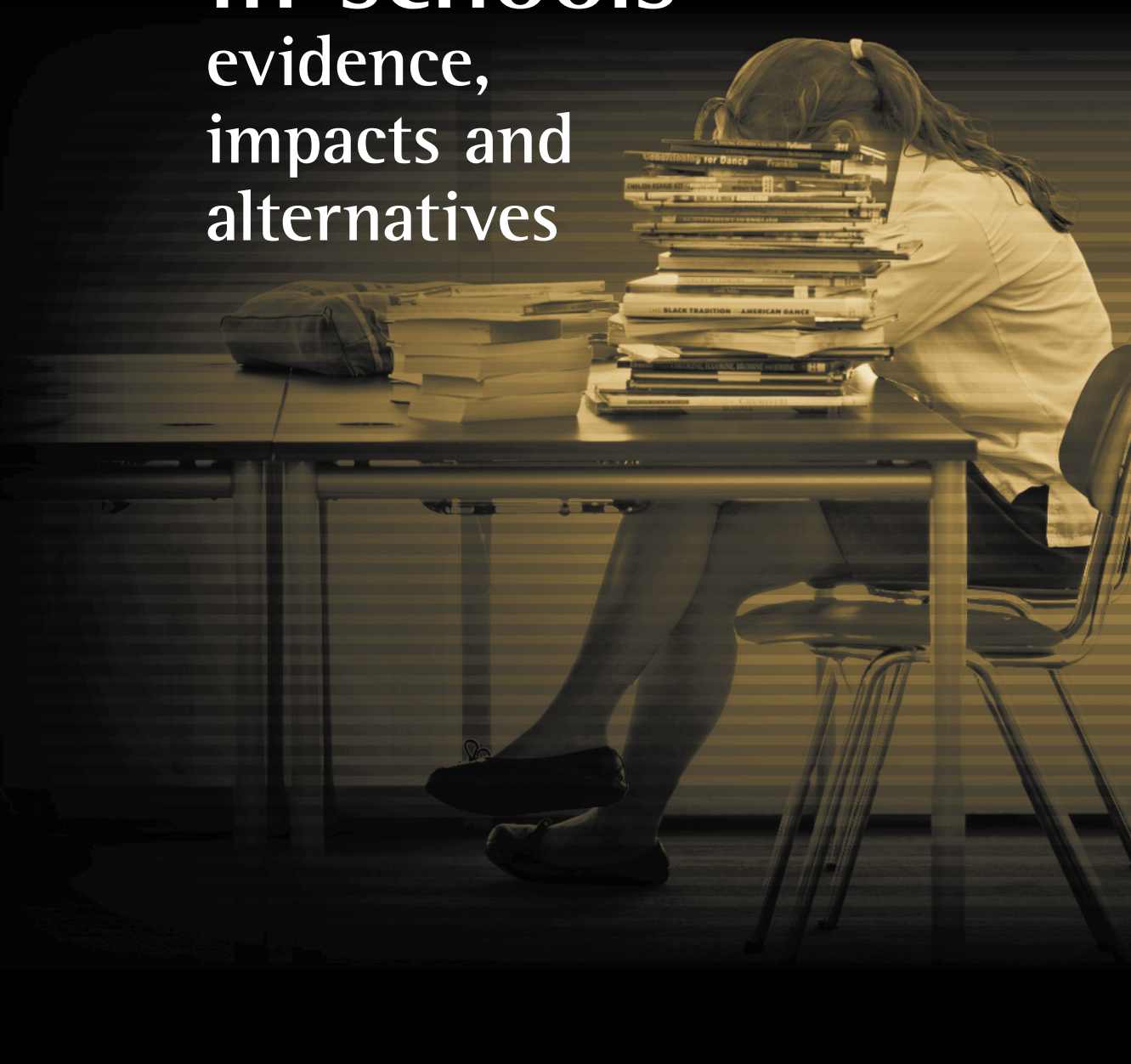
ANCD research paper 16

Drug testing in schools

evidence, impacts and alternatives



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ANCD research paper

Drug testing in schools

evidence, impacts and alternatives

National Centre for Education and Training on Addiction

Ann M. Roche
Ken Pidd
Petra Bywood
Vinita Duraisingam
Tania Steenson
Toby Freeman
Roger Nicholas

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PO Box 205, Civic Square ACT 2608
Telephone: 02 6166 9600
Fax: 02 6162 2611
Email: ancd@ancd.org.au
Website: www.ancd.org.au

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Executive summary

The National Centre for Education and Training on Addiction (NCETA) was commissioned by the Australian National Council on Drugs (ANCD) in March 2007 to undertake an independent, comprehensive and critical examination of all relevant issues involved in drug detection and screening in the school setting.

The results of the review are presented in this report.

Summary comments

Overall, the body of evidence examined indicates a strong case to be made against drug detection and screening strategies being utilised in the school setting. In essence, the key findings are:

1. Most drug tests are insufficiently reliable for testing in a setting such as schools.
2. The cost of testing was found to be very large and would represent a substantial impost on any education system's budget.
3. A wide range of moral and legal issues act as serious concerns, if not impediments.
4. Prevalence of illicit drug use by schoolchildren has been declining for over a decade; current levels of regular use are very low, making detection a technically challenging task.
5. Highest prevalence of drug use occurs among high-risk and vulnerable groups of children, including the poorer academic performers and Indigenous students, indicating that punitive and inquisitorial methods of deterrence are ill-advised.
6. Evidence indicates that drug testing is an ineffective deterrence mechanism.
7. Two-thirds of submissions received from professionals (n = 33) were opposed to drug testing in schools.
8. The majority of survey respondents (n = 284) were opposed to testing in schools.
9. An effective array of school-based prevention interventions is now available to schools – interventions that focus on building positive relations and developing pupils' sense of connectedness with the school.
10. Effective mechanisms exist to target and intervene in appropriate ways with high-risk students and/or their families.

The approach taken

In undertaking this review, NCETA endeavoured to achieve a broad and comprehensive coverage of relevant issues related to (i) prevention and school drug education, including the protective and enhancing roles schools can play; (ii) drug testing in various contexts; (iii) the efficacy of screening and detection tests; (iv) the cost of implementation; (v) ethical and legal matters; and (vi) prevalence of drug use by school-aged children. We have attempted to synthesise a diverse array of complex, conflicting and sensitive information in a balanced manner.

This report draws together input from all the above areas in an effort to ensure the most comprehensive coverage of relevant issues. In particular, we have:

- examined the available data on drug use by school-aged children (Section 4.1.1) and, in particular, high-risk groups of children (Section 4.1.2)
- assessed the evidence of the effectiveness of biometric and psychometric tests (Sections 4.2 and 4.3)
- critiqued evidence on the effectiveness of tests to deter or reduce drugs and any associated potential adverse outcomes (Sections 4.5, 4.6 and 4.7)
- examined the cost implications of the implementation of various forms of testing (Section 4.2.5)
- covered the ethical, legal and practical implications of testing school-aged children (Section 5)
- incorporated the views and perspectives of professionals, parents and community members through a submissions process (Section 6) and an online survey (Section 7)
- addressed the range of alternative strategies available to tackle drug use among school-aged children and the evidence base of effectiveness (Section 8).

This review has been undertaken from a public health perspective. In doing so, we have applied a public health model as a useful tool to draw together and analyse factors associated with the development of drug problems among children, and identify potentially effective strategies to address them. The following basic steps in the public health model have been applied in the present review and involve:

- assessing the epidemiology of a targeted problem (i.e. patterns and prevalence of use)
- identifying risk and protective factors associated with the development of the problem
- applying interventions known to reduce these risk factors and enhance protective factors that buffer against the effects of risk
- monitoring the impact of these interventions on the incidence and prevalence of the targeted disease and disorder (Hawkins, Catalano & Arthur, 2002).

Key findings

1. Patterns and prevalence of drug use among school-aged children

Drug use among school-aged children is declining according to data from the Australian Secondary Schools Survey on Alcohol and Other Drugs (ASSAD). Lifetime, monthly and weekly prevalence of use of alcohol, tobacco and illicit drugs in 2005 was significantly lower ($p<.01$) than in previous years. The overall pattern of drug use among teenagers indicates continual downward trends that are anticipated to continue into the future.

Cannabis is the illicit drug most commonly used by school-aged children on a regular basis ('regular' use is defined here as having used more than 10 times in the last year). Regular use of cannabis was reported by less than 4 per cent of the total school student population. Regular use of other illicit substances was below 1 per cent. Low levels of use present challenges for any detection devices and strategies and necessitate higher levels of testing sensitivity (see Section 4.2.1).

Students who fall into high-risk categories are more likely to use illicit substances. Illicit drug use is in the order of two to three times greater among below-average academic performers, compared to above-average students. Indigenous school students also use all illicit substances at a significantly greater level than non-Indigenous students.

Available expendable income was also strongly associated with level of drug use. After controlling for age, gender and school type, disposable income remained a significant predictor of drug use. Students with $21–$60 and with more than $60 per week to spend were respectively 1.6 and 1.9 times more likely to have used any drug in the last year than students with less than $20 to spend each week.

2. Aims/rationale for drug testing

Drug testing is sometimes viewed as an appealing strategy to deal with drug use among school-aged children as it is assumed to:

- deter initiation of drug use and encourage cessation
- detect users in order to refer them to treatment/counselling
- reduce drug-related harm by improving young people's physical and psychological wellbeing, reduce truancy and behavioural problems, and improve educational outcomes.

What drug testing does *not* purport to do, however, is to:

- provide a measure of intoxication or impairment
- determine the quantity, frequency or context of drug use
- distinguish between experimental, occasional or one-off users and those with problematic drug use
- distinguish between similar metabolites found in over-the-counter or legally prescribed medications and illicit drugs.

3. Approaches to drug detection and screening

There are a number of different approaches that can be employed to address the use of drugs in a school environment. These include:

- biometric measures of drug use (e.g. biological assays of urine, saliva, sweat, hair)
- psychometric measures of drug use (e.g. self-report survey, questionnaires or interviews)
- devices for detection of drugs or drug paraphernalia (e.g. sniffer dogs, search of lockers or belongings).

4. Effectiveness of drug testing as a deterrent

The available evidence assessing the effectiveness of drug testing programs for deterring drug use is limited, derived from United States studies only, and poor in quality. No studies were found that provided appropriate controls or baseline data to adequately determine whether changes in the proportions of students who tested positive for drugs could be attributed to the presence of any drug testing program.

This report therefore concludes that there is insufficient evidence to support the use of drug testing as a deterrent for drug use in schools.

5. Effectiveness of drug testing for reducing drug-related harm

Only two studies were located that evaluated the effectiveness of a drug testing program and/or measured other outcomes that may be impacted by drug use, such as psychological wellbeing, or behavioural and educational outcomes. Of these studies, one qualitative study found that while the majority of students were undisturbed by the drug testing experience, more than one-quarter were distressed or angered by it. The other study reported that drug-tested students had more negative attitudes and beliefs about drug testing, the school, and drug use outcomes, compared to students who were not drug-tested.

No studies directly evaluated the safety or other adverse outcomes of implementing a drug testing program, but several potential harms were identified, including:

- damage to the child–school or child–parent relationship and loss of school connectedness
- truancy to avoid testing and school exclusion for positive tests. This is particularly pertinent for students who are at risk and most in need of a supportive educational environment
- reduced participation in healthy activities
- conversion to other less detectable, but potentially more harmful substances
- diversion of school resources from educational programs to manage a drug testing program
- psychological distress and embarrassment due to unwarranted invasion of privacy
- breach of confidentiality where students may be required to declare use of prescribed medication
- false sense of a drug-free environment, where children with problematic drug use evade tests or are not detected and, therefore, not referred to appropriate treatment.

6. Cost of tests

Cost is an important consideration in the implementation of any school-wide program. Existing information about test costs is very limited. To establish a cost structure relevant to Australian schools, during August 2007 NCETA canvassed information via telephone from 11 of the main Australian suppliers of drug testing products or services.

Costs of implementing drug detection and screening

To estimate the actual costs of implementing a drug testing program in a school setting, a series of cost estimates were undertaken based on information obtained through the survey of the 11 test providers. A series of detailed breakdowns were calculated, from the basic cost of purchasing tests to the full cost of actual implementation of different testing regimes.

Costs were calculated for a hypothetical school of 500 students, then calculated for all government and non-government schools separately, and then combined across Australia using actual student enrolment figures for 2006. The costings were based on four possible scenarios: testing a whole school population once; a 10 per cent random sample three times; a 5 per cent targeted sample three times; and a 2 per cent 'for cause' sample.

To undertake annual drug testing for all schools nationally for each of the four possible testing regimes the likely cost range is:

$15.9 million – $355.2 million (for saliva tests) and

$11.7 million – $302.3 million (for urine tests).

Not included in the cost implementation assessment was the cost of the provision of counselling and other essential forms of supports required after detection of use.

7. Accuracy of tests and other limitations

The accuracy of any test can vary greatly according to conditions and circumstances. A generally acceptable level for different drug testing settings has been set as ≥ 90 per cent sensitivity, ≥ 90 per cent specificity, and ≥ 95 per cent accuracy. However, many tests that would be potential candidates for use in school drug testing would have levels of accuracy well below these levels.

Even achieving the minimum acceptable accuracy levels of tests, concerns remain when these tests are used with children in school settings. For example, a specificity level of 90 per cent results in a false positive error rate of 10 per cent, or one in 10. Such common results would necessitate strategies to be in place to cope with the consequences of false positives. Falsely accusing a child of illicit drug use may have a range of negative legal, social and psychological sequelae.

8. Ethical and legal issues

A range of ethical and legal issues pertaining to drug detection and screening in schools were examined. Consideration was given to the issues of rights of the child, invasion of privacy, protection from assault, and the school's duty of care.

Comparison was made between the Australian and United States legal frameworks as drug testing and screening of schoolchildren has been employed as a drug prevention strategy in many schools within the United States, and the experience there is often cited as a basis for emulating such approaches in this country. Australia's legal framework differs markedly from that of the United States in a number of important respects. The United States applies a less stringent standard of privacy and reasonableness which resulted in children and

teenagers being strip-searched, drug-tested and, in one school, the FBI raided the school with sniffer dogs and pointed guns at the children's heads (*Alexander et al. v Goose Creek Police Department et al.*, 2006).

Overall, it was identified that:

1. The Australian and United States legal perspectives differ greatly in regard to a number of key issues pertinent to drug testing. Hence, legal determinations by United States courts cannot be readily transferred to the Australian context.
2. Duty of care in Australia is considerably more limited in its extent than in the United States. The duty of care of an Australian school does not normally extend to cover activities outside school hours. On these grounds, it is unlikely that a case could be made for drug testing to be necessitated or justified as part of the school's duty of care.
3. It is improbable that drug testing of a child could occur without their consent, or that of their parents. Moreover, failure to offer consent would be unlikely to be deemed an admission of guilt within the current Australian legal framework.
4. The Australian legal perspective places great(er) weight on the rights of the child (than does the United States) and affords the child greater rights to privacy and protection from interference, especially where it may negatively impact their reputation. Australian law is also sensitive to the lack of avenues for redress and natural justice available to children.
5. Best practice in workplace drug testing involves extensive consultation processes with employees, management and unions to achieve consensus. Even then, it is considered reasonable only where specific workplaces are deemed safety-sensitive or special needs settings. Zero-tolerance random drug testing, in the absence of strong justification, has been judged as unreasonable.

9. Submissions

A total of 33 submissions were received as part of this review. The majority of respondents (61%, n = 20) were not in favour of drug detection and screening measures in schools. The disadvantages of drug detection and screening in schools were seen to outweigh any potential advantages, and the lack of credible evidence on the effectiveness of such measures was highlighted.

The following comments were made about the relative advantages and disadvantages of school drug testing. Disadvantages included a range of social, economic, ethical and legal disadvantages of school drug detection and screening, such as:

- potential stigmatisation, discrimination and alienation of students who are subject to screening and detection
- creation of mistrust, suspicion and loss of respect between teachers and students and/or parents and their children
- disengagement of young people from schools.

Most frequently cited advantages among the 27 per cent of stakeholders in favour of drug detection and screening in schools were that it would:

- provide an opportunity for early detection and intervention
- act as a deterrent to drug use
- provide a legitimate reason for young people to refuse the offer of drugs and resist peer pressure.

Other advantages included the scope provided to identify young people at risk and thereby benefit parents and the community in general by reduced drug use.

10. Survey results

Results from a community survey (n = 284) conducted as part of the consultation component of this project found that less than one-quarter (24%) of respondents supported drug testing in schools, while 71 per cent (n = 200) were opposed or strongly opposed to it. Approximately half the respondents (51%) felt there were no advantages to drug testing in schools, and most (96%) believed that 'it would lead to mistrust between students and school personnel' and that 'it would stigmatise students with drug problems' (72%). Where testing was supported, it was more strongly endorsed for older school students, with respondents most commonly endorsing random drug testing (39%) for Years 7–9 (42%) and Years 10–12 (61%), and with virtually no support for testing among primary schoolchildren.

11. Alternatives to drug testing

Schools are one of the most important settings for health promotion and preventive interventions among children and youth. There is considerable scope for the school to act as an agent for prevention of drug use and associated problems. Schools can be effectively engaged in this area in a number of different ways. This review has identified three very different, but complementary, approaches as potentially useful ways in which schools can implement evidence-based strategies to prevent drug-related problems among their student populations. These are:

- support and develop connectedness between the child and their school
- provide targeted early and brief interventions for high-risk youth
- offer family strengthening interventions.

Overall, the literature suggests that successful, safe negotiation through the adolescent–adult transition requires good regulatory capacity, including executive functioning and emotion regulation, and the opportunity to draw on social capital, such as connections or relationships with supportive adults, peers who have good regulatory capacity, and prosocial community organisations. There is a close association between the level of connectedness felt by students and behaviours such as drug use. Enhancing student bonding to schools has been found to decrease these behaviours among young people. Measures that encourage students to bond with their schools as social institutions and to form trusting, nurturing relationships with staff and other students represent the most important and empirically validated drug prevention strategies available to schools.

1. Background and rationale

Over recent years, numerous preventive strategies have been explored as possible options to address drug use by young people. One set of prevention and early intervention options relates to drug detection and screening measures. Screening and detection allow for the advantages afforded by early and brief interventions. A strong evidence base exists to support the efficacy of the latter in particular contexts.

However, to date, little systematic attention has been directed to these options as they might be applied within a school setting. A comprehensive, impartial and critical analysis is provided in this document to assess the potential for their application in the school setting. Such an analysis necessitated a careful and detailed examination of potential impacts and implications, and was undertaken with cognisance of the wider range of available options for school-based interventions.

Drug detection and screening take highly varied forms, and can include questionnaires (administered with pen and pencil screening forms, or completed online), interviews and clinical observation (such as used in a clinical interview assessment), or independent tests of body fluids (e.g. saliva, sweat, urine, breath or blood) or tissue (e.g. hair, skin, nails). Other forms of detection and screening do not involve assessment of an individual per se but assessment of their materials (clothes, bags, belongings) using techniques such as sniffer dogs, scanning equipment or other forms of non-invasive mechanical detection devices.

In undertaking this examination of drug detection and screening in schools, the National Centre for Education and Training on Addiction (NCETA) attempted to ensure that an independent, comprehensive and critical examination of all relevant issues involved in drug detection and screening in the school setting was achieved. NCETA has drawn on its background in relation to (i) prevention and school drug education, including the protective and enhancing roles schools can play (Roche, 2006); (ii) drug testing in various contexts (Pidd & Roche, 2006); (iii) screening and early and brief interventions (Roche & Freeman, 2004; Roche, Freeman & Skinner, 2004); (iv) comprehensive literature reviews and critical appraisals (Bywood, 2006; Bywood, Lunnay & Roche, 2006); (v) ethical and legal matters; (vi) experience in secondary data analysis; and (vii) expertise in synthesising complex, conflicting and sensitive information in a balanced manner.

