

"ALCOHOL, DRUGS, AND TRAFFIC SAFETY"

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An accident may be defined as an unplanned event; Yet despite the most meticulous planning there is a high risk of a road accident occurring if the driver's ability is impaired by some disease and/or the therapy prescribed to treat that disease.

Human failure overshadows all other factors in the causation of traffic accidents. There can be no doubt that poor judgement, impaired reaction time, faulty attitudes, emotional disturbances and physical disabilities are basically responsible for most accidents. Poor road engineering, inadequate lighting, adverse weather conditions and mechanical defects may play a part in a small percentage of traffic accidents — but in the majority of accidents, the basic cause is to be found

in some impairment of the driver's ability to properly control his vehicle.

Sufficient information has been gathered to show that the contribution of medical conditions other than alcoholism to the road toll is not insignificant; and when alcoholism and drug reactions are included, medical conditions must be considered a major factor.

The human mechanism must be in good condition to cope with the split second timing needed to manoeuvre responsive high speed motor vehicles in today's high traffic density. It should be the right of every road user to believe that every driver is physically, mentally and emotionally fit, and has the social responsibility required to hold a drivers license.

The key to ultimate success in road accident prevention lies with the driver — his intelligence, his sense of personal and social responsibility, his reactions to various stimuli in normal conditions and under stress, and his driving ability in good health and in illness.

Impairment of the skills necessary to properly control a motor vehicle may arise from physical or mental illness. In physical illness, we are concerned with those conditions likely to produce sudden changes in the level of consciousness, such as diabetes and epilepsy; but it is toxic impairment — impairment by alcohol and other drugs — which poses the greatest threat to safety on our roads.

The role of alcohol in the causation of traffic accidents has been well documented and thoroughly discussed. However, I must remind you that in this State of Queensland, alcohol is a predominant factor in over 50% of all fatal accidents, in over 80% of single vehicle fatal accidents, and in a similar percentage of serious injury and property damage accidents.

Experience has shown that man, alcohol and the motor vehicle are incompatible. Educational programmes have been designed to show man how to live with alcohol and the motor car; but legislation has been necessary for those who refuse to be educated.

During the last two decades, chemical technology has provided man with a bewildering array of therapeutic synthetics, structured to cure his physical and mental ills. Social competition produces a modern stress syndrome which presents in divers ways, and which attracts an increasing use of psychotropic drugs. These substances are rapidly becoming an integral part of our web of life; but as such, are proving to be another incompatible for man when related to the motor vehicle.

"ALCOHOL, DRUGS, AND TRAFFIC SAFETY"

ABUSE OF NON-THERAPEUTIC DRUGS

The most common drugs in the group are marihuana, psilocybine and L.S.D. These drugs are all hallucinogenic, producing grossly disordered senses. The writer has only personal knowledge of marihuana associated with impaired driving, and has not been involved with the other hallucinogens in this regard.

THE PROBLEM - HOW EXTENSIVE?

As Milner has pointed out, the full effect of alcohol on driving competence was not appreciated until objective methods of measuring blood-alcohol levels became generally available. The same may well be true of psychotropic drugs, either alone or in combination with alcohol. It is suggested that this problem may be compared with the role of alcohol in traffic safety thirty years ago, and unless it is curbed now, could parallel the role of alcohol today.

During the period 1 July, 1974 - 31 December, 1975, Police in the Australian Capital Territory conducted 1,985 Breath Analyses. Some 289 or 14 per cent of these subjects admitted to concurrent prescribed drug ingestion. Well over 70 per cent of these persons ingested psychotropic drugs. The predominant drugs are listed in Table I.

Many drugs which act principally on the central nervous system are known to impair driving ability. These include analgesics, anticonvulsants, antihistamines, sedatives, hypnotics, narcotics, tranquillisers and anti-depressants collectively defined as psychotropic drugs. The metabolism of drugs of other groups may also produce undesirable side effects. The degree of impairment varies widely from person to person, and it is difficult to predict whether a disabling reaction will occur in any specific instance.

It is convenient to consider drugs and driving impairment under several headings.

- *Therapeutic drugs taken in a prescribed manner.*
- *Abuse of therapeutic drugs.*
- *Abuse of non-therapeutic drugs.*
- *Drug-Alcohol interaction.*

PRESCRIBED THERAPEUTIC DRUGS

The most dangerous period — that period when impairment is likely to be greatest — is during the initial stage of taking a prescribed drug; before the nature and extent of any side effects, or indeed of the intended effect, is known in respect of the individual concerned. Psychotropic drugs taken in prescribed dosage may initially produce drowsiness, ataxia, impaired judgement and increased reaction time. After a period of time, tolerance to the drug develops, with marked reduction in unwanted side effects. At this stage, driving impairment is not measurable, and proper control of a motor vehicle may be expected.

