



**THE EXPERT ADVISORY COMMITTEE ON DRUGS (EACD)
ADVICE TO THE MINISTER ON:**

METHAMPHETAMINE

Released 2002

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Executive Summary

This paper presents evidence on the risk of harm associated with methamphetamine, a powerful central nervous system stimulant. The information presented adheres to the criteria set out by the Misuse of Drugs Amendment Act 2000, and provides arguments in support of the reclassification of methamphetamine.

Methamphetamine is currently in the Second Schedule (Class B), Part 2 of the Misuse of Drugs Act 1975, however, the Expert Advisory Committee on Drugs recommends classification of the drug in the First Schedule (Class A) to better reflect the risk of harm associated with methamphetamine.

This recommendation results from evidence presented in this paper indicating the following:

- That the use and manufacture of methamphetamine in New Zealand is growing, seizures are increasing, and it has potential appeal to vulnerable populations.
- There are pronounced long-term physical and psychological adverse effects associated with methamphetamine abuse.
- There are significant risks to public health from intravenous use of methamphetamine, as well as the dangers posed by illicit clandestine laboratories.
- There are few, if any, therapeutic applications for methamphetamine.
- Methamphetamine has been linked to deaths both in New Zealand and overseas.
- There is a high physical and psychological dependence potential.

The EACD has balanced these arguments against other issues, with a particular focus on the scheduling criteria set out in the Act. We recommend that in terms of the criteria of the Act, methamphetamine is most appropriately classified in First Schedule (Class A) of the Misuse of Drugs Act 1975.

Recommendations

After considering all of the information put to the Committee and the classification criteria in the Misuse of Drugs Act 1975, the EACD makes the following recommendations to the Associate Minister of Health:

- (a) Methamphetamine should be classified in the First Schedule of the Misuse of Drugs Act 1975 (ie, A).**
- (b) This paper should be made publicly available (eg, posted on the National Drug Policy website www.ndp.govt.nz) as soon as practicable.**

Substance Identification

Methamphetamine is a synthetic substance that is typically manufactured from over-the-counter pharmaceuticals (predominantly cough and cold medications) containing ephedrine or pseudoephedrine. Methamphetamine can also be manufactured with ephedrine extracted directly from the *ephedra vulgaris* plant or from a wide variety of other chemicals. Marnell (1999) identifies several techniques that are employed to manufacture methamphetamine.

Typically, methamphetamine is a white (some grades may be yellow/brown due to incomplete manufacturing processes or impurities), odourless, bitter tasting powder that is alcohol and water-soluble. The drug is also available in a clear crystal form that is high in purity.

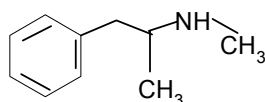
Street names for methamphetamine include *Speed*, *Wizz*, *Go* and *Meth*. The crystal form of the drug is often referred to as *Ice*, *Pure*, *Crystal Meth*, *Glass*, or *Shabu*.

The chemical nomenclature for methamphetamine is as follows:

- (S)-N, α -Dimethylbenzene-ethanamine
- d-N-methylamphetamine
- d-desoxyephedrine
- d-deoxyephedrine
- 1-phenyl-2-methylaminopropane
- d-phenylisopropylmethyl-amine
- (+)-(S)-N, α -dimethylphenethylamine
- 2-methylamino-1-phenylpropane.

The Chemical Abstracts Registry Service (CAS) number for methamphetamine is 537462. The CAS number for methamphetamine hydrochloride is 51570.

FIGURE 1: Chemical Structure of Methamphetamine



Methamphetamine

Source: Albertson et al. 1999

Methamphetamine molecules have two stereoisomers:¹ dextro-methamphetamine or levo-methamphetamine. Depending on the manufacturing process used, a sample may consist entirely of dextro-

¹ Stereoisomer have the same chemical composition but different spatial configurations of their molecules.

methamphetamine or levo-methamphetamine, or an equal combination of the two. While the chemical composition is the same, dextro-methamphetamine is reportedly more potent (Marnell 1999) than the other two forms.