Our report therefore draws together input from all the above areas in an effort to ensure the most comprehensive coverage of relevant issues. In particular, we have addressed the following:

- views and perspectives of professionals, parents and community members (see Sections 6 and 7)
- available data on drug use by school-aged children (see Section 4.1.1) and, in particular, high-risk groups of children (see Section 4.1.2)
- evidence of the effectiveness of biometric and psychometric tests (see Sections 4.2 and 4.3)
- evidence of the effectiveness of tests to deter or reduce drugs and any associated potential adverse outcomes (see Sections 4.5, 4.6 and 4.7)
- the ethical, legal and practical implications of testing school-aged children (see Section 5)

- finally, a separate section has been included which addresses the range of alternative strategies available to tackle drug use among school-aged children and the evidence base of effectiveness (see Section 8).

This report has been undertaken from a public health perspective and, in doing so, we have applied a public health model as a useful tool to draw together and analyse the factors associated with the development of drug problems among young people and identify potentially effective strategies to address them. These basic steps in the public health model have been applied in the present review.

This model involves:

- assessing the epidemiology of a targeted problem (i.e. patterns and prevalence of use)
- identifying risk and protective factors associated with the development of the problem
- applying interventions known to reduce these risk factors and enhance protective factors that buffer against the effects of risk
- evaluating the safety and effectiveness of interventions
- monitoring the impact of these interventions on the incidence and prevalence of the targeted disease and disorder (Hawkins et al., 2002).

First, a brief overview is presented of factors associated with the development of alcohol and other drug (AOD) problems among young people.

1.1 Factors influencing the development of AOD problems

A large research base now exists which identifies factors associated with drug use problems. Toumbourou (2005) has described four major motivations underlying the development of drug use problems, as follows:

- *To escape developmental distress.* The most severe and harmful drug use problems are associated with childhood backgrounds characterised by problems that undermine healthy development and that operate from prior to birth through childhood. This appears to translate into social marginalisation and emotional distress through social exclusion processes, which can operate in families, schools and communities. Moderating factors include healthy family, school and peer environments.
- *To self-manage body and spirit.* Substance misuse is often an intentional activity that has functional motives relevant to feeling good, enhancing the body or achieving spiritual connection.
- *To conform to social norms.* Conformity is a general motivation behind the majority of alcohol and other drug use. Conforming to social norms includes a variety of more specific motivations including the desire to achieve social inclusion, to achieve normal adulthood acceptance within a valued social group. Moderating factors in this regard include the range of situational influences that determine the balance of social approval for a particular type of drug use.

- *To create individual identity*. Greater industrial and technological sophistication, coupled with increasingly individualistic values, leads young people to try and establish a distinctive individual and peer identity. Individuating may be a more prominent motive in the needs of young people in communities in which the more basic needs of life are taken care of. One way of expressing this identity is via the use of licit and, in particular, illicit drugs. Moderating influences on this behaviour include the policies and practices of schools, families and the wider society.

The development of potentially harmful patterns of alcohol and other drug use is known to be associated with a range of risk and protective factors (Loxley, Toumbourou, Stockwell, Haines, Scott, Godfrey et al., 2004). These risk and protective factors can be categorised according to their influence at different developmental stages of the human life span and the development of later behavioural and adjustment problems and subsequent harms. The likelihood of health and behavioural problems occurring is substantially greater among those exposed to multiple risk factors.

Risk factors include:

Pre-school

- inherited vulnerability (for males)
- maternal smoking and alcohol use
- extreme social disadvantage
- family breakdown
- child abuse and neglect

At school entry

- early school failure
- childhood conduct disorder
- aggression
- favourable parental attitudes to drug use

Adolescence onwards

- low involvement in activities with adults
- the perceived and actual level of community drug use
- availability of drugs in the community
- parent–adolescent conflict
- parental alcohol and drug problems
- poor family management
- school failure
- deviant peer associations
- delinquency
- favourable attitudes to drugs
- community disadvantage and disorganisation
- positive media portrayals of drug use
- adult unemployment
- mental health problems.

In contrast, protective factors against drug use include:

- being born outside Australia
- having an easy temperament
- social and emotional competence
- a shy and cautious temperament
- degree of family attachment
- parental harmony
- religious involvement (Loxley et al., 2004).

The key clusters of identified risk factors for AOD problems among school-aged children that are of particular relevance to the school setting and that provide scope for effective intervention (Hawkins, Catalano & Arthur, 2002) include:

- early and persistent anti-social behaviour
- academic failure, beginning in late elementary school
- lack of commitment to school.

These risk factors also impact on other areas of problematic behaviour. Risk factors associated with development of drug use problems by young people are also associated with development of adolescent delinquency, teen pregnancy, dropping out of school and violence (Hawkins et al., 2002). Hence, many interventions designed to address drug use in schools also have potential to impact across these other domains. Effective interventions can have the advantage of a 'knock-on' effect across a wide range of health and behavioural issues, thus representing a good return on investment.

The nature of these approaches, the principles upon which they are predicated, and their respective evidence bases are detailed below.

1.2 The broad social context of drug use

It is also important that drug use is examined and understood in the broader social context in which use occurs. To view drug use from a predominantly individualistic perspective, without taking into consideration the broad range of factors that impact upon use, may result in simplistic and ineffective responses to problems that have complex aetiologies. The implementation of any drug prevention program in schools therefore requires consideration of the full range of social influences on drug use.

There is general consensus that drug use problems should not be regarded as a behaviour that is wholly influenced by individual choices (Spooner, Hall & Lynskey, 2001); rather, they are problems shaped by a range of macro-economic factors, including the economic, social and physical environment. Wilkinson and Marmot (2003) maintain that:

> Trying to shift the whole responsibility on to the user is clearly an inadequate response. This blames the victim, rather than addressing the complexities of the social circumstances that generate drug use. Effective drug policy must therefore be supported by the broad framework of social and economic policy. (p.25)

Human beings go through a number of transition periods which are critical for human development, including infancy to early childhood, going to school, the transition from primary to high school, and the transition into the workforce (National Crime Prevention, 1999). These transition points are times when a range of different outcomes are possible. The nature of these outcomes is influenced by environmental factors, the way in which previous transitions were coped with, and the level of support available to

the individual. When these transition points are not successfully negotiated, it can lead to an accumulation of risk factors for the development of problems, such as drug use, later in life. However, the effect of early developmental disadvantage on the progression to harmful substance use is not inevitable, and can be moderated by reducing its translation into social marginalisation (Toumbourou, Stockwell, Neighbors, Marlatt, Sturge & Rehm, 2007).

Spooner, Hall and Lynskey (2001) identified three groups of macro-economic risk and protective factors that impact on the degree to which young people make these transitions successfully. These are:

- the economic environment and socio-economic status
- the social and cultural environment (including the strength and cohesiveness of social, family, school and community networks)
- the quality of the physical environment (which influences the individual's opportunities for leisure, recreation, social integration and mobility).

Spooner et al., in their examination of the structural determinants of drug use by young people in Australia, highlighted that drug use is but one of a range of problem behaviours and should not be viewed in isolation. They hold that it is important that strategies be developed to address the shared pathways to these problem behaviours, and responses to drug use problems should not be developed in isolation from responses to other risky adolescent behaviours.

One of the themes arising from the research on risk and protective factors for adolescent drug use is the degree of social support and connectedness experienced by young people. Indeed, this is consistent with the broader literature concerning the social determinants of health. Social support, good social relations and social cohesion are important factors that make a significant contribution to health (Wilkinson & Marmot, 2003). It is now well established that levels of trust, networks, and norms of reciprocity in the community, in the school setting and among peer groups, all have far-reaching effects on young people's opportunities, choices and overall health and wellbeing (Roche, 2006).

It is evident that there is a very wide variety of risk and protective factors that influence patterns of harmful drug use among young people. In the following section, school-based programs that aim to reduce these risk factors and enhance protective factors among young people are examined.

Australia's document on the *Principles for School Drug Education* (Australian Government Department of Education, Science and Training, 2004) reflects the Australian National Drug Strategy's policy approach and provides guidance on the core concepts and values needed by schools so as to provide effective drug education to students. As such, *Principles for School Drug Education* advocates that a multi-dimensional approach be taken in schools. The approach endorsed is one that supports and fosters positive social networks. It provides that 'young people need to have clear expectations for their conduct as well as opportunities to participate in the life of the school and the broader community' (Australian Government Department of Education, Science and Training, 2004). Further to this, it advises that drug education needs to be addressed within the context of health and wellbeing promotions rather than as a single issue. The participation of students in meaningful learning activities is considered the best strategy in developing the ability and capacity of young people to make informed decisions.

The development of a safe, supportive and inclusive school environment is considered necessary in order to facilitate the ability of students to engage in meaningful learning, informed decision making and positive relationships within society.

1.3 Australian drug policy

Australia lacks the plethora of anti-drug legislation that is found within the United States and our National Drug Strategy is markedly different from the United States 'War on Drugs'.[1] Like the United States, Australia has a national 'Tough on Drugs' initiative. However, unlike the United States approach, the Australian National Drug Strategy advocates harm minimisation. The National Drug Strategy suggests that three interacting components be taken into account when implementing drug and alcohol policies:

- the individual and community involved
- the social, cultural, physical, legal and economic environment that the individual exists in, and
- the drug itself (Ministerial Council on Drug Strategy, 2004).

While harm minimisation does not condone drug use, it does seek to recognise that drug use is a community problem. Therefore, prevention and reduction strategies can be achieved only through wide-ranging and broad-based interventions that encompass the whole community. Further to this, the Australian National Drug Strategy recognises that approaches will vary according to the nature of the problem, the population group, the time and the locality.

The adoption of flexible principles and a harm-minimising approach distinguishes Australia's drug strategy from the United States strategy. The Australian approach may be seen as reflective that 'good public health laws require decision-makers to have regard for and value community and individual interests' (Reynolds, 2004).

1 **War on Drugs**. The Office of National Drug Control Policy (ONDCP) is the principal body empowered to set priorities, implement a national strategy, and certify federal drug control budgets in the United States. Established by the *Anti-Drug Abuse Act* of 1988, the aim of the national strategy is to reduce drug abuse, trafficking and their consequences (Eddy, 2003). In order to achieve these measures, the ONDCP has implemented a variety of punitive measures toward drug addicts and casual users alike, because drug abuse is no longer framed as a problem to be controlled but a problem to be eradicated. In the United States, to *use* a prohibited substance is defined as *abuse*, whether the user is addicted or not (Eddy, 2003). Specifically, drug abuse is to be curbed by preventing young people from using illegal drugs, reducing the number of users, and decreasing drug availability. Federal resources totalling US$1.6 billion are directed into education initiatives aimed at preventing drug use (The White House, 2007).

2. Aims and research questions

2.1 Aims

The principal aim of this project was to evaluate the effectiveness and implications of using drug detection and screening measures or alternative programs to address drug use in schools.

2.2 Research questions

The main research questions were:

1. What approaches have been used for drug detection and screening in schools?
2. How effective are these approaches for:
    a. detecting drug use
    b. deterring drug use
    c. reducing drug-related harm?
3. What are the financial costs associated with implementing drug detection and screening programs in schools?
4. What are the potential unintended harmful consequences associated with drug detection and screening in schools?
5. What are the legal, social and practical implications of implementing drug detection and screening programs in schools?
6. What alternative approaches have been used for detecting drug use in schools?
7. How effective are alternative approaches for:
    a. detecting drug use
    b. deterring drug use
    c. reducing drug-related harm?
8. What are the legal, social and practical implications of implementing alternative programs in schools?

3. Methods

This research project comprised four separate, though interrelated, components:

- invited submissions
- comprehensive literature review
- online survey
- analysis of existing datasets.

3.1 Submissions process

The aim of the submissions process was to obtain input from a range of key stakeholders in the community. Key stakeholders invited to make submissions included groups representing:

- parents
- educators, teachers and principals (government and non-government schools)
- students (government and non-government schools)
- alcohol and other drug (AOD) clinicians and researchers
- policy advisers from the education, legal and AOD sectors
- police, legal and criminal justice workers
- youth services workers
- civil liberties commentators.

3.1.1 Procedure

There were two components to the submissions process:

- personal invitations to specific groups and organisations
- general invitations for submissions via newsletters and email distribution lists.

Personal invitations were emailed or posted to various organisations, associations and government departments to inform them about the project and invite them to make a submission. A list of these organisations is at Appendix B.

In addition, general invitations for submissions were sent to various professional newsletters and email distribution lists including:

- Australian Policy Online (online newsletter on the latest Australian social, economic, cultural and political research)
- *Of Substance* (national magazine on alcohol, tobacco and other drugs)
- Australian Professional Society on Alcohol and other Drugs (APSAD) newsletter
- Australian Council of Social Service (ACOSS) website
- Alcohol and other Drugs Council of Australia (ADCA) Update online bulletin board.

A submission pro-forma was enclosed with each letter of invitation and was available for download from the NCETA website. The pro-forma was developed to:

- facilitate the compilation and analysis of responses
- provide a framework to guide stakeholder responses
- ensure that comments were received on certain pivotal areas.

The pro-forma comprised 12 questions grouped across two key themes:

- drug detection and screening measures
- alternative measures to drug detection and screening measures.

The questions pertained to the viability, effectiveness, impact and implications of drug detection and screening methods and alternative measures in schools. A section for general comments was included to enable additional input by key informants.

General information about the project, guidelines for preparing submissions, and a submission cover sheet were also provided along with the pro-forma. Respondents could choose to have all or part of their submission kept confidential. A copy of the submission package can be found at Appendix C. A maximum of five weeks was allocated for the preparation of submissions. A letter of acknowledgement was emailed to respondents upon receipt of submissions. A list of organisations and individuals who provided submissions can be found at Appendix E.

3.2 Literature review process

A comprehensive literature review was undertaken to collate and synthesise evidence from existing Australian and international literature pertaining to drug detection and screening programs and alternative drug deterrence programs implemented in schools.

The evidence base for this review was collected from a wide range of sources, including:

- electronic databases (Table 1, 2000–August 2007)
- peer-reviewed journals (Table 1, 2006–August 2007)
- websites (Table 2)
- grey literature
- experts in the content area.

Table 1: Electronic databases and peer-reviewed journals

Electronic databases	Peer-reviewed journals
PubMed	*Adolescence*
Web of Science	*American Journal of Bioethics*
Current Contents	*Archives of Pediatrics and Adolescent Medicine*
Science Citations	*Journal of Adolescence*
Social Science Citations	*Journal of Adolescent Health*
Cochrane Library	*Journal of American College Health*
PsycInfo	*Journal of Early Adolescence*
ERIC	*Journal of Research on Adolescence*
CINAHL	*Journal of School Health*
	Journal of Youth and Adolescence

Table 2: Australian and international websites

Website	URL
Alcohol and other Drugs Council of Australia	http://www.adca.org.au/
Australian Centre for Addiction Research	http://www.acar.net.au/
Australian Drug Information network	http://www.adin.com.au/
Australian National Council on Drugs	http://www.ancd.org.au/
Canadian Centre on Substance Abuse	http://www.ccsa.ca/ccsa/
CASA: National Center on Addiction and Substance Use at Columbia University	http://www.casacolumbia.org/
Center for Drug and Alcohol Studies	http://www.udel.edu/cdas/
Center for Substance Abuse Treatment	http://csat.samhsa.gov/
Centre for Youth Drug Studies	http://www.cyds.adf.org.au/
Drug and Alcohol Services of South Australia	http://www.dassa.sa.gov.au/
National Institute on Alcohol Abuse and Alcoholism	http://www.niaaa.nih.gov/
National Institute on Drug Abuse (NIDA)	http://www.nida.nih.gov/
National Institute of Mental Health	http://www.nimh.nih.gov/
National Treatment Agency for Substance Misuse	http://www.nta.nhs.uk/
Office of National Drug Control Policy	http://www.whitehousedrugpolicy.gov/
Office of Safe and Drug Free Schools	http://www.ed.gov/about/offices/list/osdfs/index.html
Student Drug Testing Coalition	http://www.studentdrugtesting.org/

Combinations of the following textwords and MeSH headings were used to identify relevant literature in the electronic databases:

- drug testing; drug screening; drug detection; urinalysis; sniffer dog; drug search; deterrent; drug education; drug prevention
- adolescent; children; school; college; teenager; student.

The bibliographies of relevant papers were examined to identify additional potentially relevant research. Relevant papers were critically appraised according to levels of evidence (National Health and Medical Research Council, 1999a) and criteria for methodological quality (EPOC, 2002).

3.3 Online survey process

An online questionnaire was developed to assess perceptions of the wider community about drug detection and screening in schools. This method of data collection was employed due to its user-friendliness, cost and time efficiency, speed in the process of collecting and collating data, and its ability to maximise the penetration and reach of the survey.

The questionnaire included sections regarding:

- basic demographics such as age, gender, location, employment status
- drug testing in schools
- alternatives to drug testing in schools
- drug testing in general (e.g. in the workplace, drug driving)
- personal alcohol and/or drug use.

A section for additional comments was provided at the end of the questionnaire. A hard copy of the online questionnaire is at Appendix D. The survey took approximately 5–10 minutes to complete and respondents were assured of their confidentiality and anonymity.

This component of the project was approved by the Flinders University Social and Behavioural Research Ethics Committee.

3.3.1 Procedure

An invitation to participate in the online survey was distributed through various media including the NCETA website, professional email distribution lists, conferences and professional magazines. Weekly reminders were sent out to increase response rates.

The questionnaire was accessed, completed and submitted online via SurveyMonkey, an online software program that allows for the design, administration and collation of surveys via a secure website. The online survey was open for a period of approximately seven weeks, enabling adequate time for notification and completion by respondents. Survey data were imported and collated via SurveyMonkey and entered into an SPSS spreadsheet for subsequent analysis. Responses were pooled and aggregated and not individually analysed.

3.4 Analysis of existing datasets process

To investigate some of the issues surrounding drug testing in schools, secondary analyses were conducted on the 2005 Australian Secondary Students' Alcohol and Drug (ASSAD) Survey.[2] The ASSAD survey is conducted by the Centre for Behavioural Research in Cancer at the Cancer Council Victoria; in 2005, 21 805 secondary school students aged 12–17 participated from 376 schools around Australia. The survey asked questions on use of licit and illicit drugs.

The main variables of interest were 'regular use' of particular drugs (defined as using a particular drug 10 or more times in the last year, on the advice of Cancer Council Victoria). Steroid and analgesics use was not included in analyses as these substances were deemed not relevant to school drug testing. Analyses of prevalence of regular use in the total student population were conducted in SPSS, and cases were weighted by State, school type (government, Catholic or independent), age level and gender to reflect the population distribution. Regular use among subgroups of students was compared using Stata 9.02, employing design-based F tests from Stata's tabulation command. Inferential statistics incorporated corrections for clustering effects, as schools were the primary sampling unit. More detail on the complex sampling procedure used in the ASSAD survey is provided in reports by White and Hayman (White & Hayman, 2006a; 2006b; 2006c).

2 This work was undertaken with the assistance of Vicki White (Cancer Council Victoria). The Cancer Council Victoria is acknowledged as the collector and owner of these data, and they conducted the secondary analyses on behalf of NCETA. However, NCETA bears responsibility for the presentation and interpretation of the data.

