each drug. This drug profile will be defined as soon as sufficient cases of single drug use and a standardised police report are available.

Th second very important point are possible tests, which can be done by roadside police officers or at the police station to check whether there has been illicit drugs in the driver's system.

The objective of the ROSITA (ROadSIde Testing Assessment) study (EU-DGVII-01 RO-SC.3032) is to identify the requirements for roadside testing equipment, and to make an international comparative assessment of existing equipment or prototypes. The assessment will address the validity of roadside testing results, equipment reliability, usability (practicality) and usage cost.

1. What are the drugs / medicines that (are suspected to) have a detrimental impact on road user performance?

2. What is the state-of-the-art roadside testing equipment for urine, sweat and saliva?

3. What operational, user and legal requirements exist in the EU member states for roadside testing equipment?

4. Which tests meet the criteria set in the methodology and experimental design (testing and evaluation of the instruments, validity, equipment reliability, usability (practicality) and usage cost)?

5. What can be recommended for the use of roadside testing equipment in Europe?

A consortium consisting of twelve contractors from seven EU countries and Norway started work in January 1999. The first three work-packages will be completed at the end of May 1999. The field tests, conducted on 27 000 subjects, will begin in June and last one year. Final recommendations will be complete by September 2000.

The laboratory results are crucial to cases of the zero-limit law, where a single drug detected in a subject's blood leads to sanctions. Therefore, the laboratory results must be absolutely reliable. Laboratory guidelines must be issued, obliging the laboratory to fulfil certain quality criteria (gas or liquid chromatography combined with mass spectrometry, use of deuterated internal standards, definition of limits of detection, limits of quantification, accuracy, precision, internal and external quality control programme, and so on). In cases where cut-offs are defined, analogue guidelines (including frequent quality controls around the cut-offs) must be fulfilled.

Conclusions:

Standardised detailed police reports are necessary in cases of “illicit drug use and driving” to facilitate court decisions and to develop “drug profiles” which will enable police officers to recognise subjects under the influence of drugs.

Only well-trained police officers can detect subjects driving under the influence of drugs. A few operational units with experienced police officers working on a national level, or at least within several police departments, are much better than a lower level of training with more participants.

Test devices for urine, sweat and saliva must be accepted by the legislation, and their use must be regulated. Recommendations will be made by ROSITA.
Laboratory guidelines are necessary for the determination of drugs, especially in zero-limit cases, but also when certain cut-offs are defined.

Fig. 1 Check List for police observations

ıex to report on

Surname:	**First name:**	**Date:**
Incident		**Blood test no.**
Observations on driving style, weather and road conditions		
Driving style: □ no own observations □ safe □ unsafe □ swerving about • deviation from straight line • by up to m • number of swerves • observed over a distance of m □ unsuitable speed □ right of way ignored □ attracted attention in other ways	**Vehicle operation** □ stalled engine □ unsure gear changes □ engine roaring □ other…….. **Road conditions:** □ good □ bad □ work site □ well lit □ poorly lit □ dry □ wet	**Vehicle faults** □ no □ yes, describe **Weather conditions:** □ rain □ ice / snow □ strong wind / storm □ fog □ daylight □ dusk □ dark
Observations when stopped or encountered		
Reaction: □ normal □ delayed □ extremely slow	**Unusual physical signs:** □ none □ sweating □ shaking □ agitated □ vomiting	**Appearance:** □ clean and tidy □ unkempt □ neglected
Command of German language: □ yes □ no □ limited	**Speech:** □ clear □ stuttering □ slurred □ mumbling	**Response / orientation:** □ sleepy □ easy to wake □ in deep sleep / unconscious □ orientated □ confused
Mood / behaviour: □ quiet, in control □ excited □ strangely cheerful □ impassive □ doesn't keep distance □ provocative □ aggressive □ tearful	**Getting out of the vehicle:** □ normal □ unbalanced □ has to hold onto vehicle	**Walk:** □ steady □ dragging □ unsteady □ staggering
Smell of alcohol: □ yes □ no	**Alcohol test** □ yes, at am / pm % □ refused	□ no □ limited
Eyes: □ normal □ red conjuctiva □ watery / shiny □ agitated	**Pupils:** **Right: Left:** □ approx. mm approx. mm □ immediate reaction to light □ slow reaction to light	**Light conditions at place of examination** □ daylight □ dusk □ night / street lighting □ night / interior lighting
Other observations: (all powders, tablets, and so on. found other particularities in the car, on the persons; continue on reverse side if necessary):		
Behaviour during official interviews (duration: from until) □ stayed the same □ increasingly strange □ became more normal		

9.5 mm
8.5 mm
8.0 mm
7.5 mm
7.0 mm
6.5 mm
6.0 mm
5.5 mm
5.0 mm
4.5 mm
4.0 mm
3.5 mm
3.0 mm
2.5 mm
2.0 mm
1.5 mm
1.0 mm

Fig. 2 Distribution of observed signs

Total	All cases		BAC ≤ 0.03%	BAC > 0.03		
				CAN single findings		
Veg. / neurol. signs	**Ns.**	**%**	**Ns.**	**%**	**Ns.**	**%**
Red conjunctiva	170	66	65	90	16	57
Watery / shiny eyes	170	66	59	82	8	29
Slow reaction to light	138	54	53	74	4	14
Pupils conspicuous	80	31	31	43	1	4
Sweating	52	20	23	32	0	0
Agitated eyes	29	11	13	18	1	4
Motorical signs						
Slurred speech	125	49	29	40	13	46
Shaking	115	45	53	74	3	11
Dragging walk	69	27	15	21	6	21
Unsteady walk	50	19	11	15	7	25
Unbalanced	46	18	9	13	4	14
Stuttering	21	8	8	11	0	0
Psycho-pathol. signs						
Delayed reaction	159	62	53	74	10	36
		49	49	68	2	7
Sleepy response	127	39	33	46	5	18
		33	30	42	8	29
Agitated	99	21	22	31	1	4
		20	11	15	4	14
Excited	86					
		16	8	11	5	18
Impassive	55					
		12	10	14	1	4
Confused	51	11	7	10	1	4
Doesn't keep distance	40					
Extremely slow reaction	32					
Changing mood	29					

The role of saliva and sweat in detecting cases of driving under influence

by Dr Pascal Kintz, Institute of Forensic Medicine,
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Introduction

In cases where someone is suspected of driving under the influence of a xenobiotic, toxicological analysis of a biological sample (particularly a blood sample) taken from the subject constitutes indisputable proof of exposure. In such circumstances, toxicological analysis does not preclude clinical testing, but serves to reinforce the medical diagnosis. We should make it clear from the outset that only a blood analysis, carried out by gas chromatography / mass spectrometry, is admissible as evidence in a court of law.

Such procedures, however, are hardly suitable for mass screening, due to the lack of public acceptance for blood sampling in prevention operations, which is a highly invasive technique, and the protracted nature of the analytical phase, which effectively makes it impossible to obtain an instant result that might lead to the vehicle being immobilised. Under these circumstances, immunological analysis (with tests specially designed for this purpose) using a saliva sample would seem to be a reasonable solution. The benefits of sweat testing are rather more debatable.

1. Saliva

The total saliva flow is 500 to 1500 ml per day. Mixed saliva, the most readily accessible and commonly used matrix for drug analysis, consists mainly of secretions from the submaxillary (65%), parotid (23%) and sublingual (4%) glands. Primary saliva formation takes place in the endpieces of the excretory ducts of the main salivary glands. As it gradually moves down the ductal system, the saliva becomes increasingly hypotonic. The salivary osmolarity, which is always lower than that of plasma, rises as the salivary flow increases, something that is normally accompanied by an increase in pH, which tends in that case to approach, or even exceed, the plasmatic pH. The resting salivary pH is 6.8.

Mixed saliva is 99% water. It also contains mineral salts and proteins such as mucins (lipoproteins which act as lubricators) and enzymes which aid digestion.

Several theories have been advanced to explain the mechanisms by which xenobiotics enter the saliva. The smallest molecules, such as ethanol, pass freely through the membranes, via the pores. Most drugs seem to enter the saliva by a simple passive diffusion mechanism which depends on their physico-chemical properties (pKa, liposolubility, molecular weight and spatial configuration), their link to the plasmatic proteins and the plasmatic and salivary pH values. Slightly ionised, lipophilic substances thus have no trouble penetrating the plasma / saliva barrier, since the salivary concentration is a reflection of the plasma concentration of the free molecule. In the case of slightly alkaline substances, the salivary concentration is closely related to the pH of the saliva. In the case of constituents which have a pKa close to the salivary pH, a slight change in pH engenders a significant change in the degree of ionisation reflected by the saliva / plasma (S/P) ratio. This perhaps explains why experimentally determined S/P ratios sometimes differ from the theoretical values calculated using the Henderson-Hasselbach equations. The fact is that salivary collection procedures tend to vary considerably from one study to the next.

Saliva collection is seen as a non-invasive procedure which can be carried out under the direct supervision of trained police officers, to reduce the risk of adulteration.

In practice, a sample of saliva can be taken by spitting into a container, by wiping the oral cavity with a cotton bud or by stimulating saliva production with acid drops, citric acid crystals or by chewing a piece of inert material such as Teflon. Since the concentration of drugs in the saliva is liable to decrease as the saliva flow increases, it might seem sensible to collect non-stimulated saliva. Many people, however, experience an aversion to “spitting”. Some individuals tend to produce excessive amounts of froth and not enough of the fluid that is needed for analysis. Also, a reduction in salivary flow can be observed following consumption of amphetamines and certain antidepressants. In a road safety context, all of these drawbacks need to be taken into account when collecting samples *in situ*. “Stimulated” saliva has been used in many controlled studies and special devices have been developed to facilitate collection and to help obtain cleaner samples that are easier to analyse.

The samples should preferably be centrifuged to eliminate the suspended particles. They should be stored at -20°C to ensure that the analytes are maintained under conditions of optimum stability; it is interesting to note that freezing and thawing the sample has the effect of reducing its viscosity. The samples are normally collected and stored in plastic tubes. In some studies involving the detection of cocaine and heroin, a 5% sodium fluoride solution was added to the polypropylene collecting tubes. The cocaine present in saliva stored in a plastic container without any additives will remain stable for at least a week at 4°C. The use of citric acid or acid drops increases the stability; cocaine is less stable in glass containers. The stability of cannabinoids in saliva has not been properly studied; there are reports of cases where silylated glass containers have been used or sodium fluoride added.

The salivary concentrations of numerous products are apparently closely correlated with the plasma concentrations. In the majority of the publications available, it appears, however, that the salivary kinetics of xenobiotics differ markedly from blood kinetics, which suggests that the diagnostic value of saliva should be assessed separately for each analyte. In several studies, the authors also sought to find a correlation between the concentration of drugs in saliva and their pharmacological effects, without always managing to do so.

Numerous publications describe the excretion of cocaine and its metabolites in saliva. Cocaine is always the predominant analyte identified and the S/P ratios measured are greater than 1. Cocaine can be detected in saliva for a period of four to twelve hours following a single administration of drugs by the intravenous or intranasal (such as sniffed) method, or by inhalation (smoked). Contamination of the oral cavity after sniffing or smoking drugs is variable but significant for the first two hours following administration. The concentrations of benzoylecgonine and ecgonine methyl ester are very low compared with the concentration of cocaine and remain less than 100 ng/ml. The duration of the pharmacological effects is equivalent to or slightly less than the time during which cocaine is detectable in plasma and saliva. Sufficiently sensitive analytical methods with a detection limit of 5 to 10 ng/ml can even detect the metabolites which appear slightly later in the saliva. Although the correlation between salivary concentration and the pharmacological effects cannot always be established, as a result of contamination of the oral cavity or stimulation of the salivary flow, the presence of cocaine in the saliva may reasonably be associated with recent usage of the drug.

Heroin can be detected in saliva following a single administration by intravenous injection, inhalation (smoked) or by the intranasal method (sniffed). After intravenous injection, heroin is detectable for less than an hour in saliva, 6-acetylmorphine for one to four hours and morphine for twelve hours. Following administration by smoking, the maximum concentrations of heroine and 6-acetylmorphine and the S/P ratios during the first few hours are considerably higher. Heroin is detectable for a period of two to twenty-four hours and 6-acetylmorphine for one to four hours. As in the case of cocaine, contamination of the oral cavity following inhalation of base heroin accounts for the high S/P ratios.

Codeine is detectable in saliva for a period of nine to twelve hours following oral administration of 60mg of codeine phosphate; the S/P ratios are greater than 1.

Cannabinoids are excreted little, if at all, in saliva, but since they are almost always administered orally, ∆9-tetrahydrocannabinol (THC) is detectable in this medium for several hours, following oral contamination by inhaled smoke. In the thirty minutes following inhalation, salivary concentrations of THC greater than 100 ng/ml can be measured. The salivary concentrations are higher than the plasma concentrations in the first few hours. THC remains detectable for three to six hours on average, by most methods. Saliva testing for THC would seem to be more effective than urinary analysis in the case of recent cannabis exposure.

The salivary concentrations of amphetamine and methamphetamine following a single administration by the oral, intravenous or smoked method, are at least two to three times greater than the plasma concentrations. The period during which these molecules are detectable in saliva can be as much as two days if sensitive analytical methods are used. A correlation between the salivary concentrations of methamphetamine and the presence of subjective and cardiovascular effects has not been established.

The use of “designer amphetamines” is a growing problem. Which makes it all the more surprising that no controlled studies have been published on the measurement of methylenedioxyamphetamine (MDA), methylenedioxy-methamphetamine (MDMA) and methylenedioxyethamphetamine (MDEA) in saliva. Following oral administration of 100 mg of N-methyl-benzodioxazolyl-butanamine hydrochloride (MBDB) to a subject, the molecule is detectable in the saliva up to the seventeenth hour. The concentration of the parent substance remains higher than that of its metabolite (BDB). The salivary detection time is definitely greater in the case of substances which have an amino, liposoluble structure.

Large-scale analyses of saliva samples will remain awkward until immunoassays specifically designed for analysing saliva are developed. Saliva analysis has been carried out by some authors using tests specifically developed for detecting drugs in urine; in these studies, the tests were evaluated and / or adapted. There are two main observations to be made here:

1. saliva normally contains the parent substances whereas urine contains their metabolites;

2. the concentrations present in saliva are much lower than those observed in urine.

Generally speaking, the antibodies used in immunoassays to detect the presence of drugs in urine have a greater affinity for the urinary metabolites than for the parent substances. When a specific technique for detecting constituents in saliva is finally developed, we will be faced with the complex problem of determining suitable cut-off levels for each pharmacological class. If the cut-off levels are too low, they will give rise to an unduly high number of negative results with gas chromatography / mass spectrometry (GC/MS). If, on the other hand, they are too high, they will result in a large number of false negatives.

Some practical considerations need to be borne in mind when screening motorists suspected of driving under the influence of drugs. As in the case of drunk driving, simple, non-invasive, routine tests which give a near-instant result must be able to be carried out by police officers with only minimal scientific training. There is a growing demand for screening tests which can be performed at the site where the sample is taken. Recently, a few prototypes have been introduced to allow rapid screening for psychotropic substances in saliva:

“Drugwipe” (Securetec: Germany) for detecting the presence of illegal drugs in saliva by rubbing the tongue; the “Rapiscan” system (Cozart Bioscience Ltd, UK) for screening for illegal drugs, methadone and benzodiazepines in a saliva sample; and the “Oralscreen” Morphine (Avitar Technologies, Inc., USA) and “CarePoint” (Coventry, UK) tests for detecting opiates in an oral specimen.

Saliva can be extracted and analysed in the same way as other physiological media such as blood. In general, the endogenous constituents are less prone to interference in saliva than in blood or urine. Before carrying out a proper analysis, however, it is essential to confirm the analytical procedures with non-contaminated and deliberately contaminated saliva, both qualitatively and quantitatively, using analytical standards of the xenobiotics concerned. The analytical capacities required in order to carry out a saliva analysis are similar to those required for detecting drugs in blood; it is worth remembering, however, that saliva samples tend to be much less voluminous than blood samples and that the probability of being able to repeat the analyses is thus far smaller. Particular care should be taken when using confirmation methods designed for other matrices given that the analytical cut-off levels may be different in the case of saliva. As yet, there is no consensus over the use of cut-off levels for confirming the presence of illegal substances in saliva.

2. Sweat

Man has several million sweat glands all over the surface of his body, except for the edge of the lips, the nipples and certain parts of the external genital organs. There are two types of sweat glands: the eccrine glands and the apocrine glands.

The eccrine sweat glands are by far the most numerous and are located mainly on the palms of the hands, the soles of the feet and the forehead. Each is a single, coiled tubular gland. The secretion from the eccrine glands — sweat or perspiration — is an aqueous, hypotonic solution, derived from blood plasma by a process of passive filtration. Sweat is 99% water and electrolytes, mainly represented by sodium and chloride ions (which give sweat its slightly salty taste) and, to a lesser degree, potassium, calcium and magnesium ions. Lactic acid is the main organic constituent found in sweat. The pH of sweat varies between 3.8 and 6.5 in close correlation with the amount of lactic acid excreted.

The apocrine sweat glands are situated largely in the axillary and ano-genito-perineal regions. They are larger than the eccrine glands and their excretory duct opens into a hair follicle. In addition to the basic constituents found in eccrine gland sweat, the secretions from the apocrine glands contain organic molecules (lipids and proteins).

The physiological purpose of the eccrine glands is to act as a thermoregulator and moisturise the skin. They also perform an immunological function. The apocrine glands do not play any part in the dissipation of body temperature.

The amount of sweat continually produced every day varies according to the ambient temperature, body temperature and the degree of environmental humidity. During strenuous activity, the amount of sweat produced can be as much as 1 to 3 litres per hour.

Scientists have known about the excretion of xenobiotics in sweat since 1911 but, until recently, no-one had managed to develop a practical method of collecting sweat for analysis. In order to collect large volumes of sweat, several authors suggested thermal or pharmacological stimulation, using pilocarpine, for instance. Scientific literature also contains reports of systems of occlusive bandages consisting of one to three layers of filter paper or pieces of cotton, gauze or tissue. Using these home-made collecting devices, it proved possible to identify medicinal products and drugs such as quinine, antipyrine, salicylic acid, ethanol, methadone, phenobarbital or phencyclidine.

A major technological breakthrough occurred when, following approval by the American Food and Drug Administration, a sweat collection patch developed by PharmChem (Menlo Park, CA) appeared on the market. The liquid, non-volatile constituents of sweat are collected using a 14 cm^2 absorbent membrane situated in the middle of the patch and covered with transparent film which secures the patch to the skin and protects against environmental contamination. The only materials capable of penetrating this film are water and carbon dioxide, which are essential in order to keep the skin healthy. Over a period of several days, sweat gathers on the absorbent membrane at a rate of approximately 300 µl per day. It gradually becomes more concentrated and the xenbiotics present in the sweat are trapped. In order to comply with the quality procedures, an identification number is printed on each patch.

Depending on the requisite period, the patch can be worn from one to ten days, either on the side of the subject's body or in the bicipital or scapular regions following disinfection with cotton wool soaked in a 70% isopropanol solution. After the patch is removed, the absorbent membrane is stored at -20°C.

The xenobiotics can be extracted following incubation in a buffer / surfactant, buffer / methanol compound or simply in methanol. By using the immunochemical method (ELISA), screening can be carried out directly on the extraction compound; gas chromatography / mass spectrometry, which is more sensitive and, above all, more specific, requires additional preparation.

Controlled excretion studies following administration of cocaine, heroin, methadone, codeine and phenobarbital, MBDB and, finally, diazepam were carried out. A quantity of 1 to 5 mg of ingested cocaine is detectable in sweat.

Xenobiotics appear rapidly in sweat, sometimes even in the first hour, in the case of alkaline molecules. Depending on the elimination half-life of the xenobiotic, sudoral excretion is complete within twenty-four hours (cocaine), thirty-six hours (ecstasy derivatives) or forty-eight hours (codeine). The concentration of the parent molecule is always far greater than that of its metabolites. Thus, even in the case of heroine, whose plasmatic half-life is in the region of a few minutes, the primary constituent is predominant. The same is true of cocaine, which is found in far higher concentrations than benzoylecgonine or ecgonine methylester.

While cocaine and amphetamines, including ecstasy derivatives, as well as opiates and their metabolites are easy to detect in sweat, benzodiazepine or cannabis tracer concentrations are extremely low, probably because these drugs have a pKa and liposolubility which are relatively unconducive to passive diffusion from plasma to saliva. Identifying and quantifying this type of constituent requires the use of highly sensitive techniques, such as GC/MS with negative chemical ionisation or GC/MS/MS.

Although there is much to be said for this method from a pharmacological point of view, it is not suitable for use in a road safety context. A patch has to worn for several hours in order to collect a sufficient quantity of sweat to undergo analysis. Also, it takes a long time to prepare the sample, making it impossible to obtain an instant result.

In a controlled study following oral administration of 60 mg of codeine to six subjects, it was observed that Drugwipe was still yielding positive results twenty-four hours after the opiate had been absorbed. Under these circumstances, since sweat is a cumulative medium, a positive result cannot be regarded as conclusive evidence of driving under the influence, but merely indicates recent exposure.

Drugwipe, furthermore, is a test whose antibodies are directed at the metabolites, not the parent substances. All the studies involving patches, however, have shown that sweat excretes mainly the parent molecule. In the case of cannabis, Drugwipe is directed at the carboxylic acid of THC (THC-COOH) whereas sweat contains only THC, and in very small concentrations at that.

THC-COOH has never been found in sweat. It is easy to see, then, why all the major studies to date have found Drugwipe to be unsuitable for identifying cannabis users through sweat. As yet, therefore, there is no fast, high-performance device for on-the-spot sweat testing to ascertain whether someone has been driving under the influence.

Conclusion

Table 1 shows the main properties of each biological sample.

The scientific community universally agrees that blood should be regarded as the medium of choice for identifying cases of driving under the influence of a xenobiotic, even though it has yet to establish a definitive concentration threshold beyond which vigilance becomes impaired.

In order to be valid, expert testimony must be based on blood analysis by gas chromatography / mass spectrometry. In terms of prevention, however, it would be wrong to concern ourselves solely with bodily injuries, or even just fatalities. When it comes to preventive roadside testing, blood sampling, with its invasive procedures and cumbersome analysis, might usefully be replaced by saliva sampling. The makers of immunological reagents have the know-how to produce kits which target the parent substances and not just the urinary metabolites. Such a major shift would naturally depend on the existence of a potential market and few companies, as we approach the end of the millennium, are willing to take the financial risk involved. The marked preponderance of urinary analyses in the United States, where they are more or less the norm (thanks to Executive Order 86-12564, NIDA guidelines) and where hundreds of thousands of tests are performed every day, shapes the daily practice of all the European laboratories. The cut-off levels, the constituents (NIDA 5) and the lack of interest in European issues (ecstasy is not recognised by the tests) are being foisted on us by global market forces. It is a shame that a major public health issue like driving under the influence should be dictated entirely by economic considerations, not only on the part of the manufacturers who are failing to provide analysts with the necessary tools but also on the part of the authorities, who do not seem, for the moment at any rate, to be in any hurry to introduce prevention operations and controls (police roadblocks under the direction of a public prosecutor), as has long been the case with alcohol.

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Table 1: Comparison between urine, saliva, sweat and hair in screening procedures for driving under the influence of drugs

Parameters	Urine	Saliva	Sweat
Detection window	2-3 days	a few hours	1 week
Analytical technique	immunochemistry + GC/MS	GC/MS	GC/MS
Duration of analysis	+ or +++	+++	+++
Cost	+ or +++	+++	+++
Type of measurement	incremental	incremental	cumulative
Adulteration	possible	difficult	difficult
Storage	-20 °C	-20 °C	-20 °C
Collection	invasive	relatively non-invasive	non-invasive
Major analyte	metabolites	parent substance	parent substance
Concentration in the medium	high	low	low

Roadside drug screening, field impairment testing and DRE programme and experiences

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The detection of drug driving by police could be more efficient if there was an effective roadside drug screening device.

There are four potential sample mediums, namely:

- blood,
- urine,
- sweat,
- saliva.