Similarity to Known Substances

Methamphetamine is an Amphetamine-Type Stimulant (ATS). According to Martindale (ed. Parfitt 1999) and the United States Pharmacopeial Convention (1994) methamphetamine has a similar pharmacological action as dexamphetamine and methylphenidate (Ritalin). The United Nations (2000) also notes methamphetamine is similar to fenetylline, phenmetrazine, amfepramone, and pemoline.

Current Classification

Methamphetamine is currently classified under the Misuse of Drugs Act 1975 as a Second Schedule (Class B), Part 2 controlled drug.

Rationale for Reclassification

Likelihood or evidence of drug abuse

New Zealand survey data

New Zealand drug surveys indicate an increase in stimulant use. The latest survey undertaken by the Alcohol and Public Health Research Unit (Wilkins et. al. 2002) found a significant increase in the number of respondents trying and using stimulants (either amphetamine/methamphetamine) [see Table 1]. The largest increase in the use of stimulants was in the 15-17 (increased from 2 percent to 6 percent) and 20-24 year old age groups (increased from 6 percent to 11 percent). This data reflects a continuing trend of increased stimulant use as evidenced by the previous regional comparison survey (Field and Casswell 1999A). The use of stimulants increased from 2 percent in 1990 to 4 percent of respondents in 1998. This increase was largely in younger age groups, use increased among 18-24 year olds from 2 percent to 7 percent.

TABLE 1: Relative use of Amphetamine/Methamphetamine 1998 & 2001

	Tried		Used Last Year		Current User	
	1998	2001	1998	2001	1998	2001
Amphetamine Methamphetamine	7.6%	11.0%	2.9%	5.0%	2.2%	3.5%

Source: Wilkins et. al. 2002

The surveys also indicate an increase in the use of crystal methamphetamine (*Ice*), with the rates of people trying crystal methamphetamine increasing from 0.1 percent to 1.3 percent between 1990 and 2001 [see Table 2]. This increase is statistically significant.

TABLE 2: Relative use of Ice 1990, 1998 & 2001

	Tried			Used Last Year			Current User		
	1990	1998	2001	1990	1998	2001	1990	1998	2001
Ice	0.1%	0.2%	1.3%	0.01%	0.1%	0.9%	0.0%	0.04%	0.5%

Source: Field and Casswell 1999A and 1999B, and Wilkins et. al. 2002

These findings have been supported by additional data, in particular drug testing undertaken by the Department of Corrections. Approximately 0.1 percent of all positive drug tests in 1998/99 were for methamphetamine, however, the results for the 2000/01 year show an increase in positive tests to 0.3 percent.