4. Drug detection and screening programs

4.1 Impetus for drug detection and screening in schools

In conjunction with drug education and written drug policies, drug testing is sometimes viewed as an appealing strategy to deal with drug use among school-aged children, as it is assumed to be an objective means of detecting student drug use.

Before we discuss the principal aims and approaches to drug testing, it is important to examine the patterns and prevalence of drug use by school-aged children in Australia.

4.1.1 Prevalence of drug use in school-aged children

A range of datasets was examined to provide contextual information on the patterns and prevalence of AOD use by school-aged children. Examination was made of the National Drug Strategy Household Survey (NDSHS) and the Australian Secondary School Students' Use of Alcohol and Drug Survey (ASSAD). It was decided not to include data from the NDSHS, even though the 2004 dataset includes data from 12 year olds and older, because of sampling limitations and because the ASSAD database was assessed to be more relevant for the current purposes.

The most comprehensive and representative of the available data sources is the Australian Secondary Schools Survey (ASSAD) whereby data are collected every three years from young people aged 12–18 years within state and private schools across the country.

The most recent ASSAD survey was undertaken in 2005 and results reported in 2006 (White & Hayman, 2006a; 2006b; 2006c). As part of this project, further specific analyses were undertaken and these data are reported below.

Secondary analysis of relevant datasets allows us to map the prevalence and patterns of drug use in school-aged children. Patterns and prevalence of use are central considerations in any screening and detection strategy as the screening 'tools' used need to be appropriate to detect the substances in question. Tables 10–14 present the findings of these secondary analyses, while Tables 3–9 present results compiled from the three existing ASSAD monographs (White & Hayman, 2006a; 2006b; 2006c).

Descriptive data are presented in the tables below for use in the past week, month, year and ever or lifetime use. The data across each of these four time frames are presented by year of age from 12 through to 17, and then aggregated for all ages.

The data shown in Table 3 on drug use in the previous week indicate that cannabis is the illicit substance most commonly used. Prevalence of use in the past week is comparatively low, peaking among the 15, 16 and 17 year olds at 5.9 per cent. Use of alcohol in the past week is high, and steadily increases from the age of 12 years through to 52 per cent of 17 year olds using alcohol in the past week.

Table 3: School students' use of tobacco, alcohol, over-the-counter medications not for medical purposes, and illicit drugs in the last week (n = 22 694)

(Source: White & Hayman, 2006a, 2006b, 2006c)

Drug	12	13	14	15	16	17	12–17
Alcohol	12.0%	17.0%	29.0%	36.0%	48.0%	52.0%	30.0%
Tobacco	3.0%	5.0%	8.0%	11.0%	14.0%	19.0%	9.0%
Inhalants	6.4%	6.0%	5.5%	3.9%	2.5%	2.1%	4.6%
Cannabis	1.1%	2.4%	4.7%	5.9%	5.9%	5.9%	4.2%
Tranquillisers	1.5%	1.7%	2.7%	2.8%	2.1%	2.0%	2.1%

Note: Data were not presented for use of other drugs in the past week other than those shown in the above table.

Prevalence of use over the past month is shown in Table 4. The pattern of use is similar for weekly use of the drug groups shown above in Table 3. That is, highest prevalence of use is found for alcohol, with levels of use increasing with age, culminating in 70 per cent of 17 year olds having used alcohol in the past month. Among illicit substances, cannabis is the most commonly used drug, with 11 per cent of 17 year olds having used it in the past month. Prevalence of all other drug types is low among the 12–17 year old age groups at generally less than 3 per cent.

Table 4: School students' use of tobacco, alcohol, over-the-counter medications not for medical purposes, and illicit drugs in the last month (n = 22 694)

(Source: White & Hayman, 2006a; 2006b; 2006c)

Drug	12	13	14	15	16	17	12–17
Alcohol	17.0%	26.0%	41.0%	54.0%	67.0%	70.0%	43.0%
Tobacco	3.0%	6.0%	12.0%	16.0%	21.0%	23.0%	13.0%
Inhalants	9.9%	9.7%	9.2%	7.2%	3.6%	3.1%	7.5%
Cannabis	1.6%	3.6%	6.7%	10.4%	11.8%	11.1%	7.2%
Tranquillisers	2.4%	3.9%	4.4%	4.7%	4.0%	3.3%	3.8%
Amphetamines	1.4%	1.4%	2.6%	3.5%	3.1%	2.4%	2.4%
Ecstasy	0.7%	0.8%	2.1%	2.3%	2.3%	2.3%	1.7%
Hallucinogens	0.9%	0.7%	1.8%	2.0%	1.6%	1.1%	1.3%
Cocaine	0.8%	0.8%	2.1%	2.1%	1.4%	0.9%	1.3%
Steroids	0.9%	0.8%	1.7%	1.7%	1.1%	0.8%	1.2%
Opiates	0.6%	0.7%	1.6%	1.5%	1.1%	0.5%	1.0%
Any illicit drug			12–15:	7%	16–17:	13%	8%
Any illicit drug ex. cannabis			12–15:	3%	16–17:	4%	4%

Highest prevalence for use reported in the last year reflects a pattern of use similar to weekly and monthly use in that use of alcohol is, by far, the most prevalent substance used (peaking at 89 per cent among 17 year olds). Across all age groups and drug types, use tends to increase with age (with the notable exception of the inhalants, where use declines with age). The illicit substance most commonly used is cannabis, with 25 per cent of 17 year olds having used it at least once in the past year (Table 5).

Table 5: School students' use of tobacco, alcohol, over-the-counter medications not for medical purposes, and illicit drugs in the last year (n = 22 694)

(Source: White & Hayman, 2006a; 2006b; 2006c)

Drug	12	13	14	15	16	17	12–17
Alcohol	44.0%	55.0%	67.0%	80.0%	87.0%	89.0%	68.0%
Tobacco	9.0%	12.0%	20.0%	27.0%	31.0%	39.0%	21.0%
Cannabis	2.9%	6.7%	12.7%	18.8%	24.7%	25.3%	14.2%
Inhalants	15.7%	15.3%	16.6%	12.5%	8.3%	5.9%	12.9%
Tranquillisers	5.6%	8.5%	10.5%	10.0%	10.1%	9.5%	9.0%
Amphetamines	2.0%	2.3%	4.3%	5.6%	6.4%	5.4%	4.2%
Ecstasy	1.2%	1.3%	3.4%	4.1%	4.9%	5.0%	3.2%
Hallucinogens	1.1%	1.3%	3.0%	3.5%	3.5%	2.9%	2.5%
Cocaine	1.0%	1.3%	3.1%	3.1%	2.9%	2.1%	2.2%
Steroids	1.7%	1.5%	2.8%	2.6%	1.6%	1.5%	2.0%
Opiates	1.1%	1.3%	2.5%	2.3%	2.1%	1.0%	1.7%

Table 6: School students' use of tobacco, alcohol, over-the-counter medications not for medical purposes, and illicit drugs in their lifetime (ever) (n = 22 694)

(Source: White & Hayman, 2006a; 2006b; 2006c)

Drug	12	13	14	15	16	17	12–17
Alcohol	73.0%	80.0%	86.0%	91.0%	94.0%	96.0%	86.0%
Tobacco	16.0%	21.0%	35.0%	43.0%	50.0%	55.0%	35.0%
Inhalants	20.8%	19.1%	21.0%	16.5%	12.3%	9.9%	17.2%
Cannabis	4.6%	8.8%	15.4%	22.8%	30.0%	32.4%	17.8%
Tranquillisers	10.9%	14.2%	16.4%	16.9%	16.8%	16.3%	15.1%
Amphetamines	2.7%	2.9%	5.3%	6.6%	8.3%	7.2%	5.3%
Ecstasy	1.5%	1.9%	4.1%	4.8%	6.1%	5.9%	3.9%
Hallucinogens	1.4%	1.7%	3.8%	4.3%	4.9%	3.9%	3.2%
Cocaine	1.5%	1.8%	3.8%	3.5%	4.0%	2.9%	2.9%
Steroids	2.2%	2.4%	3.3%	3.2%	2.2%	1.9%	2.6%
Opiates	1.6%	1.9%	3.5%	3.0%	2.9%	1.6%	2.4%
Any illicit drug			12–15:	15.0%	16–17:	33.0%	20.0%
Any illicit drug ex. cannabis			12–15:	7.0%	16–17:	12.0%	8.0%

Table 6 shows the lifetime prevalence of use for all drug types; that is, if the child used a designated substance at least once in their lifetime. Again, the pattern of use is similar for use weekly, monthly and in the past year, with very high levels of alcohol use (by 17 years of age, 96 per cent of respondents had used alcohol at least once) followed by cannabis as the illicit drug most commonly used (by 17 years of age, 32 per cent had used cannabis at least once in their lifetime).

Table 7: Changes in prevalence of use – of lifetime use of drugs, use of drugs in the last month, and use of drugs in the last week, 1996–2005

(Source: White & Hayman, 2006a; 2006b; 2006c)

	1996	1999	2002	2005
Lifetime				
Alcohol		90%**	90%**	87%**
Smoking		52%**	46%**	35%**
Tranquillisers	19%**	18%**	16%**	15%**
Cannabis	35%**	29%**	25%**	18%**
Hallucinogens	8%**	7%**	4%**	3%**
Amphetamines	6%**	7%**	7%**	5%**
Opiates	4%**	4%**	3%**	2%**
Cocaine	4%**	4%**	3%**	3%**
Ecstasy	4%**	4%**	5%**	4%**
Any illicit drug	36%**	32%**	27%**	20%**
Any illicit drug ex. cannabis	12%**	13%**	11%**	8%**
Month				
Alcohol		51%**	52%**	45%**
Smoking		23%**	16%**	12%**
Tranquillisers	5%**	4%**	4%**	4%**
Cannabis	18%**	14%**	11%**	7%**
Hallucinogens	3%**	2%**	2%**	1%**
Amphetamines	2%**	3%**	3%**	2%**
Opiates	1%**	1%**	1%**	1%**
Cocaine	1%**	1%**	1%**	1%**
Ecstasy	1%**	2%**	2%**	2%**
Any illicit drug	19%**	15%**	13%**	8%**
Any illicit drug ex. cannabis	4%**	5%**	4%**	4%**
Week				
Alcohol		36%**	37%**	30%**
Smoking		19%**	13%**	9%**
Tranquillisers	3%**	2%**	2%**	2%**
Cannabis	11%**	8%**	7%**	4%**

** significantly different from 2005 at $p<0.01$

The patterns of lifetime, monthly and weekly drug use by school-aged children examined over time are shown in Table 7 with data from the ASSAD surveys conducted in 1996, 1999, 2002 and 2005. White and Hayman (2006a; 2006b; 2006c) presented analyses examining whether changes over time were statistically significant.

The lifetime, monthly and weekly prevalence of use of alcohol and tobacco in 2005 was found to be significantly lower ($p<0.01$) than in previous years. Among the illicit substances, level of lifetime, monthly and weekly use in 2005 was significantly lower ($p<0.01$) for all drug groups.

Although similar data were not presented for inhalants and steroids, the ASSAD researchers advised that the prevalence of lifetime and monthly inhalant use had decreased, while the prevalence of steroids use had not changed since 1996 (Table 7).

This trend over time is also found in the National Drug Strategy Household Survey data (Australian Institute of Health and Welfare, 2005), which show decreases from 1998 to 2004 in use of any illicit drug use in the last 12 months among 14–19 year old males (1998: 38.2%; 2004: 20.9%) and females (1998: 37.1%; 2004: 21.8%). This is further broken down by age in Table 8 and Table 9 for 12–15 and 16–17 year olds, respectively (White & Hayman, 2006a; 2006b; 2006c).

Table 8: Changes in prevalence of use – of lifetime use of drugs, use of drugs in the last month, and use of drugs in the last week, 1996–2005, for 12–15 year olds

	1996	1999	2002	2005
Lifetime				
Alcohol		87%**	86%**	82%
Smoking		47%**	40%**	29%
Tranquillisers	19%**	17%**	16%	15%
Cannabis	28%**	23%**	19%**	13%
Hallucinogens	6%**	5%**	4%**	3%
Amphetamines	5%**	6%**	5%**	4%
Opiates	4%**	4%**	3%**	3%
Cocaine	4%**	3%**	3%**	3%
Ecstasy	3%**	3%**	4%**	4%
Any illicit drug	30%**	26%**	22%**	15%
Any illicit drug ex. cannabis	10%**	11%**	9%**	7%
Month				
Alcohol		43%**	43%**	34%
Smoking		19%**	14%**	9%
Tranquillisers	5%**	4%**	4%**	4%
Cannabis	15%**	11%**	9%**	6%
Hallucinogens	2%**	2%**	2%**	1%
Amphetamines	2%**	2%**	2%**	2%
Opiates	1%**	1%**	1%**	1%
Cocaine	1%**	1%**	1%**	1%
Ecstasy	1%**	1%**	2%**	2%
Any illicit drug	16%**	13%**	10%**	7%
Any illicit drug ex. cannabis	4%**	4%**	4%**	3%
Week				
Alcohol		28%**	29%**	22%
Smoking		15%**	11%**	7%
Tranquillisers	3%**	2%**	2%**	2%
Cannabis	9%**	7%**	5%**	4%

** significantly different from 2005 at $p<0.01$

Table 9: Changes in prevalence of use – of lifetime use of drugs, use of drugs in the last month, and use of drugs in the last week, 1996–2005, for 16–17 year olds

	1996	1999	2002	2005
Lifetime				
Alcohol		94%	94%	95%
Smoking		69%**	63%**	52%
Tranquillisers	20%**	22%**	18%	17%
Cannabis	52%**	46%**	39%**	31%
Hallucinogens	14%**	11%**	6%	5%
Amphetamines	9%	11%**	10%	8%
Opiates	4%**	5%**	3%	2%
Cocaine	3%	4%	4%	4%
Ecstasy	5%	6%	7%	6%
Any illicit drug	53%**	48%**	41%**	33%
Any illicit drug ex. cannabis	17%**	18%**	15%**	12%
Month				
Alcohol		70%	68%	68%
Smoking		35%**	28%**	22%
Tranquillisers	5%**	5%**	5%**	4%
Cannabis	27%**	20%**	17%**	12%
Hallucinogens	4%**	3%**	2%	1%
Amphetamines	3%	4%	3%	3%
Opiates	1%	1%	1%	1%
Cocaine	1%	1%	1%	1%
Ecstasy	1%**	3%	2%	2%
Any illicit	28%**	21%**	19%**	13%
Any illicit ex. cannabis	6%	6%**	5%	4%
Week				
Alcohol		51%	48%	47%
Smoking		30%**	23%**	17%
Tranquillisers	3%	3%	3%	2%
Cannabis	17%**	12%**	10%**	6%

** significantly different from 2005 at $p<0.01$

Table 10: Mean frequencies of use and percentage of students aged 12–17 using regularly (defined as 10 or more times in the last year)

Substance	Mean frequency of use in last year (SD)	Percentage of users using regularly	Percentage of all students using regularly
Cannabis	5.2 (5.9)	24.1%	3.4%
Inhalants	3.9 (4.2)	13.4%	1.7%
Cocaine	3.7 (4.4)	20.2%	0.4%
Hallucinogens	8.7 (12.9)	19.0%	0.5%
Amphetamines	4.5 (5.1)	22.3%	0.9%
Ecstasy	4.4 (5.3)	18.9%	0.6%
Tranquillisers	3.8 (4.3)	9.9%	0.9%
Opiates	3.4 (4.4)	17.7%	0.3%
Steroids	5.0 (5.9)	24.4%	0.5%

To examine in more detail the trends apparent in the preceding tables, secondary analyses were conducted for this project to identify regular use patterns. Regular use was defined as using a particular drug 10 or more times in the last year (Table 10).

When the data on school students' prevalence of drug use are examined in this way, it becomes apparent that regular use (i.e. defined as having used a particular substance more than 10 times in the last year) occurs among a very small proportion of the school student population. The drug mostly used on a regular basis is cannabis, but even here it is regularly used by under 4 per cent of the total school student population. Regular use of other illicits was below the 1 per cent level. Low levels of use present challenges for any detection devices and strategies and necessitate higher levels of testing sensitivity (see Section 4.2.4.).

These data are relevant to the current examination of drug testing in schools and they have important implications for the accuracy and efficacy of any tests that might be undertaken to attempt to detect use. For accuracy and efficacy, tests require a certain level of prevalence to allow the tests to be able to detect the presence of drug use.

4.1.2 High-risk groups

There is clear evidence that social and economic disadvantage is associated with the misuse of alcohol and other drugs. As Wilkinson and Marmot (2003) highlighted in their examination of the social determinants of health conducted for the World Health Organization, alcohol dependence, illicit drug use and cigarette smoking are all closely associated with markers of social and economic disadvantage.

Evidence from various sources indicates that young people are at differential risk for developing alcohol or other drug problems. The following data are from secondary analyses of the ASSAD data undertaken specifically for this project to examine patterns of use by potentially high-risk groups.

Prevalence of use of illicit drugs by non-Indigenous schoolchildren compared to Indigenous students was compared and the data are shown in Table 11. Indigenous school students used all illicit substances at a significantly greater level than non-Indigenous students. In some instances, the level of use was almost double (see, for example, cannabis 15% vs 28%, amphetamines 4% vs 12%, and tranquillisers 9% vs 17%).

Table 11: Percentage of non-Indigenous (n = 20 712) and Indigenous (n = 881) students using each drug in the last year

Substance (use in last year)	Percentage of non-Indigenous students	Percentage of Indigenous students	Design-based F (df_1, df_2 = 1, 371)
Cannabis	15.2%	28.2%	100.5***
Inhalants	11.8%	19.7%	40.9***
Cocaine	2.0%	7.4%	85.5***
Hallucinogens	2.3%	8.5%	107.5***
Amphetamines	4.2%	11.9%	89.2***
Ecstasy	3.0%	8.5%	61.3***
Tranquillisers	8.8%	17.3%	58.4***
Opiates	1.5%	7.7%	169.8***
Any drug	28.2%	38.7%	45.6***

Notes:

df = degrees of freedom

*** $p<0.001$

'Any drug' refers to use of any of the drugs appearing in this table.

Table 12 shows the prevalence of drug use over the last year among students who spoke a language other than English at home compared to students who spoke English at home. Overall rates of drug use were not significantly different between students who spoke English at home and students who spoke a language other than English at home. However, the pattern of use for these two groups of school students is quite different.

Students who spoke a language other than English at home were significantly more likely to have used inhalants, cocaine, ecstasy and opiates but significantly less likely to have used cannabis and tranquillisers. Other variations in patterns of use may reflect different ethnic backgrounds and circumstances.

Table 12: Percentage of students who speak English at home (n = 18 761) and students who speak a language other than English at home (n = 2985) using each drug in the last year

Substance (use in last year)	Students speaking English at home	Other language spoken at home	Design-based F (df_1, df_2 = 1, 371)
Cannabis	16.3%	12.1%	21.9***
Inhalants	11.4%	16.0%	28.9***
Cocaine	2.0%	3.3%	18.1***
Hallucinogens	2.5%	2.8%	0.4
Amphetamines	4.4%	4.8%	0.9
Ecstasy	3.1%	4.2%	8.1**
Tranquillisers	9.4%	7.7%	9.0**
Opiates	1.6%	2.4%	8.4**
Any drug	28.7%	27.8%	0.8

Notes:

df = degrees of freedom

** $p<0.01$

*** $p<0.001$

Prevalence of drug use over the last year by level of self-reported academic performance was also examined (Table 13). Academic performance levels were grouped according to above-average performance, average performance and below-average performance. Across all illicit drug types there was a statistically significantly higher level of drug use among the below-average academic performers compared to average or above-average academic performers. Differential levels of drug use were in the order of two to three times greater among below-average performers compared to above-average students.