Blood would be a suitable medium except for the problems of obtaining a sample. Similarly, urine has the problem of sample collection and handling. Sweat and saliva both have the advantage that sample collection is easy and non-invasive. An accurate and effective saliva screening device would provide police with an efficient method of screening drivers for illicit drugs.

During 1998, four police forces in the UK carried out an evaluation of two roadside drug screening devices. One devices, supplied by Drugwipe, used sweat as the sample medium and the other device, manufactured by Crozart Bioscience Ltd, used saliva.
The evaluation was an assessment of the practicalities of police undertaking roadside drug screening and responses from drivers taking the tests.

The assessment showed that roadside drug screening is acceptable to drivers and that saliva and possibly sweat devices could be used effectively to screen for drug driving. Experience in the UK indicates that police are not competent in recognising the signs of a drugs driver. It is likely that this is common to police in other countries.

In 1997, two police officers from Scotland visited the United States to study the Drug Recognition Expert (DRE) programme. Parts of this programme have been developed for possible use by UK police forces.

In June 1999, six police forces in UK will have trained officers in the use of drug recognition and field impairment testing (FIT). These techniques will be evaluated in a trial involving about 300 drivers in real drugs driving cases.

The viability of DRE and FIT in an international context will be examinated in this paper.

Roadside drug screening — current situation

Impairment to drive through drugs is the main concern in road safety terms and police enforcement. In essence, if there is no impairment to drive, then there is no road safety issue.

Most police officers, throughout Europe have received little or no training in recognising the signs of a drug driver. There is no readily available roadside drug-screening device similar to ones available for alcohol screening. As a consequence, the number of successful convictions for drug-driving offences when compared to drink-driving offences, remains very small. It is very likely that a large number of drivers who are impaired to drive through drugs go undetected by police.

I illustrate the problem by showing an example of the situation which pertains to the UK and which I call the "tip of the Iceberg". In 1997, in England & Wales, police breath tested over 860,000 drivers for alcohol, of which 12% (103,000) were positive or refused to provide a sample. This left 757,000 drivers who were tested but were not positive for alcohol. If you assume that only 1% of those drivers were positive for drugs, one would expect to see over 7,500 cases each year going forward for analysis and prosecution. In 1997, the police submitted only 1,800 cases for analysis to the Forensic Science Service.

Research by the Department and the Forensic Science Service indicates that a more realistic percentage of drivers likely to be under the influence of illicit drugs is nearer 18%. Based on the 1997 UK figures for breath testing this would amount to around 130,000 drugs-driving cases per year. Clearly, the police are only detecting under 2% of this number.

Roadside drug screening devices

An effective roadside drug-screening device needs to be developed for use by police. Four potential sampling mediums could be used, such as blood, urine, sweat or saliva. Blood and urine are both suitable mediums but both have the problems of sample collection and handling at the roadside. Sweat and saliva have the advantages that sample collection is easy to achieve and non-invasive.

It would be helpful to agree and write a police user specification for a roadside drug-screening device. A specification would include the following requirements: to be accurate and reliable, easy to use all conditions, robust, capable of detecting the main groups of illicit drugs and some licit drugs at the lowest possible cost.

During 1998 four police forces in the UK evaluated two roadside drug screening devices. One device was supplied by Drugwipe Ltd and used sweat as the sample medium. The other device was manufactured by Crozart Bioscience Ltd and used saliva as the sample medium. The evaluation was an assessment of the practicalities of police undertaking roadside drug screening and the reactions of the public to being tested with these devices.

The results of over 5,000 tests showed that both methods of sample collection were practical for the police to use at the roadside. The public indicated overwhelming support (over 90%) for roadside drug screening and the methods of testing.

Drug recognition training (DRT) and field impairment testing (FIT)

The ability of police to recognise drug drivers could be enhanced if officers were given Drug Recognition Training (DRT) and Field Impairment Testing (FIT) skills. Both DRT and FIT are part of the DRE Programme (Drug Recognition Expert) used by police in certain jurisdictions within the USA.

It is likely that DRT could be given to and applied by many police officers to detect drivers under the influence of drugs without any need to change existing police law. The skill could be useful to all police officers not those engaged on the detection of drug drivers (such as custody officers, police officers interviewing suspects, general patrol officers, and so on). The national police in Sweden are using these techniques effectively.

Field Impairment Testing (FIT) requires a suspect to undergo a number of tests at the roadside to determine whether or not the person is impaired through taking drugs. A change in the law may be required to enable a police officer to enforce such a test.

In the UK, parts of the DRE programme have been developed for possible use by UK police forces. These include the DRT which cover identifying the signs and symptoms of specific classes of drug, such as cannabis, opiates, central nervous system stimulants, central nervous system depressants, hallucinogens and inhalants. In addition, officers will be trained to undertake and asses certain FIT techniques. These are, pupillary examination, the Romberg Test, a walk and turn test, a one-leg-stand test, and the finger-to-nose test.

These techniques will be evaluated by six police forces during June 1999 and will involve up to 300 real drugs-driving cases. If the techniques prove viable, it is hoped to extend the training to all police forces in the UK.

Conclusions

- police need an accurate, reliable, roadside drug-screening device that is robust, easy to use and competitively priced;

- a device which could detect impairment in drivers should be developed for the police;

- police officers should be trained to recognise the signs of a drug drivers and where appropriate, apply field impairment testing to assess whether or not a driver is impaired;

- impairment remains the main issue in respect of driving and road safety.

Why is drug driving detected so frequently in Norway ?

by Prof. Jørg Mørland, National Institute of Forensic Toxicology, Norway

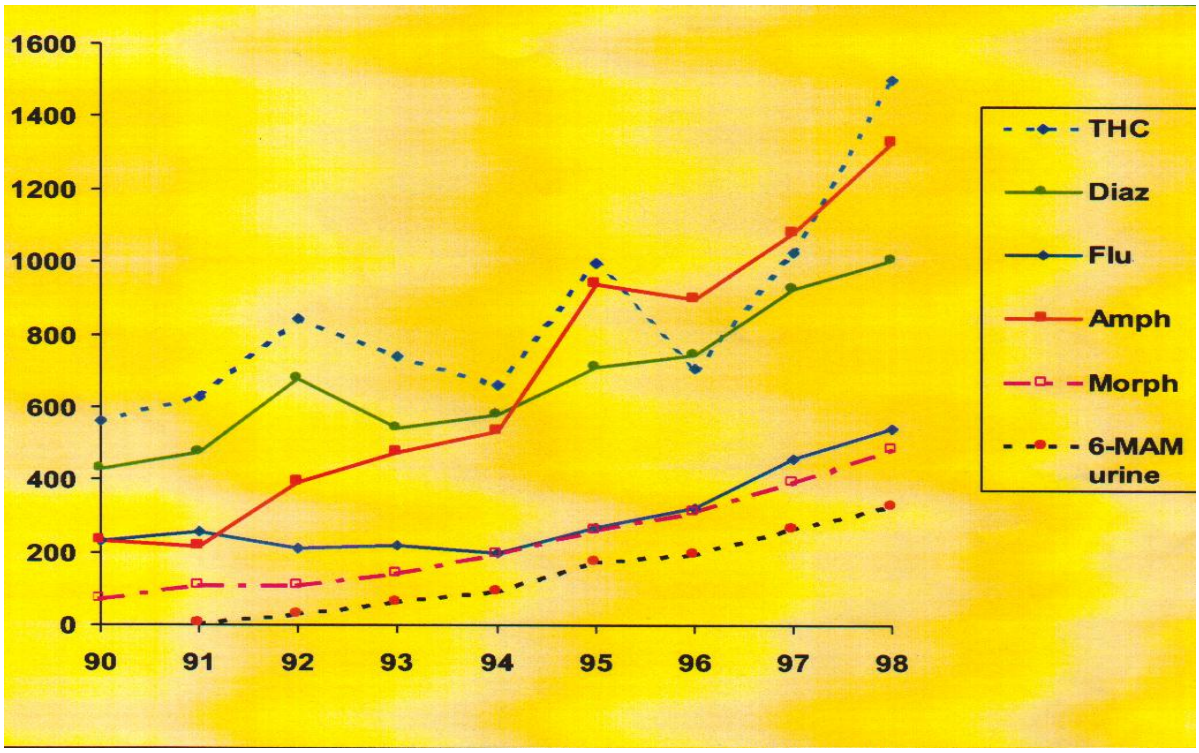
Last year (1998) the Norwegian police submitted blood samples from 4,336 persons suspected of drug driving to the National Institute of Forensic Toxicology (NIFT). One or more drugs were found in 2,951 samples, that is, in 68% of the samples submitted.

Table 1 : Detections in blood samples from drivers suspected of drug driving.

	n	%
Samples positive for drugs only	2,404	55.4
Samples positive for alcohol only (BAC > 0.05%)	887	20.5
Samples positive for both drugs and alcohol	547	12. 6
Samples with no detections	498	11.5
Total	4,336	100

The average number of different drugs detected in drug positive samples was 2.6. The most frequent drugs found were tetrahydrocannabinol, amphetamines and benzodiazepines (mainly diazepam and flunitrazepam) (Figure 1). In very few cases the benzodiazepine findings appeared to reflect therapeutic prescription as judged from the drug concentrations measured and coexistence of other drugs in the sample. Blood alcohol concentrations (BACs) above the legal limit of 0.05% (0.5 per mille) were found in 33% of the samples (Table 1).

Figure 1 : Drugs detected in blood samples from apprehended drivers in Norway (1990-1998)



In samples submitted to NIFT from cases where the primary suspicion by the police was drink driving, drugs were detected in 9.5% of the cases, that is, in 263 samples, in most cases together with alcohol (Table 2). Such samples are routinely screened for the most common drugs of abuse in Norway.

Table 2 : Detections in blood samples from drivers suspected of drink driving.

	n =	%
Samples positive for drugs only	42	1.5
Samples positive for alcohol only (BAC > 0.05%)	2,124	76.8
Samples positive for both drugs and alcohol	221	8.0
Samples with no detections	378	13.7
Total	2,765	100

Taken together drugs were detected in 3,214 cases from a total of 7,101 cases where the police suspected impaired driving of any cause (drugs and / or alcohol) and accordingly ordered a blood sample.

The drug detection rate among drivers were thus approximately 750 cases per million inhabitants per year in 1998 (that is, 3,214 divided by the total Norwegian population 4.3 million inhabitants). This detection rate appears to be much higher than in most (if not all) other European countries. The corresponding figures in Finland, Sweden, Denmark, and UK of 190, 90, 40 and 30 respectively, are markedly lower than the Norwegian detection rate.

Statistics on drug abuse in general do not place Norway in a special position among European countries. There appears to be no reason to believe that drug users drive more frequently in Norway than in other countries, although this possibly cannot be ruled out completely due to lack of information on this particular subject.

If we assume that there are no substantial differences between Norway and other European countries in this respect, reasons for the high detection rate in Norway should be looked for in the way Norwegian drug driving cases are handled to see if this procedure could give some clues to the observed difference in drug detection.

A drug driving case starts in Norway as in most other countries, by the police being called to a scene of a car accident, by the police or witness observing reckless or dangerous driving, by the police performing speed controls or sobriety roadblock checks. There is no data indication that such encounters between drivers and police occur much more frequently in Norway than in other countries, the point seems however to be that a request for a blood sample for drug analysis is a much more frequent result of such encounters in Norway than elsewhere.

The Norwegian Road traffic act dealing with drug driving seems at first glance not to represent a system that would lead to frequent blood sampling on the suspicion of drug driving. The Road Traffic Act in practice requires proof for impaired driving in each individual case based on blood drug concentration results, the outcome of a clinical examination performed by a police physician or another “neutral” physician shortly after the incident, witness reports and other evidence, often supported by expert witness evaluation of the results of drug analysis and the clinical tests. There exists no per se law prohibiting the use of any particular drug when driving and there are no fixed legal blood concentration limits (except for alcohol 0.05%). Some standard routines have however, developed during the last ten to twenty years. The blood samples have always been analysed by the same national institute (NIFT) by a rather broad analytical programme, encompassing most drugs of abuse as well as some medicinal drugs, which easily might lead to impairment.

As elsewhere in forensic toxicology, all positive screening results are confirmed by GC/MS or other alternative methods, and the amount of drug is quantified. The results of the analysis evaluated together with the results form clinical examination (which accompany the blood samples to NIFT) are reported back to the police with a recommendation on which cases should probably be dropped and which could be followed up. The police might then request an expert witness statement on the chance of impairment, after equipping the NIFT with further information on the case. The written expert statement concludes on the probability of impairment from “not impaired” through “impairment cannot be excluded”, “possibly impaired”, “likely impaired” to “impaired”. The police can then decide to bring the case to court. The experience so far has shown that the driver is very often sentenced when the expert witness statement concludes on “likely impaired” or “impaired”. More than 90% of cases with these conclusion ends with a court sentence.

From the prosecution's point of view this constitutes a positive feed back. It is observed that the systems works, that is, people who have demonstrated impairment are sentenced to prison, often unconditionally. This can be seen as a learning process. The police learn that if cases fulfilling certain criteria during the process are taken to court, the police succeeds. Thus even a rather complicated impairment-based system like the Norwegian model might act to lower the threshold for the police to investigate suspected drug driving. It is quite possible that other systems such as those based on per se laws might be effective too, to increase the drug detection rate. The critical factor is probably not the law system, but the results the police observe they can obtain through the system in operation.

Some additional points that might contribute to detection of drug driving in Norway should be discussed as follows:

The threshold for performing a roadside screening alcohol breath test is very low. In general, no suspicion or drunken driving is needed. The performance of this test gives the police officer time, time to talk with the driver, to observe the driver and his behaviour, also in relation to the result of the alcohol screening test.

Based on this information and observations, the police officer often becomes suspicious that drugs are involved and further action on the case can be taken, such as bringing the suspect to the police station for further questioning, an examination, and eventually a blood sample and clinical examination.

According to information from the Norwegian police approximately 1 million alcohol breath-screening tests are performed each year, which appears to be a high number in a population of approximately 4.3 million people. The rate of detection of drink driving is low — in 1998 the figure was about 5,000 cases, blood and evidential breath tests combined (compared to 3,214 cases of drug driving). This means that the ratio between detected drunk to drug driving is low in Norway (about 1:5 and much lower than in other Nordic countries where this ratio is 15:100. The frequent use of alcohol breath screening in Norway might be a factor in the frequent detection of drug driving and probably also in preventing drunk driving. Roadside test devices for drug driving have so far not been in use in Norway. The police officers have, however, wanted to have such devices, as they feel they leave cases which should have been followed up due to uncertainty.

The Norwegian police officers are not particularly well trained with respect to recognising symptoms of drug influence. Drug recognition expert programme have been introduced recently, but have not been a part of the education of the major part of the Norwegian police force. Still drugs are demonstrated in blood samples of 68% of the cases sent to analysis, indicating a rather high degree of correct police suspicion. It is interesting that this ability to hit the target is only slightly lower in Norway compared to other Nordic countries where a much smaller and probably much more selected group is subjected to blood sampling.

Which other clues exist then to explain the frequent and correct suspicion by the police? Two factors might be of importance. The Norwegian police force is organised in rather small units, which in general have obtained a high level of knowledge about the local population. This local police often know the suspects as people with previous drug problems. As drug drivers have a high rate of criminal recidivism, they might be known to the police as previous and potential drug drivers when they are observed behind the wheel. In such cases the police suspicion will be present by the mere observation of the driving of the former drug driver. Another factor is a routine, which the police has developed in recent years. Whenever tablets, cannabis, or other drugs are found in a car or on people in a car, the driver is suspected of drug driving regardless of signs of impairment. This procedure has lead to a series of drug detections in blood samples from this group of drivers.

The attention of the police towards the phenomenon of drug driving was markedly increased when NIFT could demonstrate a very high prevalence of drugs in blood samples that were submitted on the suspicion of drink driving only. Such studies that were carried out in the late 1980s lead the police to not only focus on alcohol as the reason for impaired driving. The studies were feasible since, at that time, alcohol analysis in blood samples was the only accepted way of detecting drink driving. Later, in 1996, evidential breath testing of drink driving has been introduced and approximately 50% of the drink driving cases in Norway is presently covered by this method. We have observed that in some police districts the introduction of evidential breath test instruments has meant a set-back for the detection of drug driving. By focusing on the question whether alcohol was present at the time of testing or not, it appeared that some police officers forgot to think of other possibilities underlying impairment. This problem seems to be under better control now, but it shows that too much focus on alcohol can in fact be counterproductive to the detection of drug driving. The importance on how police officers are trained on the use of evidential breath alcohol instruments thus appears to be critical.

The role of the police physicians in the Norwegian system should also be mentioned. By performing the clinical examination and taking a drug history shortly after the apprehension they often add important information to the case, for example by indicating additional analyses which should be performed at NIFT. It should also be stressed that these physicians have no possibility of rejecting a case where the driver shows a prescription of a certain drug or make other claims that possible drug findings might be the result of treatment for disease. The physician is operating as a consultant for the police, he makes observations and notes, but has not right to interfere with the further handling of the case.

The physician performing this examination is paid a salary by the police per case of 45-80 Euros, depending on the time of day the examination is performed. There are no costs for the police linked to the analysis of the blood sample for drugs or for the recommendation form NIFT with respect to further handling of the case. If the police request a written expert-witness statement from NIFT, the fee is approximately 340 Euros. The average analytical costs not covered by the police, but through the funding of NIFT is about 300 Euros per case. The total cost per case thus constitutes approximately 700 Euros including blood sampling, clinical examination, drug screening and confirmation analyses, responding letter with analytical results and primary evaluation, and the written expert-witness statement. Expenses due to police and court work comes in addition to this. Obviously the costs covered by the police have not hampered the growth of this system in Norway.

In conclusion it is not easy to find a single factor within the Norwegian system that explains why this country has a high rate of detection of drug driving. The most important point might be what can be summarised as the “experience factor”.

By its operation, the system has given the police the experience that people apprehended under the suspicion of drug driving very often have drugs in their blood samples and that they often are impaired by these drugs. Furthermore the courts appear to react to the cases brought to the courtrooms to the general satisfaction of the police.

Another important issue is how to keep the drug drivers away from the roads. In spite of the high detection rate in Norway it has been shown that 60% of these drivers are apprehended for the same type of crime within a period of three years. As a majority of these drivers appear to have drug dependency problems, it appears that taking steps to solve these problems would be the best way to successfully decrease the rate of drug driving in the future.

Drug recognition in road traffic training programme for police officers in Germany

by Dr Sabine Joó, Federal Office for Road Traffic (BAST),
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The summer of 1998 saw the entry into force in Germany of a law under which any driver whose blood can be proved to contain the active principle of cannabis, heroin, morphine, cocaine, amphetamine or designer amphetamine is committing a regulatory offence. The penalty for this offence is a fine and a driving ban. Driving under the influence of drugs is thus punished in the same way as driving with a blood alcohol concentration of over 0.8 parts per thousand (80 mg/100 ml).

In order to enable the police to recognise motorists driving under the influence of narcotic or medicinal drugs, some twelve months prior to the new ordinance a training programme for drug recognition in road traffic was produced and made available to police colleges in the individual *Länder*. The programme was developed by a panel of experts consisting of traffic medicine experts, toxicologists, forensic experts, legal experts, police officers and doctors. It incorporates certain aspects of the DRE (drug recognition and evaluation) programme in the United States, adapting them to conditions in Germany.

The training programme comprises the following units:

- Introduction / Epidemiology
- Legal issues / Legislation
- Effects of drugs on the human body
- Materials science: Alcohol, cannabis and opiates; heroin and stimulants; cocaine, amphetamine, designer drugs, hallucinogens, nasal inhalants, drugs affecting the central nervous system, and the effects of legal and illegal drugs in combination
- Acting on suspicion and production of evidence by the police.

In addition to actual narcotics, attention is also given to what are known as psychotropic substances which are often misused, that is, they are taken either by drug addicts or as “drug substitutes”. Particular emphasis is placed on the fact that consumption of a single drug tends to be the exception, the rule being poly-drug-use, that is, consumption of several legal and / or illegal drugs at the same time. Many genuine examples from actual traffic policing are described in the curriculum.

The most important unit of the curriculum is that dealing with acting on suspicion and securing of evidence. The following three phases are described in detail:

Phase 1: The vehicle in moving traffic

Phase 2: Initial contact with the driver

Phase 3: Questioning, statements and tests

For this purpose, the panel of experts has devised not only a statement form to be filled in by the police officer on the spot but also a medical report form to be completed by a doctor at the police station after blood is taken.

The curriculum is designed for a four-day in-service course. Police officers trained in this way are then expected to pass on what they have learnt to officers in the field. These courses are either scheduled or have already taken place in many *Länder*.

The United States experience in developing and validating DRE / DEC in the field

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1. Problem

It is an unfortunately common experience, throughout Europe as well as the United States and other developed nations, that a police officer will suspect a motorist of driving under the influence of drugs (DUID), but not be able to prove it. Typically, a motorist who has had a collision or who has been stopped by police for deviant driving and seems impaired, is found to have zero or very low concentrations of alcohol, after being breath tested at the scene by the police officer. An experienced officer will then suspect the influence of drugs other than alcohol, but has no instrument for testing the driver at roadside, such as the hand-held breath tester. In some countries, if the officer has a basis for probable cause for charging a motorist with "driving under the influence of drugs," he can request that a blood or urine sample be obtained back at the police station for laboratory testing, but drug analysis is costly and time consuming. In other countries, blood and / or urine can only be obtained with the specific consent of the driver, which is often difficult or impossible to obtain. The current inability to test rapidly and selectively for drugs frustrates both the police and the judicial system, because many drivers suspected of DUID cannot be tested properly and therefore must be allowed to go free and unpunished. However, as a direct response to this very frustrating situation, a promising procedure for drug evaluation and classification (DEC) has been developed in the United States over the past fifteen years.

2. Background of the DEC programme

In response to the frustration of being unable to identify and arrest drug-impaired drivers, a small group of officers in the Los Angeles Police Department (LAPD) in the late 1970s pioneered the development of a drug recognition procedure consisting of a series of clinical and psychophysical examinations. By following this procedure, a trained police officer trained as a Drug Recognition Expert (DRE) could obtain compelling evidence establishing that a suspected DUID driver was impaired at the time of the stop or the collision, and further, that the particular nature of the impairment was consistent with a particular category or subcategory of drugs. News of this LAPD procedure gradually spread throughout the United States. In the early 1980s, the National Highway Traffic Safety Administration (NHTSA) recognised that the procedure had promise and thus initiated research to test its reliability and validity.

3. Field and laboratory validation of the DRE / DEC programme

The first important study in this research series was conducted co-operatively in 1984 by NHTSA and the National institute on Drug Abuse (NIDA) in laboratories at Johns Hopkins University to identify types of drug intoxication by means of the independent ratings by four LAPD Drug Recognition Experts (Bigelow et al., 1985). The results were very encouraging. The DREs were able

1. to identify correctly 95% of drug-free subjects as "unimpaired,"

2. to classify 98.7% of high-dose subjects as "impaired," and

3. to identify the category of drug for 91.7% of the high-dose subjects.

However, a definite false positive occurred on 1.3% of occasions when a subject who had received no drug was nevertheless classified as “impaired.” On 7% of occasions, the incorrect drug category was identified among subjects who had received some other active drug.

Following the controlled laboratory study, NHTSA proceeded with a field validation of the LAPD drug recognition procedure (Compton, 1986), the results of which demonstrated that trained DREs were able to “predict” the presence of certain drug categories in the majority of cases. All motorists arrested for DUI (driving under the influence of alcohol) in the city of Los Angeles during the study period were eligible for participation. Blood samples were obtained from 86% of the arrested suspects, although no blood samples were obtained from suspects judged by the police officers not to be under the influence of drugs. Experienced DREs rated each of the suspects, whereas an independent laboratory analyse d the blood samples. The major results are:

1. When DREs claimed that drugs other than alcohol were present, they were almost always detected in the blood (94%).

2. DREs were able to identify correctly at least one drug other than alcohol in 87% of the suspects evaluated.

3. When DREs identified a suspect as impaired by a specific drug category, the category was detected in the suspect’s blood 79% of the time.