New Zealand methamphetamine-related mortality and morbidity

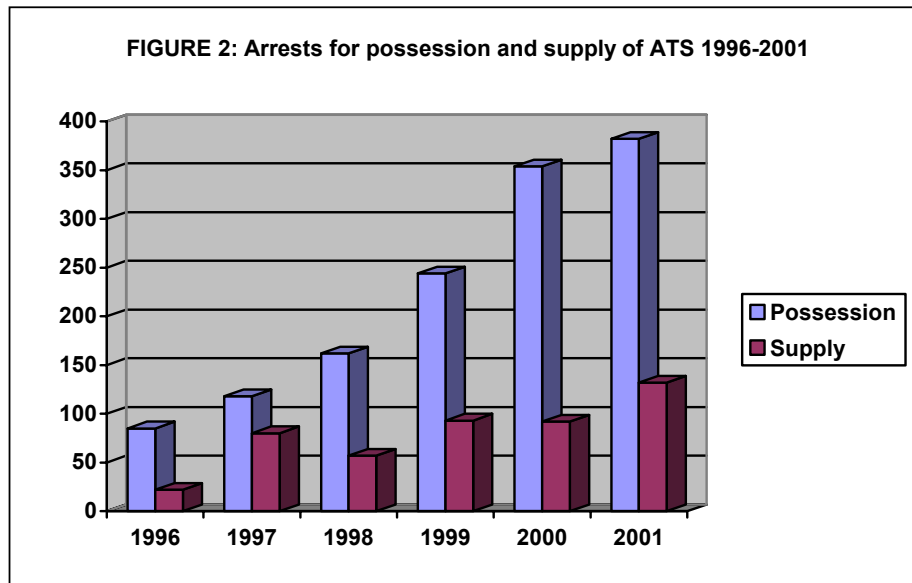
Hospital data is unable to provide definitive information about the health-related impact of methamphetamine. There are some problems associated with the data, including the fact that the data does not differentiate between methamphetamine-related admissions and those relating to the abuse or misuse of other stimulants. Nevertheless, there were 109 publicly funded stimulant-related hospitalisations between 1996 and 1998 (Ministry of Health 2001). These hospitalisations were for non-dependent abuse, dependence, and poisoning either as the presenting condition or as a secondary diagnosis. There was a rise in the total numbers of hospitalisations each year (18 in 1996, 46 in 1998), however, due to the small number and short timeframe it is difficult to describe this as a clear trend. Anecdotally, some treatment services also report an increase in the number of people with problems associated with the abuse of methamphetamine.

The New Zealand Health Information Service reports that there were no deaths associated with stimulant use in New Zealand between 1990 and 1996.

New Zealand arrest and interdiction data

New Zealand law enforcement data indicates growing availability of ATS, however, some of the data systems do not currently distinguish between methamphetamine and other ATS. For example, the number of persons arrested for the possession of ATS has increased markedly (approximately 400 percent) between 1996 and 2001 [see Figure 2]. Increasing numbers of people have also been charged with supply offences for ATS in recent years.

In the first half of 2002 (year-to 30 June 2002) 58 people had been arrested for possession of ATS and 188 for supply and manufacture offences.



Source: New Zealand Police data extracted from PIPM

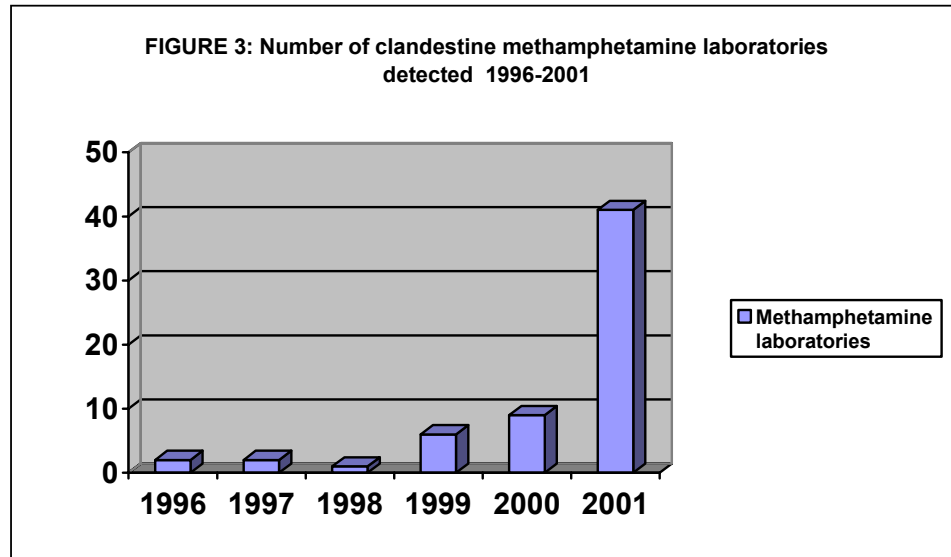
There also has been a concomitant increase in drug seizures as drugs are imported into New Zealand to meet (or stimulate) the demand for ATS. Prior to 1998 the seizures of ATS were erratic and seldom exceeded a kilogram in total for any given year, however since that time there has been a significant rise in interdiction rates and the size of seizures as outlined below:

- 1.3 kilograms seized in 1998
- 2.2 kilograms seized in 1999 (including 1.8 kilograms of methamphetamine)
- 10.1 kilograms seized in 2000 (including 2.1 kilograms of methamphetamine)
- 19.9 kilograms seized in 2001 (including 3.8 kilograms of methamphetamine)
- 32.95 kilograms seized at year-to 30 June 2002 (including 0.6 kilograms of methamphetamine).