Table 13: Percentage of students using each drug in the last year according to self-reported academic performance

Substance (use in last year)	Above-average performance (n = 9047)	Average performance (n = 11 254)	Below-average performance (n = 1386)	Design-based F[1]
Cannabis	11.6%	17.2%	31.1%	177.5***
Inhalants	9.8%	13.0%	20.9%	63.3***
Cocaine	1.8%	1.9%	7.0%	75.9***
Hallucinogens	2.2%	2.3%	7.3%	61.3***
Amphetamines	3.3%	4.6%	11.5%	92.4***
Ecstasy	2.6%	3.1%	8.8%	62.0***
Tranquillisers	7.6%	9.4%	18.0%	71.7***
Opiates	1.2%	1.7%	5.1%	56.5***
Any drug	23.2%	30.8%	45.8%	160.7***

Notes:

[1] $df_1 = 2$, df_2 ranged from 712 to 741

*** $p<0.001$

Table 14: Percentage of students using each drug in the last year according to amount of disposable income per week

Substance (use in last year)	$0–$20 (n = 11 756)	$21–$60 (n = 5823)	$61+ (n = 4117)	Design-based F[1]
Cannabis	8.8%	21.2%	27.6%	419.0***
Inhalants	12.0%	12.8%	11.5%	1.7
Cocaine	1.2%	2.7%	4.2%	67.1***
Hallucinogens	1.5%	3.1%	5.0%	71.1***
Amphetamines	2.5%	5.7%	8.4%	123.5***
Ecstasy	1.4%	4.3%	7.0%	148.6***
Tranquillisers	6.9%	11.2%	12.6%	75.2***
Opiates	1.1%	1.9%	3.3%	43.7***
Any drug	22.6%	34.0%	38.4%	216.4***

Notes:

[1] $df_1 = 2$, df_2 ranged from 721 to 738

*** $p<0.001$

Prevalence of illicit drug use was also examined by self-reported disposable income (see Table 14). With the exception of inhalants, which may not involve the same cost issues as other illicit drugs, children with more disposable income available to them each week were heavier users of the full range of illicit drugs compared to schoolchildren with less disposable income.

Age is likely to be a strong confounder in this analysis. Older students are more likely to have more disposable income and they are also more likely to use illicit drugs. To separate out the influence of age and disposable income, a logistic regression analysis was run with any drug use in the last year as the dependent variable (Table 14). After controlling for age, gender and school type (government, Catholic or independent), disposable income remained a significant predictor of drug use, with students with $21–$60 to spend each week 1.6 times ($p<0.001$, 95% CI = 1.5–1.8) more likely to have used any drug in the last year than students with $0–$20 to spend each week. Students with more than $60 to spend each week were 1.9 times ($p<0.001$, 95% CI = 1.7–2.0) more likely to have used any drug in the last year than students with $0–$20 to spend each week.

Expulsion data

Data collected through the ASSAD surveys would not include students who have been expelled (for any reason including drug use) as they would no longer form part of the school population available to participate in the surveys. Hence, available expulsion data were examined to establish the prevalence of expulsion of students related to their drug use. Expulsion data could be found only for Tasmania and New South Wales. In Tasmania in 2005, there were only two expulsions, neither for drug use (Tasmania Office for Educational Review & Department

of Education, 2005). There were 217 expulsions for misbehaviour in New South Wales in 2006 (New South Wales Department of Education and Training, 2006). This is not broken down by reason for expulsion, but for suspensions, 3 per cent were related to illicit drug use. If this is the same proportion for expulsions, then approximately seven expulsions were due to illicit drugs. Hence, the limited available data do not indicate high levels of drug-related expulsions.

4.1.3 Principal aims of drug detection and screening

There are three principal aims underlying the use of drug detection and screening programs in schools:

- to deter initiation of drug use and encourage cessation, i.e. to reduce incidence and prevalence of drug use in young people
- to detect users, i.e. to refer them to treatment or counselling
- to reduce drug-related harm, i.e. to improve young people's physical and psychological wellbeing; reduce truancy and substance-related behavioural problems; and improve educational outcomes.

Deterrence theories generally assume that individuals weigh up the rewards versus costs of engaging or not engaging in risky activities before making a rational choice. Perceptions of deterrence differ across age and gender, with younger people, especially males, being least likely to believe that they will get caught using drugs (Marlowe, Festinger, Foltz, Lee & Patapis, 2005). The guiding principle for including sanctions or punishment in response to infringements is that offenders will be discouraged from repeating the infraction. However, it is also possible that offenders will succumb to the 'gambler's fallacy',[3] believing that they would be very unlikely, or unlucky, to be caught again. Some research evidence suggests that the least experienced and/or most impulsive individuals (i.e. young people) are more likely to hold this belief (Pogarsky & Piquero, 2003). According to deterrence theory, sanctions are seen as a necessary component to determining whether a testing program has a deterrent effect (Schaub, 2004), yet approximately 25 per cent of workers surveyed in the United States National Household Survey on Drug Abuse (2000, 2001) reported no official penalties or actions associated with a positive drug test (Carpenter, 2007).

Before describing the evidence on the effectiveness of drug testing programs, it is useful to consider the key assumptions underpinning the rationale for drug testing and how it may apply to school-aged children. A recent United Kingdom report discussed three sets of assumptions in detail (McKeganey, 2005) and the key points are described in Table 15.

3 The incorrect belief that the likelihood of a random event can be affected by, or predicted from, other independent events (Gambler's fallacy, 2007). That is, if an individual has been caught and punished for using drugs, they incorrectly believe they will have less chance of being caught the next time they use drugs.

Table 15: Main assumptions underlying the rationale for drug testing

Assumptions	Limitations
Criminological theory and the power of surveillance Surveillance is used as a tool for social control. If their behaviour is open to scrutiny, young people will avoid deviant acts (Foucault, 1980).	Surveillance alone is inadequate unless accompanied by: • **social consensus about what defines deviant behaviour** Drug testing will reduce drug use only if young people believe they will experience stigma or negative consequences of their drug use if discovered. Individuals with pro-drug attitudes and little respect for societal norms are less likely to reduce drug use and may view a positive drug test as status. • **capacity to apply negative sanctions or punishment** Without a negative sanction (e.g. exclusion, punishment from parents), drug testing is unlikely to deter future use. For example, athletes may view exclusion from competition as undesirable, but schoolchildren may welcome exclusion from classes. • **capacity to handle concealment (e.g. masking)** Individuals may use masking agents, avoid providing a sample (e.g. absence from school if they expect to be tested), or switch to less detectable, and potentially more harmful, drugs or alcohol.
Early identification and intervention Identification of drug use at an early stage may reduce the likelihood of developing into a drug 'problem'.	Teenage drug use does not lead inevitably to problematic drug use. • While screening is sensible for health issues that predictably lead to deterioration (e.g. cancers), this is not so for teenage drug use. The relevance of early identification applies only to a very small number of students (see section 4.1.3).
Capacity to bolster resistance to drugs Drug testing programs give students a reason to say 'No' when they encounter drug use.	Routes to drug use differ. • Not all young people are pressured by their peers to start using drugs. Young people may also select their friends on the basis of similar interests, including drug-using behaviour.

In addition, it is important to be aware of what drug testing does not aim to achieve. That is, drug tests cannot:

- provide a direct or reliable measure of intoxication or impairment
- determine how much, how often or under what circumstances a drug was used (e.g. passive ingestion of cannabis)
- distinguish between experimental, occasional or one-off users and those with problematic drug use
- distinguish between similar metabolites found in over-the-counter or legally prescribed medications and illicit drugs (e.g. codeine vs illicit opiates).

While the terms 'drug detection' and 'drug screening' are often used interchangeably, they refer to different techniques, which may be used under varying circumstances.

Drug *screening* involves performing a test on a population to identify evidence of drug use in individuals, in the absence of suspected use and for the purpose of early identification and treatment (e.g. random testing of urine of all students in a particular school, grade or group).

Drug *detection* is a diagnostic or confirmatory test performed when the possibility of drug use has been identified in a screening test or by other means (e.g. analysis of a student's urine where symptoms/signs indicate substance use). Drug detection is a term that may also be used to describe other strategies, such as sniffer dogs, drug searches or other drug detecting devices, or questionnaire-style instruments.

4.1.4 Approaches to drug testing

The characteristics of drug testing programs vary substantially according to:

- targeted drugs (alcohol, illicit substances, performance-enhancing drugs)
- who is tested (all students, student athletes, at-risk groups)
- sampling strategy (random sampling, all students in target group)
- frequency of testing (one-off, regular, occasional, during sports season)
- pre-testing information (with/without notice)
- degree of privacy and confidentiality observed
- response to positive test (opportunity for appeal, rehabilitation/support or exclusion/expulsion)
- method of detection

  i. *detection of drug use*
  biological material assays (urine, saliva, sweat, hair, blood etc)
  survey instruments (self-report questionnaires, interviews)

  ii. *detection of drugs or drug items*
  sniffer dogs
  drug searches (person, possessions, lockers etc).

4.2 Biometric measures of substance use

4.2.1 Drug testing strategies

There are four main drug testing strategies that can be utilised to detect drug use among school-aged children:

- testing the entire school population
- testing specific groups within the school population
- random testing
- testing for cause.

Testing the entire school population involves testing all students who attend the school. The testing of specific groups involves identification of particular groups within the school population that may be more likely to use drugs compared to other groups; for example, testing might be restricted to students aged 16–18 years old, as this is a group identified as at greater risk of drug-related harm (Australian Institute of Health and Welfare, 2005). Alternatively, specific groups that may be at risk of particular types of drug use could be targeted (e.g. school athletes for anabolic steroids or performance-enhancing drugs). Random testing involves the testing of a predetermined proportion of the total school population and is usually conducted without notice with all students having an equal chance of being selected for a test. Testing for cause involves the testing of individual students where there is physical or other evidence of drug use, or where it is reasonable to suspect the student(s) may be using drugs.

4.2.2 Drug testing methods

Drug testing is a two-stage process. The first stage is an initial screen to detect the presence of a drug. This is then followed by a confirmatory test to assess (confirm) the accuracy of any initial positive results from the screening test. Consistent with Australian standards, initial positive screens must be confirmed by a validated analytical procedure using mass-spectrometry techniques (Standards Australia, 2001; 2006).

To carry out this two-stage process, two methods of drug testing are available:

- on-site analysis using Point of Collection Test (POCT) devices, and
- laboratory analysis.

As most POCT devices use immunoassay techniques and are less reliable and accurate than laboratory analysis, POCT devices are useful as initial screening tests only. However, laboratory testing can be utilised for both initial screening and confirmatory testing. Apart from this fundamental difference, POCT devices and laboratory testing each have unique advantages and disadvantages as a method for detecting drug use among school-aged children. These are outlined below.

4.2.2.1 POCT devices

There are a large number of POCT devices commercially available in Australia. In general, these devices use immunoassay techniques and are recommended for use as an initial screening test only. While Australian standards concerning drug testing exist (Standards Australia, 2001; 2006), there are no Australian standards that specifically relate to POCT devices. However, a substantial proportion of the devices commercially available in Australia have received United States Food and Drug Administration approval.

While some POCT devices reliably give test results that are consistent with more sophisticated laboratory testing, there is wide variability in accuracy and reliability across devices (Verstraete & Puddu, 2000a; Verstraete & Raes, 2006). In addition, the use of POCT devices potentially introduces wide variability in the expertise and qualifications of individuals who may be required to conduct on-site tests. This is an important point, as research indicates that even medical general practitioners can have limited expertise concerning technical and ethical issues related to testing (Evans & Thornett, 2003; Levy, Harris, Sherritt, Angulo & Knight, 2006).

Advantages

- Tests are usually less expensive than laboratory testing.
- Tests are relatively easy to administer with little training required.
- Test results are generally available within a few minutes of the test being conducted.

Disadvantages

- Most POCT devices have a lower level of accuracy and reliability compared to laboratory analyses.
- The range of drugs that can be detected by most POCT devices is limited (a number of devices may be required to test for a range of different drugs).
- POCT devices cannot distinguish between prescribed drugs or over-the-counter medications and illicit drug use.
- Most POCT devices do not allow for a permanent record of the raw test results to be kept for medical or legal reasons.
- Visual display markers utilised by POCT devices vary widely and are subject to misinterpretation.
- There is increased potential for staff with limited training in drug testing to be exposed to health and safety hazards, inappropriately conduct the test, or misinterpret results.

4.2.2.2 Laboratory testing

There is also a large number of drug testing services that offer laboratory testing; however, only a few Australian laboratories are accredited to Australian standards. Laboratory testing can involve a range of immunoassay and chromatography methods to detect drug use. A detailed description of the different types of immunoassay and chromatography analysis methods utilised by laboratories is available elsewhere (Lu & Taylor, 2006; Simpson, Braithwaite, Jarvie, Stewart, Walker, Watson et al., 1997). In general, these methods give much more reliable and accurate results compared to POCT devices.

Advantages

- Much more reliable and accurate than testing with POCT devices.
- Can detect a much wider range of drugs than POCT devices.
- Better able to distinguish between prescription or over-the-counter drugs and illicit drugs (however, the medical history of the specimen donor may still be required to definitively distinguish between some drug types).
- Can detect the adulteration or dilution of specimen samples.
- Has the ability to store raw data and results of tests for future medical or legal access.
- Laboratory staff are likely to have more expertise in the conduct of tests and the interpretation of test results compared to those using POCT devices.

Disadvantages

- Laboratory testing is generally more expensive than POCT testing.
- Laboratory testing also involves a chain of custody procedure that increases the financial and time costs of the testing process.
- Slower turnaround time for test results compared to testing with POCT devices.

4.2.3 Types of drug tests

Blood testing is considered the 'gold standard' for accuracy and reliability, but for a variety of reasons it is not suitable for the detection of drugs that might be used by school-aged children. In particular, blood testing is an invasive medical procedure that can pose a health and safety risk to both donor and collector. Blood testing is not discussed further in this report. Apart from blood tests, there is a range of other different types of tests that may be suitable for the detection of drugs used by school-aged children including:

- urine
- saliva
- hair
- sweat tests.

Differences between urine, saliva, hair and sweat tests, together with the advantages and disadvantages of each test, are briefly outlined below.

4.2.3.1 Urine

Urinalysis is the most frequently used and most researched type of drug test currently conducted in workplace, clinical and custodial settings. Donors are usually required to produce a urine sample, delivered directly into a sterile tamper-proof container. While Australia standards (Standards Australia, 2001) allow for the physical observation of the urine being passed into the collection device, in most cases donors are allowed to produce the specimen in a private toilet cubicle. However, donors are supervised entering and leaving the cubicle and water in the toilet cistern and bowl is dyed to prevent sample dilution. Urinalysis is the least expensive of all drug test types, whether conducted using a POCT device or in the laboratory. For most drug types, it can detect use that has occurred up to three days prior to the test. One exception to this is cannabis use, in which case occasional use can be detected up to six days prior to the test, while for regular use the window of detection can increase to several weeks.

Advantages

- Relatively inexpensive compared to other test types.
- Most widely researched test type.
- Sufficient quantities of specimen sample can be obtained for confirmatory analysis and retesting.
- A substantial number of Australian laboratories have expertise in urinalysis.
- The accuracy and reliability of test results from some urinalysis POCT devices are similar to laboratory analysis.
- Higher concentrations of drug metabolites[4] are present in urine compared to other types of specimen samples, making detection of drug use more likely in urinalysis compared to some other test types.
- Australian standards for specimen collection, detection and quantification of drugs in urine exist (Standards Australia, 2001).

Disadvantages

- Other than for cannabis use, the window of detection provided by urinalysis is relatively short compared to some other test types (e.g. hair and sweat).
- The supervised collection of urine can be an invasive and disturbing process, especially for children and young adolescents.
- Collection facilities that maintain donor privacy and comfort need to be provided.
- Good quality POCT devices can be more expensive than laboratory urinalysis.
- Dilution, adulteration or substitution of urine samples is more easily achieved compared to other specimen samples.
- Can be time-consuming if the donor cannot readily provide a sample or is required to produce a second sample.

4 Metabolites are chemical compounds created as a drug is activated or deactivated by internal chemical processes after ingestion. In some cases, very little of the actual (parent) drug is evident in biological samples; however, recent use can be determined by the presence of drug metabolites.

4.2.3.2 Saliva/oral fluid testing

Saliva testing is a relatively new technology that is increasing in popularity as a less invasive form of testing compared to urinalysis. Saliva samples are usually collected from inside the donor's mouth by use of a swab or pipette. However, while less invasive than urinalysis, the collection of saliva is not without problems. Given the relatively small amounts of saliva present in the mouth, the collection of sufficient quantities for confirmatory analysis or retesting can be problematic. While more saliva can be generated by stimulation (e.g. the chewing of gum), this alters the pH level of the saliva collected, which in turn can influence the test result. In addition, a number of relatively recent evaluations have concluded that saliva POCT devices are limited in their ability to detect cannabis use (Crouch, Walsh, Flegel, Cangianelli, Baudys & Atkins, 2005; Verstraete & Raes, 2006; Walsh, Flegel, Crouch, Cangianelli & Baudys, 2003) and cannabis is the illicit substance most likely to be used by school-aged children (Australian Institute of Health and Welfare, 2005).

Advantages

- Specimen collection process is less invasive than urine specimen collection.
- Specimen is available immediately.
- Collection of sample is more easily supervised which reduces the opportunity for specimen substitution, dilution or adulteration.
- Higher concentrations of the parent drug in saliva compared to urine allow for more reliable identification of drug type.
- There are Australian standards for specimen collection, detection and quantification of drugs in saliva (Standards Australia, 2006).

Disadvantages

- Can be difficult to collect sufficient sample quantities for subsequent confirmatory analysis or retesting.
- The window of detection for saliva tests is much shorter (12–24 hours) than for other test types.
- Oral contamination (e.g. eating or drinking) can adulterate or dilute the sample.
- Due to the risk of oral contamination, donors need to be supervised for up to 30 minutes prior to sample collection.
- May have a limited ability to detect some drug types (e.g. cannabis).

4.2.3.3 Hair testing

While hair analysis is not new, hair testing to detect drug use is not used as frequently as urine or saliva analysis. Hair testing involves the analysis of samples of hair strands, usually taken from the donor's scalp. While research on the issue is sparse, it appears that the time it takes for drug use to be detectable in human hair varies from one to seven days according to drug type (Wennig, 2000). The main advantage of hair analysis is the relatively long window of detection offered. While there is wide inter-individual variability, human hair usually grows at the rate of 1 cm per month (Wennig, 2000) and while different models have been proposed to explain how drugs are incorporated into hair, it is generally accepted that, as drugs are used, evidence of use is permanently encapsulated within the hair shaft (Wennig, 2000). Theoretically, and depending on the length of hair being analysed, a history of drug use can be determined for months or even years prior to the test. However, as hair strands of 2–3 cm, cut close to the scalp, are normally taken for hair analysis, the window of detection is usually limited to 60–90 days prior to the test.

Advantages

- Provides a long window of detection compared to other tests.
- Relatively non-invasive compared to urine testing.
- Less sample storage and transportation problems compared to urine, saliva and sweat specimen samples.
- Sufficient quantities of hair specimen samples can be readily obtained for confirmatory analysis and retesting.
- Hair sample substitution is more difficult to achieve compared to urine or saliva samples.