4. In almost 50% of the suspects, the DREs were entirely correct in identifying all of the categories detected in the blood. (Most of these suspects had used multiple drugs, other than alcohol.)

5. The use of alcohol with other drugs was common, with 50% of the suspects who had used drugs having also used alcohol (thus making the detection of other drugs more difficult).

6. Only six of the suspects (3.7%) who had used drugs had BACs equal to or greater than 0.10% (100 mg / dl). It is likely that most (if not all) of the remainder of the suspects would have been released if the drug symptoms had not been recognised by the DREs.

On the basis of these two studies, NHTS proceeded to refine the procedure and to develop standardised training programme for DREs to be assigned to interested police agencies throughout the United States.

More recently, a systematic study of DRE programme validity was conducted in Phoenix, Arizona (Adler and Burns, 1994; Burns and Adler, 1996). According to Burns and Adler (1996), the Drug Influence Evaluation (DIE) is a systematic, standardised 12-step method. It yields information, which is the basis for a DRE-trained officer’s opinion:

1. that a suspect is or is not impaired;

2. if impaired, that the impairment is or is not drug related; and

3. if drugs, that a specific drug category (or categories) is present.

In this study, DIE records and toxicologic analyses of urine and blood specimens from 500 suspected drug-impaired drivers were analyse d with a special database software. DRE opinions about suspects’ drug impairment and identifications of drug categories were highly accurate. For example, officers identified at least one drug in 91% of the positive specimens.

Further, specimen analysis confirmed or partially confirmed 83.5% of DRE drug identifications. The investigators concluded that their study supported the validity of the drug recognition methods used in the DRE programme.

Two recent laboratory studies assessed the validity of individual components / variables of the DEC programme for a selection of drugs. The studies were conducted by Heishman and colleagues and funded by NIDA and NHTSA (Heishman, Singleton, and Crouch, 1996; Heishman, Singleton, and Crouch, 1998). Results of both studies indicate that a certain subset of variables of the DEC evaluation can be used to predict accurately acute administration of alprazolam, *d*-amphetamine, marijuana, ethanol, cocaine, and to a lesser extent, codeine. Predictive validity was optimal when predictions were made using 17-28 variables from the DEC evaluation in the earlier study, and using 2-7 variables in the more recent study. These findings suggest that predictions of impairment and drug use may be improved if DREs focus on a subset of variables associated with each drug class, rather than the entire DEC evaluation. The investigators concluded that the DEC evaluation is a valid test to identify recent drug use.

4. Evaluation of the impact of DEC use on enforcement and adjudication

In the early 1990s, NHTSA conducted an evaluation of the impact of the DEC procedure in the community. This study examined the effect of the DEC programme on impaired driving (DUI and DUID) enforcement and adjudication. DREs in DEC programme evaluated 1,842 suspects when drugs other than alcohol were suspected of contributing to driver impairment. Eleven police agencies in five states with DEC were compared with similar police agencies without DEC. The results varied considerably across the DEC agencies. Regarding specific results, an opinion of drug use was reached in 92.9% of the DRE evaluations, whereas 7.1% of suspects were either found to be fit, were excluded for medical reasons, or refused to participate in the evaluation. Laboratory analyses failed to confirm drugs in 15.9% of the tests completed on the suspects, and 52.6% of these cases had a “guilty” outcome. In cases where drugs were confirmed by the laboratory assays (and adjudication outcomes were known), 88.4% had a guilty result. The median department-by-department proportion of guilty outcomes was 92.3%, with a range being from 57.3% to 100%. Thus, this evaluation found that the DEC programme had strong positive effects on DUI and DUID enforcement and adjudication.

5. The current DEC programme

As it has evolved during the last fifteen years, the DEC programme is now a standardised, systematic method of examining a motorist suspected of impaired driving or some other alcohol- and / or drug-related offence to determine:

1. whether the suspect is impaired; and if so,

2. whether the impairment is drug-related or medically related (e.g., illness or injury); and if drug-related,

3. the broad category (or combination of categories) of drugs likely to have caused the impairment.

On the other hand, it is also important to understand what the DEC process is not. It is not:

1. a field test procedure,

2. a means of determining exactly what drug(s) the suspect has ingested, or

3. a substitute for a chemical test.

There are seven broad categories of drugs that can be identified through the DEC process. These categories do not correspond exactly to the typical taxonomies of drugs, but rather are distinguished from one another on the basis of the observable signs they generate during the various examinations that comprise the evaluation process. A similar classification of drugs has been developed for clinicians in the field of substance abuse and mental health. The seven drug categories are as follows:

1. central nervous system depressants (CNS; alcohol, derivatives of barbituric acid, anti-anxiety tranquilisers, anti-psychotic tranquilisers,and so on;

2. CNS stimulants (cocaine, members of the amphetamine family, and so on);

3. hallucinogens (peyote, psilocybin, LSD, MDMA, and so on);

4. phencyclidine (PCP or angel dust);

5. narcotic analgesics (heroin, opium, morphine, codeine, methadone, and so on);

6. inhalants (volatile solvents, aerosols, anesthetic gases, and so on); and

7. cannabis (marijuana, hashish, hashish oil, and so on).

Each category of drugs affects humans in a unique fashion. A DRE can examine a suspect and discern the unique “fingerprints” of the category or categories of drug(s) ingested. The DRE reaches an opinion based on a systematic evaluation of the subject’s appearance, behaviour, performance of psychophysical tests, eyes, vital signs, and an examination for signs of ingestion.

6. Components of the drug evaluation in the DEC

The specific components of the DEC form the basic elements of the drug evaluation process. Each component has been tested and validated in the field, and some components have also been rigorously validated in the laboratory. To ensure that the drug evaluation is systematic and standardised, each DRE completes a “Drug Influence Evaluation” (Adler and Burns, 1994; Burns and Adler, 1996). The components of the evaluation are summarised briefly below.

1. Breath alcohol test

2. Interview of the arresting officer (not the DRE)

3. Preliminary examination by the DRE

4. Examination of the eyes: horizontal gaze nystagmus, vertical nystagmus, and lack of convergence

5. Divided attention psychophysical tests: Romberg Balance, Walk and Turn, One-leg Stand, and Finger-to-Nose

6. Vital signs examination: precise measurements of the suspect’s pulse, blood pressure, and temperature

7. Dark room examination: systematic checks of the size of the pupils of the suspect's eyes, under three different lighting conditions: near-total darkness, indirect light, and direct light

8. Examination of muscle tone

9. Examination for injection sites

10. Interview by DRE, suspects' statements, and other observations

11. Opinion of the evaluator: the DRE must document his or her opinion in a formal report that specifies the bases for the opinion

12. Toxicological examination: blood or urine

It usually requires approximately 30 minutes to complete a drug evaluation. Depending on the kinds of drug ingested, however, as well as the amount of impairment, the evaluation can take longer.

7. DEC programme training requirements

Over the years, a highly standardised training and certification programme has evolved with the co-operation of NHTSA and the International Association of Chiefs of Police (IACP). Currently, certification as a DRE involves successfully completing a three-phase programme of instruction: (1) the **Pre-school**, consisting of a two-day training event, during which candidates learn the basic drug terminology and become familiar with the seven broad categories of drugs. They also learn about the clinical and psychophysical examinations that constitute the procedure and have opportunities to begin practicing the administration of those examinations; (2) the **DRE School**, consisting of a seven-day event involving 30 modules of instruction, including an overview of the development and validation of the drug evaluation process, relevant legal issues, in-depth sessions on each drug category, including practice session for each aspect of the examination process, and legal case preparation and testimony; and finally, (3) **Certification Training**, consisting of on-the-job training of the student, administering a minimum of 12 complete examinations under the supervision of an approved DRE instructor. Experience indicates that the average student requires approximately 120 hours of on-the-job supervision to complete certification training.

8. Conclusions

Two important ways to improve the effectiveness of drug-driving enforcement are:

1. to introduce chemically based screening devices for drug consumption (analogous to breath analysers for alcohol), and

2. to implement drug recognition programme for the police.

The first approach is based on **measures of the presence** – and, if possible, the quantity – of particular drugs in the driver's body; whereas the second method is based on **measures of behavioural impairment** assumed also to be indicators of impaired driving performance. Because no acceptably accurate chemically based screening devices for measuring presence (and, hopefully, quantity) of selected drugs have yet been developed and validated, policy makers are forced to consider an approach to the problem based on **impairment** by drugs. Therefore, this report has been focused on overt behavioural and physiological indicators of drug influence and therefore of assumed drug impairment.

The approached based on this assumption of observable indicators of drug influence involves training the police to recognise the differential influences of selected categories of drugs on drivers. Thus, **drug recognition programme** are based on trained, systematic observation of drug effects, interpreted as indicators of driving impairment, and are known as the **Drug Evaluation and Classification programme.** It is administered in practice by trained and certified police officers known as **Drug Recognition Experts**.

Until a valid, rapid screening device for drugs is developed, the use of the DEC with certified DREs is the one method currently available. It is not perfect; it is not simple; and it is not quick, but it is available and it works quite well. It has been determined to be acceptably valid, both in controlled field studies and in systematic laboratory studies. One remaining question concerns the extent to which the DEC lends itself to use in European countries.

All of the countries participating in the Pompidou study agree that a one-to-one transfer of the US programme would not be directly applicable for European countries. The adaptation of the American programme for use in each European country would, by necessity, be individually very costly – particularly because each country has a unique approach to law enforcement and a unique economy. In fact, only Germany has thus far supported the extensive development and implementation of a comprehensive DEC programme appropriate to that country's needs. Nevertheless, there is a clear, recognised need and unanimous willingness throughout all of the participating countries to collaborate on the development of an appropriate European version of the drug recognition programme. A subsequent problem will be the necessarily expensive implementation of such programme within the police domain. But programme efficiency can only be guaranteed if education of the officers is fundamental, systematic, and ongoing. Finally, the necessity of conducting and paying for these programme requires a societal consensus for effectively combating the drug problem in traffic.

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Practical experience in the field of control

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I would like to quickly cover some general aspects of our approach, both before legislation, and to say a few words on the legislation and its practical aspects.

I will also mention a scheme of controls that we conducted in 1995 and problems we encountered, the tools that we used and the organisation of controls in those days as well as some future problems and measures to be covered.

A little word of history will be the first part, the motivation that brought us to our approach and a little word covering the legislation which is now in place.

In 1993-94, we received the first results of our investigations. During these tests, a great deal of people were driving back from Holland with no drugs at all, but clearly under the influence of illicit substances. We began to look for a tool to combat this and started with a few investigations in order to find out what the scope of the problem was. The first result, in 1993-4 in the Province of Antwerp, showed that between 10 to 17% of all drivers tested positive for one or more drugs.

In 1995, the Government decided that measures were necessary to fight the problem, beginning with a number of exercises. These were actually the launching pad for a number of other studies, where we actually showed that it really was a problem to be driving with drugs and that it was possible to tackle the problem, namely with an article in the law on impairment or being drunk ("*l'état analogue à l'ivresse*"); a similar state to being drunk due to alcohol, but with drugs or medicines instead. Based on that, we then wanted to prove the existence of impairment. The next step in our approach in Belgium was a study that was actually conducted by Dr Verstraate: the BTTS study. This very interesting study was actually the basis for our legislation. It was a study based on almost 1500 cases of injured cases brought into casualty hospitals. They were tested in their urine for alcohol, and the connection was made with the cause of the accident. The conclusions of the study are particularly interesting. It was stated that 19% of the drivers were tested positive for benzodiazepines and drugs; actually, the exact figure was 10% for illegal drugs and 9% for benzodiazepines, which is quite a large proportion.

In 1996, we had the first legal project, and this year, the law was passed. The legislation with the philosophical concepts have already been discussed, as have the zero-limit and impairment. The latter is very difficult to measure as such, but because of the problem of alcohol in traffic, it was decided to go for the same philosophy as for alcohol, detoxification, because of the possible impairment of drugs.

The test is a three-tier test, resembling the one existing in Germany, giving the police officer the right to take a urine sample to check for immuno-acids, and if positive, to then take a blood sample. The blood is used as evidence during the trial, yet limiting its use in the field of the law on traffic safety; it may not be used for drug testing.

In 1995, we started to use Article 35 in our law, dealing with impairment and similar states of impairment, in an attempt to convince prosecutors to punish. We did a number of tests in a number of locations on roads used by tourists as well as people going and coming from night-clubs, and so on. We first made a selection of the vehicles we would stop: "what kind of car would we stop? What kind of persons should there be in the car?" We would not stop over-aged drivers, and of course we would target younger people and certain types of cars.

We would check the car generally, check the driver's external signs and invite those drivers to voluntarily, because of the non-existence of legislation, give a urine sample on the premises. We had only one refusal. The police officers who were to supervise the external signs were ordinary traffic wardens who had had only a three-hour briefing to give them sufficient knowledge.

They were accompanied by our staff, so that they did have help in the field. The tools used were the "Acusign", first the panels followed by single tests and finally the Acon from SYVA. The reliability of the test caused problems, as, in conjunction with this, we also performed the analysis of these urine tests in our National Institute of Criminolistics, which showed that, apart from a few mistakes of interpretation because of light and so on, there were 8% false negatives and 1% false positives, which can be detrimental to the driver involved. Since then, we have performed a number of other trials, with different tools. Many of them cover the legal requirements, although sometimes two tests are necessary. Yet, some of these are not simple enough to execute in the field, by the roadside. Another problem is the readability of the results without interpretation mistakes.

The turn over of personnel is an important issue. In the few examples mentioned, briefings seemed sufficient to motivate personnel, together with the help of personnel that has extensive knowledge of the effects of drugs. Since the preparation of controls require different approaches, it is necessary to tackle it in the correct way, with sufficient medical personnel, in order to respect the privacy of the driver (for example, a van with adequate toilets, and so on). The infrastructure is relatively heavy when testing for drugs and the budgetary impact is not to be ignored, as most of these actions occur at night, with an increased number of personnel.

There are a few measures regarding the application of this legislation, relating to the blood analysis and to the circulars of the Prosecutor General. This covers the way in which the police will target these controls, whether on the drug tourism scene or the night-club drugs scene, because of the risks of drug trafficking and road accidents with injuries.

In the operations of 1995, we used a check-list for drivers to cross-check the signs of drug use or influence of drugs on a person. We have further developed this in the meantime, based on what is available and has been developed both in the United States and in Germany. We now have a system which is operational.

For the next two weeks, we are starting with a three-day training course of personnel, since they have already had training in our drug-prevention network. These officers have had extensive training, a basic fourteen-day training, and additional days every three months, making a total of five days a year for the last two years in drugs and their effects in order to be able to talk to parents and educators. They have an extensive knowledge of the effects of drugs; they are the first group of officers to have benefited from this training and are the first to train officers of different units. The urine amino-acid procedure is nearly in place, as well as a number of practical criteria. A directive is under preparation for the organisation of those controls, since it involves a number of aspects, such as the respect of the person's privacy.

The clinical and behavioural assessment of person who drive while under the influence of psychotropic substances

by Dr Charles Mercier-Guyon, CERMT, Annecy, France

Driving while under the influence of illicit drugs or psychotropic medications used improperly is a problem encountered more and more frequently in road traffic accidents.

The police and the courts alike find it difficult to grasp the clinical and behavioural effects of such substances, especially since the composition and usage of illicit drugs, unlike that of alcohol and medication which remains relatively stable, have rapidly changing chemical natures and usage.

It is not easy to transpose the experience of the police and courts, firmly established where alcohol is concerned, to the host of drugs now in use.

In order to combat the problem of people driving while under the influence of drugs, the courts need specific evidence enabling them to prove that the offender's behaviour was adversely affected.

This evidence may take the form:

- a certified assessment of a state of intoxication or of adversely affected behaviour,
- the detection of a substance in bodily fluids,
- a confession of drug taking before driving, combined with an analysis of the products seized.

Far from helping the courts to take decisions, their experience of drink-driving legislation does in fact complicate their task.

Driving while intoxicated by alcohol, an offence still appearing in many national penal codes, has gradually been superseded by the offence of **driving with an illegal blood alcohol level**, involving an alcohol level in the blood or in the breath above the statutory level.

Thanks to the contribution of biological evidence, the blood or breath test, the law enforcement agencies have gradually dropped procedures for assessing behaviour and are no longer in the habit of using the forms provided for this, among which is the French “Form A”.

The administrative authorities responsible for the provisional suspension of driving licences, pending the final court decision, have also laid down suspension scales based upon the blood alcohol level recorded. These, of course, cannot be applied to drivers whose alcohol levels are within the law, even if they are obviously intoxicated.

In most of the countries wishing to introduce legislation on driving while under the influence of drugs, many representatives of the law enforcement agencies are firmly opposed to returning to any form of behavioural assessment, for fear of either risking an additional element of subjectivity, or giving the police on the spot a difficult task to perform.

Thus, they often express the wish for machines or detection tests to be invented, which would be equivalent, in respected of drugs, of breath and blood tests for alcohol.

While there is an obvious need for a detection system and drug-taking confirmation, it is just as clear to the scientific community that proof that a driver's behaviour is adversely affected, is a decisive element in determining the driver's liability, because of the complexity of the pharmacokinetic and clinical parameters of illicit drugs.

We may give a simple illustration of this principle if we say that, while there is a clearly established relationship between the degree of alcoholic intoxication and the measured level of alcohol, the same does not apply to drugs, which may remain in the body for several days, even weeks.

While a significant biological level of a drug may, in a similar to the biological markers of chronic alcohol consumption, lead to an inability to drive from an administrative point of view, only a clearly established relation ship between a positive drugs test and a finding of an adverse effect on behaviour may culminate in penal proceedings.

A behavioural assessment thus seems vital to enable the offence of driving while under the influence of illicit drugs and psychotropic medication put to improper use, to be characterised.

In order to achieve this, a number of countries have introduced clinical evaluation procedures, for which they use a variety of methods.

The United States has been using a complex assessment system for over fifteen years now. The **DRE (Drugs Recognition Expertise) Programme** is conducted by specialised members of the police force.

This system was set up because the American Constitution does not allow biological tests to be carried out on a driver unless there are certified reasons for suspecting an adverse effect on behaviour.

The DRE Programme is run by a small number of specially trained members of the police (two or three for an area equivalent to a department of France. They are re-trained every year and have to conduct a minimum number of examinations to retain their entitlement.

The expert reports produced by these police specialists generally have probative value in court, but there are limits for it is difficult to reveal the effects of stimulants, such as amphetamines.

The DRE concept, which could be described as “**wholly behavioural**”, offers a complete contrast to the south European (for example French) concept, which is “**wholly biological**”.

Several of these countries, among them Scandinavia, have adopted an approach between these two extremes, setting up an intermediate procedure based on the concept of “**reasonable suspicion**”. Under this concept, the police may carry out very simple but strictly codified tests, enabling them to request a clinical assessment and take biological samples, if a driver clearly shows behavioural disturbances or signs that a drug or drugs have been taken, when the results of the alcohol test prove to be negative.

The great variety of judicial systems and cultural customs worldwide has led to very different procedures relating to alcohol in different countries, raising a number of questions about clinical assessment procedures in the drugs field.

Who should carry out clinical assessments?

- the police officer in the field ?
- the DRE-style police specialist?
- A requisitioned doctor?
- A specialist doctor?

In every case, the use of a standardised procedure means that the staff concerned needs initial training.

Who should conduct on-the-spot drug testing or, at the very least, during the initial phase?

This, usually immunochemical, testing is necessary in all cases dealt with by law-enforcement agencies responsible for putting a stop to immediate dangers (in the event of obvious intoxication or of an offence against the highway code), or in which evidence is to be preserved in the immediate aftermath of the act.

The immunochemical testing of urine, saliva or sweat does not mean that there is no need for procedures to be made available to obtain confirmation through a blood test, where results are under dispute or if there are implications in the field of forensic medicine.

What clinical or behavioural signs should be sought?

- the effects of drugs are many and varied and that combinations of drugs, of alcohol and drugs and of medication and drugs are frequently encountered.
- the clinical signs linked to stimulant consumption are harder to detect.

In the light of the points, we may suggest that each country suggest a logical approach, with emphasis on its own particular judicial, legislative and cultural context.

The conditions for the implementation of behavioural assessment and drug testing

These conditions may relate to:

- fatal accidents,
- accidents involving personal injury,
- infringements of the highway code,
- manifest behavioural disturbances,
- accidents involving damage to property,
- systematic checks.

The parties involved in behavioural assessments

- **The police in the field**, who are always the first on the scene, and may simply start the procedure, calling in a DRE-style police specialist or a requisitioned doctor, either under an automatic procedure (as in the case of a fatal accident) or on grounds of reasonable suspicion. In future, they may have to be more thoroughly trained on the effects of drugs.

- **The police specialist**, DRE-style, requiring long and costly training courses only possible because of political good will or because of an obligation under the judicial system of the country concerned.

- **The requisitioned doctor** also needs training, or must at least have instruction on how to follow a procedure (clinical form, instructions on how to use the immunochemical results or sampling techniques), so that the assessment reports and biological results are certain to be reliable.

The clinical signs covered by the simplified behavioural assessment carried out by on-the-spot police

These signs have to be simple and objective, without any interpretation difficulties.

Five points could be adopted:

- **general behaviour**
  normal, slower than normal, agitated

- **speech**
  normal, indistinct or unintelligible

- **explanations**
  clear, muddled or incoherent

- **balance while standing with feet together**
  possible, difficult or impossible

- **walking in a straight line**
  possible, difficult or impossible.

The conclusions of the brief examination by a on-the-spot police officer are intended solely to ascertain whether the person examined does or does not seem in a normal state, as correlated with the result of the alcohol test. This preliminary report enables a procedure to be launched, for which a police specialist or a requisitioned doctor is called.

In our opinion, this preliminary examination must be extremely simple and leave a very small margin for subjectivity.

The clinical signs covered by the thorough behavioural assessment of a police specialist or a requisitioned doctor

These clinical signs must be recorded by staff that has been trained or has sufficient medical competence.

They may be subdivided into various categories:

General behavioural signs

- general behaviour
- state of mind
- speech
- temporal / spatial orientation

Signs connected with balance

- balance while standing
- walking

- turning to face the opposite direction
- fingers-to-nose test
- nystagmus

Clinical signs of the use of toxic substances

- examination of the conjunctivae
- examination of the nasal septum
- examination of the pupils and of their reactivity to light
- examination of traces of injections

Cardiovascular signs

- blood pressure
- pulse rate at different times during the examination

In addition, medical information is collected (previous record and consumption).

Where an assessment is made by a police specialist, any medical evidence (pathology, prescribed treatment) takes the person under examination “out of the assessment procedure” and put in the care of a doctor.

The DRE system applies, in theory, only to persons without a treated or untreated pathology likely to interfere with the behavioural assessment criteria.

It seems necessary, not only to introduce systems based on the criteria set out above, but also to conduct research into clinical and behavioural criteria for the new synthetic drugs regularly appearing on the market, to see whether they can be validated.

In the face of the danger faced by persons driving while under the influence of drugs and improperly used medication, it now seems necessary to develop a new culture of behavioural assessment among the police, doctors and courts responsible for dealing with such drivers in the context of forensic medicine.

Drug dependence and Road safety: The treatment and Rehabilitation of drug addicts and their relevance for the road safety.

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Introduction

In the last few years the relation between illegal drugs and driving has been a subject of growing interest (Albery et al., 1998; Del Río and Alvarez, 1995). This is mainly due to the notable increase over the last decades in the use by the population of illegal drugs, in most cases for enjoyment. What is more, driving is a necessary daily activity which is becoming more and more common. It is believed that an ever-increasing number of people might be driving under the influence of illegal drugs, which would mean a high-risk factor in terms of road safety.

So far the difficulties and limitations surrounding the area of illegal drugs and driving have, in our opinion, been the consequence of:

1. An attempt to use the alcohol and vehicle driving model for that of illegal drugs and driving.

2. Limited scientific knowledge; in many cases with more doubts and questions than answers.

3. Regulations which, although appropriate, are difficult to apply.

4. The consideration that alcohol is the main factor involved in traffic accidents, and that, in comparison, illegal drugs (and medicinal drugs) constitute a less serious problem.