In a similar vein, domestic manufacture of methamphetamine has grown significantly in recent years. A record number of clandestine laboratories were dismantled by a specialist Police unit in 2001 [see Figure 3]. These facilities range from crude suitcase laboratories to increasingly sophisticated operations. The number of laboratories detected to-date this year (44 laboratories at 30 June 2002) indicates that this trend is set to continue.

Finally, there has been a decline in the street price of methamphetamine. According to the National Drug Intelligence Bureau (2001) the price of methamphetamine has declined from \$250-\$300 per gram prior to mid 1999 to \$100-\$180 per gram. This could be interpreted as a sign of increasing

levels of supply, however, the relationship between price and availability is not explicit.



Source: New Zealand Police data

Specific effects of the drug

Methamphetamine can be taken by intranasal and intravenous means, orally ingested, as well as smoked in crystal form. While the mode of administration may impact on the speed of onset and the level of euphoria experienced by the user, the basic pharmacology remains the same. Once consumed, methamphetamine is readily absorbed into the bloodstream and crosses the blood/brain barrier to interact with the central nervous system. The half-life of methamphetamine ranges between 10 to 30 hours (Guharoy et. al. 1999, Wermuth 2000). However, the duration of effects vary, powdered methamphetamine lasts for several hours, while crystal methamphetamine can last up to 24 hours (Castro et. al. 2000).

As a central nervous system stimulant, methamphetamine stimulates the release of catecholamines and dopamine from the presynaptic nerve endings, as well as inhibiting re-uptake or degradation (Guharoy et. al. 1999, Logan, Fligner and Haddix 1998). The adrenergic stimulation leads to an increase in blood pressure, elevated pulse rate and cardiac output as well as enhanced mood and stimulation. The effects of methamphetamine are dose dependent, however, users can expect to experience:

- euphoria
- increased activity and energy levels
- disinhibition
- sense of well-being
- increased confidence
- decreased appetite
- agitation.

A large single dose may also result in a number of unwanted effects including elevated body temperature and convulsions. These conditions may be exacerbated by extended periods of activity that many users engage in. Use of methamphetamine may also expose users to a range of potentially life-threatening conditions, for example stroke and arrhythmic sudden death (Wermuth 2000).

Upon withdrawal of methamphetamine, and metabolism by the liver, the opposite effects to the drug-induced state often eventuate. Fatigue, restlessness, nervousness, alienation and irritability result as the excess supply of neurotransmitters is depleted. Sympathomimetic effects also include tremor, sweating, palpitations, headache, dizziness, dryness of the mouth, and gastrointestinal problems.

The long-term effects of methamphetamine use are pronounced. Heavy users may display a number of psychotic features, including paranoia, auditory hallucinations, mood disturbance and delusions (Australasian Centre for Policing Research 2001). Of the amphetamine users surveyed by Hando and Hall (1993) 80 percent reported mood swings, 71 percent paranoia, 46 percent hallucinations, 43 percent aggressive episodes and 16 percent violence. Problems may be compounded by existing mental health issues, these are common among users (Vincent, Allsop & Shoobridge 1997).

The pattern of methamphetamine use tends to compound physical, psychological and social problems. To extend the euphoria, and stave off negative effects, users often engage in prolonged binges and users forgo sleep and other needs. These binges are then followed by a pronounced crash where the resultant exhaustion and psychotic effects are amplified. The crash generally includes a deep depression, followed by fatigue, difficulty in sleeping, headaches, decreased energy and a strong desire to use the drug again.