Disadvantages

- No POCT devices for hair analysis are currently available.
- Few laboratories with expertise in hair analysis exist in Australia.
- Cannot detect recent drug use (i.e. use in the hours/days prior to the test).
- More expensive compared to urine and saliva analysis.
- Difficult to detect low levels of drug use (e.g. single episodes of use or very occasional use).
- Test can be easily evaded (e.g. shave hair).
- The use of hair treatments and differences in hair colour and hair structure can make test results difficult to interpret (Wennig, 2000).
- Hair is susceptible to environmental/passive drug contamination (Romano, Barbera & Lombardo, 2001).
- At present, there are no commercial Australian laboratories that offer hair analysis services.
- No Australian standards exist for specimen collection, detection and quantification of drugs in hair.

4.2.3.4 Sweat testing

Sweat testing is a relatively new technology that can utilise two approaches to drug detection. The first is aimed at the detection of recent use and involves the collection of a sample of sweat at one point in time with the use of a swab, an analysis of which can detect drug use up to 48 hours prior to the test. The second approach, which is more commonly used, is aimed at monitoring drug use that may occur over a predetermined time period. This approach involves applying an adhesive patch to the donor's skin for up to seven days. During this time, any drugs excreted by sweat are collected and stored in the patch. The patch is subsequently removed from the donor and analysed. Sweat patches are particularly useful for detecting low levels of drug use (e.g. single episodes of use). However, there is some evidence to indicate this may lead to unacceptably high levels of false positives (Levisky, Bowerman, Jenkins, Johnson, Levisky & Karch, 2001). There is also some evidence indicating the ability of sweat patches to detect single episodes of use may decline the longer the patch is worn (Pichini, Navarro, Pacifici, Zaccaro, Ortuno, Farre et al., 2003; Uemura, Nath, Harkey, Henderson, Mendelson & Jones, 2004).

Advantages

- Sweat collection is less invasive than urine collection (although sweat patches need to be worn continually for up to seven days).
- Sweat patches can allow for continuous monitoring over a period of time and thus provide a longer window of detection than urine and saliva analysis.
- Sweat patches are easily applied and removed with little training required.
- It is difficult to substitute sweat specimen samples and sweat patches are relatively tamper-proof.
- Sweat patches can detect low levels of use (e.g. single episodes of use or very occasional use).

Disadvantages

- Very few POCT devices exist.
- No commercial laboratories with expertise in sweat analysis exist in Australia.
- More expensive compared to urine and saliva analysis.
- The necessity to store sweat specimens at a very low temperature creates storage and transportation problems.
- Sweat patches are susceptible to environmental contamination prior to application and during use (Kidwell & Smith, 2001).
- Sweat patches can be easily adulterated or contaminated by accidental or deliberate removal during the monitoring period.
- Sweat patch tests can be evaded by refraining from drug use during the monitoring period and returning to use after the patch is removed.
- Sweat testing is a relatively under-researched technology compared to urine, saliva and hair testing.
- Positive test results need to be confirmed by a different test type (usually urinalysis).
- No Australian standards exist for specimen collection, detection and quantification of drugs in sweat.

Table 16: A summary of specific issues related to drug tests: a comparison of four biological specimens

Issue	Urine	Saliva	Hair	Sweat
Level of invasiveness	High	Low	Low	Low
Window of detection	Up to 3 days[1]	Up to 48 hours	7–90 days[2]	Up to 7 days[3]
Environmental contamination risk	Low	Low	High	Medium
Sample adulteration/ dilution risk	Medium	Medium	Medium	Medium
Sample substitution risk	Medium	Low	Low	Low
Collection difficulty	High	Low	Low	Low
Sample storage/ transportation difficulty	Medium	Medium	Low	High
Availability of POCT devices	High	High	N/A	Limited
Availability of Australian laboratories	High	Medium	N/A	N/A
Applicable Australian standards	Yes	Yes	No	No
Cost: POCT device[4]	Low	Low	N/A	Low/medium
Cost: laboratory screen[4]	Low	Medium	High	Low/medium
Cost: laboratory confirmation[4]	Low/medium	Medium/high	High	Low/medium

Notes:

[1] Window of detection for cannabis use can be up to several weeks depending on frequency of use.

[2] Window of detection for recent use may vary according to drug type from 1 to 7 days.

[3] Sweat patches do not detect past use, rather they monitor drug use that occurs while the patch is worn.

[4] For more detailed information on costs, refer to section 4.2.5.

In summary, there is a range of drug testing strategies that could be utilised to detect drug use among school-aged children, including testing the entire school population, testing specific groups within the school population, random testing, and 'for cause' testing. The choice of strategy would largely depend on the needs and resources of individual schools. Regardless of which strategy is chosen, initial screening tests could be conducted using POCT devices; however, any positive test would need to be confirmed by subsequent laboratory analysis. There is also a range of different test types that can be utilised including urine, saliva, hair and sweat analysis. Each of these tests has advantages and disadvantages. A summary of the main issues associated with the different types of tests is outlined opposite in Table 16.

4.2.4 Effectiveness of drug detection and screening programs

Consideration of the implementation of drug detection or screening strategies among school-aged children requires close examination of a range of factors. A key factor is the efficacy of the range of drug tests that are currently available.

The assessment of how good or reliable a particular drug testing technique is involves a number of different technical calculations. Each of these different calculations gives information about different aspects of the test. It is important to be familiar with these technical calculations and what they are attempting to assess and how this informs the determination of how good a test is and how useful, or otherwise, it might be in the school setting.

For any drug test on a given population sample, there are four potential outcomes (see Table 17).

(a) a true positive (a drug is detected and a drug is present)

(b) a false positive (a drug is detected, but no drug is present)

(c) a false negative (no drug is detected, but a drug is present)

(d) a true negative (no drug is detected and no drug is present).

Table 17: Possible outcomes of a drug test

		Drug present?	
		YES	NO
Drug detected?	YES	True Positives (a)	False Positives (b)
	NO	False Negatives (c)	True Negatives (d)

An ideal test accurately measures what it is supposed to measure. That is, an ideal test indicates use of drugs when drugs have been taken (true positive) and shows no use of drugs when drugs have not been taken (true negative). The higher the proportions of the true positives and true negatives the better the test. The ability of any test to accurately detect drug use is determined by three criteria – sensitivity, specificity, and accuracy. Each of these three key criteria is explained below.

4.2.4.1 Sensitivity

Sensitivity refers to how good a test is at correctly identifying people who use drugs. Sensitivity is calculated as the number of true positives detected by the test, expressed as a percentage of all actual positive cases (both true positives and false negatives) and can be described algebraically as:

$$\text{Sensitivity (\%)} = \frac{\text{true positives (a)}}{\text{true positives (a)} + \text{false negatives (c)}}$$

For example, of 100 samples that are known to contain drugs, a test that correctly classifies 90 samples as positive for drugs (true positives) and incorrectly classifies 10 samples as negative for drugs (false negatives) would have a sensitivity of 90 per cent.

$$\text{i.e.} \quad \frac{90\ (a)}{90\ (a) + 10\ (c)} = \frac{90}{100} = 90\%$$

4.2.4.2 Specificity

Sensitivity, however, is only one criterion for a test's efficacy. Not only is it important for a test to be able to correctly identify those that have used drugs (in this context), it is equally important that it can distinguish between those who have used drugs and those who have not used drugs. This is called specificity.

Specificity refers to how good the test is at identifying people who do not use drugs. Specificity is the number of true negatives detected by the test, expressed as a percentage of all actual negative cases (both true negatives and false positives), and can be described algebraically as:

$$\text{Specificity (\%)} = \frac{\text{true negatives (d)}}{\text{true negatives (d)} + \text{false positives (b)}}$$

For example, of 100 samples that are known not to contain drugs, a test that correctly classifies 90 samples as negative for drugs (true negatives) and incorrectly classifies 10 samples as positive for drugs (false positives) would have a specificity of 90 per cent.

$$\text{i.e.} \quad \frac{90\ (d)}{90\ (d) + 10\ (b)} = \frac{90}{100} = 90\%$$

4.2.4.3 Accuracy

The third key criterion is accuracy. Accuracy is an indicator of how good a test is overall, taking into account the sensitivity and specificity of the test. Accuracy is determined by the number of tests conducted where drug use was correctly detected expressed as a percentage of all test results. It can be described algebraically as:

$$\text{Accuracy (\%)} = \frac{\text{true positives (a)} + \text{true negatives (d)}}{\text{true positives (a)} + \text{false positives (b)} + \text{false negatives (c)} + \text{true negatives (d)}}$$

For example, from 100 samples, a test that correctly classifies 10 samples as positive for drugs (true positives), correctly classifies 80 samples as negative for drugs (true negatives), and incorrectly classifies 10 samples as being positive or negative (false positives or false negatives) would have an accuracy of 90 per cent.

$$\text{i.e.} \quad \frac{10\ (a) + 80\ (d)}{10\ (a) + 5\ (b) + 5\ (c) + 80\ (d)} = \frac{90}{100} = 90\%$$

The sensitivity, specificity and accuracy of any test can vary greatly and are dependent on various conditions and circumstances. To ensure appropriate, rigorous and accurate tests are used, standards concerning acceptable levels of sensitivity, specificity and accuracy need to be set. Evaluations of the effectiveness of various test devices, such as those outlined below, have generally established minimum acceptable levels for different drug testing settings as: ≥ 90% sensitivity, ≥ 90% specificity, and ≥ 95% accuracy (Verstraete & Puddu, 2000a).

Further consideration should be given to whether these minimum acceptable levels are adequate for the testing of children in school settings. For instance, a specificity level of 90 per cent that accepts a false positive error rate of 10 per cent, or one in ten, may be unacceptable in the school setting. If tests with a specificity level of 90 per cent are acceptable, mechanisms would need to be in place to cope with the consequences of false positives. Falsely accusing a child of illicit drug use may have legal, social and psychological sequelae.

False positives can result from the test detecting a legal substance that is chemically similar to the target drug (e.g. over-the-counter or prescribed medications). For example, codeine, like all opioids, metabolises to morphine and most drug tests cannot distinguish between codeine and other opioids (such as heroin) that also metabolise to morphine. Other factors that can contribute to false positives include environmental

contamination at the time of the test, passive drug exposure,[5] poor interpretation of test results, poor quality testing, or test device/method error or malfunction. False negatives can result from sample adulteration or substitution, poor interpretation of test results, poor quality testing, or test device/method error or malfunction.

While sensitivity, specificity and accuracy are indicators of a test's efficacy in detecting drug use, there is a range of other factors that can influence the efficacy, usefulness and appropriateness of drug tests. A positive test merely indicates that a drug, or drug metabolite,[6] is present at or above a designated cut-off level.[7] While a positive test may indicate that a drug/drug metabolite is present at a designated cut-off level, it cannot determine dose level, time of use, frequency of use, or degree of impairment. In contrast, a negative test does not necessarily mean that the person tested has not used drugs. For example, a drug/drug metabolite may be detected which is below the cut-off level. Alternatively, use may have occurred at a time outside the test's window of detection.

4.2.4.4 The effectiveness of POCT devices in detecting drug use

Evidence concerning the effectiveness of urine and saliva POCT devices in detecting drug use is mixed. While some studies have concluded that urine and saliva devices are effective (Crouch et al., 2005; Moody, Fang, Andrenyak, Monti & Jones, 2006; Peace, Tarnai & Poklis, 2000; Walsh, Crouch, Danaceau, Cangianelli, Liddicoat & Adkins, 2007; Walsh et al., 2003), others have cautioned against the use of these devices, particularly in clinical settings (George & Braithwaite, 1995; 2002).

Research on the effectiveness of urine and saliva POCTs raises two main issues of concern. First, while some devices have been found to be relatively accurate and reliable, there is wide variability between devices (Peace et al., 2000; Verstraete & Puddu, 2000a; Walsh et al., 2003). In particular, research indicates saliva POCT devices are limited in their ability to detect cannabis use (Crouch et al., 2005; Walsh et al., 2003). Second, the ease of using urine and saliva POCT devices and the degree of difficulty in interpreting the test results also vary widely (Gronholm & Lillsunde, 2001; Verstraete & Puddu, 2000a; Verstraete & Raes, 2006).

5 Passive exposure can occur when a non-drug user comes into contact with or in close proximity to drugs or a person using drugs. Hair tests, for example, have been shown to be particularly sensitive to passive exposure from cannabis smoke (Uhl & Sachs, 2004).

6 Metabolites are chemical compounds created as a drug is activated or deactivated by internal chemical processes after ingestion. In some cases, very little of the actual (parent) drug is evident in biological samples; however, recent use can be determined by the presence of drug metabolites.

7 In general, cut-off levels are set at a point likely to maximise the detection of true positives, while at the same time minimising the likelihood of false negatives. Australian standards have set cut-off levels for POCT and laboratory urinalysis (Standards Australia, 2001), and while target drug/drug metabolite concentrations in saliva have been set (Standards Australia, 2006), there are currently no Australian standards on cut-off levels for saliva, hair or sweat testing.

A comprehensive evaluation of urine and saliva POCT devices was provided by two studies conducted on behalf of the European Police Services Commission (Verstraete & Puddu, 2000a; Verstraete & Raes, 2006). The first of these studies evaluated 15 urine and three saliva POCT devices that are commercially available. This study conducted tests on 2968 individuals across eight European countries and identified several urinalysis devices that met the evaluation criteria of ≥ 95% accuracy, ≥ 90% sensitivity and ≥ 90% specificity when compared to laboratory gas chromatography/mass spectrometry analysis (Verstraete & Puddu, 2000a). However, none of the urinalysis devices scored highly for all drug categories and there was wide variability between different devices and drug types. For example, accuracy for amphetamine detection varied from 66 to 100 per cent, sensitivity from 16 to 100 per cent, and specificity from 56 to 100 per cent across urine devices. For cannabis, accuracy varied from 85 to 97 per cent, sensitivity from 70 to 99 per cent, and specificity from 90 to 100 per cent across urine devices. For the three saliva POCT devices evaluated, the first study concluded that:

> The present generation of onsite (oral fluid) tests are insufficiently sensitive and/or specific to give reliable results for most classes of drugs. (Verstraete & Puddu, 2000b, p.5)

A second evaluation of nine commercially available saliva POCT devices was subsequently conducted by the same researchers on 2046 individuals across Europe and the United States from 2003 to 2005 (Verstraete & Raes, 2006). None of the saliva POCT devices tested met the evaluation criteria of ≥ 95% accuracy, ≥ 90% sensitivity, and ≥ 90% specificity for three of the main drug types used in Australia (i.e. amphetamines, cannabis and benzodiazepines). For amphetamine detection, accuracy varied from 75 to 98 per cent, sensitivity from 40 to 83 per cent, and specificity from 80 to 100 per cent for different devices. For cannabis, accuracy varied from 55 to 96 per cent, sensitivity from 0 to 74 per cent, and specificity from 70 to 100 per cent for different devices.

Relatively few studies have evaluated sweat POCT devices. Available research indicates that these devices provide results comparable to urine POCT devices (Kintz, Tracqui, Mangin & Edel, 1996; Taylor, Watson, Tames & Lowe, 1998). However, other studies have concluded that while sweat POCT devices give results of comparable reliability to urine, caution needs to be applied as sweat patches are subject to environmental contamination (Kidwell, Blanco & Smith, 1997) and can result in a high proportion of false negatives (Huestis, Cone, Wong, Umbricht & Preston, 2000).

4.2.4.5 Sensitivity and specificity modelling for saliva tests

The Rosita report evaluated oral fluid screening tests for cannabis, cocaine, amphetamines and opiates, and reported the mean specificity and sensitivity of the tests for each drug. Based on these data, the possible outcomes of drug detection in a school of 1000 students can be modelled (Tables 18–20). Prevalence of regular use is used in the modelling on the hypothesis that occasional users, using less than 10 times a year, are unlikely to be detected using saliva tests.

Table 18: Sensitivity and specificity of tests identified in the Rosita study

Drug	Regular users	Mean specificity	Mean sensitivity
Cannabis	34	92%	46%
Cocaine	4	94%	77%
Amphetamines	9	94%	79%
Opiates	3	99%	61%

Table 19: Sample results from tests with the best sensitivity

Drug	Regular users	Device	Failure rate	Specificity	Sensitivity
Cannabis	34	Oralab	26%	99%	74%
Cocaine	4	Oralab	26%	97%	97%
Amphetamines	9	Drugwipe	4%	96%	83%
Opiates	3	Oralab	26%	100%	100%

Table 20: Sample results from tests with the best specificity

Drug	Regular users	Device	Failure rate	Specificity	Sensitivity
Cannabis	34	Oraline	39%	100%	25%
Cocaine	4	SalivaScreen	47%	100%	75%
Amphetamines	9	SalivaScreen	47%	100%	78%
Opiates	3	Oralab	26%	100%	100%

True +	False -	True -	False +	% of positives that are true
15	19	888	78	16%
3	1	936	60	5%
7	2	931	60	10%
1	2	987	10	9%

Fails	True +	False -	True -	False +	% of positives that are true
260	18	7	707	8	69%
260	2	0	714	24	8%
40	7	1	913	39	15%
260	2	0	737	0	100%

Fails	True +	False -	True -	False +	% of positives that are true
390	5	15	589	0	100%
470	1	1	527	0	100%
470	3	1	525	0	100%
260	2	0	737	0	100%

4.2.4.6 Laboratory analysis

Due to the risk of POCT devices producing false positive test results, it is a requirement of Australian standards (Standards Australia, 2001; 2006) that any positive test is confirmed by laboratory analysis. Laboratory analysis is likely to be more accurate and reliable than field analysis with a POCT device for a variety of reasons including:

- More advanced and sophisticated immunoassay and gas chromatography/mass spectrometry analysis can be undertaken in a laboratory compared to the analysis methods used by POCT devices.
- Contamination risks may be lower in a laboratory due to more control over environmental conditions compared to field testing.
- The equipment utilised in a laboratory is more likely to be subjected to regular monitoring and calibration.
- Laboratory staff are likely to have higher level skills and qualifications concerning the conduct of sample analyses and the interpretation of test results compared to staff who conduct field tests with POCT devices.

While laboratory analysis is likely to be more accurate and reliable than field analysis using a POCT device, laboratory analysis can also be subject to error. There are a number of Australian laboratories offering drug testing services; however, few of these laboratories are accredited to Australian standards. In many cases, the standards and procedures of these laboratories differ, and in some cases may be of a lower standard than those required for accreditation. As a result, the reliability and accuracy of these tests may come under question. No studies were located that evaluated the effectiveness of Australian laboratory drug testing services. However, several international studies have raised concerns regarding the accuracy and reliability of laboratory testing. For example, in one United States study (Riley, Lu & Taylor, 2000) the same 931 urine samples were submitted to two independent laboratories for analysis. Of these samples, a total of 52 resulted in a different analysis outcome from the two laboratories. Thirty-eight were found to be positive at the first laboratory and negative at the second. Fourteen were found to be negative at the first laboratory and positive at the second (Riley et al., 2000). The researchers concluded that differential results between the two laboratories may have largely been due to differences in procedural and operational factors. Such findings raise serious concerns about the veracity of testing even when undertaken by laboratories.

A more recent study in the United States also identified that a significant proportion of tests within the same laboratory can be susceptible to misinterpretation (Levy, Sherritt, Vaughan, Germak & Knight, 2007). Levy et al. examined 710 urinalysis results obtained from 110 adolescent patients in a hospital substance abuse program and found re-analysis indicated 40 samples originally classified as negative were too dilute to accurately interpret (i.e. they may have been adulterated) and 45 tests originally classified as positive for illicit drug use were due to the licit use of prescribed medication (Levy et al., 2007). This is an error rate of 12 per cent.