Should a person ingest his prescribed drug in such a cavalier fashion, so as to omit doses he does not consider necessary, or to increase the dose at his own whim, he may well prevent the development of pharmacological tolerance, and impairment of driving skills may well be continuing. Should he add alcohol to his therapy, an adverse interaction will occur, and severe impairment is predictable. Potentiation occurs and such impairment is greatly in excess of the simple additive effect of each substance taken separately.

ABUSE OF THERAPEUTIC DRUGS

Abuse of a therapeutic drug means the self-administration of a drug, not prescribed for the person using it, and /or not for the purpose for which the drug is intended. The most common drugs so abused include Morphine, Pethidine, Methadone, Methaqualone (Mandrax), Diazepam (Valium), and Barbituates. The common purpose for such abuse is to get "high" — a state of unreality characterised by euphoria and/or hallucinations, either visual or auditory or both.

Intoxication by any of these drugs produces severe impairment of driving skills. The writer has personal experience of offences against Section 16 of the "Traffic Acts" involving each of the drugs listed.

TABLE I

CONCURRENT DRUG-ALCOHOL INGESTION A.C.T. Police 1.7.74 - 31.12.75

DRUG	ACCIDENT	NON ACCIDENT	TOTAL
Diazepam	28	45	73
Analgesics	16	36	52
Anti-depressants	8	2	10
Barbituates	5	7	12
Anti-histamines	10	15	25
Tranquillisers	1	7	8
Hypnotics	6	8	14
	74	120	194

Other prescribed drugs in this survey included Phenytoin, Morphine, Methadone, Lithium carbonate, appetite depressants and hypotensives.

In the period 1.9.74 to 30.6.75, twenty-one blood samples from drivers suspected of drug effectedness were submitted to the Government Analyst in Brisbane. Of these ten samples were positive (Table II).

TABLE II

CONCURRENT DRUG-ALCOHOL INGESTION Queensland 1.9.74 - 30.6.75

21 Specimens	10 Positive
Diazepam	6
Barbiturates	2
Phenytoin	1
Methadone	1

In the period 1.7.75 to 30.6.76, forty-one suspect blood samples were analysed — thirty-two were positive (Table III). Some specimens contained more than one drug.

"ALCOHOL, DRUGS, AND TRAFFIC SAFETY"

TABLE III

CONCURRENT DRUG-ALCOHOL INGESTION Queensland 1.7.75 - 30.6.76

41 Specimens	32 Positive
Diazepam	19
Nitrazepam	2
Barbiturates	9
Phenytoin	2

In the period 1.7.76 to 30.6.77 twenty eight samples were submitted, nineteen were positive (Table IV).

TABLE IV

CONCURRENT DRUG-ALCOHOL INGESTION Queensland 1.7.76 - 30.6.77

28 Specimens	19 Positive
Diazepam	10
Barbiturates	4
Oxazepam	3
Methaqualone	2

TABLE V

CONCURRENT DRUG-ALCOHOL INGESTION Queensland 1.7.77 - 30.6.78

51 Specimens	35 Positive
Diazepam	11
Methaqualone	7
Quinalbarbitone	6
Phenytoin	4
Nitrazepam	3
Amylobarbitone	3
Pentobarbitone	2
Promethazine	2
Garbamazepine	1
Lithium	1
Salthiame	1

6 Specimens contained more than 1 drug.

The figures for Queensland do not present a true picture of the problem on our roads. I feel sure that a great many of the negative results represent cannabis intoxication. As yet, the Government Chemical Laboratory is unable to detect cannabinoids in biological fluids, although this situation should be corrected in the near future. Charges of driving under the influence of cannabis depend on admissions from the accused person, or the detection of the drug on or about this person, plus clinical findings on examination of the

person. The writer has been involved with several charges related to cannabis, but the number is lost in the general figure of prosecutions and convictions under Section 16 of the Traffic Acts.

With regard to those drugs which are detectable, it is suggested that the figures show only a small proportion of those persons affected by drug-alcohol interaction. When Police apprehend a driver suspected of driving under the influence of alcohol and/or a drug, the person has a breath specimen analysed for alcohol content. If this is shown to be so low that the alcohol concentration is not consistent with observed behaviour pattern, blood and urine specimens are obtained and analysed for drug content. If however the blood alcohol concentration is shown to be 80mgm per cent (0.08%) or slightly greater, no further action is taken in the majority of cases, as there is sufficient evidence to bring a charge against the driver.