In extreme cases, overt psychosis is discernible which may last for several days, however, the symptoms may persist for a number of weeks (Bell 1971, cited in Australasian Centre for Policing Research 2001). Erratic and violent behaviour, delusions, and paranoia are characteristic of this condition which is attributable to withdrawal symptoms or extreme fatigue from repeated administration of the drug. Symptomatically, his state may be indistinguishable from schizophrenia (Logan, Flinger and Haddix 1998).

Prolonged use of methamphetamine may also contribute to a number of other health problems. There is evidence to demonstrate that chronic use can result in respiratory problems, stroke, irregular heartbeat, and extreme anorexia, and neurotoxicity (Kia-Ping 1999, Zhu et. al. 2000, Wermuth 2000).

There is evidence to suggest that regular methamphetamine use may compromise cognitive functioning or the ability to perform a range of tasks, however, the research appears equivocal at this stage. Signs of permanent brain damage caused by large doses of methamphetamine have been found in animal studies, but studies in humans are less clear. Preliminary research by Simon and colleagues (2000) found that regular methamphetamine users

exhibited compromised memory, manipulation of information and ability to focus in comparison to non-using controls. Some of these deficits were similar to normal ageing, and there were no difference in a range of other tasks performed to test reasoning, learned facts/skills, fluency and storage.

Therapeutic value

There are few accepted therapeutic uses for methamphetamine. The drug has previously been used to treat children for attention deficit hyperactivity disorders (ADHD), as an anorectic in obesity, and in the treatment of narcolepsy (National Institute on Drug Addiction 1998). The levo rotatory form has also been used as a nasal decongestant and in bronchial inhalers (Parfitt 1999, Anglin et. al. 2000). However, the use of methamphetamine has largely been discontinued due to the availability of other medications.

Potential to cause death

International studies show that a single dose of methamphetamine may result in a range of potentially life-threatening conditions. Death can occur with methamphetamine concentrations in the blood greater than 0.5 mg/L (Logan, Fligner, & Maddix 1998). However, fatal overdose is more likely in naïve or episodic high dose users, than in regular users who have developed tolerance to the drug (Dukes 1996).

Molina and Jejurikar (1999) describe one recorded methamphetamine-related fatality, where medical staff observed the rapid deterioration of an arrestee in Police custody. After appearing asymptomatic an hour after arrest, the person became agitated and hallucinatory, ensued by seizures, a raised body temperature of 104F degrees, diaphoretic with obvious bleeding, tachycardia of 130 –140 and a pulse rate of 173. The subject then became hypertensive and bled from all orifices. Upon arrival in the Intensive Care Unit the patient began twitching uncontrollably, subsequently he went into paralysis and could not be resuscitated. The principal diagnosis was acute methamphetamine ingestion combined with alcohol. Secondary diagnosis indicated irreversible shock, acute respiratory failure, hepatic necrosis and renal failure. The blood sample taken soon after arrest revealed a blood concentration of 0.23 mg/L methamphetamine, as well as 0.12 g/dL alcohol, and the presence of cannabis.

Methamphetamine has been identified as a risk factor for the development of stroke in relatively young people. Perez et. al. (1999) reported on four cases of stroke in patients aged from 29 to 45 associated with the use of methamphetamine. In further studies strokes, either ischemic or hemorrhagic, were attributed to the sympathomimetic effects of methamphetamine, in particular the increase in pulse rate blood pressure and associated with cerebral vasculitis (Kelly, Gorelick & Mirza 1992, Kaku & Lowenstein 1990). According to Zhu et. al. (2000) stroke is the most common cause of sudden death in non-abusers of methamphetamine.

The pharmacological effects of methamphetamine also promote a range of cardiac conditions including arrhythmia, tachycardia, and myocardial

infarction. Guharoy et al (1999) present six cases of hospitalisation secondary to methamphetamine toxicity. In all but one of the cases the patients had elevated heart rates (HR 137-157), high blood pressure (for example, BP 167/85), and one was diagnosed with an anterior wall myocardial infarction. While all of these patients responded to treatment, in other cases methamphetamine users have succumbed to sudden cardiac deaths (Kia-Ping 1999, Richards et al 1999, Zhu et al 2000).