Fortunately, this negative picture has begun to change considerably in the last few years, and although the situation is still far from perfect, significant progress in the field has meant that we can look ahead with optimism.

In particular, recent progress has been made in:

1. An analysis of how different illegal drugs affect driving ability (psychomotor performance, risk-taking behaviour, and so on); however, there are still several aspects to be clarified (Albery et al., 1998; Christophersen and Morland, 1997; EMCDDA, 1999; Robbe, 1998; Stramer and Mascord, 1994).

2. The drawing up of legislative measures to prevent driving under the effects of illegal drugs.

3. The development of devices in order to specifically and accurately screen different illegal drugs; these devices should be easy to use on the road and suitable for using easily obtainable biological fluids (saliva, sweat) (Buchan et al., 1998; de Zeew, 1998; Kintz, 1996; Kintz et al., 1998).

4. Programme (drug recognition) aimed at training the police to detect individuals driving under the effects of illegal drugs (Page, 1995; BAST, 1997).

5. Acknowledgement of how complex is the issue of driving under the effects of illegal drugs and of the need to develop policies directed towards reducing it (del Río and Alvarez, 1995).

Nevertheless, there are areas in which scientific knowledge and developments are still quite limited and where, as a result, action is a priority. Three areas, in fact, stand out, and these are the ones I am going to refer to in this article.

6. The consideration is that some of the people who start taking drugs for enjoyment purposes end up “ill” (dependence). We are mainly unaware of how this illness, together with the accompanying psychopathological, psychiatric and medical disorders, as well as the pharmacological treatment we prescribe, interferes in driving performance and when the person is once again fit to drive safely.

7. A particularly dramatic situation is that which involves individuals undergoing treatment with opiate agonists: maintenance programme using methadone, LAAM and buprenorphine. Can these people drive safely?

8. Rehabilitation is called for those people driving under the influence of illegal drugs (drug-driving); however, we lack experience in this field.

In this article I am going to concentrate, as the title of the article indicates, on an analysis of the complex relation between the illness (drug dependence), the course of treatment and fitness to drive. That is to say, an approach from the “clinical” point of view, that of the professionals who must treat these people. We shall, therefore, look at the person who, as a consequence of taking drugs on a regular basis, is “ill” — drug dependence — and who therefore needs medical and psychological help and later a rehabilitation-reinsertion programme. In this context the illness is much more important than the substance which produces it. As I pointed out previously, it is in this area where we have little scientific information at our disposal, and very often we must make our decisions and take measures on the basis of empirical criteria.

Use, abuse / harmful use and dependence

It is necessary to differentiate between three levels regarding drug taking and pathology. Most people take the different substances for recreational purposes with varying degrees of frequency. However, some of these individuals will, after a more or less prolonged period, find themselves in a situation of abuse / harmful use (depending on whether we use the DSM-IV or ICD-10 classification and criteria), which is basically characterised by a deterioration in one's social and work activity due to drug taking. A few of these persons, if they continue to take the drug / drugs, will end up being drug-dependent on it / them; in this situation the drug will represent the most important thing in their lives, with the appearance of tolerance and neuroadaptation.

As can be seen in Figure 1, the clinical drug-dependent disorder is a complex one, the situation of each patient being determined not only by the clinical manifestations of drug-dependence on each of the different substances (cocaine, heroin, amphetamines, and so on), but also the different disorders, both psychopathological and psychiatric (psychotic problems, anxiety, depression, insomnia, delirium, and so on) and the organic pathology these people may develop. The person's family and social context is also relevant. Obviously, the patient's clinical situation will vary according to the different associated disorders. Not only does drug-dependence disorders affect capable driving performance, but also the diverse psychiatric problems (psychosis, depression, anxiety, insomnia and delirium).

The effect of drugs on driving ability

Driving a motor vehicle is a complex multifunctional task involving visual search and recognition, vigilance, information processing under variable demand, decision-making, risk-taking and enough sensory-motor control to carry out all these activities correctly. It is also an overlearned (where practice has obviated the need for conscious recall) task, where critical high-level demands are very infrequent (Stramer and Mascord, 1994).

The different illegal drugs affect driving ability by different degrees. All the same, there exist, as can be seen in Figure 1, various aspects which significantly modulate a drug's final effect on driving ability (Del Río and Alvarez, 1995). Among these should be mentioned:

1. The amount taken. With continued drug taking, an increase takes place in the size of the dose. It is easy to appreciate that the greater the quantity taken, the greater its influence on the different aspects associated with the ability to drive properly.

2. The route of administration: oral, smoked, intranasal, intravenous. Certain drugs may be taken in more than one way (heroin, cocaine), with marked pharamacokinetic differences depending on how they are administered; these could have a greater or a lesser effect on driving ability (Cone, 1998).

3. The appearance of tolerance, that is, that a greater quantity of the drug must be taken so as to produce the same effects. This could also contribute to the effects brought about by increasingly larger doses on one's ability to drive not deteriorating much more than with initial doses.

4. Intoxication (overdoses) and withdrawal symptoms, produced when the person takes an excessive amount of the drug or when it is purer than normal (intoxication-overdoses), or when the individual is without the drug (withdrawal syndrome). In both cases there is a wide range of physical and psychic manifestations which may affect one's ability to drive safely.

5. Multiple drug taking. This is normal among people who frequently take illegal drugs and a wide variety of substances are mixed. Very often alcohol and benzodiazepines are taken in order to counteract the stimulating effects of drugs, as well as deprivation symptoms (Del Río and Alvarez, in press).

However, in the great majority of studies aimed at analysing the effects of illegal drugs on driving ability these aspects are not taken into consideration.

It is obvious that all these phenomena (an increased dose, tolerance, intravenous use, intoxication, withdrawal symptoms, multiple drug use) appear more frequently in those people who are drug dependent than among those who take the different drugs for enjoyment purposes.

It must be remembered that certain medicinal drugs which can be used for illegal purposes or as medication employed when treating these patients (benzodiazepines, antidepressant drugs, antipsychotic drugs) also interfere with the ability to drive safely (Barbone et al., 1998).

The dependent patient, and legislation concerning drug driving and regranting driving licences

In this regard, two normative aspects should be mentioned:

1. The different European countries have legal regulations concerning drug driving, with “sanctions against drivers who are under the influence of substances and have an impaired ability to drive a vehicle” (Kruger et al., 1998).

Obviously, this situation applies both to those who take drugs occasionally as well as to those who abuse or are dependent upon drugs, although it is the latter who are most likely to be under the effects of illegal drugs at any moment; consequently, if they drive they are breaking the law. However, as many of these drug-dependent people are unemployed, without family and social support, and sometimes commit crimes for their daily subsistence, they do not, in our experience, give great importance to driving under the influence of illegal drugs. Therefore, one of the priorities is that those who take drugs should be properly informed of the risks they are running.

2. The different member countries of the European Union possess national regulations on driving licences following Council Directive 91/439/EEC (Table 1). Here it is indicated that “ driving licences shall not be issued to or renewed for applicants or drivers who are dependent on psychotropic substances or who are not dependent on such substances but regularly abuse them”. In accordance with this regulation, people with a drug dependence are not permitted to obtain or renew a driver's licence. Significant differences exist concerning the implementation of this regulation in the different member states.

It is important to point out that, in line with this regulation, and as we indicated previously (Table 1), the illness itself, many of the possible associated psychiatric disorders (psychosis, depression, anxiety, delirium) suffered by these patients, as well as the medication occasionally prescribed (benzodiazepines, some antidepressant drugs and antipsychotic drugs) prevent these people from being allowed to obtain or renew their driving licence.

Medical-psychological assessment of fitness to drive

Legislation concerning drug driving is particularly a matter for the police and sanctions authorities, and health professionals should limit themselves exclusively to informing and advising their patients (if they are known to be taking illegal drugs) to abstain from driving if they have taken certain medication or illegal drugs.

The role of health professionals in assessing drug-dependent patients' fitness to drive is of much greater importance: apart from giving them adequate information, they should inform their patients when they are unfit to drive and fit to drive again.

We are now, by way of example, going to analyse two different situations, namely, that of the United Kingdom and Spain.

In the UK, guidelines for medical practitioners suggest a period of time away from driving if drug addiction is diagnosed, with the responsibility of informing the licensing authority about a drug problem resting with the patient / licence holder. In practice, this mechanism is not well-implemented (Albery and Strang, 1995; Albery et al., 1998). The authors claim that this is due to the fact that “doctors are not aware of the procedures or because they believe it to be an unacceptably large disincentive for individuals to seek treatment, which may conflict with their professional obligations and confidentiality”.

As regards Spain, before the issue or renewal of a driving licence, the person has to be examined at a special Medical Centre by a general practitioner, an ophthalmologist and a psychologist. There are about 1,400 such centres, where around three million drivers go for a check-up every year. There are very few driving licence revocation cases related to drug-dependence.

The big problem which we, professionals who work in this field, face is perhaps threefold:

1. On the one hand, it has not been proved that drug-dependent patients have greater accident risk than those who do not belong to this pathological group or have a different case history (such as anxiety, depression, and so on). This also applies to drug-dependent patients receiving treatment.

In accordance with the legislation, when a person is diagnosed as drug-dependent, he / she should not drive and his driving licence should be taken away. However:

2. Perhaps the most dangerous period from the point of view of road safety is all the time prior to being diagnosed and treated, when he / she was already ill (drug-dependent) and presumably drove vehicles, a high-risk factor. We are in no doubt that it is these people without adequate medical and psychological monitoring who constitute the greatest risk.

3. In addition, once the person starts medico-psychological treatment and is undergoing check-ups, his situation changes: he can and must be properly informed about the effect of the drugs he is taking and his illness with regard to driving vehicles, and be advised not to drive or to try not to drive. What is more, being in work encourages patients to integrate socially, and very often helps them to abandon drugs. For many jobs driving is necessary, whether it be only for getting to work. In our opinion, it is preferable that a person who is receiving the right kind of medical-psychological treatment, drives in order to reach his place of work, rather than not doing so because of the possible greater risk of accident.

From these three points of view, starting the treatment by taking away the driving licence may, although perhaps correct and expedient, be a negative measure, clearly limiting the relationship between the doctor / psychologist and the patient.

It seems obvious that health professionals and in particular the doctor should carry out a clinical assessment of each patient based on:

1. Drug-dependence history

2. Psychiatric pathology, psychopathology and medical pathology

3. Prescribed treatment

Then, taking into consideration these points, they should give the patient the appropriate advice: that he / she should try not to drive for a limited period (for example, during the first four weeks of the treatment), or that he / she should drive and then rest every so often (every hour, for example), or that he should not drive at all.

A matter which also needs to be determined is when will the person be once again fit to drive safely.

We believe that the decision as to whether or not a drug-dependent patient is fit to drive should rest with a different health professional from the one providing the treatment, as is the case in Spain.

Treatment of drug-dependent patients. Methadone maintenance programme.

A special case is that of opiate-dependent patients, and especially those dependent on heroin. In simple terms, the two main strategies are: 1) harm-reduction programme, and in particular methadone maintenance programme, and 2) drug-free programme.

Regarding methadone maintenance programme, a great deal of controversy exists as to whether or not methadone itself affects driving ability, and if drug-dependent patients on maintenance programme are fit to drive or not (EMCDDA, 1999; Hauri-Bionda et al., 1998).

Before commenting on scientific evidence in this regard it should be pointed out that:

1. Each patient entering a methadone maintenance programme receives an initial dose of methadone depending on the amount of heroin or other opiate he / she takes. Obviously, to give an example, a patient taking 30 mg / day is not the same as one taking 120 mg / day.

2. At the start of the treatment patients receive high doses of methadone which are progressively reduced. First of all further medication is often prescribed (anxiolytics, hypnotics, antidepressant drugs, antipsychotic drugs) for treatment of the patient's psychiatric pathology. This is usually a long process, with some patients even taking methadone for years. In addition, there are both very strict and very flexible methadone maintenance programme. When it comes to interpreting the fitness to drive, it is clear that no comparison can be made between the initial phases of treatment and the periods when the patient is stabilised, or at the end of the programme, when only very low doses of methadone are taken. This means that neither the methadone maintenance programme themselves nor the patients on them are homogeneous.

In Table 2, the conclusions are presented relating to methadone in the literature review on the relation between drug use, impaired driving and traffic accidents, carried out for the EMCDDA (1999).

In general, it concludes that methadone has no marked effect on psychomotor performance, and, except at the start of treatment (the first month), patients on methadone maintenance programme are fit to drive. Nevertheless, there are still many aspects to be dealt with. As things stand at the moment, the decision, especially at the start of treatment, is a hard one to take, and should be based on a personalised evaluation of the patient.

It should be noted that LAAM (levo-alpha-acetylmethadol) has also been introduced, and that this, together with buprenorphine, is used in maintenance programme. We have little information concerning how these substances affect driving ability.

Finally, a word about drug-free programme. Here naltrexone is normally administered, and this does not appear to have any marked effect on driving ability. However, in the Summary of Product Characteristics (Spanish version) an indication is given that naltrexone may interfere with the psychic and / or mental capacity needed to undertake tasks requiring special attention, such as driving vehicles.

Rehabilitation of drug-driving offenders

The rehabilitation of drug-driving offenders should be understood in a broad sense to cover any course of treatment aimed at changing the behaviour of the offender so that he / she does not persist in combining drug-taking with driving. In this regard, use may be made of educational methods, psychological techniques, medical treatment, or a convenient mix.

In the field of alcohol, rehabilitation of drink-driving offenders has been shown to be effective, with a wide variety of programme and approaches depending on the country (Wells-Parker et al., 1995).

As regards rehabilitation of the drug-driving offender, there is, to the best of our knowledge, very limited experience available within European Union countries.

Future projects

In our opinion, any integral approach concerning the question of illegal drugs and driving should not fail to contemplate two important aspects: 1) the cases of the patients and the treatment they require (drug dependence), and 2) the need to rehabilitate drug-driving offenders.

What is more, it is necessary to involve the professionals treating these people, since it is they who are in contact with them and look after them, and, generally speaking, the patients tend to pay attention to their health professionals' recommendations.

In our experience, the latter need much more scientific evidence concerning the aspects mentioned here if they are to show greater involvement when dealing with their drug-dependent patients. We have commented on many aspects from the point of view of logic and supposition, but decisions should be taken on the basis of scientific knowledge.

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Table 1: Council Directive of 29 July 1991 on driving licences (91/439/EEC).

Annex III: Minimum standards of physical and mental fitness for driving a power-driven vehicle: topis related to mental disorders, alcohol, drugs and medicinal products.

Definitions

1. For the purpose of this Annex, drivers are classified in two groups:

1.1. Group 1: drivers of vehicles of categories A, B and B+E and subcategory A1 and B1;

1.2. Group 2: drivers of vehicles of categories C, C+E, D, D+E and of subcategory C1, C1+E, D1 and D1+E.

Mental disorders

Group 1:

13.1. Driving licences shall not be issued to, or renewed for, applicants or drivers who suffer from:

- severe mental disturbance, whether congenital or due to disease, trauma or neurosurgical operations,
- severe mental retardation,
- severe behavioural problems due to ageing; or personality defects leading to seriously impaired judgment, behaviour or adaptibility,
- unless their application is supported by authorised medical opinion and, if necessary, subject to regular medical check-ups.

Group 2:

13.2. The competent medical authority shall give due consideration to the additional risks and dangers involved in the driving of vehicles covered by the definition of this group.

Alcohol

14. Alcohol consumption constitutes a major danger to road safety. In view of the scale of the problem, the medical profession must be very vigilant.

Group 1:

14.1. Driving licences shall not be issued to, or renewed for, applicants or drivers who are dependent on alcohol or unable to refrain from drinking and driving.

After a proven period of abstinence and subject to authorised medical opinion and regular medical check-ups, driving licences may be issued to, or renewed for, applicant or drivers who have in the past been dependent on alcohol.

Group 2:

14.2. The competent medical authority shall give due consideration to the additional risks and dangers involved in the driving of vehicles covered by the definition of this group.

Drugs and medicinal products

15. Abuse:

Driving licences shall not be issued to or renewed for applicants or drivers who are dependent on psychotropic substances or who are not dependent on such substsances but regularly abuse them, whatever category of licence is requested.

Regular use:

Group 1:

15.1. Driving licences shall not be issued to, or renewed for, applicants or drivers who regularly use psychotropic substances, in whatever form, which can hamper the ability to drive safely where the quantities absorbed are such as to have an adverse effect on driving. This shall apply to all other medicinal products or combinations of medicinal products which affect the ability to drive.

Group 2:

15.2. The competent medical authority shall give due consideration to the additional risks and dangers involved in the driving of vehicles covered by the definitions of this group.

Table 2: Literature review on the relation between drug use, impaired driving and traffic accidents (EMCDDA, 1999): executive summary in relation with methadone

- Experimental studies have suggested that, in "*naïve"* individuals, the effect of acute methadone administration is to produce a dose-dependent reduction in reaction time, in visual function and in information processing. Significant psychomotor impairments however are seldom evident when "*non-naïve"* subjects have been tested.

- Where new patients on a maintenance programme are concerned, the literature suggests that it is advisable to allow a period of up to a month during which they should not drive.

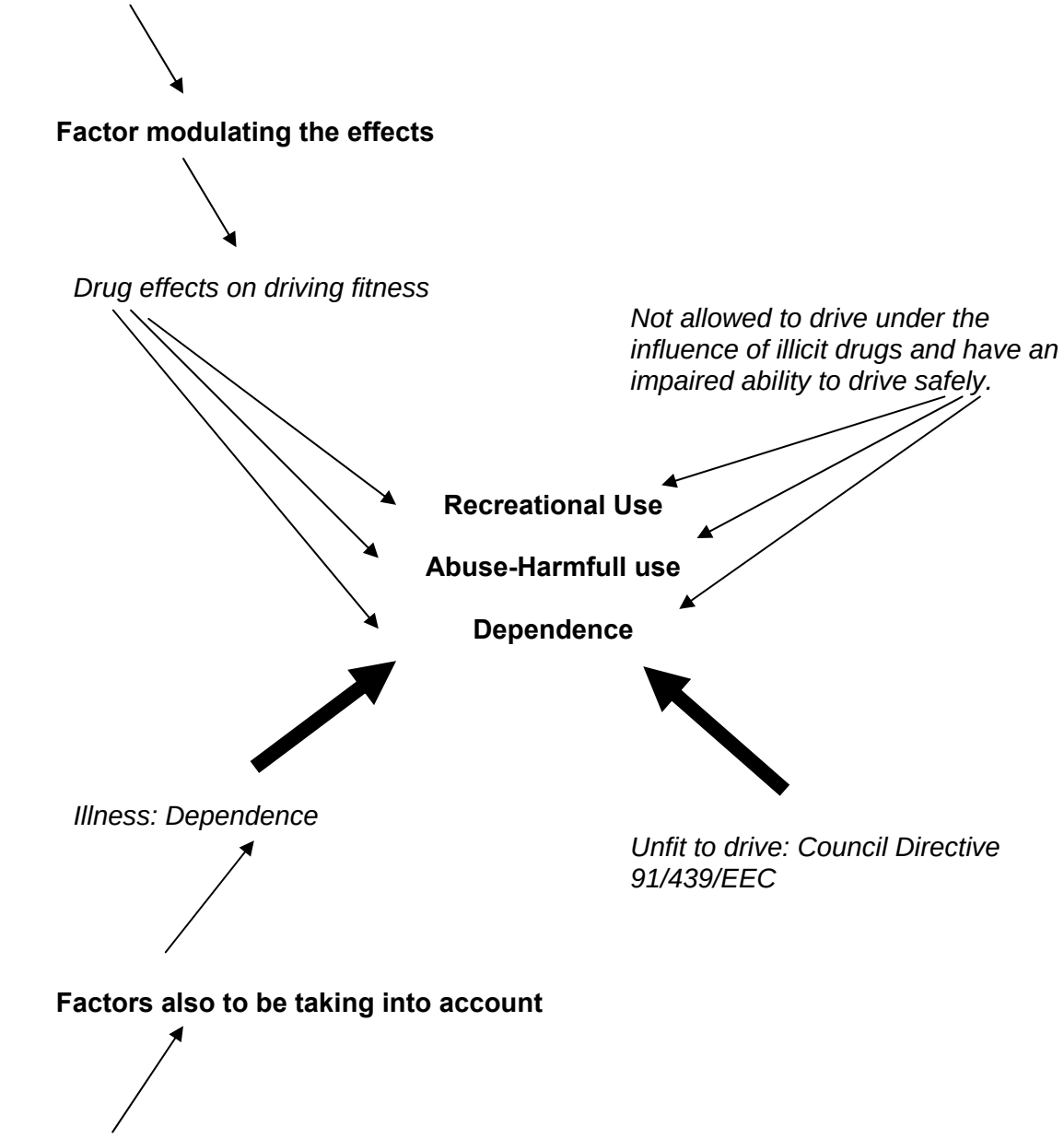
- Field studies have shown that, where body fluids have been examined for drug traces, narcotic analgesics [including methadone] have not featured prominently.

- In general the effects of the opioids are slight when compared to other drugs such as benzodiazepines.

- As is the case with numerous drugs, methadone can potentiate the deleterious effects of alcohol.

- Both experimental and field studies suggest that methadone use does not result in sufficient driving impairments to merit users being designated as 'unfit'; experimental studies would suggest that this is particularly the case with *non-naïve or experienced* users.

Figure 1 : Illegal drugs and driving



Licit drugs and driving: prevention by informing patients, physicians and pharmacists

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Introduction: rationale and timing

In 1995 and 1996; a Belgian Toxicology and Trauma (BTTS) study was carried out on 2,053 injured drivers. In this population, 8% were tested positive for benzodiazepines in plasma, 6% for cannabinoids in urine, 5.5% for medicinal opiates in urine, 2% for amphetamines, and so on. The results were presented at the end of 1996 and the Secretary of State for Security, Mr. Jan Peeters, started to prepare legislation on drugs and driving. One of the questions was whether the new laws would cover only illicit drugs or also medicines. Several experts advocated to also cover medicines, because illicitly obtained medicines are often used by drug addicts; making the difference between licit and illicit products more and more vague. Moreover, a larger percentage of the driving population uses medicines rather than illicit drugs. In the end, it was decided that the law would only cover illicit drugs, following the example of Germany. It was then decided to start a prevention campaign on medicines. The Secretary of State asked the Belgian Road Safety Institute to study the problem. The Institute contracted the Toxicological Society of Belgium and Luxembourg (BLT) to do a written study on the problems of medicines and driving. Two deliverables were asked:

1. a report concerning the influence of medicines on driving performance, where the problem of medicines and driving is discussed in general and the medicines are categorised according to their influence on driving.

2. a text for the general public, where the results of the report are summarised and understandable for the general public, with a general introduction and a list of medicines with indication (with symbols) of their influence on driving performance.

The work was carried out in 1997 and 1998, and resulted in April 1999 in the production and distribution of the brochures.

Methods

Six people started to work on the subject. The list of medicines available on the market was obtained from the Belgian “Commented Repertory of Medicines 1997” and 179 molecules in nine therapeutic groups were studied. Literature data from around 500 references were obtained, mostly from scientific journals and conference proceedings. For the public leaflet, contacts with colleagues were established and several examples of existing brochures were obtained. Internet searches were also performed to find texts on medicines and driving intended for the information of the public.

For the report, a common framework for all discussed drugs was decided:

1. a list of the available trade marks and the text of the package insert concerning driving and use of machinery

2. pharmacokinetic data (time of peak concentration and half-life)

3. a review and discussion of the relevant existing studies

4. classification: the classification was based on the system of Wolschrijn et al. which contains seven categories: no effect (I), minor (II1) and moderate (II2) effect and severe effect (III). In addition, three classes exist (I*, II* and III*) on basis of pharmacological profile (for those drugs for which insufficient study data exist).

For the public leaflet, examples from other countries (Australia, Finland, France, Germany, The Netherlands, Spain, UK) were obtained.

After some time, it was decided that a brochure would be made for the physicians and pharmacists, in addition to the report, because it was thought that it would have more impact and because the cost of sending the report to all professionals involved (60,000) was too high.