On one occasion, the writer was asked to take a specimen of blood from a driver whose behaviour was not consistent with a blood alcohol concentration of 85mgms per cent. Analysis revealed a concentration of diazepam (Valium) in the driver's blood as well as alcohol. One wonders how many drivers under the influence of a drug-alcohol interaction escape detection because of current practise.

Some drugs commonly associated with impaired driving deserve special comment.

MARIHUANA

Cannabis produces euphoria and impairs judgement. Whilst any psychoactive drug is capable of increasing the incidence of traffic accidents by impairing driving skills, cannabis, because of its wide spread use, is particularly dangerous. Cannabis has received little attention as a possible cause of traffic accidents, largely owing to the difficulty of proving its use analytically in this State.

In a survey of drugs found in drivers involved in fatal accidents, Woodhouse obtained indirect evidence of marijuana use in roughly 40% of the cases, depending on the "diagnostic" criteria employed, but was unable to confirm it by direct analysis of body-fluids because of lack of a suitable method. He estimated that cannabis use increased the risk of being involved in a fatal accident 3½ times above control. This was much more than tobacco, which did not increase it at all, but less than alcohol which increased the risk 23 times.

In 1974, Teale and his colleagues described a comparatively simple and inexpensive method of estimating the amount of tetrahydrocannabinol (THC) and its metabolites in small samples of blood or urine. The technique was a radioimmunoassay which could measure the THC in less than 1ml of blood or urine in a volunteer who had smoked a single cigarette impregnated with 5mg of pure THC. The serum used by them gave cross-reactions with several other cannabinoids, including the principal metabolite of THC in the blood, but this did not appear to affect the significance of the results. It was noted that the extent of the subjective effects experienced by the volunteers appeared to correlate well with the plasma THC levels.

In 1976, Teale and Marks published a case report in which objective evidence of cannabis intoxication was given in a Coroner's Court.

A young man, who had been observed to be driving erratically before the accident, failed to pull in to his own side after overtaking and drove head-on into an approaching lorry. He was killed, and the lorry driver fortunately escaped, badly

"ALCOHOL, DRUGS, AND TRAFFIC SAFETY"

shaken. There was no alcohol in the dead man's blood or urine, but his plasma contained 315ng of cannabinoids per millilitre, and the urine 1210ng/ml. By contrast, a volunteer who was given a cigarette containing 5mg of pure THC had a peak plasma level of cannabinoids of 75 ng/ml ten minutes after beginning to smoke, when he felt mildly euphoric, and a mean 24 hour urine concentration of 50 ng/ml. (Incidentally, under the passenger seat of the wrecked car were found some packets of cannabis leaf and a "pipe" for smoking it).

During a recent visit to the State of Rhode Island, U.S.A., the Chief Medical Examiner, Dr. William Q. Sturner, expressed concern that cannabis use was an increasing factor in road accident causation. His investigation of young driver fatalities includes the swabbing of nose, mouth and finger tips, and screening the swabbings for cannabinoids by thin layer chromatography. Blood and urine were examined by Radioimmunoassay (RIA).

Whilst he did not give actual figures, Dr. Sturner indicated that the positive findings were increasing, and that the percentage of positives was significant.

In a personal communication to Dr. Sturner dated January 3, 1978, Mr. Dale H. Speck, Director of the Division of Law Enforcement, Department of Justice, State of California states:

"The Investigative Services Branch of this division contracted to have between 1800 and 2400 blood samples analysed by radioimmunoassay techniques to determine the presence of a discreet marijuana metabolite. These blood samples are from drivers subjectively determined to be impaired by officers of the California Highway Patrol. The samples are segregated on the basis of impaired driving populations above and below 0.10% alcohol levels. The percentage of samples containing marijuana will be reported together with a correlation of statistical information on a number of sociological variables. To date, the total analytical results received with respect to 376 blood samples in the population group with a blood alcohol level of 0.10% or below, 27.6% were found to contain detectable levels of the impairing short term Delta 9 THC substance found in marijuana. Three-hundred sixty samples have been analysed from the population group consisting of blood samples with an alcohol content of above 0.10%. The percentage of this population containing detectable levels of impairing short term Delta 9 THC was found to be 18.8%. This summarizes the analytical results to date. So far, the marijuana incidence in impaired drivers is consistently above 23% of the specific impaired driving population surveyed in this study.