The treatment protocol for methamphetamine toxicity involves activated charcoal and gastric lavage to neutralise or expel the drug. In the majority of cases no further intervention is required beyond confirmation of the diagnosis through a toxicology screen and observation until cleared for discharge. However, some patients may require pharmacological intervention (Guharoy 1999). Antihypertensive agents and beta-blockers have been used effectively to reverse cardiovascular symptoms. According to Guharoy (1999) phentoamine and nitroprusside have been used successfully to treat amphetamine-induced hypertensive crisis, while tachycardia may be controlled by propranolol. Haloperidol has been demonstrated to be effective as an antagonist to block the effects of methamphetamine on the central nervous system (Murray 1998). While diazepam has been used with some success, there are no controlled trials to validate its efficacy, and haloperidol has been superior in protecting against death (Guharoy 1999).

Ability to create physical or psychological dependence

Regular methamphetamine users may exhibit signs of both psychological and physical dependence (Murray 2001). Methamphetamine dependence is evidenced by increased tolerance to the drug, problems in controlling usage, and a range of physical/psychiatric withdrawal symptoms. There is evidence to suggest that methamphetamine has a faster progression (from initial use, to regular use, and a subsequent need for treatment) than other stimulants such as cocaine (Castro et al 2000, Kalechstein et al 2000). Users who inject methamphetamine, or smoke crystal methamphetamine, may also be more susceptible to the development of dependence due to the speed of onset and the intense rush associated with these modes of administration which serves to reinforce usage.

Tolerance to methamphetamine appears to develop rapidly after repeated use (Smith in Murray 1998). One putative argument for the development of tolerance is the neurotoxicity of methamphetamine that damages dopamine receptors (Castro et al 2000, Buffenstein et al 1999), therefore increasing dosage levels or frequency of use is required to obtain the desired euphoric effects.

Methamphetamine dependent people often experience a high degree of physical craving for the drug, alongside cravings that are produced by conditional cues, which continue for long periods after cessation of use (Wermuth 2000). These factors contribute to a loss of control over methamphetamine use and 'intractable dependence' (Anglin et al 2000).

A range of physical withdrawal symptoms are associated with methamphetamine abstinence due to neuroadaptation. These symptoms are often the opposite of the drug-induced state and include dysphoria and anergia (Murray 1998). Further, sleepiness and fatigue appears to last for several weeks after abstinence. Psychiatric symptoms are typically prevalent and severe in problematic methamphetamine users prior to treatment. According to Rawson and colleagues (2002) a large proportion of users presenting for treatment report delusions and hallucinations (for example, formication: the sensation of insects creeping on the skin), while even more report severe paranoia and depression. Individuals reporting methamphetamine dependence are also more likely to report suicidal ideation (Kalechstein et al 2000). Dependence is also associated with poor health outcomes (Henry-Edwards 2001) and a range of social problems including family breakdown, unemployment and financial difficulties.

There is currently no recognised treatment protocol for methamphetamine dependence.

Dexamphetamine has been trialed as a substitution therapy to facilitate withdrawal with some promising results. Klee and colleagues (2001) found that clients prescribed 100mg tablets of dexamphetamine daily had better treatment outcomes (greater reductions in amounts of methamphetamine used and frequency of use, and higher treatment retention rates) than controls. However, some trial participants also reported diverting or injecting the tablets. Cognitive Behavioural Therapies may also produce good results in helping clients deal with drug expectancies, ideation, as well as the urge to use.

Risks to public health

HIV/AIDS, Hepatitis B and C

There are several public health risks associated with the abuse of methamphetamine, particularly the risk of transmission of communicable disease through the sharing of injecting equipment. Methamphetamine can be consumed through a variety of mechanisms, however, heavy or regular users may be more likely to inject the drug in order to maintain the intensity of the 'high', or as the result of developing tolerance to the drug. Increased risk of HIV/AIDS and hepatitis B and C transmission is a likely consequence intravenous drug use, particularly if users share injecting equipment or other paraphernalia.