Like most workplaces, laboratories that test for drugs can be subject to human or equipment error and mistakes can be made. In addition, the collection, storage, transportation and analysis of samples require a large amount of manual handling. Different procedures involved in this handling may result in sample deterioration or contamination, or test results being misinterpreted. There is evidence to indicate that the reliability and accuracy of laboratory analysis can vary between laboratories (Lu & Taylor, 2006; Montagna, Polettini, Stramesi, Groppi & Vignali, 2002; Riley et al., 2000) and according to the methods of analysis utilised by individual laboratories (Baptista, Monsanto, Pinho Marques, Bermejo, Avila, Castanheira et al., 2002; Eichhorst, Etter, Lepage & Lehotay, 2004).

In summary, currently available research indicates that, in the majority of cases, POCT devices and laboratory analysis can detect drug use. However, for POCT devices the risk of false positives is relatively high depending on the type of device used, the target drug, and the expertise of the person conducting the test. This risk is reduced, but not eliminated, by laboratory confirmation of positive POCT tests. The acceptability of this risk needs to be assessed against the implications of a school-aged child being falsely accused of using illicit drugs. If the outcome is negligible, then the risk may be deemed unacceptable. However, the potential ramifications of a false positive also need to be considered. These may include the child being incorrectly labelled a 'drug user', ostracised by their peers, experiencing decreased self-esteem, or it may result in a negative impact on student–teacher or child–parent relationships.

4.2.5 Financial costs of drug detection and screening programs

Research on the cost of drug testing programs in general, and school drug testing programs in particular, is limited. Much of the available research is either dated, specific to international contexts, or provides little detail on how cost estimates were determined. For example, in a survey of nine United States schools that conducted predominantly urine testing during the 2001–02 school year, Dupont, Campbell and Mazza (2002) estimated that the mean cost for each test conducted was US$42. However, this estimate is limited for several reasons. First, the cost estimate is restricted to the United States context and based on 2001 US$ values. Factors affecting cost may differ in the Australian context and costs associated with testing may have increased or decreased since 2001. Second, and more importantly, limited detail is provided as to how these costs were determined. It appears DuPont et al.'s (2002) estimate may have been based on the laboratory costs for each test only, with no consideration of any additional expenses that may be associated with conducting the test.

An earlier and more detailed examination of the costs associated with workplace urine testing estimated the cost of on-site POCTs at US$49.39 per test and US$66.70 per off-site laboratory test (Ozminkowski, Mark, Cangianelli, Walsh, Davidson, Blank et al., 2001). Ozminkowski et al.'s estimate not only included the fixed cost for each type of test, but also included fixed and variable costs associated with factors such as staff time to administer the test, donor time to take the test, test preparation time, and costs associated with test result tracking and recording (Ozminkowski et al., 2001).

4.2.5.1 NCETA survey of suppliers of testing products and services

In order to overcome the limitations of existing information about costs and provide a more relevant and contemporary estimate of the cost of school drug testing, NCETA canvassed information from 11 of the main Australian suppliers of drug testing products or services. Each company was contacted by telephone during August 2007 and asked to provide details of their fees and/or prices for the various products and services they provided. All suppliers contacted provided this information verbally or via subsequent email.

The services and products provided by the companies contacted varied and included:

- provision of POCT devices and/or laboratory access for confirmations
- provision of laboratory analysis
- provision of drug testing services and staff (including specimen collection and analysis)
- a combination of the above.

The cost estimates in this section provide a series of detailed breakdowns from the basic cost of purchasing tests to the full cost implications involved in the actual implementation of different testing regimes. The cost estimates are broken down as follows:

- The basic cost (per person) of purchasing POCT, laboratory screens and laboratory confirm tests for urine, saliva, hair and sweat tests (Table 22) – urine tests are the least costly.
- The cost of purchasing the cheapest of these tests in the school setting for different testing regimes (when testing (i) a total school population once, (ii) a 10% random sample three times, (iii) a 5% targeted sample three times, and (iv) a 2% 'for cause' sample once with 50% retested) (see Table 23).
- The costs calculated in the second item above are then revised with the additional expenses involved in collection, sample storage, transportation, administration etc (see Table 24).
- The cost of external agency staff to undertake the tests was then calculated at an hourly rate (see Table 25) and at a fixed fee per school (see Table 26).
- Finally, a full cost scenario is calculated in Table 27 factoring in all identified expenses and using the fixed fee plus costs model.

The above were calculated for a hypothetical school of 500 students, then calculated for all government and non-government schools separately, and then combined across Australia using actual student enrolment figures for 2006.

As shown in Table 21 when all costs are calculated the following estimate is arrived at for undertaking drug testing for all schools nationally (using either saliva or urine tests), for each of the four possible testing regimes.

Table 21: Summary overview of all testing costs for all Australian school students (2006 enrolment figures)

Testing method	Urine				Saliva			
Strategy	Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
Times tested p/a	1	3	3	1	1	3	3	1
Total cost (All schools)	**$302.3m**	**$91.4m**	**$47.9m**	$11.7m	**$355.2m**	**$110.6m**	**$58.6m**	**$15.9m**

Information obtained from the companies surveyed allowed for POCT and laboratory analysis costs for the four different drug test types, described in section 4.2.2, to be determined as outlined in Table 22. All costs detailed in Table 22 refer to the purchase of a single test that can be used to test one person only. These costs do not include any additional on-costs such as freight, handling, sample collection, or test administration costs.

Table 22: Cost per person of Australian POCT and laboratory analysis for urine, saliva, hair and sweat testing

Cost per test	Urine	Saliva	Hair[3]	Sweat[4]
POCT devices	1 panel $3–$7[1] 6 panel $13–$25[2]	6 panel $21–$34	N/A	$30–$50[5]
Lab screen	$25–$30	$80–$90	$170	$45–$60
Lab confirmation	$55–$75	$80–$275	$200–$300	inclusive

Notes:

[1] A one-panel test can detect only one specified drug per test.

[2] A six-panel test can detect six different specified drugs per test.

[3] There are currently no Australian laboratories that offer commercial screening or confirmation services for hair samples. All samples need to be sent overseas.

[4] There is only one sweat POCT device currently available in Australia. There are no Australian laboratories that offer screening or confirmation services for sweat samples. All samples need to be sent to overseas laboratories.

[5] The price of the one sweat POCT device varied according to the number of different drugs that various models of the device could detect. The single drug model cost $30, the two-drug model $40, and the three-drug model $50.

Price variations for each test type are due to several factors. In part, cost variation can be attributed to competition and market forces (i.e. different companies offered the same test type at different prices). Price variations also reflect variations in sale volumes and product quality. Most companies surveyed offered price reductions for bulk orders, with discounts of up to 20 per cent for orders of 250 or more tests. Similarly, the price varied with the quality and extent of products/services provided. For example, the less expensive urine POCT devices required more sample collection time and more collector training than the more expensive test devices.

Overall, urine tests appeared the least costly. The least expensive urine POCT was a single panel device but, as this device can detect only one type of drug, several of these devices may be required to test one student for a range of drugs. Thus, six-panel devices may be more cost-effective. This issue aside, the cost of urine POCT devices and laboratory analysis was substantially less than other test types. However, this has to be weighed against costs associated with the need to provide private and comfortable collection facilities for urine specimen collection. The provision of facilities for saliva, hair or sweat collection may not be as resource-intensive.

The detail provided in Table 22 also allows for costs associated with different test strategies outlined in section 4.2.2 to be estimated. These cost estimates are detailed in Table 23 and are based on the following assumptions:

- In all cases the least expensive price quoted by the companies surveyed was used except for urine and sweat POCT devices in order to provide the most conservative cost estimate.
    - For urine, the price of the six-panel POCT device was chosen as it is more comparable with saliva POCT devices. In addition, the mid-range price of $18 (range = $13–$25) for the six-panel urine POCT was chosen as this was likely to be more cost-effective than the more labour-intensive, but less expensive, urine POCT devices.
    - For sweat, the most expensive ($50) POCT device was chosen as it was able to detect three different drug types and thus was more comparable to the six-panel urine and saliva devices.
- A school population of 500 students was used to estimate costs.
- A positive test rate of 3.4 per cent of the sample tested was utilised as this is consistent with previously reported data indicating 3.4 per cent of all students are regular users (defined as using 10 or more times a year) of cannabis (the most commonly used drug). It was reasoned that drug testing was most likely to detect regular as opposed to occasional use.[8]
- A sample of 10 per cent of the total school population tested on three occasions throughout the school year was chosen for calculating the cost of random testing.
- A sample of 5 per cent of the school population was chosen for the targeted group strategy and, in this case, a positive test rate of 7 per cent (twice the prevalence rate for random testing) was utilised as the targets for this strategy are selected on the basis they are more likely to use drugs than other groups.
- A sample of 2 per cent of the school population was chosen for the 'for cause' strategy and, in this case, the positive test rate was increased to 50 per cent as the individuals tested using this strategy are selected on the basis that it is reasonable to suspect they are using drugs.

8 However, it could be argued that drug testing can detect occasional use and, as such, costings are also presented at Appendix A using a prevalence rate of 20 per cent which is consistent with AIHW data that found 20.9 per cent of males and 21.8 per cent of females have recently (in the past 12 months) used illicit drugs (Australian Institute of Health and Welfare, 2005).

Table 23: Cost estimates for the purchase of different test types, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine				Saliva			
Strategy	Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
Times tested p/a	1	3	3	1	1	3	3	1
POCT								
Quantity	500	50	25	10	500	50	25	10
Cost	$18	$18	$18	$18	$21	$21	$21	$21
Subtotal (a)	**$9000**	**$2700**	**$1350**	**$180**	**$10 500**	**$3150**	**$1575**	**$210**
Laboratory confirmation								
Quantity (3.4%)	17	2	2	5	17	2	2	5
Cost	$55	$55	$55	$55	$80	$80	$80	$80
Subtotal (b)	**$935**	**$330**	**$330**	**$275**	**$1360**	**$480**	**$480**	**$400**
Total cost per school								
Total (a + b)	**$9935**	**$3030**	**$1680**	**$455**	**$11 860**	**$3630**	**$2055**	**$610**
Total student population 2006								
Government schools	2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
Total cost (govt.schools)	**$44.7m**	**$13.6m**	**$7.6m**	**$2m**	**$53.3m**	**$16.3m**	**$9.2m**	**$2.7m**
Non-government schools	1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$22.3m**	**$6.8m**	**$3.8m**	**$1m**	**$26.6m**	**$8.2m**	**$4.6m**	**$1.4m**
Total cost (All schools)	**$67m**	**$20.4m**	**$11.4m**	**$3m**	**$79.9m**	**$24.5**	**$13.8m**	**$4.1m**

Note: [1] POCT devices are unavailable for hair analysis.
However, overseas laboratories can screen hair for drug use.

Sweat				Hair[1]			
Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
1	3	3	1	1	3	3	1
				Laboratory screen[1]			
500	50	25	10	500	50	25	10
$50	$50	$50	$50	$170	$170	$170	$170
$25 000	**$7500**	**$3750**	**$500**	**$85 000**	**$25 500**	**$12 750**	**$1700**
17	2	2	5	17	2	2	5
$45	$45	$45	$45	$200	$200	$200	$200
$765	**$270**	**$270**	**$225**	**$3400**	**$1200**	**$1200**	**$1000**
$25 765	**$7770**	**$4020**	**$725**	**$88 400**	**$26 700**	**$13 950**	**$2700**
2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
$115.9m	**$34.9m**	**$18.1m**	**$3.3**	**$397.5m**	**$120.1m**	**$62.7m**	**$12.1m**
1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
$57.7m	**$17.4m**	**$9m**	**$1.6m**	**$198m**	**$59.8m**	**$31.2m**	**$6m**
$173.6m	**$52.3m**	**$27.1m**	**$4.9m**	**$595.5m**	**$179.9m**	**$93.9m**	**$18.1m**

4.2.5.2 Additional costs

The costs outlined in Table 23 do not include costs associated with the collection, storage and transport of specimens. The time taken to collect specimen samples can vary according to the specimen collected and the type of collection device. In addition, POCT results should be recorded and Australian standards (Standards Australia, 2001; 2006) require a chain of custody procedure to be followed for any positive specimens that need to be transported to a laboratory for confirmation. This can involve a substantial time cost for both the specimen donor and specimen collector. Information provided by the drug testing service companies surveyed indicated that, for safety and procedural reasons, two collectors are required at each test site and that, on average, only 8–10 specimens could be collected and processed in one hour.

Similarly, specimen collection and storage facilities can also substantially add to the cost of drug testing. Private and comfortable collection areas need to be provided and some specimen samples collected (e.g. urine and sweat) may require refrigeration to prevent deterioration. In addition, the transportation of positive specimens to laboratories for confirmation adds to the costs. Containers suitable for specimen transportation are provided by the companies surveyed at a cost of $12–$17 per container and freight charges ranged from $15 to $20 per container.

Previous estimates of the total costs of on-site POCT workplace testing which have taken into account collection, storage, transportation, administration, and other associated costs (Ozminkowski et al., 2001) indicate that the real cost of urine POCTs was approximately double the cost of purchasing the POCT device. Adjusting for these additional costs, using a similar rate as that adopted by Ozminkowski et al. (2001) would conservatively add an additional $20 cost to each test conducted (see Table 24).

Several companies surveyed also offered drug testing services which involved provision of trained staff to carry out the collection and testing of samples. These services were supplied at either an hourly rate or a fixed fee per test. Most companies surveyed restricted drug testing services to urine and/or saliva testing. The hourly rate for these services ranged from $80 per hour to $275 per hour. Different hourly rates varied according to:

- number of staff provided (lower rates involved only one staff member; however, most providers recommended two staff members)
- qualifications of staff (staff with nursing qualifications were more expensive)
- number of hours required (higher rates applied to less than four hours' work)
- location of testing (rural, regional and outer-metropolitan locations attracted a higher hourly rate and additional travelling charges)
- services included in the hourly fee (lower fees did not include the provision of POCT devices and other test consumables).

For all companies surveyed, laboratory confirmation of positive tests was an additional charge, regardless of the hourly rate charged. Estimated costs associated with testing a school population of 500 students based on an hourly rate and the four testing strategies are outlined in Table 25. While the estimates in Table 25 appear to be more attractive when compared to Table 24, it must be remembered that they do not include:

- travelling time and costs of the service provider
- hourly costs associated with laboratory confirmations
- cost of donor time
- cost of school staff time to organise and coordinate the tests, and
- administrative costs associated with the recording and reporting of test results.

Table 24: Cost estimates for the purchase of different test types plus additional on-costs, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine				Saliva			
Strategy	Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
Times tested p/a	1	3	3	1	1	3	3	1
POCT								
Quantity	500	50	25	10	500	50	25	10
Cost	$18	$18	$18	$18	$21	$21	$21	$21
On-costs (+ $20)	$38	$38	$38	$38	$41	$41	$41	$41
Subtotal (a)	**$19 000**	**$5700**	**$2850**	**$380**	**$20 500**	**$6150**	**$3075**	**$410**
Laboratory confirmation								
Quantity (3.4%)	17	2	2	5	17	2	2	5
Cost	$55	$55	$55	$55	$80	$80	$80	$80
On-costs (+ $20)	$75	$75	$75	$75	$100	$100	$100	$100
Subtotal (b)	**$1275**	**$450**	**$450**	**$375**	**$1700**	**$600**	**$600**	**$500**
Total cost per school								
Total (a + b)	**$20 275**	**$6150**	**$3300**	**$755**	**$22 200**	**$6750**	**$3675**	**$910**
Total student population 2006								
Government schools	2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	**$91.2m**	**$27.7m**	**$14.8m**	**$3.4m**	**$99.8m**	**$30.4m**	**$16.5m**	**$4.1**
Non-government schools	1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$45.4m**	**$13.8m**	**$7.4m**	**$1.7m**	**$49.8m**	**$15.1m**	**$8.2m**	**$2m**
Total cost (All schools)	**$136.6m**	**$41.5m**	**$22.2**	**$5.1m**	**$149.5m**	**$45.5m**	**$24.7m**	**$6.1m**

Note: [1] POCT devices are unavailable for hair analysis.
However, overseas laboratories can screen hair for drug use.

Sweat				Hair[1]			
Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
1	3	3	1	1	3	3	1
				Laboratory screen[1]			
500	50	25	10	500	50	25	10
$50	$50	$50	$50	$170	$170	$170	$170
$70	$70	$70	$70	$190	$190	$190	$190
$35 000	**$10 500**	**$5250**	**$700**	**$95 000**	**$28 500**	**$14 250**	**$1900**
17	2	2	5	17	2	2	5
$45	$45	$45	$45	$200	$200	$200	$200
$65	$65	$65	$65	$220	$220	$220	$220
$1105	**$390**	**$390**	**$325**	**$3740**	**$1320**	**$1320**	**$1100**
$36 105	**$10 890**	**$5640**	**$1025**	**$98 740**	**$29 820**	**$15 570**	**$3000**
2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
$162.3m	**$49m**	**$25.4m**	**$4.6m**	**$444m**	**$134.1**	**$70m**	**$13.5m**
1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
$81m	**$24.4**	**$12.6m**	**$2.3m**	**$221.1m**	**$66.8m**	**$34.9m**	**$6.7m**
$243.3m	**$73.4m**	**$38m**	**$6.9m**	**$665.1m**	**$200.9m**	**$104.9m**	**$20.2m**

Table 25: Cost estimates for the provision of testing services at an hourly rate, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine			
Strategy	**Total school population**	**Random sample**	**Targeted groups[3]**	**For cause[3]**
Quantity tested	500	50	25	10
Tests p/hr	8	8	8	8
Hours needed	63	6	4	4
Hourly rate[1]	$80	$80	$80	$80
Times tested p/a	1	3	3	1
Subtotal (a)	**$5040**	**$1440**	**$960**	**$320**
POCT device cost	$9000	$2700	$1350	$180
Lab confirmation cost	$935	$330	$330	$275
Subtotal (b)[2]	**$9935**	**$3030**	**$1680**	**$455**
Total cost per school Total (a)+(b)	**$14 975**	**$4470**	**$2640**	**$775**
Total student population 2006				
Government schools	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	**$67.3m**	**$20.1m**	**$11.9m**	**$3.5m**
Non-government schools	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$33.5m**	**$10m**	**$5.9m**	**$1.7m**
Total cost (All schools)	**$100.8m**	**$30.1m**	**$17.8m**	**$5.2m**

Notes:

[1] The hourly rate is costed on the lowest price of $80 per hour and calculated on the assumption that eight tests can be performed in one hour.

[2] As the lower hourly rates quoted by service providers do not include POCT devices and laboratory confirmations, these costs are added.

[3] As targeted groups and 'for cause' testing involves less than four hours of testing, it is likely that a minimum service fee of four hours would be charged.

Saliva			
Total school population	Random sample	Targeted groups[3]	For cause[3]
500	50	25	10
8	8	8	8
63	6	4	4
$80	$80	$80	$80
1	3	3	1
$5040	**$1440**	**$960**	**$320**
$10 500	$3150	$1575	$210
$1360	$480	$480	$400
$11 860	**$3630**	**$2055**	**$610**
$16 900	**$5090**	**$3015**	**$930**
2 248 219	224 822	112 411	44 964
$76m	**$22.9m**	**$13.6m**	**$4.2m**
1 119 807	111 981	55 990	22 396
$37.9m	**$11.4m**	**$6.8m**	**$2.1m**
$113.9m	**$34.4m**	**$20.4m**	**$6.3m**

Rates for a fixed service fee varied from $48 to $80 per test performed for urine testing and from $62 to $115 per test performed for saliva testing. Again, fees varied according to the qualifications of the staff (nursing staff attracted a higher rate), the number of tests conducted (most required a minimum of 50 tests to attract the lower rate), the location of tests (rural, regional and outer-metropolitan locations attracted additional travelling charges), and the services provided (in general, higher test fees included the cost of the POCT device). For all companies surveyed, laboratory confirmation of positive tests was an additional charge to the fee per test rate. Estimated costs associated with testing a school population of 500 students based on a fixed fee per test rate are outlined in Table 26. Estimated costs associated with testing a school population of 500 students based on a fixed fee per test rate, including the cost of purchasing POCT devices and additional on-costs of $29 per test, are outlined in Table 27.