Drafts of the report, brochure and public leaflet were submitted to the pharmaceutical industry through their professional organisation. The first reaction was not very enthusiastic and we were sternly warned that only the text of the package insert has legal value and all information must comply with that. Reactions from individual companies were more constructive, offering missing information and advice.

One company strongly objected to the classification of one drug in category II1. They sent us more information, and threatened with a lawsuit if the report was published as such. After a long review and many discussions, and after contacting many experts, the drug was re-classified in category I.

Finally in April (in order to coincide with the new legislation on drugs and driving), the brochures were printed. This consisted of:

- The report in Dutch and French (3,000 copies)
- A CD-ROM containing the text of the report in both languages (3,000 copies)
- A thirty-two-page brochure for doctors and pharmacists (65,000 copies) in both languages
- A general public leaflet (50,0000 copies) in both languages.

The brochures and leaflet are distributed free of charge. The brochure will be sent to all professionals together with the *Folia Pharmacotherapeutica*, an official monthly publication of the Ministry of Public Health. The leaflet will be distributed to doctors' practices, health insurance organisations for the general public. The report and the CD-ROM will be sold to interested professionals at a price of 18.6 Euros. In addition, information will be made available though the website of the Belgian Road Safety Institute (www.bivv.be).

Encountered problems

Information was sometimes difficult to find, mostly on older drugs: 46% were categorised in presumed classes (I*, II*, III*). The percentage varies between the different therapeutic groups. The diversity of study protocols (subjects, tests, doses, acute or chronic use), with sometimes conflicting results, made it sometimes difficult to classify the drug.

Classification of the drugs in the seven groups was not always easy. Sometimes a drug would appear safe on the basis of existing studies, although other experience taught that they are impairing. The need to classify the drugs without taking the dose into account also made it difficult.

The sometimes negative reactions from the industry, with accusations of lack of objectivity left a bitter aftertaste.

Another problem was the request to include trade names in the public leaflet. Many members of the working group considered this dangerous because patients could over-react and stop their medications instead of their driving, with adverse consequences. An additional problem is that trade names change and the brochure would be outdated very rapidly.

The future

This work should not stop here but be continued in time. A possibility would be to include information on driving impairment in future editions of the commented Repertory. The newer drugs and the classes not yet evaluated should be studied too. One should decide whether to do this on a national or international (European) basis.

The question whether to label the medicines with a warning label remains a matter of debate, when considering the experience of other countries.

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Substitution programme (methadone) and driving ability

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Introduction

After more than ten years of methadone substitution in Austria, this type of therapy has proved to be effective and well received by the addicts themselves. The psychosocial rehabilitation of addicts suffering from multiple dependency must be regarded as the main aim of substitution treatment. Possession of a driving licence is not only important for social prestige in our society but in most cases is also the precondition for full occupational integration.

Legal rules governing driving ability

The individual provisions affecting the licensing of a person to drive on the public highway are to be found in the Motor Vehicle Act (20th amendment), the Driving Licence Act (2nd amendment) and the Road Traffic Act (20th amendment), as well as in individual implementing orders. A Health Ministry circular of 22 January 1991 states, with regard to driving licences for substitution programme patients, that “the question of driving ability during substitution treatment is particularly important, since occupational rehabilitation is either impaired or totally prevented if a programme participant is thereby automatically deprived of his right to drive”.

The statutory provisions are to be found in the implementing ordinance to the Motor Vehicle Act and in the 1997 Driving Licence Act and its implementing ordinance. It is first and foremost the task of a doctor — generally a public authority's medical officer — to decide whether a driver is in a mental and physical state of health such as to be able to control a motor vehicle and drive it in on the public highway whilst complying with traffic regulations. Substitution patients, like patients who are treated with psychotropic substances, must be informed, counselled and monitored as to whether their treatment is likely to impair their driving ability. If in individual cases it is suspected that an individual's driving ability may be impaired as a result of his illness or treatment, a special psychiatric and psychological examination is then necessary. A well-founded decision cannot be taken on the basis of a psychological examination alone but must also include a medical examination.

In the event of an individual relapse involving multiple addiction or misuse of opiates or opioids, it is the doctor's task to examine whether the person concerned is still capable of driving and, if not, to suggest appropriate action. The competent authority may be notified, but, as a result of the 1998 Medical Act's new provisions concerning the medical duties of discretion and disclosure, this is no longer mandatory.

Methods

For our study of the driving ability of methadone substitution patients we selected thirty-four people, all of whom had been on a substitution programme for at least six months and had observed the rules laid down in the Health Ministry circular.

The following criteria were considered:

- Psychopathological examinations
- Psychological tests

- Methadone concentration in serum
- HIV results
- Drug screening of urine samples (opioids, opiates including differentiation, cocaine, benzodiazepine, methaqualone, barbiturates, amphetamines and Antapentan)
- Neurological status

The blood sample to determine methadone level was taken immediately before and the urine sample for drug screening immediately after the psychological tests were completed.

The normal limits for healthy test subjects of comparable age were used as controls for the psychological tests. Positive HIV results and / or psychiatric secondary symptoms not requiring treatment with powerful psychotropic substances were not, in principle, considered to impair driving ability. Patients manifesting AIDS symptoms were not accepted for our study. Alteration in driving ability due to isolated affects, HIV infection (eg HIV encephalopathy or polyneuropathy) or organic mental syndromes of other origins (such as after-effects of multiple addiction), or even caused by other clinical symptoms was taken into account in individual cases.

Results

The daily dose of methadone administered ranged between 10 and 180 mg. The level of methadone measured in the plasma showed a particularly good correlation with the dosages used, lying between 0.09 and 1.32 mg per litre of plasma. To test reactivity we used the "*Wiener Determinationsgerä*t" ("Vienna determination apparatus"). Verbal memory was assessed using the Arnold Kohlmann test. Visual short-term memory was assessed with the help of Benton's test, and attention and concentration with the Pauli test procedure (+d2 on the Brickenkamp scale). Of the thirty-four test subjects, twenty-two obtained the results required to be considered able to drive, and nine even achieved above-average results.

Similarly, none of the psycho-pathological results was such as to jeopardise the positive assessment of driving ability resulting from the psychological tests. Fifteen test subjects, of whom 10 were HIV-positive, showed psycho-pathological characteristics. In individual examination, 4 patients showed symptoms of toxic psychosis and one patient was in a state of exogenous depression. In 10 patients, we found a discrete encephalopathy or an organic mental syndrome which matched neurological findings of a diffuse cortical dysfunction. As already mentioned, half of the 34 patients were HIV-positive but presented no manifest AIDS symptoms.

Drug screening produced positive results in 6 cases. We evaluated these test subjects as being temporarily unfit to drive. However, it was quite possible to revise this assessment within 6 months if the test was passed satisfactorily.

Nineteen patients, 9 of whom were HIV-positive, met the criteria we had laid down for a positive assessment of driving ability. In all, 25 of the patients already held driving licences before the start of the substitution treatment. Of these, 17 were deemed fit to drive, from which we may deduce that driving-licence holders are much more motivated to pass the necessary tests.

Discussion

Simple assessments of the driving ability of drug addicts in a state of abstinence or during substitution therapy cannot replace a properly individual assessment of a former addict's abilities. The addict's personality and his current mental and physical state of health (which play an important role), as well as specific individual factors affecting commitment must all be taken into consideration for a sophisticated assessment. On the one hand, a number of vague objections and prejudices relating to the reliability of former addicts in today's road traffic must be overcome. On the other hand, we must be careful not to assess too generously the driving ability of addicts in treatment because we are concentrating too much on rehabilitation.

The study to assess the driving ability of addicts undergoing methadone substitution treatment was not designed to detect in individual persons certain impairments, produced by methadone substitution, of the particular abilities required for driving. The aim was rather to demonstrate that, in the case of many addicts, methadone substitution treatment could result in positive changes in parameters specifically affecting driving ability and therefore use of the public highway.

Follow-up study five years later

In a follow-up study in 1997, the 34 test subjects previously examined were found to have the following socio-demographic status:

• Test subjects still undergoing methadone substitution in the drugs out-patient department of the university psychiatric clinic	13	38.2%
• Test subjects who had left and were undergoing substitution or other treatment elsewhere	2	5.9%
• Test subjects in prison	1	2.9%
• Test subjects having properly completed their methadone treatment	5	14.7%
• Test subjects having broken off their substitution treatment or having moved	6	17.7%
• Test subjects having died	7	20.6%

It was thus possible to cover 13 test subjects from the original survey — methadone substitution and driving ability — in a follow-up study. From the continuous records of the drugs out-patient department of the university psychiatric clinic, it was possible to ascertain the patterns of drug consumption during substitution treatment over the previous five years, and thus any additional use of illicit drugs or medicines.

Results

Of the 13 follow-up subjects:

- 8 were HIV-positive (of whom 5 manifested AIDS symptoms)
- 10 were in receipt of occupational invalidity pensions
- 1 was registered as unemployed
- 2 only were in regular employment.

These social situations no doubt reflect a certain order and regularity in lifestyle but do not indicate any successes or positive trends in terms of occupational rehabilitation. With regard to abstinence from drugs and / or additional use during the previous five years, the toxicological findings were as follows:

- 4 test subjects showed no additional use
- 2 test subjects showed only sporadic additional use
- 5 test subjects showed occasional to frequent additional use during the observation period
- 3 test subjects developed alcohol problems.

It should also be noted that the drugs consumed most often in addition to the methadone dose were benzodiazepine derivatives — in particular diazepam, oxazepam, flunitrazepam and bromazepam — as well as codeine, dihydrocodeine and cocaine, but seldom amphetamine derivatives or alcohol. Except for thiopental, which is used as an anaesthetic, barbiturates are no longer obtainable in Austria and are thus no longer a factor. Even substances such as phencyclidine (better known as “angel dust”) or propoxyphene could be detected only occasionally. We have also been testing on a random basis for LSD but have obtained no positive results so far, except from collaborative trials.

In 1992, on the basis of the overall assessment criteria used at the time, 5 of the 13 substitution patients were deemed to meet the requirements for driving ability. Taking the same criteria, the 1997 follow-up study found positive results for 4 test subjects as regards their fitness to drive, while 4 other test subjects had lost their fitness over the past 5 years, and 3 test subjects who were originally assessed as unfit in 1992 had fulfilled the requirements in the meantime. Only in the case of one test subject had the conditions remained stable according to the study results. The proportion of HIV-positive patients and / or AIDS sufferers in the follow-up group was strikingly high: 5 test subjects had contracted with AIDS and 3 were HIV-positive. Of the three test subjects who were positively assessed in the follow-up study with regard to their driving ability, 2 were HIV-negative and 1 HIV-positive.

Discussion

Given the lack of continuity in the original methadone substitution test group, a conclusive opinion concerning driving ability can be given only for those people who continued with the substitution treatment. It emerges that, taking into account all the criteria, the fitness of this group to drive deteriorated, since after five years of substitution treatment three of the test subjects who were originally assessed as fit to drive could no longer reach the standard set by these criteria. One test subject, however, was able to achieve the requirements during the observation period despite originally having been unable to do so. The result may be blurred by the high proportion of HIV-positive patients and / or AIDS sufferers who, even during the first study but much more so in the second, showed cognitive performance deficits due to HIV-related encephalopathy. From the overall progress of all 34 test subjects, the conclusion may be drawn, with regard to driving ability, that the conditions for safe driving of motor vehicles exist or are likely exist:

1. Only in the case of reliable participation in substitution treatment and compliance with all its rules, and not until a one-year observation period has elapsed.

2. Only on condition that no illegal drugs or unprescribed medicines whatsoever are taken in addition.

3. Provided that there is strict abstinence from alcohol.

4. Provided that the driving licence is for a limited period, with regular examination of current driving ability.

The poor results of rehabilitation reflect the problems of HIV-positive patients and AIDS sufferers: in the follow-up group of 13, all 8 HIV-positive test subjects were receiving occupational invalidity pensions. As far as HIV status is concerned, in addition to supplementary use of other drugs, greater attention should be directed to cognitive deficits in relation to driving ability. It must be emphasised, however, that this high percentage of HIV-positive patients is no longer representative of the population of test subjects currently undergoing substitution treatment. Whereas at the time of the first study approximately 50% of the substitution-programme patients were HIV-positive, this percentage has recently dropped to some 6%. On the other hand, however, the percentage of patients infected with Hepatitis C rose to between 70% and 80%.

Active participation of drug addicts (as drivers of motor vehicles) in road traffic is almost always rejected on the basis of an undefined risk. The question of whether and in what way drug addicts can again meet the fitness requirements to drive a vehicle while in substitution therapy or after having completed withdrawal treatment is one which is preoccupying doctors, drug therapists and legal experts in the field of transport. In addition to abstinence from drugs or substitution without additional use of illegal drugs, treatment is aimed at re-socialisation and a return to mental and physical health. The possession of a driving licence may be seen not only as an expression of individual integrity but also as a precondition for leading a socially complete life.

As our studies show, through conscientious assessment and close monitoring — which is necessarily the case with participants in a methadone substitution programme — it is possible to allow a not insignificant number of substitution patients to hold a driving licence at least temporarily. Such a decision can also have a positive influence on rehabilitation. It must, however, be emphasised that this evidence is valid only for methadone substitution patients and not for opiate substitution patients (morphine, codeine and dihydrocodeine).

Study criteria

- Psychopathological examinations
- Psychological test
- Methadone concentration in serum
- HIV results
- Drug screening of urine samples (opioids, opiates including differentiation, cocaine, benzodiazepine, methaqualone, barbiturates, amphetamines and Antapentan)
- Neurological status

Psychological tests

Reactivity
"*Wiener Determinationsgerät*"

Verbal memory
Arnold Kohlmann test

Visual short-term memory
Benton's test
Concentration
Pauli test procedure

Socio-demographic status of follow-up subjects

• Still in treatment	13	38.2%	
• Left treatment		2	5.9%
• In prison		1	2.9%
• Treatment properly completed	5	14.7%	
• Treatment interrupted		6	17.7%
• Died in the meantime		7	20.6%

Social situation of follow-up subjects n = 13

HIV positive	8
Occupationally disabled (pension)	10
Unemployed	1
In regular employment	1

Conclusions

- Participation in substitution treatment and compliance with all rules
- Not before a one-year observation period has elapsed
- No additional use of any illegal drugs or unprescribed medicines
- Strict abstinence from alcohol
- Time-limited driving licence with regular examination of current driving ability
-

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Re-granting of Driving Licences and Medico-Psychological Assessment of Drivers in Germany and Selected European Countries

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Abstract

By law, specified groups of drivers known to display an elevated risk in terms of DUI, DUID, aggressive and negligent driving, or with physical or mental impairment, have to submit to a medico-psychological assessment (MPA) in the course of their application for re-granting a driver's license.

Administrative licensing basically serves two purposes:

1. to ensure that drivers unfit to drive do not do so as long as they are unable to prove to the contrary and

2. to assess the underlying causes of negligent behaviour in order to enable the driver to take adequate measures to re-establish his ability to drive.

MPA has been evaluated on a large scale; the outcome shows a highly significant drop in recidivism for those assessed with a positive result as well as for those participating in rehabilitation programme. The recidivism rate dropped by more than 50%.
The legal, medical and psychological criteria (including personality and performance variables) will be discussed.

Captain Edward Murphy, Jr., of Edwards Air Force Base, an engineer, working together with the biophysicist and medical doctor, Major John Paul Stapp drew this lesson from a number of failures observed during high deceleration stress tests: "If there's more than one way to do the job and one of those ways is to end in disaster, then somebody will do it that way" (BLOCK, 1979). This is certainly true for driving as well.

Background

At the turn of the last century and well into the 1920s, psychological tests developed to assess the skills of industrial workers, railroad personnel, army truck drivers and private drivers. The main focus of testing was on skill, particularly reaction time, as it was then widely believed that highly developed skills and abilities were the best predictors of success on the job, handling machinery and driving. Interestingly enough, this belief will still survive into the turn of the next century, which we are now facing, although psychological research has demonstrated the superiority of combined variables in predicting driving success.

The development of medico-psychological assessment in Germany after the second world war up until now has — particularly in the last fifteen to twenty years — turned to an integrated approach: a driver must be physically and mentally fit to drive. It is acknowledged that physical and mental variables are inter-related. Psychologically, not only skill is necessary; personality variables, traits and behavioural preconditions also play an important role in driving behaviour, in related risk potential and accident causation.

Situation in different countries:

Country	Driver assessment	Driver rehabilitation
Austria	Yes	Yes
Denmark	No	Yes
France	Yes, partially for HRO	No
Germany	Yes	Yes
Hungary	Yes	Yes
Italy	Yes; one province	Yes, one province
Netherlands	No	Yes
Spain	Yes	planning in progress
Sweden	No	experimental programme
Switzerland	Yes	Yes, ¼ of cantons
United Kingdom	Yes, HRO only	Yes

(according to NICKEL, 1995)

Procedure of assessment

Assessment for administrative purposes

Drivers assessed for administrative purposes are mostly those who re-apply for a license after revocation because of drink driving, driving under the influence of drugs, moving violations within a demerit point system, or because of physical and / or mental handicaps. All cab and public transportation drivers have to be assessed several times during their driving career regardless of violations or offences.

1. Physical requirements

A catalogue of physical requirements — “Disease and Road Traffic” — is valid for all medical assessments; the catalogue summarises medical knowledge and was published by an advisory board for traffic medicine of the departments of traffic and health. It is updated regularly according to scientific progress in medicine. Currently under discussion is the combination of physical and psychological catalogues in order to ensure uniform applicability.

2. Psychological requirements

The assessment criteria used by MPA to come to a final recommendation for the administrative authority are the following:

- alcohol dependency
- lack of control in drinking behaviour
- alcoholism
- drinking and driving (conditions for changes in drink and driving behaviour)
- additional traffic offences without alcohol
- additional general offences not connected with alcohol
- organic impairment
- psycho-functional condition (assessed with computerised testing devices — ART 2020 — manufactured, standardised and validated by KfV in Austria)
- potential for improvement by means of training
- potential for improvement by means of a course.

Aspects like visual perception, reactive and concentrating capacity, stress tolerance, eye-hand co-ordination, intelligence and memory as well as traffic-related attitudes, proneness to risk, social norm-consciousness, self-control, emotional stability, aggressiveness and so on are examined.

The individual assessment lasts three-four hours on average. The synopsis of MPA by doctors and psychologists takes another two-three hours. The price of MPA is approximately USD 300; offenders have to pay themselves. 0,28% of the driving population is assessed annually (140,000 out of 50,000,000).

License holders and / or applicants have to decide whether they want to turn, in light of the results of MPA, to the authority. If not, the authority's doubts about the driver's fitness will prevail and consequently the license will not be re-granted. If the result of MPA is positive and presented to the authority, the license will be re-granted.

If the result of MPA is negative and presented to the authority, the license will be withdrawn or not re-granted respectively. Drivers who do not accept this decision may have the decision evaluated by an administrative court. The case may be carried through all levels of administrative jurisdiction and finally be decided by the Federal Administrative Court (which happens in approximately 1 out of 100,000 cases)

MPA centres have to be accredited according to EN 45013 which includes that all personnel involved in assessment and rehabilitation are subject to quality management and supervision (cf. NICKEL, 1997, 102).

Assessment criteria

As an example, the drug problem should be considered in some detail according to the Psychological Guidelines (KROJ et al., 1995)

Guiding principles

1. Someone who is addicted to drugs or who, without being addicted, misuses illegal drugs (according to DSM-III-R) or who takes drugs that will adversely affect his physical and mental performance or his judgement whilst driving (according to ICD-10), cannot be regarded as totally fit to drive.

This statement, which is also applicable to alcohol and medicines on prescription refers, in particular, to:

- Cannabinoids (hashish or marijuana)
- Hallucinogens like LSD, mescaline and various designer drugs (DOM, DOB, Ecstasy, PCP)
- Stimulants like amphetamines, cocaine ("crack")
- Opiates like morphine or heroin.

2. Impairment of the driver's judgement as well as of his physical and mental performance can occur even when only small amounts are consumed or when such drugs are taken only occasionally.

Even if a specialist can dispel any doubts about the client's fitness to drive, the Ministry's guidelines still require a report from an MPA centre.

In its verdict of 24 June 1993, the Supreme Court stated that such an MPA report is not required if a cannabinoid is taken on one occasion only, as an experiment. The authorities must first ascertain whether the drug is taken repeatedly or regularly by means of laboratory analysis.

Requirements for fitness to drive

If a client has been declared unfit to drive according to 1) or if there are doubts concerning his fitness according to 2), then the following requirements must be met before the decision can be reversed:

1. There are no indications that drugs are still being taken.

2. There are no indications that substitute substances are being taken (alcohol, methadone* or other psychotropic substances).

3. In cases of drug addiction or drug abuse, the client must have withdrawal treatment or counselling that will lead to continued abstention.

4. There must be convincing evidence that the client has distanced himself from drug-taking.

5. There must be no discrepancy between the client's avowed intentions and the results of medical examinations (cf. the report “Krankheit und Kraftverkehr”).

6. As a rule, the period of abstention must be at least one year (which can run, for example, from the end of withdrawal treatment).

7. There has been a definite change in the client's personal situation during the period of abstention (e.g. his behaviour and his social environment).

8. Organic or psychic malfunctions that might have been a result of previous drug consumption can no longer be diagnosed or have stabilised.

9. There are no psychic problems causing the client to feel resentment towards society.

10. Personality disorders that might have led to drug consumption have been identified and overcome.

11. The client must be intellectually, psychologically and functionally in a position to cope adequately with traffic situations. For ways of assessing the client's performance see Section 4.7 (Reduced psychic and functional performance) and Section 4.8 (Intellectual impairment).

* For clients on methadone substitution, an MPA report can, in rare cases, be recommended. A consultation prior to the report should take place and the client must have fulfilled all the requirements of a methadone programme for at least one year, with no other drugs prescribed (to be checked by polytoxicological urine screening or hair analysis). Furthermore, there must be a particularly good prognosis for his social development.

In view of the high risks involved, drivers conveying passengers or hazardous materials must undergo a probationary period of at least one year with a general licence and also prove that they have abstained from drugs for a further year. Before the probationary period, the driver must have convinced an MPA centre that he is fit to drive.

Reasons and comments

A driver's performance is significantly impaired if he is either physically or psychologically dependent on psychotropic substances. He can exhibit symptoms of intoxication and / or withdrawal symptoms. The consumption of psychotropic substances can have long-term effects on traffic safety by diminishing the driver's physical and intellectual performance or his powers of judgement.

In particular, the driver's personality may change radically. He may feel increasingly ostracised by society and so may care little for the safety of the general public.
Another negative characteristic associated with drug taking is that there can be no certainty about when the effects set in. A potentially dangerous situation can occur at any time because the driver's performance and behaviour might suddenly be impaired.

Drug taking is especially dangerous for the traffic situation because there is no way of predicting when, how intensively and how long the effects may influence the driver's performance.

It must also be assumed that a driver taking drugs will not be able to make a rational decision about whether to avoid driving whilst impaired.

Further information can be obtained in DSM-II-R and ICD-10 and in the report "*Krankheit und Kraftverkehr*".

Medication — abuse and dependency

Guideline principle

Someone who is dependent on drugs that are potentially addictive or who does not take the medication in the manner prescribed, thus impairing his physical and intellectual performance or his powers of judgement, cannot be regarded as totally fit to drive.

The medication we are talking about can be classified as follows:

- anaesthetics, such as narcotics and opiates
- other pain-killers
- addiction surrogates (e.g. Dihydrocodein)
- sleeping tablets
- chemical solvents (medication containing ethanol)
- sedatives (benzodiazepines)
- stimulants and appetite controllers
- medicines for allergies, asthma and so on.

Requirements for fitness to drive

If a driver has been declared unfit to drive or if there are doubts about his fitness, he can only be declared fit if the following requirements are met:

1. There is no evidence that the driver is still taking the medication, or similar psychotropic substances, that led to his disqualification. If consumption is justified on medical grounds, then the medication must be dosed according to the doctor's prescription. It must be ensured that taking the medicine will not pose a threat to traffic safety.

2. There is no evidence that surrogate substances have been used (such as alcohol).

3. The driver has undergone either withdrawal treatment or counselling in order to abstain or not to exceed the dosage prescribed.