Methamphetamine intoxication has been associated with increased libido, unsafe sex and increased risk of disease transmission. Molitor and colleagues (Rawson et al 2000) found that methamphetamine use was independently related to decreased condom use during sex (across both heterosexual and homosexual groups), prostitution, and sex with known drug users. In addition methamphetamine has been associated with prolonged and rougher sex, which may lead to bleeding and abrasions. These factors

may account for the greater likelihood of sexually transmitted diseases in methamphetamine users (Rawson et al 2000).

Clandestine Manufacture

There are a number of risks associated with the domestic manufacture of methamphetamine. The primary concern is exposure to substances and chemical processes used to manufacture methamphetamine.

Several different chemical processes can be used to manufacture methamphetamine. Regardless of the process used the chemicals involved are generally highly flammable, corrosive, explosive or toxic (Centres for Disease Control and Prevention 2000). Any of the following chemicals may be used, or produced in the manufacture of methamphetamine (Marnell 1999):

- Acetone
- Hydrochloric acid
- Sodium hydroxide
- Anhydrous ammonia
- Ether
- Red phosphorous
- Hydrogen cyanide
- Hydrogen sulphide
- Iodine
- Mercury salts.

While these are hazardous substances in isolation, the combination of chemicals or the heating of the substance over an open flame can be extremely dangerous. Thus the risk of explosion, chemical burns or poisoning associated with the domestic manufacture of methamphetamine is high. It is notable that 20-30 percent of methamphetamine laboratories are only discovered as a result of fires and explosions (Skeers 1992).

This is a significant issue for law enforcement officials or emergency service personnel, particularly as international experience indicates that exposure can be reasonably frequent and have serious health consequences (Centres for Disease Control and Prevention 2000). Health practitioners may also be exposed to hazardous chemicals when treating people who have been involved in a hazardous substances emergency event (Burgess 1997).

New Zealand Police have taken steps towards mitigating some of these risks with the establishment of a specialist national investigation team to dismantle clandestine laboratories. The Clandestine Laboratory Team is trained in the investigation of cases involving illicit drug manufacture and the safe dismantling of clandestine laboratories. This training is primarily focused on the safety to the investigating officers and prevention of environmental pollution. However, there have been several incidents where the health and welfare of frontline police has been compromised as a result of encountering clandestine laboratories in the course of routine enquiries. With the increase of clandestine methamphetamine manufacture in New Zealand (43 laboratories in 2001) similar problems are likely.

The public may be exposed to risks due to the establishment of clandestine laboratories in New Zealand communities. The risk may be further intensified if manufacturers shift to smaller or portable operations to avoid detection (Inter-Governmental Committee on Drugs 1999). Health hazards associated

with clandestine methamphetamine laboratories are not limited to the immediate period of manufacture. As a result of the leeching effect of many of the chemicals and gases involved in the manufacturing process, the building containing the laboratory can be contaminated for some time after the completion of the manufacturing procedure (DEA 1996). Both the precursor chemicals and the by-products associated with clandestine laboratories can also contaminate the soil and water table.

Other public health risks

Like many other drugs, the consumption of methamphetamine may interfere with people's ability to drive. This poses a significant risk to the individual user and the public. The main risks associated with methamphetamine use are increased risk taking, post-use fatigue or withdrawal (Logan, Flinger & Haddix 1998).

Fetal exposure to methamphetamine is another issue to consider. Research indicates that methamphetamine abuse during pregnancy may result in prenatal complications, increased rates of premature delivery, altered neonatal behaviour patterns and developmental disorders (Anglin et al 2000).

International classification and experience

New Zealand's international obligations under the United Nations Conventions

The current classification of methamphetamine as a Second Schedule (Class B), Part 2 substance is in accordance with the United Nations conventions. Methamphetamine is listed in the Schedules (Schedule II) annexed to the United Nations Convention on Psychotropic Substances (Vienna 1971).