Table 26: Cost estimates for the provision of testing services at a fixed fee per test (for a school population of 500 students)

Testing method	Urine			
Strategy	Total school population	Random sample	Targeted groups	For cause[1]
Times tested p/a	1	3	3	1
POCT				
Quantity	500	50	25	10
Service fee	$48	$48	$48	$801
Subtotal (a)	**$24 000**	**$7200**	**$3600**	**$800**
Laboratory confirmation				
Quantity (3.4%)	17	2	2	5
Service fee	$55	$55	$55	$55
Subtotal (b)	**$935**	**$330**	**$330**	**$275**
Total cost per school				
Total (a + b)	**$24 935**	**$7530**	**$3930**	**$1075**
Total student population 2006				
Government schools	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	**$112.1m**	**$33.9m**	**$17.7m**	**$4.8m**
Non-government schools	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$55.9m**	**$16.9m**	**$8.8m**	**$2.4m**
Total cost (All schools)	**$168m**	**$50.8m**	**$26.5m**	**$7.2m**

Note: [1] As testing for cause is likely to involve only one or two tests being conducted on each occasion, it is likely that the maximum fixed fee amount would apply.

Saliva			
Total school population	Random sample	Targeted groups	For cause[1]
1	3	3	1
500	50	25	10
$62	$62	$62	$1151
$31 000	**$9300**	**$4650**	**$1150**
17	2	2	5
$80	$80	$80	$80
$1360	**$480**	**$480**	**$400**
$32 360	**$9780**	**$5130**	**$1550**
2 248 219	224 822	112 411	44 964
$145.5m	**$44m**	**$23.1m**	**$7m**
1 119 807	111 981	55 990	22 396
$72.5m	**$21.9m**	**$11.5m**	**$3.5m**
$218m	**$65.9m**	**$34.6m**	**$10.5m**

Table 27: Cost estimates for the provision of testing services at a fixed fee per test plus on-costs and the purchase of POCT devices, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine			
Strategy	Total school population	Random sample	Targeted groups	For cause[1]
Times tested p/a	1	3	3	1
POCT				
Quantity	500	50	25	10
Service fee	$48	$48	$48	$80
POCT device cost	$18	$18	$18	$18
On-costs ($20/test)	$20	$20	$20	$20
Subtotal (a)	**$43 000**	**$12 900**	**$6540**	**$1180**
Laboratory confirmation				
Quantity (3.4%)	17	2	2	5
Service fee	$55	$55	$55	$55
Confirmation test cost	$55	$55	$55	$55
Subtotal (b)	**$1870**	**$660**	**$660**	**$550**
Total cost per school				
Total (a + b)	$44 870	$13 560	$7110	$1730
Total student population 2006				
Government schools	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	**$201.8m**	**$61m**	**$32m**	**$7.8m**
Non-government schools	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$100.5m**	**$30.4m**	**$15.9m**	**$3.9m**
Total cost (All schools)	**$302.3m**	**$91.4m**	**$47.9m**	**$11.7m**

Note: [1] As testing for cause is likely to involve only one or two tests being conducted on each occasion, it is likely that the maximum fixed fee amount would apply.

Saliva			
Total school population	Random sample	Targeted groups	For cause[1]
1	3	3	1
500	50	25	10
$62	$62	$62	$115
$21	$21	$21	$21
$20	$20	$20	$20
$51 500	**$15 450**	**$7725**	**$1560**
17	2	2	5
$80	$80	$80	$80
$80	$80	$80	$80
$2720	**$960**	**$960**	**$800**
$54 220	**$16 410**	**$8685**	**$2360**
2 248 219	224 822	112 411	44 964
$243.8m	**$73.8m**	**$39.1m**	**$10.6m**
1 119 807	111 981	55 990	22 396
$121.4m	**$36.8m**	**$19.5m**	**$5.3m**
$355.2m	**$110.6m**	**$58.6m**	**$15.9m**

4.3 Psychometric measures of substance use

4.3.1 Methods and types of psychometric tests

While biometric tests are often assumed to be a more accurate indication of drug use as they are not subject to some of the potential biases inherent in self-report, such as poor recall, conscious or unconscious denial or distortion, they may also be influenced by sources of error (e.g. measurement artefacts, false positives/negatives). Moreover, a biological snapshot cannot be used to accurately infer general consumption/use of drugs over time or chronic patterns of use. That is, the dichotomous results from biometric testing are not useful for predicting other outcomes.

An alternative means of identifying individuals who are using drugs is a range of screening instruments, which are predominantly self-administered. Such instruments have been designed to detect: (i) single domain risks, such as use of alcohol, specific drugs or substances in general; or (ii) multiple domain risks, including substance use, risky sexual practices, suicidal ideation or use of weapons. Some screening instruments may also be useful for monitoring changes in substance use over time and/or monitoring progress of interventions. Table 28 lists a sample of screening instruments.

Table 28: Psychometric measures of risky behaviours

Instrument	Target population	Method	Focus
ARBS (Adolescent Risk Behavior Screen) (Jankowski, Rosenberg, Sengupta, Rosenberg & Wolford, 2007)	Adolescents	9-item self-report questionnaire with multiple responses	Substance use; risk behaviours (use of seatbelts, fighting); suicidal ideation; eating disorders
ASSIST (Alcohol Smoking and Substance Involvement Screening Test) developed by WHO	General population	8-item interview questionnaire with multiple responses	Substance use (alcohol, tobacco and other drugs)
AUDIT (Alcohol Use Disorders Identification Test) (Cook, Chung, Kelly & Clark, 2005)	General population	10-item self-report questionnaire with multiple responses	Alcohol use
CAGE (Cook et al., 2005; Knight, Goodman, Pulerwitz & DuRant, 2000)	Adult population CAGE–AA modified for adolescents	4-item self-report yes/no questionnaire	Alcohol use Have you felt you should Cut down on your drinking? Have people Annoyed you by criticising your drinking? Have you felt bad or Guilty about your drinking? Have you had a drink first thing in the morning (Eye-opener) to steady your nerves?
CPQ (Cannabis Problems Questionnaire) (Copeland, Gilmour, Gates & Swift, 2005; Martin, Copeland, Gilmour, Gates & Swift, 2006)	General population CPQ–A modified for adolescents (14–18 yrs)	54-item self-report yes/no questionnaire	Cannabis use

Instrument	Target population	Method	Focus
CRAFFT (Cook et al., 2005; Cummins, Chan, Burns, Blume, Larimer & Marlatt, 2003)	Adolescents	6-item self-report yes/no questionnaire	Substance use Have you ridden in a Car driven by person using drugs/alcohol? Do you use alcohol/drugs to Relax? Do you use alcohol/drugs when Alone? Do you Forget things while using drugs/alcohol? Do your family/Friends tell you to cut down on drinking/drug use? Have you gotten into Trouble while using drugs/alcohol?
DAP–4 (Drug and Alcohol Problem QuickScreen) (Knight et al., 2000)	Adolescents	30-item self-report yes/no questionnaire	Substance use
DAST (Drug Abuse Screening Test) (Martino, Grilo & Fehon, 2000; Yudko, Lozhkina & Fouts, 2007)	General population DAST–A is modified for adolescents	10-28 item self-report yes/no questionnaire	Substance use
DUSI (Drug Use Screening Inventory) (Christie, Marsh, Sheridan, Wheeler, Suaalii-Sauni, Black et al., 2007)	Youth and adult versions	159-item self-report questionnaire	Substance use
GAIN (Global Appraisal of Individual Needs) (Lennox, Dennis, Scott & Funk, 2006)	General population	Semi-structured interview (8 sections) 99 scales & subscales 1606 items in full version	Background; substance use; physical health; risk behaviours; mental health; environment; legal; vocational

Instrument	Target population	Method	Focus
HEADS FIRST (Fournier & Levy, 2006)	Adolescents	Structured interview (10 sections)	Medical, social, psychological issues: home; education; abuse; drugs; safety; friends; image; recreation; sexuality; threats
MSI–X (Marijuana Screening Inventory) (Alexander & Leung, 2006)	General population	31-item self-report yes/no questionnaire	Cannabis use
POSIT (Problem Oriented Screening Instrument) (Latimer, O'Brien, McDouall, Toussova, Floyd & Vasquez, 2004)	Teenagers	139-item self-report questionnaire	Substance use Substance use/abuse risk; alcohol abuse/dependence disorders; substance use frequency
SACS (Substances and Choices Scale) (Christie et al., 2007)	Adolescents	10-item self-report questionnaire with multiple responses	Alcohol and substance use
SDQ (Strengths and Difficulties Questionnaire) (Christie et al., 2007)	Children and young people (3–16 years)	25-item interview questionnaire	Problems Emotional, conduct, attention, relationships, social
SSI–AOD (Simple Screening Instrument for Alcohol and Other Drug Abuse (Knight et al., 2000)	General population	16-item questionnaire	Substance use

4.3.2 Effectiveness of psychometric measures of substance use

The effectiveness of psychometric measures of substance use varies depending on a range of factors:

- validity of instrument (sensitivity, specificity, predictive value)
- reliability of instrument for target population (not all instruments have been adequately validated in youth population)
- focus of questions (single vs multiple domains of risk)
- ease of use (self-report vs interview; time required for completion)
- competency of staff interpreting results
- follow-up action (access/availability of appropriate programs or treatments).

Advantages of psychometric tests

- non-invasive
- not dependent on a window of detection
- collection of data is simple; no equipment required
- may provide a temporal pattern of substance use, rather than a single point in time
- may provide a context for substance use (e.g. other risky behaviours)
- not subject to substitution or environmental contamination.

Disadvantages of psychometric tests

- subject to self-report biases (underreporting, exaggeration, poor recall)
- potential literacy problems
- security of records (privacy, confidentiality).

Table 29: Validity of psychometric screening instruments

Instrument	Validity	Advantages	Disadvantages
ARBS (Adolescent Risk Behavior Screen) (Jankowski et al., 2007)	Cut-off score = 17.5 Sensitivity = 82% Specificity = 84% Accuracy = 84%	Brief, easily administered, easy to score; completed in 10 minutes	Not tested in diverse groups Poor positive predictive value (35%), which yields high false positive rate
ASSIST (Alcohol Smoking and Substance Involvement Screening Test) developed by WHO (Humeniuk & Ali, 2006; WHO ASSIST Working Group, 2002)	Global illicit use Cut-off score = 6.5 Sensitivity = 88% Specificity = 89% Accuracy = >80%	Good test–retest reliability Brief, verbally administered, easy to score, acceptable and easy to understand	Not validated in adolescents
AUDIT (Alcohol Use Disorders Identification Test) (Cook et al., 2005)	Cut-off score = 9 Sensitivity = 76% Specificity = 79% Accuracy = 84%	Overall good test performance in adolescents (15–24 years) (Cook et al., 2005)	Measures alcohol use only
CAGE (Cook et al., 2005; Knight et al., 2000)	Cut-off score = 1 Sensitivity = 69% Specificity = 63% Accuracy = 70%	Brief, verbally administered, easy to remember, easy to score	Average test performance in adolescents (15–24 years) (Cook et al., 2005)
CPQ–A (Cannabis Problems Questionnaire) (Copeland et al., 2005; Martin et al., 2006)	Daily cannabis use: Sensitivity = 52% Specificity = 93% Cannabis dependence: Sensitivity = 78% Specificity = 90%	Good test–retest reliability in adolescents (14–18 years) Easy to administer, easy to score	Measures cannabis use only

Instrument	Validity	Advantages	Disadvantages
CRAFFT (Cook et al., 2005; Cummins et al., 2003)	Cut-off score = 2 Sensitivity = 94% Specificity = 63% Accuracy = 79%	Good test performance in adolescents (15–24 years) Easy to administer, easy to score; free and accessible for use	Brevity of instrument limits its usefulness; unable to measure treatment outcomes
DAP–4 (Drug and Alcohol Problem QuickScreen) (Knight et al., 2000)	Partially validated 4 items (Knight, Shrier, Bravender, Farrell, Vander Bilt & Shaffer, 1999)	Easy to administer	Not fully validated
DAST–A (Drug Abuse Screening Test – Adolescent) (Martino et al., 2000; Yudko et al., 2007)	Cut-off score = 6 Sensitivity = 79% Specificity = 85% Accuracy = 82%	Good internal consistency, high test–retest reliability and good validity in adolescent psychiatric in-patients Brief, easy to administer, 5 minutes to complete	
DUSI (Drug Use Screening Inventory) (Christie et al., 2007)	Not validated	Comprehensive questionnaire	Long, takes >20 minutes to complete
GAIN (Global Appraisal of Individual Needs) (Buchan, Dennis, Tims & Diamond, 2002; Lennox et al., 2006)	Sensitivity = 95% Specificity = 31%	Comprehensive questionnaire Good test–retest reliability; good internal consistency; easy to score; normalised to adolescents in many settings; inexpensive	Long, takes 60–120 minutes to complete

Instrument	Validity	Advantages	Disadvantages
POSIT (Problem Oriented Screening Instrument) (Knight et al., 1999; Latimer et al., 2004)	Cut-off score = 1 High school Sensitivity = 71% Specificity = 73% Middle school Sensitivity = 86% Specificity = 48%	Good internal consistency, good test–retest reliability, validated in adolescents (12–19 years); validated in multiple settings (schools, juvenile justice system)	20 minutes to complete
SACS (Substances and Choices Scale) (Christie et al., 2007)	Sensitivity = 86% Specificity = 81%	Good internal consistency, good test–retest reliability, validated in adolescents (13–18 years) Acceptable to young people; simple and brief; able to measure changes over time; free and accessible over the internet	Focus on problems; intended to be used with SDQ
SDQ (Strengths and Difficulties Questionnaire) (Christie et al., 2007; Goodman, 2001; Hawes & Dadds, 2004)	Total difficulties Cut-off score =17–18 Sensitivity = 23% Specificity = 94%	Moderate–strong internal reliability Free and readily accessible over the internet; acceptable to young people	Does not measure substance use behaviours or implications
SSI–AOD (Simple Screening Instrument for Alcohol and Other Drug Abuse (Knight et al., 2000)	Cut-off scores: 0–1 = low risk 2–3 = minimal risk 4+ = moderate–high risk	Good internal consistency, high test–retest reliability	

4.4 Use of sniffer dogs and drug searches

Possession of drugs and drug items, such as pipes or other implements, may also indicate drug-using behaviour. Drug detection 'sniffer' dogs have been trained to detect the scent of illicit drugs, such as cannabis, ecstasy, meth/amphetamine, cocaine and heroin (Barbour, 2006).

The use of drug sniffer dogs in schools and searches of students' lockers or belongings have been subject to frequent litigation in the United States (Stader, 2002) and no studies have evaluated the effectiveness of such searches for deterring drug use or reducing drug-related harms in students.

In Australia, drug detection dogs are not used in the school environment. The *Police Powers (Drug Detection Dogs) Act 2001* (NSW) (the 'Drug Dogs Act', now repealed[9]) authorised police to use drug detection dogs, without a warrant, in public places, such as licensed premises, public transport routes and sports/entertainment venues. Drug detection dogs could also be used in other public places, with a warrant, if police had a reasonable suspicion that drug offences were taking place in the public place.

In a review of the Drug Dogs Act, the New South Wales Ombudsman examined police records and court documents, and conducted community consultations to evaluate the use of drug detection dogs by New South Wales police (Barbour, 2006). Over the two-year review period (February 2002–February 2004), 17 drug detection dogs made over 10 200 indications.[10] No record of the total number of people screened was available. Approximately 40 per cent of indications were in persons aged 18–25 years, whereas 7 per cent occurred in persons under 18 years.

In accordance with police policy, indication by a drug detection dog allows police to search the person. The rate of finding drugs by search was approximately 26 per cent (a range of 7–56 per cent depending on the dog) of those indicated by a drug detection dog. Cannabis was the most frequently detected drug (84%), followed by ecstasy (8.5%) and meth/amphetamine (7.7%). The quantities of drug found were generally very small amounts and predominantly resulted in a caution, without legal proceedings or prosecution. Where drugs were not located, the person sometimes admitted prior drug contact, either their own use or passive contact with the drug (e.g. in the same location as others using cannabis).

The review concluded that drug detection dogs were able to target drug supply in 1.4 per cent of indications, where the quantity of drug found was sufficient to lay supply charges, but found no evidence that drug detection dogs deterred drug use or reduced drug-related crime.

9 The *Police Powers (Drug Detection Dogs) Act 2001* (NSW) was repealed in December 2005 and replaced with the *Law Enforcement (Powers and Responsibilities) Act 2002* (NSW).

10 When a dog detects the scent of a drug, it normally sits next to the scent to indicate the location to the dog handler.

While drug detection dogs were generally unobtrusive and non-threatening, some people were distressed and fearful of the dogs. Police also received a number of complaints from people concerned about the use of drug detection dogs (>50 written complaints). Complaints primarily pertained to false indications, infringement of civil liberties, feelings of embarrassment, humiliation and anger, escalation of searches to charges for non-drug-related offences (e.g. resisting arrest), police use of personal information, and victimisation based on racial or other minority status.

Some reports included in the review suggested that the use of drug detection dogs may encourage drug users to engage in more harmful drug behaviours in order to evade detection. For example, drug users wanting to avoid carrying drugs consumed larger quantities of drugs at one time instead of smaller amounts over a longer period, consumed drugs at home before driving to an entertainment venue, purchased drugs from unknown sources at a venue, and switched to drugs that they believed were less detectable, but potentially more harmful (e.g. GHB).

4.5 How effective are drug testing programs at deterring drug use?

The evidence base pertaining to the effectiveness of drug testing programs in schools is scarce and available research is generally limited in scope and poor in quality. While there is a large volume of literature about drug testing programs for school-aged children, the overwhelming majority of articles comprise anecdotal evidence and journalistic comment. Few studies have examined specifically the effectiveness of drug testing programs for school students and none has been conducted rigorously in a controlled, unbiased manner. Table 30 provides a brief summary of the available studies that assessed the effectiveness of drug testing programs in schools.