4. As a rule, at least one year must have elapsed since the dependency or abuse was established — this period could date from the end of an in-patient withdrawal therapy.

5. Positive laboratory tests are not in contradiction of the client's claim that he is either abstinent or adhering to the prescribed dosage (cf. report on "*Krankheit und Kraftverkehr*").

6. The client is determined to avoid misusing psychotropic substances.

7. During the period of abstinence, the client has experienced positive changes in his personality, his behaviour and his social environment.

8. The client has either recovered from or has a stable prognosis for the illness which led to his abuse of the medication.

9. There are no psychological disorders that might affect the client's ability to conform to normal behaviour in the driving situation.

10. The client has understood and appreciated why he misused the medication prescribed.

11. Intellectually, physically and functionally the client can compensate for any deficiencies so that he will perform adequately in a traffic situation. Section 4.7 and Section 4.8 detail how these factors should be assessed.

In view of the high risks involved, drivers conveying passengers of hazardous materials must undergo a probationary period of at least one year with a general licence and also prove that they have abstained from medication abuse for a further year. Before the probationary period, the driver must have convinced an MPA centre that he is fit to drive.

Reasons and comments

The consumption of the above-mentioned psychotropic substances can have long-term effects on traffic safety by diminishing the driver's physical and intellectual performance or his powers of judgement.

Another negative characteristic associated with medication abuse is that there is no certainty about when the effects set in. A potentially dangerous situation can occur at any time because the driver's performance and behaviour might suddenly be impaired.

Further information can be obtained in DSM-II-R and ICD-10 and in the report *"Krankheit und Kraftverkehr*".

Assessment for other purposes

A testing and counselling procedure for drivers between 18 and 25 years of age has been developed in conjunction with German Lloyd. It consists of three parts:

1. assessment of performance variables,

2. diagnostic encounter and

3. individual counselling based on the assessment.

Testing covers perception (measured by TT15 of the ART 2020), reaction behaviour (as measured by RST 3) and concentration (measured by Q1).

The diagnostic encounter of about 30 minutes aims at exploring risk potential; it is conducted according to specific guidelines. The results of the encounter are documented for further evaluation.

The individual counselling serves to inform the driver about the results of risk and performance assessment and giving him / her advice on the possible need for behavioural changes.

German Lloyd then receive a document containing the conclusion — either "elevated risk potential" (which will result in a low reduction of the liability premium), "average risk potential" (resulting in a higher reduction of the liability premium) or "low risk potential" (resulting in an attractive reduction of the liability premium).

All other information gathered on the participant is kept confidential.

Evaluation

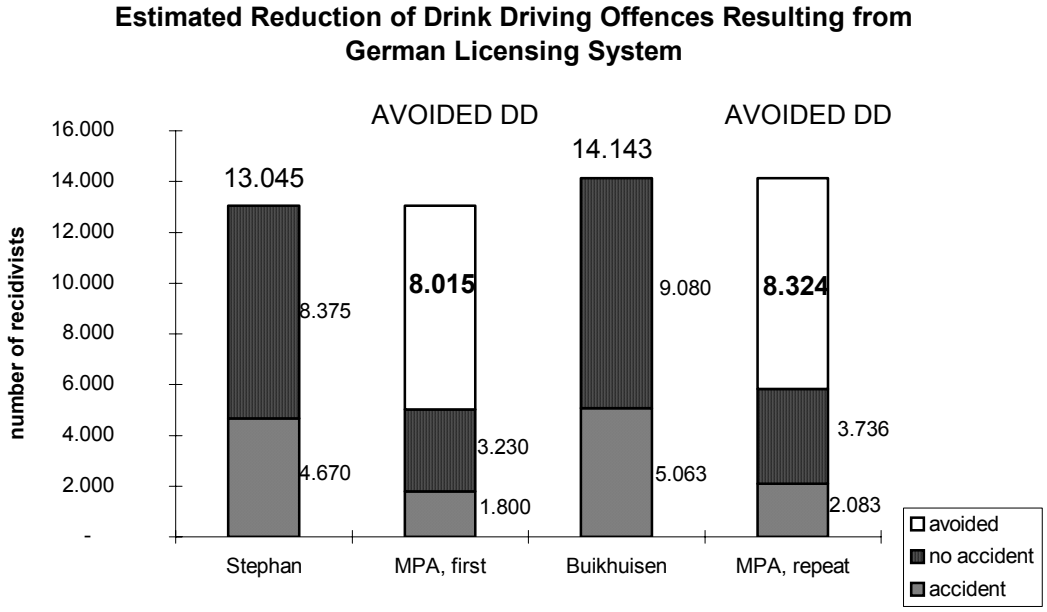
Assessment as well as treatment schemes have been re-evaluated recently. One of the aims of evaluation was to find out whether the MPA and rehabilitation course system, as it has evolved, contributes to overall traffic safety. Recidivism quotas reported for non-assessed and non-treated first offenders in Germany are 24.9% (Stephan). We found a drop in recidivism of more than a half (Jacobshagen & Utzelmann, 1998):

27.9% of all offenders were assessed "positive"; 11.2% of these recidivated within 36 months.

30.5% of all offenders were assessed "negative" but eligible for treatment; of those treated, 13.8% recidivated.

41,6% of all offenders were assessed "negative" — 21.2% of these drivers recidivated.

Figure 1 : Estimated Reduction of Drink Driving Offences Resulting from German Licensing System



The "Stephan" and "Buikhuisen" columns show the expected number of recidivists on the basis of all offenders assessed (N= 52,393 for first offenders and N=50,153 for repeat offenders). The "MPA, first" and the "MPA, repeat" columns show the actual number of recidivists after MPA in 1993 (black and grey parts); the white parts of the columns show the number of avoided drink driving offences.

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The Austrian experience with diagnosis of drug offenders

by Dr Alexander Kaba, Kuratorium for Road Safety, Vienna, Austria

The situation from the point of view of regulations or the law is very similar in Austria and in Germany. In the latter, there are no institutions resembling that of the "*Amtsarzt*". The licence authorities in Austria have special medical doctors to prove a driver's physical fitness. A psychological institute is only responsible for testing psychological factors, such as the MPA and not medical factors.

There are the same limits for drugs as there are for alcohol. When drug misuse is suspected, the licence is temporarily suspended, followed by some assessment investigations or possible VPU, the short form for "*Verkehrspsychologische Untersuchung*", meaning psychological assessment. There could also be a possible administrative fine, but a court only becomes involved in accident cases with personal injury. The loss of the driver's licence can then occur and its re-granting involves further mental and psychological driver training. This is a figure showing the age range of the 134 driving offenders in our institute. This figure is not very recent as it is from 1994. People born in 1966 / 1970 and aged 30 represent the highest proportion of the people coming to our institute, as they were under suspicion for their driving. Hashish and marijuana products are the most prevalent, while other drugs are not consumed so frequently; this could be as a result of enforcement, or failure to recognise the drug.

Why did it come to the assessment? Because of a misuse of drugs in seventy cases; this means that the people did not commit any offence in road traffic, but were detected misusing drugs; this was followed by a court judgement, which led to the suspension of the driver's licence for one or two years. twenty-four people were detected in road traffic with drugs and other substances such as alcohol. The diagnosis of these drivers is the ability to carry through this assessment, judged on personality specific pre-requisites for the ability to drive a vehicle and capabilities specific to driving. The Art 20 / 20 test device, also used in Germany, is a non-verbal intelligence test, testing the attention under certain circumstances, measuring decisions and reaction behaviour in a dynamic driving environment, testing visual structuring ability, measuring the ability for visual perception using traffic situations and testing reactive stress tolerance. The outcome of these power tests is not only the ability to drive, there is also the performance of these tests, in order to find out some personality figures. The clients are people caught driving while under the influence and drug offenders undergoing, according to the SMG (*Suchtmittel-Gesetz*), drug addiction substitution programme. Here are some positive and negative factors concerning driving ability: the family factor, which is our diagnostic instrument used by psychologists. A good relationship with parents, partner, concrete family planning, no unusual family stress, financial security, responsibility towards the family, regular occupation, or the negative aspects: broken home situation no relationship and no responsibility. When exploring the case, all these factors are raised with the client. The other positive points are: school, profession, positive continuity in schooling and profession, high motivation in profession; and the negative ones: several repeated classes, change of schools, poor education, frequent job changes, lack of planning, repeated unemployment. What we have to look for is the change in this environment and how it has changed in the last weeks or months. The traffic record is also important, with regard to vehicle use, accidents and penalties. Consumption habits weigh heavily in the balance with respect to alcohol and drugs. They have the same pattern of results as shown before, involving long-term abstinence for at least one year.

Working group A1: Legal aspects

by Prof. Hans Peter Krüger, University of Würzburg, Germany

Summary

It is very difficult to summarise the entire half-day with both elaborate contributions and the discussion, which clearly reflected the personalities and professions of the participants. It is also very difficult to give a report about the activities of other persons *sine ira et studio*, if the rapporteur has his own opinion. Since the material from the contributions was distributed, I will not give a step by step report of the papers and the discussion. Therefore, I will present you the results of our working group, A1, from a more or less personal view that is open for discussion.

The workshop was entitled “Legal Aspects” and was meant to present and to discuss the legal basis of drug legislation, its current status in different countries and the actual surrounding questions. Traditionally, legislation has been based on:

- an understanding of the source of the problem;
- a definition of the legal bases for regulation; and
- all legal measures needed to enforce the law.

Last but not least, legislation must also prove whether the intended aims are fulfilled — some kind of quality control.

The first papers in the workshop dealt with these problems. Based on the results of our main study we first have to distinguish between the problem of:

- Drugs in society and
- Drugs in traffic which are in fact a subset of the former problem.

As Frances Huessy pointed out, in the global marketplace the drug problem in traffic must be looked at multi-dimensionally. Politics, economy, and culture play an important role in the way a society deals with the drug problem. Her conclusion was concise — the only way to handle this problem effectively and responsibly is to accept this multi-faceted condition of the problem and to be always aware that an isolated approach will fail. Thus, the problem of drugs in traffic has to be discussed in a broader context. But, frankly speaking, this was not done in workshop A1.

The narrowed look at the problem of drugs in traffic lead immediately to the basic question of whether we should go to “zero tolerance” or “impairment.” The way of zero tolerance is a broad and convenient avenue, which can be justified very easily — is there anybody who wants to have drugs in society or in traffic? Drugs are prohibited in general, therefore they have to be prohibited also in traffic. Traffic regulations are a tool in drug prevention. End of discussion.

The other way to handle the problem is a traffic-specific one. The base that the legal regulations rely on is impairment. This approach was present in all national laws long before the drug problem became large. The impairment principle is solidly founded in the constitutional rights and duties of the citizen, which is also applicable for drivers. Danger prevention is a fundamental principal of traffic legislation and is far away from actual problems like drugs.

The concentration approach — which poses the question of which substance concentration is allowable — is only a slight modification of the impairment approach in so far as a significant correlation between impairment and concentration level is scientifically established. The impairment approach comprises all kinds of detrimental effects and is strongly linked with risk assessment.

Impairment is another word for increased risk, which can be and has to be shown in traffic. And the impairment approach is based on an individual evaluation of each case — a horror vision for some practitioners.

However, in working group A1, once again, there was no discussion about justification of legal regulations — either the drug prevention approach of zero tolerance or the danger prevention approach of impairment. It is not my intention to complain, but this seems worthy to note. In some way different to the results of the roundtable discussions, there was a more or less unanimous acceptance of the zero tolerance approach. It is easy and straightforward — perhaps too easy, as the following will show.

Both approaches must become practical for police enforcement. Melanie Mettke gave a sophisticated presentation about the basic principles that police enforcement is based on: efficiency (which may lead to random testing procedures with no right to refuse) and civil rights such as being free from police infringements (which allows police activity only in case of suspicion). She demonstrated impressively how different legal systems handle this dilemma between fundamental individual rights and necessary interest of the community. This problem, once again, was not discussed in the working group.

The working group was dominated by the second section of papers that dealt with different solutions in Belgium, Sweden, Switzerland and Portugal. The basic issue of all these papers was a very pragmatic one: the problem that under former legislation we could not punish the drugged driver except in cases when he or she is really endangering others, we cannot not handle the problem of substance concentrations, and so on. And: we found a solution with a new law with zero tolerance.

The discussion of these new laws dealt with very practical problems:

- Which substances are included?
- What is the procedure the police has to follow? First impairment observation, then urine, then blood?
- What happens if a driver refuses?
- How long can he or she be forced to abstain from driving?

These are very necessary questions and they were fully discussed. Most of the participants seem to agree to the approaches those countries have chosen: zero tolerance, effective legal regulations for police enforcement and strong prerequisites for license regranting.

Once again, without any evaluation from my side, it has to be stated that the basic question of impairment has degraded from a constitutional reason for conviction to a procedural principle (getting a suspicion). And the concentration limit as an equivalent for the level of impairment degrades in the case of zero tolerance to a procedural principle for prosecuting.

It is too early to evaluate the consequences of these regulations. Let us hope that the approach will work. But even now, the price these straightforward, pragmatic solutions have to pay becomes obvious. They are substance-oriented, using the fact that illicit drugs are forbidden as a reason for combating them in traffic. We get into difficulties if other substances like medicaments are included in the discussion. We had a very honest paper by Hans Laurell who presented the new Swedish legislation that forbids any narcotic substance in traffic. It is a clear and deliberate solution: all substances with detrimental power should be excluded from traffic. Zero tolerance, even for benzodiazepines.

But, in the next sentence, Hans Laurell had to admit that a bundle of problems arise in the case of prescribed medicaments: if a narcotic substance is prescribed by a doctor, what concentration should be allowed? What is a normal dose? What is an overdose? It will be hard to define the “therapeutic window” of a drug, dividing the licit use from the illicit use. What has to be done if a normal dose leads to impairment? The Swedish seem to be quite aware that many problems will follow – but “we shall see”. It seems to be a new kind of “experimental legislation”.

The same problems arise in Switzerland whose drug regulations also include medicaments. The *Bundesamt für Gesundheit* has to establish concentration limits for all therapeutical substances starting from which a given concentration cannot be looked at as a consequence of normal doses.

It is really beneficial to note that just at that moment when the problem of medicaments is introduced, the zero tolerance approach must be modified into a concentration limit approach which — as we have seen — is in fact an impairment approach. It seems inappropriate to punish for substance use in the case of medicaments. Should we do it in the case of illicit drugs? Why abandon the impairment approach in the case of drugs? Perhaps because a general impairment after drug consumption cannot be proven? Or, like David Rowe formulated in a very dry manner: “If there is no impairment caused by drugs — where is the problem with drugs?”

To summarise: at least from the participants of this symposium, the straight and easy way of zero tolerance seems to be the favourite option. The rationale of this solution is simple: the police has to look for signs of drug consumption — not necessarily impairment — which provide the justification for taking a blood sample which, in turn, justifies punishment in the case of detection of any illicit substance. In the case of medicaments the “fallback position” is basically the impairment approach, somewhat covered by the discussion about normal and abnormal concentrations.

We had no discussion about the effects of this decision towards a zero limit on the population at risk, that is the young drivers. What do these people think about our regulations, do they accept the morale behind the law? What happens if they don't accept this morale? At this point we come back to the beginning of our working group where Frances Huessy stressed the need for an integrative approach to the problem.

We need more symposia like this one.

Working group A2 : Issues of law enforcement

by Dr Rob Tunbridge, Transport Research Laboratory,
Crowshore, Berkshire, United Kingdom

Summary

It is a great privilege to be asked to be the rapporteur for the Working Group A2, covering the issues of inforcement and detection. When the rapporteurs met on Monday, we originally developed a series of eight questions to be put to the Working Group for discussion, addressing the key issues as we saw them. In yesterday afternoon's session we had a series of six presentations which were provisionally to last around fifteen minutes each, but because of the extensive discussion of each one, we actually ended up not only using up but over-running our time to six o'clock last night without formally putting forward these questions for discussion. Nevertheless, I believe we covered the issues in the formal questions in the papers and discussions which followed.

I would like to spend my time this morning, going over each paper and the issues which were raised. We started off with an excellent paper by David Rowe who gave us a description of the drug-driving enforcement issues as we see them in the United Kingdom, but we believe that much of our experience is universal. Firstly we need to establish the size of the drug-driving problem but we have three main difficulties. Firstly, we have no acceptable roadside screening devices, secondly, we have insufficient drug recognition training of police officers, thirdly there are some legal restrictions on identifying drug-driving, for example, limitations on roadside testing.

We know that in the UK our current drug-driving enforcement is very low — only 1,850 cases per year compared to over 100,000 drink driving prosecutions and for those 1,800 cases a very large proportion are positive for drugs. We are clearly missing some significant amount of drug-driving. We see a need to establish a user specification for a roadside drug screening device which is preferably a European standard. This needs to be accurate, reliable, easy to use, robust and inexpensive. We think it should probably be based on samples of saliva. David Rowe briefly addressed the issue of which legal approach should be adopted and Hans-Peter has covered this in more detail. Should it be the zero limit which is basically based on a drug prevention approach or should it be an impairment approach which is based on the assumption of road safety risk? I must say that in the UK we favour the latter approach.

David also addressed the long term desirability of producing a device which would test general impairment from any source, including alcohol, drugs and drive fatigue but I think that this is some way off.

We then had an extremely interesting paper from Jørg Mørland who gave us his appreciation of the drug-driving situation in Norway and why so many cases are detected relative to the rest of Europe. This was fascinating and gave much food for thought on how we go about detecting drug driving. In Norway the number of detected drug driving cases are of the same order as the number of drink-driving cases. This contrasts greatly to the majority of the rest of Europe where the ratio of drink driving to drug driving detection can be up to a factor of 50:1 as is certainly the case in the UK.

There seem to be several reasons for this, including a particular awareness of drug driving by police officers in Norway, a generally sympathetic court system with standard procedures, a single analytical institute for doing the chemical analysis of the samples, a relatively plentiful supply of medical examiners and, I think, most importantly a critical use of the breath testing facilities by police officers. Cases which were negative for alcohol were quite often followed up, rather than as in several other countries I think, being abandoned at that stage. This is seen in the context of a very large number of alcohol breath tests in Norway — .around 1 million, which is the same order as the UK, with a population which in only 10% the size. There is also a factor, I think, that there is some central government funding of the testing which probably helps. This experience in Norway shows the level of enforcement which can be reached, with the suspicion of drug driving confirmed by the police in a large proportion of cases.

Next we had a paper from Sabine Joó from Germany who gave us a brief description and a thorough account of how the new 1998 drug driving laws are working in Germany, where specific training in drug recognition is based on a simplified version of the US drug recognition expert programme. This is assisting in the detection of drug driving. So many of us around Europe are adopting or thinking of adopting such training so this was very relevant and informative. At the moment, I think it is true to say that they are relying on training a specific number of officers and the targeting of likely offenders, for instance, at specific times, at night and in venues such as clubs.

Our next paper was by Bud Perrine from the United States. He gave us a very valuable background to the development and validation of the US drug recognition expert programme covering how it was developed in the 1970s onwards, detailing the training which is involved and the validation and gave us some figures for how successful the DRE experts can be at identifying consistently drug impaired drivers. When he conducted the original roundtable discussions with most of us last year, he found that most of the experts in Europe that he spoke to, were keen to take up a version of the DRE programme but in a simplified form, suitable for the various European laws and systems. This is beginning to happen, as I said earlier.

Then we had a paper from Charles De Winter from the Belgian Gendarmerie. He gave us a very useful introduction to the Belgian efforts to improve their drug driving detection. This was motivated by the evidence that drivers were coming back from visits to Holland not necessarily in possession of drugs but impaired and routine tests in 1993 and 1994 showed that 17% of those tested in the Antwerp region were positive for drugs. This, together with Dr Verstraete's BTTS study in 1995 showing that 10% of injured drivers had illicit drugs in their blood and 9% benzodiazepines prompted the development of the current system to improve drug driving detection in Belgium. This will involve a roadside impairment tests followed by a urine sample. If this is positive, a blood sample would be required for court use. A full programme of police officer training is just about to begin in Belgium.

Finally Dr Mercier-Guyon gave us a thorough evaluation of the value and role of assessing impairment not just at the roadside but also by a medical practitioner. Since the advent of roadside breath testing, many of the old skills at detecting impairment, particularly at the roadside, have been lost. He believes that it is essential to properly assess drivers' behaviour, that this should be relatively simple at the roadside with a more thorough complementary test performed by a medical practitioner. This helps in later court cases and in assessing any impairment which possibly results from medical conditions. I think this is an important factor which probably hasn't had sufficient discussion. I think we certainly need to look at this if we adopt, as we increasingly are doing, a form of the DRE programme. We need to do this to ensure that we are not unfairly treating people who quite legitimately are driving with sort of medical condition.

To sum up, overall, I think we had a thorough discussion of the issues on roadside enforcement and detection and I would like to thank all my colleagues and the participants very much for their contributions.

Working group B1 : Prevalence, epidemiology, risk assessment

by Dr J. J. de Gier, Oosterhout, Netherlands

Summary

In order to give you the exact report, I will start with the comments made yesterday by Professor Lagier from France. He gave us very relevant comments at the start. His emphasis was actually on the linguistic confusion as it was called on illicit drug use. If the drugs are not illicit, their use could be illicit. In practice, it means abuse. On the other side there could be a therapeutic or an intended use for the drug. I think this is fundamental if we focus on the user of the drug which has not been done so extensively. If we follow the more humanistic approach I think that maybe we should have had the opportunity to invite different user groups to know their points of view and experiences. I think most of the discussion and conclusions here were about these people who were not in our audience.

So, even if drug levels are known, as Professor Lagier stressed, verification of illicit drug use is necessary and if needed, one should also have access to medical records. Professor Lagier stressed that clinical confirmation is as important as biological confirmation and blood is still the first choice as a biological fluid for that. However, as stressed also by Mr Mercier-Guyon, very little is know about the standardised procedures and harmonisation, in particular for epidemiological research to be used for comparisons across European countries. Problems do exist if we focus too much on the clinical confirmation, if people are fatally injured. As I understood that is a typical French situation — the efforts there can only be focussed on fatally injured people.

The next presentation by Mr Verstraete from Belgium was very interesting as we saw again the overview and also he illustrated that substantial evidence exists from epidemiological studies that shows more accident involvement in drivers who have high doses of drugs alone or in combination with other drugs including alcohol. That has been consistently reported and I think that the combination with alcohol should be focussed upon because it might well be that this problem is caused by a specific sub-group of drivers that we have not focussed on extensively. If you look at medicinal drugs in combination with alcohol, it is suprising that in the German study on the general driving population where they detected benzodiazepines, it was shown that there was no one sample where alcohol was shown in that particular group of drivers. This probably means that people taking benzodiazepines as patients, may be well informed of the risks of taking them in combination with alcohol. So, what about the other groups, are they listening to advice or not receiving the advice. Also, it is clear in the responsibility analyses that these drivers, who are taking combinations of drugs, were also found more culpable for causing the accident. In pharmoco-epidemiology we have record linkage studies providing more insight into the relative importance of the different medicinal drugs. Some interesting findings were summarised by Dr Verstraete. The start of a benzodiazepine treatment for the first couple of weeks caused the most problems; so the risk is there and practically no-one is actually paying attention to that. Maybe Dr Kaba will come back to that later in his report.

Another finding was that young males are more at risk compared to the other sub-groups. We have seen that before with alcohol. Another important and interesting finding is that in the elderly use of benzodiazepines is decreasing. Well, does that mean that traffic safety will be increased in the next 20 years because we all know that there will be a lot more elderly drivers if we wait long enough. I don't think so, but it is interesting to know why this happens. I believe that the elderly people take other strategies for driving. They decide not to drive when the conditions are not so favourable for them and maybe this is a reason why the risk is decreasing in the epidemiological surveys.

Of course, there are limitations and they have been stressed very carefully by Dr Verstraete. There is a compliance issue if you use exposure data as they are built from medical histories in pharmacies for example or insurance companies. Although I can say that for benzodiazepines under medication has never taken place as much as it has in over-medication. Compliance in this situation could also take another further step if we look at the drug combinations and I think that is something that has not been discussed to an extent but combinations of drugs in real life is something that we really have to worry about. The medical conditions are probably not known if you look at the medication histories from pharmacies and of course you do not know anything about the alcohol use.