It appears that marijuana impairment by itself, marijuana in combination with alcohol and marijuana with other drugs is playing a part in the driving under influence situations on the highways of California."

It is not supposed that in our present society cannabis intoxication makes a substantial contribution to our road toll, but current information clearly indicates that it may well do so if not curbed and that it is possible for a well equipped laboratory to investigate cannabis in appropriate cases.

MANDRAX

The product marketed under this name is a combination of two drugs, methaqualone, a hypnotic, and diphenhydramine HC1, an anti-histamine. It was produced as a sleeping aid, the usual dosage being one tablet on retiring. Some years ago, Mandrax was included in the list of Pharmaceutical Benefits obtainable under the National Health Scheme. It has since been removed from that List, but is available on prescription.

The majority of medical practitioners in this State do not prescribe Mandrax, but unfortunately some in Brisbane do so. The usual script is for one hundred (100) tablets, sufficient for more than three months if used as the manufacturer intended. But, of course, the drug is abused by the purchaser, invariably a young person, and his or her friends, to get "high". The drug has marked euphoric and hallucinogenic properties, and is seen more and more to be associated with traffic accidents and impaired driving.

Mandrax is a dangerous drug of abuse. It is in extremely common use among young people and frequently leads to abuse of more potent drugs. It has no useful place in medical therapy, and should be declared a prohibited drug. The most certain way of eradicating Mandrax from our society would be to prohibit its manufacture.

METHADONE

The continuing and increasing use of methadone in the therapeutic treatment of heroin-dependant persons causes some anxiety in relation to these persons driving. Methadone is potentially a dangerous drug in that it produces euphoria, mental sluggishness and hallucinations. As such, it must impair driving skills. Tolerance to the effects of methadone develops through continued usage, but this does not mean that driving skills remain unimpaired.

The writer has observed young people shortly after receiving a maintenance Methadone dose. Euphoria and loss of coordination are obvious. These young people arrive at, and depart from, the treatment centre on motor-cycles and in cars. One cannot fail to reflect on the degree of impairment that exists in these drivers. A search of the literature has failed to disclose any detailed study of the effect of Methadone on driving skills. One knows from personal experience that methadone does cause traffic accidents, but the cases the writer has knowledge of were instances of abuse. It would not be fair to suggest restrictions on methadone — dependant persons without a detailed study to back up the recommendations.

There is an urgent need to study the level of driving skills in methadone — dependant persons. Preliminary work to inaugurate such a study is currently being done.

APPROACH TO THE PROBLEM

The extent of the contribution of drivers impaired by drugs and drug-alcohol interaction to traffic accidents has not yet been defined. It will not be defined until other States follow the Queensland example and enact effective legislation to enable such drivers to be identified.

Yet, the problem does exist, and if not controlled, could become a more significant factor in traffic accident causation than it is at present.

Legislation is not the sole approach to this problem, nor perhaps the most desirable approach. Educational programmes are essential to a complete attack — but they must be programmes with a difference, directed to the prescriber rather than the consumer, for the adverse effects of alcohol — drug interaction may truly be described as an iatrogenic disease. It must be the duty of every doctor to fully understand the

"ALCOHOL, DRUGS, AND TRAFFIC SAFETY"

properties of each drug he prescribes, and to warn his patient in relation to driving a motor vehicle, operating machinery and drinking alcohol whilst taking the drug.

Pharmaceutical manufacturers also have a duty. Appropriate warning labels should be attached to each pack of a drug acting on the central nervous system. In Australia, the National Therapeutic Goods Committee has recommended this procedure as a Code of Practice. Some manufacturers have adopted this recommendation — others unfortunately have not.

Perhaps if more thoughtful attitudes were adopted by manufacturers and prescribers, the application of the legislation would be less frequently required.

Best Wishes to the Australian Crime Prevention Council

Darryl Bryer Sands

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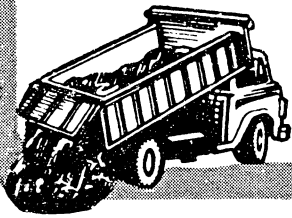
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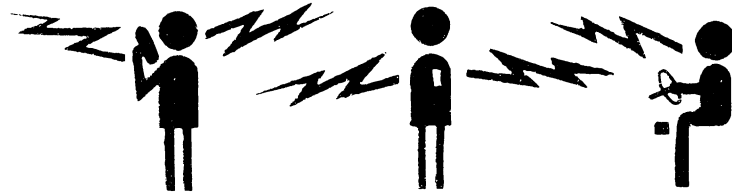
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