Other countries' classification of methamphetamine

Methamphetamine is a Schedule II substance, under the United States Controlled Substances Act. Certain regions in the United States (Midwest and Western seaboard as well as Hawaii) has experienced significant problems with methamphetamine, which has been described as reaching "epidemic proportions" (Perez, Arsura & Strategos 1999).

Methamphetamine is a highly controlled substance, on par with heroin and cocaine, in most Australia jurisdictions (for example, Schedule 1 in Queensland and Schedule 11 in Victoria). Australia has also seen an increase in methamphetamine use alongside other ATS. These drugs are the most frequently used illicit drugs after cannabis (Australian Bureau of Criminal Intelligence 2000). Australia has also experienced problems with domestic manufacture of methamphetamine that is dominated by organised crime groups.

Methamphetamine is listed as a Part II, Class B substance under the United Kingdom's Misuse Use of Drugs Act 1971 (alongside amphetamine).

Recommended Presumption for Supply and Justification

The Expert Advisory Committee on Drugs recommends that presumption for supply of methamphetamine be set at:

- 5 grams or more of crystal methamphetamine, or methamphetamine, whether contained in a substance, preparation, or mixture, or not.

This figure is based on an assumption that the average active dose is between 15 mg and 150 mg. Thus 5 grams would be the equivalent of approximately 30 doses and have a street level price of between \$500 and \$900. However, this figure may not represent more than a week or two supply for a heavy user, nor does it account for groups of people buying in larger quantities to avoid detection. These issues will need to be taken into consideration as part of the Bill of Rights 1990 vetting.

Other Relevant Information

International experience indicates that methamphetamine, and some of the more potent forms of ATS will have a negative impact on frontline policing. This impact is due to the characteristics of the drugs, and is separate from other forms of drug-related crime, which are largely associated with the illegal nature of the drugs. The key issues are behavioural disorders associated with methamphetamine and discernible patterns of methamphetamine-related crime. For example, Police are concerned that the behavioural problems associated with methamphetamine will become manifest in unpredictable behaviour and an increase in social disorder or violent offences. While there is no explicit relationship between the use of methamphetamine and aggressive behaviour there may be a propensity towards violence (Richards 1999). For example, a recent survey in Western Australia of remand inmates and volunteers under suspicion of committing an offence (Loxley and Bevan 1999) found that amphetamine users were more likely to report high or medium physical aggression and recklessness associated with the use of the drug. According to this study ATS use was the only predictor of violent offences among all the other variables. However, the interplay between the effects of the drugs and individual, social, and environmental circumstances of use are also significant (Asnis and Smith 1978 cited in Loxley and Bevan 1999). The use of alcohol and methamphetamine also appears to contribute to violent behaviour (Murray 1998).

The issue of violence associated with methamphetamine is particularly relevant when considered in light of the main protagonists involved in methamphetamine manufacture and supply. Organised crime, often conducted by gangs, appears to control all facets of the methamphetamine market, including: stockpiling precursor substances; manufacture in clandestine laboratories; and distribution networks. These groups are typically associated with antisocial behaviour, often in the form of extreme

violence which could become more pronounced, particularly if 'turf wars' over the supply of methamphetamine develop between rival groups.

The anxiety associated with methamphetamine abstinence or withdrawal may also heighten the fears of those involved in criminal activities. Potentially, this could account for an increase in the number of instances where firearms are being located at residential addresses frequented by users and dealers.

Finally, methamphetamine-related psychosis may expose users to life threatening situations. Of particular concern is the role of methamphetamine-related paranoia contributing to homicidal or suicidal thoughts (National Institute on Drug Abuse 2001). Economic, social and psychological pressures may contribute to violent behaviour and self harm, as well as impaired judgement and lack of critical capacity associated with both stimulant impairment and abstinence (Logan, Flinger & Haddix 1998).

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