Another thing that is missing is that the accident characteristics because most of these data are linkage records for admission data in hospitals which the more severe accidents are taken into account there. Of course you would also like the list of your accidents – how that has an impact on your data.

The next speaker, Dr Raemaekers from Maastricht, presented a series of well, very relevant driving studies and emphasising on the standardisation of driving tests which have taken place in Maastricht University for over 13-14 years now. He presented two typical tests: a standard car following test with recreation uses of marijuana with people who admit to use two or three times a month for recreational purposes. Doses up to 300mg/kg were used in his study as the highest dose. I think that we should emphasise that this is close to what is perceived as high in normal conditions. What is also interesting is that for the marijuana alone there was no effect in the car following test which actually relates to the measurement of reaction time. There was some effect in the combination with alcohol. There was, for marijuana alone a mild effect on the weaving index which was in the standardised driving test – the interest for the research group to look for. That was comparable to the alcohol effects of .5g/l which is I think the legal limit in many countries.

If you combine the marijuana intake with alcohol and they did it in an experimentation by 0.7g/kg, impairment was comparable to the effects of highly sedating hypnotics like florazabine which if I think is a well known one for its effect on driving. With marijuana alone there are no clear level response relationships. That is also important because emphasis on drug levels whether it is for benzodiazepines or for drugs like cannabinoids or GED, I think that there is always a discussion whether or not this is a meaningful measurement. Of course, I think that the conclusion was that for experimental purposes it is needed to have insight into the actual pharmacological impairing effects of the drugs. They are needed before we can link the effects to the outcome of epidemiological studies.

The next speaker, Professor Möller from Germany gave a very good presentation on the drug recognition expert development there. Since 1997 police officers can determine whether or not a urine or blood sample should be taken and the whole approach is aimed at recognising drug impairment by first standardised procedures for observation of behaviour or physical signs of impairment, and secondly, it testifies that facilitates to take the sample.

The checklist of police together with the medical examination in the blood sample finally is taken to court so that is a whole set of data that should be considered. I think that in the German experience, and that is not surprising, the better trained officers yielded more positive cases. That will be interesting to see how it will develop in the future. It was also mentioned that more than 50% of the cases were detailed police reports, mostly concerning poly-drug users so there is some emphasis probably also on the people that really have taken more than one drug.

Professor Möller stressed that profiles of drug users determined so far would mean that the behavioural and psychophysiological signs are detected and taken into account are very useful in training police officers. It might also be useful to know the result in other countries who are thinking of taking a step in the direction of drug recognition experts.

The officers in the Saarland project have shown that the procedures they follow deliver the key to the detection of impaired driving. That was made very clear by Prof. Möller. In order to achieve a better quality of police reports in general one can say that standardisation is needed to produce these reports, especially was it a driver, was it a passenger, was the driver responsible for the accident and so on. Also, the use of test devices for screening samples should be regulated by law and that has been discussed in the other session as well I think. Of course, the laboratory guidelines for quality control programme needed to keep up with the new standards in toxicologicial analysis.

It has been mentioned before that the European ROSITA Projects prompted by DGVII will be the end of this year provide the first answers to questions like what are the first drugs detected, what screening devices are available for reliable screening of urine, saliva and sweat and what are the legal requirements for roadside testing. What are the costs because a lot of this information we have is also very costly.

Finally, Dr Kintz was looking at alternatives, in other words, non-invasive, simple, fast and reliable methods for screening on drugs and he focused on saliva and sweat as biological samples.

Furthermore, urine assays are taken into account, the drug metabolites which I think is a problem if you look at the pharmacological active compounds in the body. That of course is something interesting with saliva because saliva, as Dr Kintz pointed out, most of the time the pharmacological active compound is there. We generally reflect much lower concentrations that in the blood but fairly good correlation with the blood concentrations. The problem, and of course, it has been mentioned before, that the contamination of the sample in the mouth is there because sometimes higher concentrations can be expected in saliva than in the blood (for example for cannibanoids).

Working group B2: Prevention and rehabilitation

by Mr Alexander Kaba, Kuratorium for Road Safety, Vienna, Austria

Few participants took part in this working group. We were concerned with behavioural aspects not so far removed from aspects of detection or legislation. The questions we had to answer were what to do with suspects, how do they become offenders and how should we deal with these people after punishment. I hope these questions can raise some interest.

We opened with a short introduction on questions concerning the conclusions. Mr Alvarez (Spain) started with his key speech on drug dependency and road safety, the treatment and rehabilitation of drug addicts and their relevance to road safety. The presentation focused on the relation between drug dependency disorders and ability to drive safety. When considering their complex relation, it is necessary to take into account not only the illness — the dependency disorder — but also many other aspects, namely the presence of other psychiatric and medical disorders. Regulations for the re-granting of driving licences are in force within the European Union; with the result that it is not possible to issue or renew driving licenses to people with drug dependency. The treatment, especially for opiate addicts, focuses on medical and psychological approaches, including basically harm-reduction programme and drug-free programme.

There is a great concern about people on methadone maintenance programme and their fitness to drive. Rehabilitation of drug-driving offenders is an area of increasing interest despite little experience worldwide. Mr Alvarez differentiated between recreational use and social disorder. He defined dependency as an illness, intoxication and overdose with some withdrawal syndromes and multiple drug use. There are also medical disorders and psychopathology. He pointed out the legislative approach — do not drive under the influence of illicit drugs. However, we did not define the limit of drug dependency and the progress of the rehabilitation process. He looked at a clinical approach where the outcome is that of advice to the patient, in other words that this patient should not drive. The treatment for drug dependency in methadone programme was also widened for the LEAM programme or other substitution programme. It was also pointed out that some people took alcohol as an additional drug. So the main focus is on the social integration including driving as a normal activity for work integration. We had no discussion after this presentation.

The next speaker was Mr Verstraete (Belgium). He presented a paper on licit drugs, driving and prevention by informing patients, physicians and pharmacists. The goal of the Belgian investigation was to publish a brochure for the public. They found 180 molecules in nine groups and seven categories which bore no effects, minor and moderate effect, severe effects and so on. There was a description of available products with trade names and texts inserted into the package. Only the package insertion was deemed valid. The industry was mostly co-operative in this project. A report was then published and the contents were made available on CD-Rom, which is being sent to doctors and pharmacists with 65,000 copies as well as a publication for the general public in 500,000 copies. There is also a presentation on the Internet. The cost of the project was about 125,000 Euros. The problems encountered were complications with classification as well as some negative feedback from the industry. What remained unsolved was the problem of labelling, especially with pictograms and the question as to whether labelling the medicines with a warning label remains a matter of debate.

In the ensuing discussion, Austria raised the question regarding the consequences of this categorisation. Concerning the evaluation of this brochure, Mr De Gier (The Netherlands) asked for comments from consumers or doctors. There was also a question from Mr Battista (Austria) on the problem of dosing these medicines.

This was in connection with the legal regulations. Mr Alvarez then asked about the responsibilities regarding the safety issues of this project, which were not given by the Ministry of Transport of Belgium.

Then, Mr Battista continued with the description of the substitution programme and driving ability in Austria. This study was carried out over a couple of years with a number of patients attending the methadone substitution programme in the Tyrol province. They were screened psychologically and toxicologically to determine driving ability. The study criteria were the following: psycho-pathological findings, psychological testing, and evaluation of methadone plasma, HIV findings, drug screening of urine samples, neurological states. Out of thirty-four patients who were investigated, twenty-five of them had driving licences and seventeen of these were found fit for driving according to the above criteria. Two others, who did not have driving licences, at the time of the investigation, were found fit for driving as far as the medical and psychological viewpoint was concerned.

During the follow-up study six years later, five patients were found to have completed the substitution therapy and were rehabilitated. Seven had, in the meantime, ceased treatment and nine had discontinued the therapy for other reasons. Only thirteen patients were available for a follow-up study. Their outcome will be discussed in detail. Eight of them were HIV positive, ten were not able to work, one was unemployed, one was employed. Four of these people had no side-consumption, five consumed other drugs and one had alcohol problems. Concerning the driving ability, four of them were classified as fit and are still fit, three are no longer fit. Drivers' fitness is not granted for a long time without therapy, so one year's observation is needed without any consumption of drugs. It is also necessary to have a limited validation of licences. A special problem was those people who were HIV positive, since their re-integration is very complex. This result may not be representative. Actually, people in this substitution programme have more problems with hepatitis, rather than with AIDS. Driving ability requires further discussion. In the following discussion, Mr Alvarez asked for experience with other substitution programme, but there are none in Austria.

The next presentation was by Mr Nickel (Germany) who wanted to focus on the re-granting of driving licences and the medical-psychological assessment of drivers in Germany and selected European countries. The contribution started with an overview on the situation in Europe. There are activities in nearly all countries, but with different procedures. This will be discussed later. By law, specified groups of drivers known to display an elevated risk in terms of impaired driving, aggressive and negligent driving or with physical or mental impairment have to submit to a mental and psychological assessment because of their application for re-granting a driving licence. Administrative licensing serves two purposes. One, to ensure that drivers who are unfit to drive do not drive as long as they are unable to prove the contrary, and second to assess the underlying causes of negligent behaviour in order to enable the driver to take adequate measures to re-establish driving fitness. The assessment has been evaluated on a large scale and the outcome shows a highly significant drop of recidivism for those assessed with a positive result as well as those participating in rehabilitation programme. Recidivism rates dropped by more than 50%. The legal, medical and psychological criteria, including personality and performance variables were discussed and described. The devised test was introduced. There was no follow-up discussion.

After this presentation, I presented some experiences with psychological diagnosis of drug offenders in Austria. The report started with the legal basis — such as the road traffic act and the drivers licence law in Austria. There was a statistical analysis by the Austrian road safety report, in which 144 drug-using persons were put through a psychological examination on traffic. Half of them were addicted only because of illegal drug consumption without any connection to road traffic. The largest group was between 23 and 27 years old. The most frequently used drug was hashish. Next discussed was the examination to test the driving ability of conspicuous drug offending drivers.

Driving ability includes willingness to follow traffic regulation as well as capabilities specific to operating a motor vehicle. The most important psychological test procedures in determining capabilities were introduced. The concluding section deals with a nine-part examination of conspicuous drug offending drivers to determine their fitness to drive. These nine sections, for example, family, schooling, profession, consumption habits and so on, should give insight on the extent to which these factors have a positive or negative influence on the fitness to drive.

A discussion followed on the basis of the questions for conclusions and recommendations. Firstly, we discussed the re-granting procedure and rehabilitation programme. The first point was to discuss if licence suspension is inflicted on any addict. In Portugal, for example, there are no cases of suspension. The same applied to Belgium and the UK. On the other hand, in Austria and Germany we do have suspension of driving licences. From Spain, we have learnt that there are 2,000 centres for psychological assessment to find out driver fitness. Mr Verstraete pointed out that in any case the physician who makes the evaluation of the fitness of the driver should be different from the treating physician.

The Austrian delegation pointed out that individual judgement and treatment is necessary because it is not the same if there is a dependency or consumption of illicit drugs. From the Netherlands, we know that a medical examination is done first, followed by psychiatric investigations. In the case of detection, there is a one-year suspension, but no mandatory treatment. At the end of the year, a different follow-up test is performed.

Then we focussed on substitution programme. We see that there is, in some cases, the need for a special regulation of cases often connected to road traffic accidents, since these people are in a rehabilitation programme and need their driving licence for their reintegration.

Then we discussed the point of prevention. Legislation is a most important factor of prevention but there should also be some campaigns to give information on general prevention. Prevention and information campaigns have to be evaluated. They should also give information to learner drivers and driving schools to influence the drivers from the beginning.

A very important point is also training, information, and education of pharmacists and medical doctors on impairment of licit use of medicines to prevent illicit use.

We also agreed on the point that prevention programme should be well designed, carefully implemented and critically evaluated.

There was not much time left to discuss medicinal drugs, but the problem of licit drugs and driving cannot be ignored since the prevalence of medicinal drugs is frequently reported in most studies. At least we pointed out that it is necessary to obtain knowledge on how traffic safety would be affected if patients needing these medicines participate in the programme with no medication.

Future trends in drug-driving policy in Europe - Report from the roundtables

by D[r] Frances B. Huessy, Addiction Research Institute, South Burlington, Vermont (USA)

The roundtable members in each of the 12 participating countries in the Pompidou Group / Council of Europe study met in 1998 with representatives of the Krüger research group to discuss the legal aspects of drugs and driving in Europe. By necessity, the discussions were not confined to legal aspects alone. They ranged across social, economic, health, and political considerations, and were grounded in the participants' professional experiences in addressing the drug-driving problem.

The key question with regard to drugs and driving is relatively simple: Given the fact that drugs and cars are nearly everywhere in the Western world, **how do we minimize the risk that drug use presents to the general driving population?**

Unfortunately, the answer to the question appears to be relatively complicated. One immediate reason for this is that the question links considerations of time with those of space. That is, how long does the risk from drug use last, across the period of a drug's influence on the driver? And over how many kilometers of public roadways does a typical driver travel when he or she is under the influence of a psychoactive substance? And what happens if the driver is under the influence of a combination of such substances, including alcohol? Further, the answer to the primary question about minimizing risk requires considerations across significant professional fields and institutions, across different legal structures and foundations, and across political cultures.

The Integration of Science, Law, and Politics in Minimizing Risk

Minimizing risk from driving under the influence of drugs – both between borders and across borders -- is the focus of this activity of the Pompidou Group, even though we do not know for certain to what extent drugs are a problem on roadways. Nevertheless, enough anecdotal evidence and other information exist that indicate that drug driving is a very real problem. Further, it is an indicator of the interrelated character of medical, legal, economic, and political factors that predominate at the end of the 20th century among industrialized countries. After all, the past 100 years have witnessed the globalization of markets – including the markets for drugs and cars.

The fact that we are all here under the auspices of the Council of Europe demonstrates the political and economic interaction that has taken place in Europe. The fact that the Pompidou Group of the Council of Europe has taken up the question of drugs in road traffic acknowledges the cross-border character of the drug marketplace, and accepts the fact that cars are a likely venue for drivers who have been drinking and / or consuming drugs.

One of the cardinal characteristics of the 20th century has been the burgeoning development of technology. Across the Northern Hemisphere, it is easy to identify the common events that technology has made possible. Among other things, it has expanded our ability to travel long distances. People living in many parts of Europe as well as people in many parts of the United States enjoy access to an impressive infrastructure of roadways across large expanses of land. This infrastructure has, by extension, contributed to the existence of the global marketplace.

However, access across greater expanses of space has also resulted in less-intimate communities, and this in turn has led to a situation in which we all now live in comparative anonymity. So in a smaller sense, technology, infrastructure, and anonymity have all provided the means by which people can transport drugs across borders, without a high probability of detection. Thus, when we look at the factors that have created an active

marketplace and the changing home community, we should not be surprised to see that drug driving is not just possible, but perhaps inevitable.

Further, there is no single reason that people decide to drive when they are under the influence of drugs. Not surprisingly, the roundtable discussions offered up no single solution to minimize the risk brought on by the combination of cars and drug use. Nevertheless, the roundtable discussions did identify risk minimization as the quest of legal, scientific, economic, health, and political practitioners at professional and grassroots levels. As such, it demands integrated thinking across a wide range of interrelated fields, from the science of drug effects to within-government legal structures, to cross-border considerations. In short, it demands the integration of science, law, and politics.

How the Roundtable Discussions Gave New Insight into European Drug Driving

The roundtable meetings with the countries that agreed to participate in the 1998 Pompidou Group survey for the Council of Europe provided a unique forum for candid comments about future reduction of the drug-driving problem. Representatives from law enforcement said although they **know** that people are driving under the influence of drugs, it is much more difficult and costly to test drivers successfully for drug presence than it is to test them for alcohol presence. Even when arrests occur, successful prosecution can be elusive. The doctors and other scientists at the roundtables enumerated the many difficulties of finding a valid indicator of recent drug use – let alone the drug concentrations and their relative probabilities of causing impairment and accidents. The solutions to this problem ranged from drug recognition training for police to the development of hand-held devices that could be used in the field to screen for drug presence. The training is expensive, but reasonably effective; the screening devices have yet to be invented. For their parts, policymakers have difficulties in even determining whether specific drug-driving laws are necessary, given a system of government that already has both drug laws and motor vehicle regulations. All of these considerations and constraints – technological, legal, and national – both temper and impel the cross-national efforts to develop and implement meaningful drug-driving policy.

In his introduction to this symposium, Prof. Krüger identified several common legal aspects in the survey of the 12 countries participating in the study. The primary aspect is that all of the countries have dedicated their fight against illicit drugs or the illicit use of drugs in the context of criminal law. Even so, each country has differed in the way in which it has adopted risk-minimization approaches. Some approaches are firmly rooted in the concept of reducing impairment or endangerment, while others are seriously considering zero tolerance – or, as in the case of Germany, have actually embraced it. Another common element is that each country has identified drug dealing – whether by an individual or under the control of a larger group – as a significant target for prosecution and conviction.

Although many of the roundtable discussions emphasized that reducing the endangerment of others formed the theoretical basis for specific countries' drug policies, risk minimization appears to have been the focus of actual drug-driving policy. The form in which risk minimization has appeared varies considerably across the countries that participated in the study. At nearly every roundtable meeting where law enforcement representatives were present, for example, we heard anecdotes about drivers whom the police were quite certain were putting others at risk because of drug influence while driving. However, many of these drivers escape detection and prosecution. It is the existence of these people who inspire the laws and policies that address drugs and driving. But have the measures been successful in minimizing risk in a region that does not know how prevalent the problem is and does not know for certain what the crash risk of drugs is?

A Case in Point

All of you probably know -- or know of – people such as my acquaintance, Steven. He began drinking at the age of 14. Now, at the age of 45, he is a member of Alcoholics Anonymous

and proudly displays to his parents, his brothers and sisters, and their friends, his 5-year button – the award one receives if one has not had a drink in that amount of time. Only in Steven's case, he stole it. He not only still drinks, he is also on drugs. His wife left him long ago, and does not let him see their son. He has been arrested many times for alcohol and drug offenses, but he has been convicted only a few times. He uses some very innovative tricks to play for time during an arrest, to avoid taking a breath test, and to talk his way out of going to jail. In short, he knows how to work the legal system, and he is very, very good at it.

When Steven is under the influence of either drugs or alcohol, which is every day, he thinks nothing of getting into his car to drive to the store to buy more alcohol. Or go downtown and buy drugs from one of his dealer friends. Because of his addictions, he sometimes thinks he is being pursued by other cars on these trips. Once he was convinced that the car behind him was chasing him, so he tried a quick maneuver to elude it, and crashed into a building. When the police arrived, he said someone else had been driving his car and the driver had run away from the scene. The police officer did not believe his story, and Steven was breath-tested for alcohol. He was well over the legal limit, which was enough for a charge of drunken driving. And like so many of the anecdotes we heard during the roundtable meetings, the police did not expend the extra time, effort, and expense to test Steven for drugs, so they did not discover that he was driving under the influence of cocaine.

We have an expression in the United States that bad legal cases make bad law. Nevertheless, every country has its Stevens. If this American Steven lived in Europe, he would no doubt also have applied his considerable skills in avoiding prosecution. But he might also now be in an appropriate drug program – something that he has not accomplished at home because someone like him is considered primarily a law enforcement problem and not a person to be rehabilitated through the public health system.

In fact, the United States is a country that has not yet come to terms with the concept of harm reduction the way many countries in Europe have. In addition, the United States is not unified in what it is trying to accomplish in its war on drugs – a war it is fighting at its borders and on the streets with the full artillery of the criminal court system behind it. It is not overstating the case to say that American jails and prisons are literally jammed to overflowing with drug offenders. And it is not overstating the case to say that the $16 billion poured into the American "war on drugs" in 1997 alone has not kept Steven drug-free, sober, or off the roadways in his car.

How Can Peace Be Concluded in the Fight against Drugs?

In this symposium, we have heard many references to terms such as "combating drugs" and "the fight against illicit drugs." And now I have just used the popular American term, the "war on drugs." The analogy is obvious, of course. If one thinks about the political products of big social upheavals such as wars and revolutions, an interesting observation can be made. One political outcome of revolutionary war has been diversity in how a country is governed. Former European monarchies and aristocracies, for example, have given way to democracies or other forms of representative government that contain vestiges of monarchy and aristocracy. These vestiges are, however, newly translated for post-revolutionary times. For example, it is true that the Americans, in their revolution against the British, formed a new government that paid attention to democratic representation. But America has also maintained and developed its own form of monarchy and aristocracy, even so. Captains of industry and business are our monarchy, now. They have names like Rockefeller, DuPont, and currently, Gates.

The professions that require a high degree of training – medicine, science, and law, for example – form the aristocracy. These elements exist in various forms and various states of

balance both in Europe and in the United States. Taken together within each country, these elements describe or define a country's basis for governance.

This diversity in governance in turn has also made possible the kinds of economic conditions that allowed the great European movement toward a single common market and a single currency. But how does the fight against drugs, and more specifically, against drugs in road traffic, fit into the model of diversity in governance and the subsequent movement toward a single economic and political union?

During the roundtable discussions, we discovered that each country considers the problem of drugs in traffic from the perspective of its own efforts to minimize risk within its borders, **and** from the perspective that the drugs are flowing into the country from outside its borders, whether by land or water. Each country participating in the study also has a primary legal approach – we described it as either "an analytical approach" or "an impairment approach." No matter which legal approach is applied, in each case, it is founded in the basic principles of the laws governing drugs and road traffic. Each country in the study, and indeed throughout Europe -- has a unique situation with regard to its internal laws, its geographic location, and its political structure.

So there is currently a primary oneness within each individual country's approach, but because of the diversity of considerations – within-border or cross-border influences, for example -- already we can see elements of other approaches sometimes taking place within a single country's drug policy and / or road traffic policies. This is very similar to the existence of surrogate aristocracies and monarchies in an era dominated by democracy.

France provides perhaps the most dramatic form of this integration of approaches. This country has adopted an endangerment / impairment approach, basing it on the assumption that **no drug is illegal per se**, but that a drug may be **illegally used** (without a prescription, for example, or in an amount that goes beyond the dosage prescribed).

This approach, while grounded in the principle of impairment, in effect also recognizes the zero tolerance approach, although it does not articulate that particular policy. That is, a drug used **without a prescription** – in any concentration -- is an **illegally used** drug. This, at least theoretically, provides the legal basis for sanctioning a user. Thus, if you can get a physician in France to write you a prescription for heroin, the simple, personal, private use of it is decriminalized. But if you obtain it from a dealer, its use is criminalized.

One can also see that drugs in society and drugs in traffic pose at least two different kinds of problems and therefore command more than one policy response. In the Netherlands, prosecutors will look the other way when it comes to cannabis use, but they will still prosecute cases of impaired driving, in the context of traffic law, even if cannabis was involved.

Drug Diversity Requires Diversified Responses

The more we learn scientifically about the effects of various drugs on the central nervous system, the more we can integrate the approaches to controlling their use – and minimizing the risk they pose -- on roadways. We know the effects of alcohol on driving, but it is just one drug. We know that per se limits – the provable measure of impairment for alcohol – do not apply to the 200-plus psychoactive drugs currently in pharmacies or on the streets. Even if you can show that a driver involved in an accident had cannabis in his blood, for example, it cannot be proven that the effects of cannabis caused the accident, partly because cannabis and its metabolites linger for a long time in certain body fluids, and the effects of the drug might have vanished long before the accident. This was the message that was repeated over and over again at the roundtable discussions.

Harm Reduction as a Basis for Social Policy

It was refreshing to hear at the roundtables that, although criminal law is used as a mechanism to combat the deleterious use of drugs – whether among drivers endangering others on roads or among 15-year-olds at rave concerts -- the real thrust of drug deterrence is generally seen as a matter of public health policy. It is as if the words of Hippocrates -- "First, do no harm" -- are applied not as an oath for the exclusive use of physicians entering medical practice, but as a message for the general population.

Whether this reduction is achieved by establishing zero tolerance limits, using traffic law as a tool for combating drug use, finding ways to measure impairment by drugs, or attempting to establish per se limits, the approach is still an accepted and acceptable premise from which certain parts of the criminal law spring.

Harm reduction, as a public policy and supported by appropriate laws, has the great advantage that it is blind to the myriad changes in drug popularity. Who knows how long crack cocaine will be a drug of choice, or if Ecstasy in 5 years will have given way to some other kind of high? The drugs will probably all exist 10 years from now, but their relative popularity will shift as new products enter the market. Glue, for example, is no longer a single substance in a category by itself, the way it was when I was growing up. It's just one component of the family of inhalants that appear to be attractive now to the young and the poor. The psychoactive prescription drugs have changed, too – both in their contents and in quantity. There are many more families of antidepressants, for example, on the market today than there were even 5 years ago.

Rapprochement in Minimizing Risk

The message of the roundtables is relatively simple: Creative solutions to the drug-driving problem will come from the willingness of governments to use the diversity of governance within their own borders to address the challenges of cross-border drug influences from their neighbors. This will require the integration of legal, scientific, and political expertise with grassroots action. In this way, minimization of risk will go hand in glove with harm reduction. If Europe succeeds in this quest, you may be sure that it will be noticed in the global marketplace for drugs.

Conclusions and recommendations

I Preamble

The objective of the seminar “Road traffic and illicit drugs” and its conclusions was above all to exchange information and experiences in order to help improve road safety as it relates to the consumption of illicit drugs but also of other substances which affect the ability to drive. The aim was not to develop new or additional measures in connection with national drug policies.

This document constitutes the conclusions and recommendations adopted by the participants in the seminar, which draw on the seminar's considerable documentation and the presentations and comments made during the discussions. Like all these contributions, they reflect the great diversity of national situations and approaches in the area of road traffic and drug policies. Accordingly, they do not seek to present a “single model” but take account of the possibility of adopting diverse approaches depending on political options, social and cultural traditions, fundamental institutions and legislation, and the economic possibilities of each country.

The aim of the proposals and approaches set out in this document is to contribute to the ongoing discussions not only in national and international bodies but also at the level of non-governmental organisations, researchers and field-workers.

As reaffirmed at the seminar, the problem of driving under the influence of drugs and its impact on road safety is complex. It has not yet been possible to find answers to many questions, whether they concern the real dimension in European countries of the phenomenon of driving under the influence of psychoactive agents or knowledge of the impact of these substances on the ability to drive. The lack of knowledge in these areas calls for extended and more in-depth research and a critical scientific review of knowledge acquired earlier. On this basis, it will be easier for states to take the organisational or legislative measures required.

II Conclusions and recommendations

1. Prevalence

1.1. At a general level, the participants in the seminar are of the view that great efforts must still be made to close the gaps in research on prevalence. Such research should be conducted bearing in mind the particular ethical principles of each country and rules set by national legislation on data protection. The collection of data in the context of this research, in particular data on the analysis of body fluids, should serve scientific purposes only.

1.2. Roadside surveys should be conducted on a pan-European basis to investigate the prevalence of illicit (and licit) drug use in the general driving population by using state-of-the-art screening tests for body fluids and behavioural checking followed by blood sampling. These surveys should ideally be done as a continuous effort, repeated over time to get insights in trends of drug use patterns.

1.3. Blood samples from drivers injured in traffic accidents should be assayed for illicit drugs at a representative selection of hospitals presently competent to conduct them. These hospitals should completely report the results of the assays to the national forensic laboratories, if possible, on an annual basis separating the prevalences of the combination of alcohol with licit and illicit drugs.

1.4. Blood samples from all fatally injured drivers should be assayed for every drug that is believed to be used by a significant proportion of the general population. If economic constrains prevent the determination of drugs in blood samples from all fatally injured drivers, efforts should be focused on a representative sample.

1.5. Law enforcement authorities should provide full details of the circumstances surrounding the submission of biological samples from drivers to the forensic laboratories conducting the assays. In the case of accidents, they should clearly indicate whether the sample was from a driver or a passenger, and whether the driver was judged responsible for the accident. The forensic laboratories should use the police report for stipulating the incidence of illicit drugs found in passengers, responsible drivers and non-responsible drivers in all of its summary reports.

1.6. In those European countries where the law permits, blood samples obtained for the purpose of measuring blood alcohol concentrations should also be assayed for the presence of illicit (and licit) drugs. Laws in those countries which prohibit this procedure should be abolished or in any case modified to permit data collection for research purposes.

2. Risk assessment

2.1. It is of paramount importance to determine what doses and / or blood, or saliva concentrations are associated with acceptable and unacceptable driving quality for those drugs that can be either licit and illicit. Experimental studies should be organised and funded for determining the safety of driving after the use of controlled substances such as methadone or similar substances during heroin replacement therapy. The driving of persons undertaking such therapy should be controlled by law to minimise the risk to the patients involved and the driving population in general (for example by prohibiting driving entirely or for a specified period after each treatment).

2.2. Using the data gathered from epidemiological studies as described above state-of-the art risk assessment studies should be conducted (for example responsibility analyses or case-control-studies) for the most frequently used drugs. These risk studies should include the combined risk if either licit or illicit drugs were consumed in combination with alcohol.

3. Detection and police enforcement

3.1. The authorities responsible for roadside screening should be able to have accurate, reliable and robust roadside screening devices allowing, if necessary, screening of body fluids (urine, saliva, sweat). These texts should permit as objective a reading as possible of a positive result, either by optical scanner or by internal test check. Manufacturers should be urged to market such devices. Clear instructions for the user should be drafted.

3.2. Procedures and devices should be developed for police to detect reliably impairment of drivers.

3.3. There is a need for an effective training programme for police officers regarding drug recognition, drug impairment, and drugs and driving. National training programme should be introduced for police officers who should be trained in recognising the signs of drug driving and impairment due to drugs.

3.4. Exchange of methods and experiences in detection and police enforcement between countries should be encouraged.

3.5. There is a critical need for the systematic review of all studies of the effectiveness of police activities and countermeasures in combating and reducing drugs and driving.

4. Medical examination and toxicology

4.1. Education and training of physicians in the determination of drug-specific impairment should be improved. Their training programme must be co-ordinated with the drug recognition programme of the police. The role of examiners (police, medical examiners or forensic physicians) in the determination of impairment should be clarified. Education and training of toxicologists in trace drug analyses in biological fluids should be implemented.

4.2. Standardised procedures and protocols for the medical examination of suspected drug drivers should be developed. These procedures should be valid all over Europe.

4.3. Procedures used by national forensic laboratories for assaying and reporting illicit (and licit) drugs should be standardised across the European countries. European harmonised proficiency testing programme for drug analyses in blood should be implemented in each country. A European proficiency testing survey should be elaborated.

5. Prosecution

5.1. There is a need for distinguishing between drug and alcohol-related offenses in statistics. This holds true for police reports of drug drivers, dismissals on prosecutions' decisions and charges or indictments before courts.

5.2. Basic knowledge about the problems with drug driving should be improved for prosecution authorities and judges.

6. Regranting procedures and rehabilitation programme

6.1. There is a need for describing a procedure as to how offenders after drug consumption in road traffic with or without impairment are treated:

a. License suspension or not.

b. Getting back the license or renew it after a certain period with or without any measure:

- undergo a psychological and medical assessment (drivers' mental fitness)
- undergo a therapeutical (psychological) treatment to separate consumption from driving (ignoring the fact of using illicit drugs)

c. In cases of drug abuse or drug dependence special measures should be implemented

6.2. A special regulation is necessary for drug rehabilitation programme like substitution programme, such as methadone, and driving ability. An assessment should clarify whether patients in these programme are able to drive cars or heavy goods vehicles.

6.3. Health professionals (medical practitioners and psychologists) should advise the drug-dependent patients about their illnesses and treatment regimes, as well as about their fitness to drive — or not to drive.

6.4. There is a need for well-designed, well-implemented, and critically evaluated rehabilitation programme for drug-driving offenders.

7. Legislation

7.1. In the framework and on the basis of national legislation, police should receive sufficient powers to conduct roadside screening. For this purpose, the two principle options favoured by European countries are either to admit roadside screening only in the case of substantial suspicion of driving under substance influence, or to admit such screening on a random basis. As provided for in several countries, a possibility to reach drivers' co-operation would be that those who refuse to test should face sanctions comparable to those imposed in cases of an actual drug influence.

7.2. A zero tolerance of any illicit psychoactive agent should be a permitted option under the laws of any European country. The other option is adapting the impairment approach to the special problems of drug driving.

7.3. National bodies should consider the possibility of establishing lower per se blood alcohol limits for drivers depending upon the presence of illicit and licit drugs in the same samples.

7.4. There is a critical need for studies examining the consequences of changes in legislation.

8. Prevention

8.1. Legislation is a most important factor of prevention. To point out this function new legislation should be accompanied by information campaigns and has to be discussed in public. The intention of the regulation, the efficiency of the legislation and the corresponding information campaign should be evaluated.

8.2. Regular campaigns to inform the public of the dangers of driving when taking certain medications should be organised. The information in the package insert should be more informative, operational and less vague. There should be a warning pictogram (like a traffic sign) on medicines that severely impair driving. More training of pharmacists and medical doctors on impairment by medicines is required.

8.3. There is a need for well-designed, carefully implemented, and critically evaluated drugs-and-driving prevention programme. More effort should be expended on understanding or addressing the problem of drugs and driving from the perspective of the most common drug consumer: the young user. There is a complete lack of research comparing and contrasting drugs-and-driving behaviour, attitudes, and perceptions of sanctions in the different European countries, with different regulations and different levels of societal acceptance of drug use.

9. Medicinal drugs

9.1. The problem of licit drugs and driving cannot be ignored since the prevalence of medicinal drugs is frequently reported in most studies. Furthermore the proportion of drivers taking psychotropic medication is estimated to be about several times higher than the proportion of drivers using illicit drugs. In epidemiological studies or roadside surveys samples from drivers submitted to forensic laboratories or obtained in hospitals should at least be screened on hypnotics, anxiolytics, antidepressants, antipsychotics, antihistamines and narcotic analgesics.

9.2. The prevention of driving under the influence of licit drugs that significantly impair driving performance should be encouraged by promoting a categorisation system allowing physicians and pharmacists to respectively prescribe and dispense the least impairing medicinal drug in each therapeutic class. This effort should be undertaken on a European level.

9.3. For medicinal drugs more efficient methodologies (less expensive and more practical than roadside surveys) can be used to study the risk estimate of accident involvement while using psychotropic medication and should be applied in a pan-European study. In different European countries a pharmaco-epidemiological approach is feasible by linking records of medicinal drug use (obtained from pharmacists who keep records on individual patients) and records of accident involvement within the same population. This approach offers an opportunity to validate the categorisation system proposed above, which is till this moment primarily based on knowledge derived from experimental studies.

9.4. Recognising that certain medicines are used illicitly (e.g. benzodiazepines), the forensic laboratory or hospital performing a epidemiological study should endeavour to learn how such substances found in drivers who were injured or killed in an accident were obtained.

9.5. It is necessary to obtain knowledge about how traffic safety would be affected if the patients participate unmedicated. Studies about the benefits of a medication with respect to the requirements of safe driving should be encouraged.

FUTURE TRENDS IN DRUG-DRIVING POLICY IN EUROPE - REPORT FROM THE ROUNDTABLES

by D[r] Frances B. Huessy, Addiction Research Institute, South Burlington, Vermont (USA)

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The key question with regard to drugs and driving is relatively simple: Given the fact that drugs and cars are nearly everywhere in the Western world, **how do we minimize the risk that drug use presents to the general driving population?**

Unfortunately, the answer to the question appears to be relatively complicated. One immediate reason for this is that the question links considerations of time with those of space. That is, how long does the risk from drug use last, across the period of a drug's influence on the driver? And over how many kilometers of public roadways does a typical driver travel when he or she is under the influence of a psychoactive substance? And what happens if the driver is under the influence of a combination of such substances, including alcohol? Further, the answer to the primary question about minimizing risk requires considerations across significant professional fields and institutions, across different legal structures and foundations, and across political cultures.

The Integration of Science, Law, and Politics in Minimizing Risk

Minimizing risk from driving under the influence of drugs – both between borders and across borders -- is the focus of this activity of the Pompidou Group, even though we do not know for certain to what extent drugs are a problem on roadways. Nevertheless, enough anecdotal evidence and other information exist that indicate that drug driving is a very real problem. Further, it is an indicator of the interrelated character of medical, legal, economic, and political factors that predominate at the end of the 20th century among industrialized countries. After all, the past 100 years have witnessed the globalization of markets – including the markets for drugs and cars.

The fact that we are all here under the auspices of the Council of Europe demonstrates the political and economic interaction that has taken place in Europe. The fact that the Pompidou Group of the Council of Europe has taken up the question of drugs in road traffic acknowledges the cross-border character of the drug marketplace, and accepts the fact that cars are a likely venue for drivers who have been drinking and / or consuming drugs.

One of the cardinal characteristics of the 20th century has been the burgeoning development of technology. Across the Northern Hemisphere, it is easy to identify the common events that technology has made possible. Among other things, it has expanded our ability to travel long distances. People living in many parts of Europe as well as people in many parts of the United States enjoy access to an impressive infrastructure of roadways across large expanses of land. This infrastructure has, by extension, contributed to the existence of the global marketplace.

However, access across greater expanses of space has also resulted in less-intimate communities, and this in turn has led to a situation in which we all now live in comparative anonymity. So in a smaller sense, technology, infrastructure, and anonymity have all provided the means by which people can transport drugs across borders, without a high probability of detection. Thus, when we look at the factors that have created an active marketplace and the changing home community, we should not be surprised to see that drug driving is not just possible, but perhaps inevitable.

Further, there is no single reason that people decide to drive when they are under the influence of drugs. Not surprisingly, the roundtable discussions offered up no single solution to minimize the risk brought on by the combination of cars and drug use. Nevertheless, the roundtable discussions did identify risk minimization as the quest of legal, scientific, economic, health, and political practitioners at professional and grassroots levels. As such, it demands integrated thinking across a wide range of interrelated fields, from the science of drug effects to within-government legal structures, to cross-border considerations. In short, it demands the integration of science, law, and politics.

How the Roundtable Discussions Gave New Insight into European Drug Driving

The roundtable meetings with the countries that agreed to participate in the 1998 Pompidou Group survey for the Council of Europe provided a unique forum for candid comments about future reduction of the drug-driving problem. Representatives from law enforcement said although they **know** that people are driving under the influence of drugs, it is much more difficult and costly to test drivers successfully for drug presence than it is to test them for alcohol presence. Even when arrests occur, successful prosecution can be elusive. The doctors and other scientists at the roundtables enumerated the many difficulties of finding a valid indicator of recent drug use – let alone the drug concentrations and their relative probabilities of causing impairment and accidents. The solutions to this problem ranged from drug recognition training for police to the development of hand-held devices that could be used in the field to screen for drug presence. The training is expensive, but reasonably effective; the screening devices have yet to be invented. For their parts, policymakers have difficulties in even determining whether specific drug-driving laws are necessary, given a system of government that already has both drug laws and motor vehicle regulations. All of these considerations and constraints – technological, legal, and national – both temper and impel the cross-national efforts to develop and implement meaningful drug-driving policy.

In his introduction to this symposium, Prof. Krüger identified several common legal aspects in the survey of the 12 countries participating in the study. The primary aspect is that all of the countries have dedicated their fight against illicit drugs or the illicit use of drugs in the context of criminal law. Even so, each country has differed in the way in which it has adopted risk-minimization approaches. Some approaches are firmly rooted in the concept of reducing impairment or endangerment, while others are seriously considering zero tolerance – or, as in the case of Germany, have actually embraced it. Another common element is that each country has identified drug dealing – whether by an individual or under the control of a larger group – as a significant target for prosecution and conviction.

Although many of the roundtable discussions emphasized that reducing the endangerment of others formed the theoretical basis for specific countries' drug policies, risk minimization appears to have been the focus of actual drug-driving policy. The form in which risk minimization has appeared varies considerably across the countries that participated in the study. At nearly every roundtable meeting where law enforcement representatives were present, for example, we heard anecdotes about drivers whom the police were quite certain were putting others at risk because of drug influence while driving. However, many of these drivers escape detection and prosecution. It is the existence of these people who inspire the laws and policies that address drugs and driving. But have the measures been successful in minimizing risk in a region that does not know how prevalent the problem is and does not know for certain what the crash risk of drugs is?

A Case in Point

All of you probably know -- or know of – people such as my acquaintance, Steven. He began drinking at the age of 14. Now, at the age of 45, he is a member of Alcoholics Anonymous and proudly displays to his parents, his brothers and sisters, and their friends, his 5-year button – the award one receives if one has not had a drink in that amount of time. Only in Steven's case, he stole it. He not only still drinks, he is also on drugs. His wife left him long ago, and does not let him see their son. He has been arrested many times for alcohol and drug offenses, but he has been convicted only a few times. He uses some very innovative tricks to play for time during an arrest, to avoid taking a breath test, and to talk his way out of going to jail. In short, he knows how to work the legal system, and he is very, very good at it.

When Steven is under the influence of either drugs or alcohol, which is every day, he thinks nothing of getting into his car to drive to the store to buy more alcohol. Or go downtown and buy drugs from one of his dealer friends. Because of his addictions, he sometimes thinks he is being pursued by other cars on these trips. Once he was convinced that the car behind him was chasing him, so he tried a quick maneuver to elude it, and crashed into a building. When the police arrived, he said someone else had been driving his car and the driver had run away from the scene. The police officer did not believe his story, and Steven was breath-tested for alcohol. He was well over the legal limit, which was enough for a charge of drunken driving. And like so many of the anecdotes we heard during the roundtable meetings, the police did not expend the extra time, effort, and expense to test Steven for drugs, so they did not discover that he was driving under the influence of cocaine.

We have an expression in the United States that bad legal cases make bad law. Nevertheless, every country has its Stevens. If this American Steven lived in Europe, he would no doubt also have applied his considerable skills in avoiding prosecution. But he might also now be in an appropriate drug program – something that he has not accomplished at home because someone like him is considered primarily a law enforcement problem and not a person to be rehabilitated through the public health system.

In fact, the United States is a country that has not yet come to terms with the concept of harm reduction the way many countries in Europe have. In addition, the United States is not unified in what it is trying to accomplish in its war on drugs – a war it is fighting at its borders and on the streets with the full artillery of the criminal court system behind it. It is not overstating the case to say that American jails and prisons are literally jammed to overflowing with drug offenders. And it is not overstating the case to say that the $16 billion poured into the American "war on drugs" in 1997 alone has not kept Steven drug-free, sober, or off the roadways in his car.

How Can Peace Be Concluded in the Fight against Drugs?

In this symposium, we have heard many references to terms such as “combating drugs” and “the fight against illicit drugs.” And now I have just used the popular American term, the “war on drugs.” The analogy is obvious, of course. If one thinks about the political products of big social upheavals such as wars and revolutions, an interesting observation can be made. One political outcome of revolutionary war has been diversity in how a country is governed. Former European monarchies and aristocracies, for example, have given way to democracies or other forms of representative government that contain vestiges of monarchy and aristocracy. These vestiges are, however, newly translated for post-revolutionary times. For example, it is true that the Americans, in their revolution against the British, formed a new government that paid attention to democratic representation. But America has also maintained and developed its own form of monarchy and aristocracy, even so. Captains of industry and business are our monarchy, now. They have names like Rockefeller, DuPont, and currently, Gates.

The professions that require a high degree of training – medicine, science, and law, for example – form the aristocracy. These elements exist in various forms and various states of balance both in Europe and in the United States. Taken together within each country, these elements describe or define a country’s basis for governance.

This diversity in governance in turn has also made possible the kinds of economic conditions that allowed the great European movement toward a single common market and a single currency. But how does the fight against drugs, and more specifically, against drugs in road traffic, fit into the model of diversity in governance and the subsequent movement toward a single economic and political union?

During the roundtable discussions, we discovered that each country considers the problem of drugs in traffic from the perspective of its own efforts to minimize risk within its borders, **and** from the perspective that the drugs are flowing into the country from outside its borders, whether by land or water. Each country participating in the study also has a primary legal approach – we described it as either “an analytical approach” or “an impairment approach.” No matter which legal approach is applied, in each case, it is founded in the basic principles of the laws governing drugs and road traffic. Each country in the study, and indeed throughout Europe -- has a unique situation with regard to its internal laws, its geographic location, and its political structure.

So there is currently a primary oneness within each individual country’s approach, but because of the diversity of considerations – within-border or cross-border influences, for example -- already we can see elements of other approaches sometimes taking place within a single country’s drug policy and / or road traffic policies. This is very similar to the existence of surrogate aristocracies and monarchies in an era dominated by democracy.

France provides perhaps the most dramatic form of this integration of approaches. This country has adopted an endangerment / impairment approach, basing it on the assumption that **no drug is illegal per se**, but that a drug may be **illegally used** (without a prescription, for example, or in an amount that goes beyond the dosage prescribed).

This approach, while grounded in the principle of impairment, in effect also recognizes the zero tolerance approach, although it does not articulate that particular policy. That is, a drug used **without a prescription** – in any concentration -- is an **illegally used** drug. This, at least theoretically, provides the legal basis for sanctioning a user. Thus, if you can get a physician in France to write you a prescription for heroin, the simple, personal, private use of it is decriminalized. But if you obtain it from a dealer, its use is criminalized.

One can also see that drugs in society and drugs in traffic pose at least two different kinds of problems and therefore command more than one policy response. In the Netherlands, prosecutors will look the other way when it comes to cannabis use, but they will still prosecute cases of impaired driving, in the context of traffic law, even if cannabis was involved.

Drug Diversity Requires Diversified Responses

The more we learn scientifically about the effects of various drugs on the central nervous system, the more we can integrate the approaches to controlling their use – and minimizing the risk they pose -- on roadways. We know the effects of alcohol on driving, but it is just one drug. We know that per se limits – the provable measure of impairment for alcohol – do not apply to the 200-plus psychoactive drugs currently in pharmacies or on the streets. Even if you can show that a driver involved in an accident had cannabis in his blood, for example, it cannot be proven that the effects of cannabis caused the accident, partly because cannabis and its metabolites linger for a long time in certain body fluids, and the effects of the drug might have vanished long before the accident. This was the message that was repeated over and over again at the roundtable discussions.

Harm Reduction as a Basis for Social Policy

It was refreshing to hear at the roundtables that, although criminal law is used as a mechanism to combat the deleterious use of drugs – whether among drivers endangering others on roads or among 15-year-olds at rave concerts -- the real thrust of drug deterrence is generally seen as a matter of public health policy. It is as if the words of Hippocrates -- “First, do no harm” -- are applied not as an oath for the exclusive use of physicians entering medical practice, but as a message for the general population.

Whether this reduction is achieved by establishing zero tolerance limits, using traffic law as a tool for combating drug use, finding ways to measure impairment by drugs, or attempting to establish per se limits, the approach is still an accepted and acceptable premise from which certain parts of the criminal law spring.

Harm reduction, as a public policy and supported by appropriate laws, has the great advantage that it is blind to the myriad changes in drug popularity. Who knows how long crack cocaine will be a drug of choice, or if Ecstasy in 5 years will have given way to some other kind of high? The drugs will probably all exist 10 years from now, but their relative popularity will shift as new products enter the market. Glue, for example, is no longer a single substance in a category by itself, the way it was when I was growing up. It’s just one component of the family of inhalants that appear to be attractive now to the young and the poor. The psychoactive prescription drugs have changed, too – both in their contents and in quantity. There are many more families of antidepressants, for example, on the market today than there were even 5 years ago.

Rapprochement in Minimizing Risk

The message of the roundtables is relatively simple: Creative solutions to the drug-driving problem will come from the willingness of governments to use the diversity of governance within their own borders to address the challenges of cross-border drug influences from their neighbors. This will require the integration of legal, scientific, and political expertise with grassroots action. In this way, minimization of risk will go hand in glove with harm reduction. If Europe succeeds in this quest, you may be sure that it will be noticed in the global marketplace for drugs.

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