Table 30: Summary of studies assessing the effectiveness of drug testing programs

Study	Study design	Quality	Setting	Population
(Brady, 2004)	Cross-sectional survey (American Drug and Alcohol Survey)	Poor	Hunterdon Central Regional High School, New Jersey USA	550 student athletes, grades 9–12 (1997–1999) 948 student athletes, grades 9–12, in extracurricular activities, or holding parking permits (2002)
(McKinney, 2004b)	Cross-sectional surveys	Poor	2 Indiana high schools, Columbus USA	High school student athletes & students in extracurricular activities, grades 9–12 (study sample unknown)
(DuPont et al., 2002)	Cross-sectional surveys	Poor	9 secondary schools across USA, with apparently successful drug testing programs	246–2500 student athletes, students in extracurricular activities, or student drivers
(Goldberg, Elliot, MacKinnon, Moe, Kuehl, Nohre et al., 2003)	Cross-sectional surveys	Poor	2 Oregon high schools, Portland USA	276 student athletes 135 tested; 141 not tested (1999–2000)
(Yamaguchi, Johnston & O'Malley, 2003a; 2003c)	Cross-sectional surveys	Average	410 secondary schools across USA (Monitoring the Future study data)	75 000 children in grades 8, 10, 12 (1998–2001)

	Intervention	Outcomes assessed	Results
	Random drug testing program (no details provided)	Frequency of use of: • stimulants • cannabis • alcohol • any drug	Reported drug use: • declined in testing period • increased in non-testing period Reported alcohol use: • increased in testing period (grades 10–12) • decreased in non-testing period (grades 10–12)
	Random drug testing program implemented in one school (1999–2003) (no details provided); written policy, student assistance, student counselling One Indiana high school, without drug testing program (2001)	Cannabis and other drug use (no details provided)	Reported drug use: • lower in drug testing school
	Random drug testing programs; primarily urinalysis; hair analysis at one school	Proportion of positive drug tests 4 schools used self-reported drug use	No formal evaluation conducted in any school
	SATURN study Random drug testing program (urinalysis) implemented at Wahtonka High School	Lifetime drug use; 30-day drug use; attitudes and beliefs	Reported drug use: • lower in drug testing school Drug use risk factors: • higher in drug testing school
	Range of drug testing programs: • random testing of all students, student athletes, students in extracurricular activities, or those with parking permits • targeted testing of students with suspicion of use	12-month cannabis use 12-month other drug use	Reported rates of drug use in student athletes and experienced cannabis users similar in schools with and without drug testing programs

All evidence is derived from United States studies where drug testing programs have largely targeted athletes and students involved in extracurricular activities. This follows legal proceedings in which the constitutionality of drug testing programs has been challenged in several cases (see Section 5). In addition, all available studies used a self-report, cross-sectional survey design, which may have limitations for measuring drug use. For example, one study reported that the proportion of teenagers self-reporting illicit drug use in the United States National Household Survey on Drug Abuse (NHSDA) did not correlate with objective measures, such as the proportion of teenagers in drug overdose deaths or drug-related hospital emergency treatments (Males, 2005).

In contrast, a recent validity study compared self-reported drug use data from the same NHSDA survey with results of urine and hair specimens collected from the same respondents (Harrison, Martin, Enev & Harrington, 2007). While there were some differences between reported use and test results (e.g. some reported use and tested negative; others did not report use and tested positive), self-reported drug use was verified by objective biological testing in most respondents aged 12–25 years (e.g. 93 per cent agreement in three-day self-reported cannabis use and urine drug test results). Therefore, the validity of self-reported data may depend on the quality of the survey instrument and the reliability of an objective comparator.

4.5.1 Hunterdon study

One widely cited study that has been used as evidence of the effectiveness of drug testing was conducted at Hunterdon Central Regional High School in New Jersey (Brady, 2004). Between 1997 and 2000, a drug testing program was implemented to detect drug use in student athletes.[11] Five hundred and fifty students (approximately 24 per cent of all enrolled students in grades 9–12) were surveyed twice using a self-report questionnaire: (i) prior to the implementation of the drug testing program (1996–1997); and (ii) during the period in which drug testing was conducted (1999–2000).[12] In 2002 (during the period in which random drug testing was suspended), 948 students (approximately 36 per cent of all enrolled students in grades 9–12) were surveyed (Brady, 2004). Students were stratified by their level of risk into three levels:

- high risk = multi-drug users, stimulant users and heavy cannabis users
- moderate risk = occasional drug users and light cannabis users
- low risk = students who had tried, but were not current users; those who had negligible use; and those who had never used.

11 The study provided no information about the type of testing, or what drugs were being tested for.

12 Random suspicionless drug testing was believed to violate the Fourth Amendment of the United States Constitution, which ruled that individuals and their property could be searched only on the basis of evidence that a crime had been committed or was about to be committed (i.e. where there was probable cause) (McKeganey, 2005). The program was suspended in 2000 following a Supreme Court challenge to the constitutionality of random drug testing (*Board of Education of Independent School Dist. No. 92 of Pottawatomie County v Earls* (2002), but reinstated for athletes and students undertaking extracurricular activities in December 2002.

Overall, there was a decline in self-reported use when the drug testing program was in place, with a subsequent increase in use when the program was suspended. For example, 1.4 per cent of grade 9 students were classified as high-risk, multi-drug users prior to drug testing – this reduced to 0.6 per cent during the testing period and increased to 2.5 per cent when drug testing was suspended. A similar pattern was reported for the other risk levels and for the older grades. While these data may appear to indicate that the drug testing program was successful in reducing and/or deterring drug use, caution should be taken before reaching this conclusion as this study was fraught with methodological and interpretive weaknesses that severely limit its usefulness in determining the effectiveness of drug testing in deterring drug use. The study's limitations include:

- The lack of control data makes it impossible to determine whether changes in behaviour were due to the drug testing program or to a range of other potentially confounding factors that may have existed in parallel (e.g. changes in drug availability and/or cost, external health promotion messages or preventive strategies).
- Additional elements to the drug testing procedures, such the presence of a written drug policy, drug education, student counselling and assistance, were not evaluated to assess their impact on students' behaviour. It is possible that these components alone contributed to a reduction in reported drug use.
- The representativeness of survey participants is also unknown as it was not clear what proportion of eligible[13] students was tested or surveyed or how many eligible students were absent on data collection days.
- The validity of the survey instrument[14] is unknown.
- Notwithstanding the potential inaccuracies inherent in self-reported surveys of drug use (Males, 2005), the reliability of data from the Hunterdon survey is also in question as it was unclear whether the survey was supervised by an independent agency or by staff that may have supported the drug testing program.
- It was not clear whether reported reductions were significant as no statistical analyses were performed.

The research data also showed some anomalous findings. For example, while there were some reported reductions in use during the period that testing was suspended (e.g. the proportion of grade 12 heavy cannabis users decreased from 2.1 per cent during drug testing to 0.6 per cent during suspension), the proportion of grade 10–12 students using alcohol increased during the drug testing period, with a subsequent decrease during suspension. No explanations were provided to account for these changes. However, in relation to the latter effect, it is not unreasonable to speculate that this may represent a displacement effect. That is, students were increasing their alcohol intake during the drug testing period in lieu of taking drugs.

13 Eligible students were those in grades 9–12, excluding school drop-outs, absentees and students with ≥ 3 inconsistent responses, or those deemed to have exaggerated responses.

14 The American Drug and Alcohol Survey was developed by Rocky Mountain Behavioral Sciences Institute, Fort Collins, CO.

Although the United States Supreme Court identified student athletes as suitable candidates for drug testing in their 2002 judgement, there is little evidence to suggest that student athletes are more at risk of social drug use compared with their non-athlete peers (Albrecht, Anderson & McKeag, 1992). On the contrary, studies have shown that, apart from anabolic steroids and other performance-enhancing drugs, student athletes have *lower* drug use compared to non-athlete college students (Schnirring, 1995; Taylor, 1997). Taylor (1997) proposed a model of compensating behaviour, which suggests that drug testing may persuade a small number of athletes to reduce (or modify) their drug use, but may also induce marginal athletes to quit participation in sports and revert to the higher levels of drug use shown by their non-athlete peers. This may result in a small reduction in drug use for some, but a redistribution of drug use from relatively low levels to a higher level of use for others.

> Not only does this policy invade the privacy of a group of students who are relatively unlikely to use drugs, but it also discourages athletic participation and may actually lead to an increase in overall drug use. (Taylor, 1997, p.362)

4.5.2 Student Drug Testing Coalition

Similar poor-quality research on drug testing programs has also been reported in several short papers prepared by members of the Student Drug Testing Coalition. These papers provide simple descriptive statistics and school principals' views of drug testing programs (McKinney, 2002; 2004a; 2004b; 2005). For example, 85 per cent of school principals believed that students' drug use decreased when drug testing was implemented and increased when it was suspended (McKinney, 2002; 2004a; 2005). However, given that the argument for the use of drug testing is predicated on the assumption that teachers do not know who is using drugs, it is unclear how they could determine whether there was any change in use in the absence of testing. Data from these studies do not provide adequate evidence of effectiveness; they serve only to indicate that some teachers support the drug testing program.

In a comparison of two schools, one with and the other without a drug testing program, McKinney (2004b) suggested that the school with drug testing had lower levels of drug-related expulsions and suspensions, lower cannabis use, higher graduation rates, and that students felt safer, were more disapproving of cannabis use, and less likely to use inhalants, tranquillisers or amphetamines compared to the school without a drug testing program. However, the author provided no indication of how comparable the drug-testing and non-drug-testing schools were with respect to other potential confounding characteristics, such as socioeconomic status, ethnicity and gender, school size and location – factors known to impact

on the prevalence of drug use by schoolchildren (Hawkins et al., 2002; Masten, 2004; National Crime Prevention, 1999; Spooner et al., 2001; Wilkinson & Marmot, 2003). In addition, if there were differences between these two schools *after* the implementation of drug testing, these cannot be attributed to the drug testing program as baseline measures of drug use were not recorded in the schools *before* implementing the program. Therefore, data derived from comparisons between these schools are unreliable.

A post hoc survey was also conducted in nine United States schools, which used a variety of drug testing programs (DuPont et al., 2002). Overall, survey results showed limited data pertaining to the effectiveness of drug testing programs. No schools conducted formal evaluations, yet reductions in the number of positive tests for a variety of substances were reported. Since the survey results included only those schools that described their programs as 'successful', it is not surprising that the authors concluded that drug testing programs were successful. No control schools were included in the survey to determine whether other components of the program (e.g. drug education, parental/community support) contributed to reduced drug use. For example, evidence from a survey of secondary school students in Victoria (Australia) and Washington (United States) showed significant associations between drug education with strong abstinence or harm minimisation messages (without drug testing programs) and reduced drug or alcohol use at school (Evans-Whipp, Bond, Toumbourou & Catalano, 2007).

4.5.3 SATURN study

In 1999, the SATURN (Student Athlete Testing Using Random Notification) study was undertaken and involved a pilot evaluation of the effectiveness of a drug testing program implemented as a deterrent to drug and alcohol use among high school athletes (Goldberg et al., 2003). Student athletes in two Oregon high schools, with and without a drug testing program, completed survey questionnaires at the beginning and end of the school year. Between the initial survey and the end-of-year survey, the proportion of student athletes reporting illicit drug use in the 30 days prior to testing decreased significantly in the drug-testing school, whereas 30-day use for control athletes (without drug testing program) increased ($p<0.05$). No change in tobacco or alcohol use was reported in either school. This is not surprising, as tobacco was not included in the tested substances and students were probably aware that alcohol use was unlikely to be detected one day after use. However, while random drug testing may have reduced reported use of illicit drugs in student athletes in the school conducting drug testing, risk factors for drug use, including norms of use, belief in lower risk of drugs and poorer attitudes toward school, increased significantly in the same group ($p<0.05$). Goldberg et al. (2003) suggest that students' attitudes may have become more negative due to the perception that the new school policy would reduce their individual freedom. This is consistent with reported negative attitudes of employees after the introduction of workplace drug testing programs (Konovsky & Cropanzano, 1991; Rosse, Miller & Ringer, 1996).

The SATURN study, which was funded by a drug testing grant, raised many ethical concerns about the participation of children in this type of research (Chiodo, Moe & Goldberg, 2004; Shamoo & Moreno, 2004a; 2004b; Verma, 2004) and federal authorities suspended this study during the piloting phase due to poor methodology (Winter, 2003). Students in the study who refused to be tested were barred from participation in sports. Thus, the lack of options for students to refuse drug testing failed to meet the Office of Human Research Protection standards (Verma, 2004). Other study limitations, which severely limit the generalisability of results, included: a high study dropout rate (> 40%); small sample size; and self-selection to the intervention group. In addition, students in both schools knew whether they would be tested (or not) at least three months before testing began. Thus, baseline data were not a true measure of drug use before the intervention was implemented.

Despite poor methodology, the SATURN study was used as evidence in the Supreme Court ruling against Earls (*Board of Education of Independent School Dist. No. 92 of Pottawatomie County v. Earls* (2002).[15] Goldberg, the SATURN study's principal author, admitted that the study did not prove that testing reduced drug consumption and stressed the need for a larger randomised controlled study with longer follow-up and evaluation across an adequate number of suitably matched schools (Winter, 2003).

4.5.4 Michigan study

Drug testing programs are often predicated on the basis that drug testing will deter use. If this assumption is correct, it follows that less drug use should occur in schools with a drug testing program compared to schools that do not test. Thus, a large national United States study, known as the 'Michigan' study, examined the association between drug testing and self-reported drug use in over 75 000 children in grades 8, 10 and 12 from 1998 to 2001 (Yamaguchi, Johnston & O'Malley, 2003b; 2003c). Data were obtained primarily from the Monitoring the Future (MTF) study, which comprises a series of annual surveys of secondary school students in the United States (Johnston, O'Malley, Bachman & Schulenberg, 2007).

Between 1998 and 2001, approximately 18 per cent of all schools surveyed in the United States (74/410 secondary schools) reported implementing a drug testing program (Yamaguchi et al., 2003b). Results showed that the presence of a drug testing program was not associated with the prevalence or frequency of cannabis or other illicit drug use in schools (grades 8, 10 and 12). In addition, drug testing programs were not associated with lower use of cannabis or other illicit drugs in targeted subgroups, i.e. male athletes or experienced cannabis users.

15 Lindsay Earls was an 18-year-old, high-achieving high school student who never took drugs. The mandatory drug testing policy at her school required her to provide a urine sample before she could join the choir. She objected to the invasion of privacy and having to prove her innocence without evidence of wrongdoing before gaining permission to participate.

A follow-up study containing one year of additional data in a larger sample of schools confirmed the lack of effect shown in the initial study (Yamaguchi et al., 2003a). However, due to the cross-sectional study design, causal effects cannot be determined. A key limitation of this survey was that it failed to distinguish between schools that conducted regular random tests and those that tested only occasionally. In addition, it was unclear how well the program had been implemented (e.g. appropriate collection of materials, adequate supervision of tests, strategies to minimise opportunities for cheating). A well-designed, randomised controlled study with appropriate baseline measures, comparison of different drug testing approaches, frequency of testing, potential adverse outcome measures (e.g. truancy, drop-outs, diversion to other drugs or alcohol, disconnectedness from school) and examination of the cost-effectiveness of drug testing is needed for this purpose.

The implementation of drug testing programs in schools is a highly controversial issue that has evoked much debate amongst researchers and policy makers alike. While the magnitude of support for random drug testing from government, schools, parents and anti-drug agencies is frequently cited in commentaries and research papers (Edwards, 2003; Office of National Drug Control Policy, 2006), there are no sound research data to provide evidence of its effectiveness. It appears that there may also be a shift away from community support for school drug testing. Despite earlier indications to the contrary, a recent report prepared by the American Civil Liberties Union and the Drug Policy Alliance (Kern, Gunja, Cox, Rosenbaum, Appel & Verma, 2006) showed that school officials, parents and experts are inclined to oppose the introduction of drug testing programs for a variety of reasons, including:

- cost of testing
- invasion of privacy
- unfair burden placed on schools
- unproven efficacy of drug testing
- failure to reflect reality of what works
- fear that drug testing will draw resources from prevention programs based on robust scientific research
- exclusion policy for positive tests may exacerbate students' problems
- misappropriation of school role
- erosion of student–teacher trust relationship.

4.5.5 Drug testing in the workplace

Since there is a paucity of research evaluating drug testing programs in schools, it may be useful to consider some of the research that has been conducted on drug testing programs in the workplace. However, it must be noted that the key motives for introducing a drug testing program into the workplace are related to occupational health and safety concerns and productivity. That is, employees may be working under the influence of substances that impair their concentration and reaction times, thus potentially putting themselves, co-workers and, at times, the general public in danger; and their use of drugs may increase rates of absenteeism. This rationale differs markedly from that underlying drug testing in the school environment, which is concerned largely with reducing overall prevalence of drug use in young people.

Research on drug testing programs in the workplace has frequently reported a negative correlation between testing and drug use (Carpenter, 2007; French, Roebuck & Alexandre, 2004; Hoffman & Larison, 1999). However, correlations cannot be interpreted as having a causal deterrent effect. Levels of drug use in workplaces with drug testing programs may be attributed to other factors:

- Self-selection processes – workers who use illicit drugs are less likely to work for companies that have drug-testing programs (Bush & Autry, 2002; Hoffman & Larison, 1999); and more health-conscious workers or those with more negative attitudes towards drug use may opt for jobs with drug-testing programs (Sujak, Villanova & Daly, 1995).
- Other drug programs/policies – drug education, written policies, employee assistance programs may operate as effective, if untested, deterrent strategies and an overestimation of effect of drug testing is likely to occur unless these are accounted for in analyses.
- Negative attitudes towards drug use within the general 'culture' of the workplace.

Using a multivariate logistic regression model, Carpenter (2007) analysed data from the 2000 to 2001 United States National Household Surveys on Drug Abuse (NHSDA), and found small, but consistent, patterns supporting the hypothesis that workplace drug testing deterred worker drug use, especially where drug testing was frequent and penalties were severe (e.g. termination of employment). However, a significant, though slightly smaller, effect was also apparent in workplaces that provided a drug education program, employee assistance program and written drug policy, but without a formal drug testing program.

In addition, some studies have shown that job applicants react negatively to intensified personal scrutiny by their potential employers by showing less loyalty to their employer and being less productive on the job (Konovsky & Cropanzano, 1991; Rosse et al., 1996). That is, while drug testing may reduce the proportion of workers testing positive for drugs, it comes at a cost of less positive work behaviours. Perceptions of fairness of drug testing depend on the characteristics of the job (i.e. acceptance is higher if safety is a major concern in the workplace) and drug testing procedures, such as the type of drug tested for (e.g. less positive towards alcohol testing compared with other drugs), the type of information requested (e.g. medical information is viewed as an invasion of privacy) and the response to a positive test (e.g. rehabilitation is viewed more positively than termination) (Konovsky & Cropanzano, 1991). Similar negative attitudes may develop in children who are required to undergo drug testing in the school environment. However, no studies have directly measured these outcomes.

In summary, student drug testing programs in the United States and United Kingdom show very poor evidence of effectiveness and are based on methodologically flawed research, with a high likelihood of bias leading to an overestimation of any positive effect. Currently, there are no empirical data pertaining to effectiveness or cost-effectiveness from independent unbiased studies on which to base a case to support drug testing in schools. That is, there is insufficient evidence to suggest that drug detection programs deter the initiation of, or encourage cessation of, drug use in schoolchildren. In contrast, however, there is good research evidence of other strategies that work to deter drug use among school-aged children and that can be readily and economically applied in the school setting (see Section 8).

4.6 How effective are drug testing programs at reducing drug-related harm?

Two of the key assumptions in support of drug testing schoolchildren are that testing has the potential to provide:

- early identification of drug problems, allowing opportunity for early intervention
- appropriate intervention or treatment to minimise the harms associated with drug use – such as a decline in physical health (injuries, accidents or self-harm), psychological wellbeing (depression, anxiety, psychosis), educational performance (grades, attendance), and family and other social relationships – and/or reduce drug-related criminal activities.

Existing research has focused primarily on measuring reductions in positive drug tests or self-reported drug use. Few studies evaluating the effectiveness of drug testing programs have measured changes in other outcomes that may be impacted by drug use, or potential adverse effects of implementing a drug testing program.

The following qualitative study is one of the few studies that have assessed the broader impact of drug testing in schools. After the introduction of mandatory drug testing of college athletes in the United States, a study by Coombs and Coombs (1991) examined the impact of drug testing on students' morale and psychological wellbeing. Data, which were collected from 500 survey questionnaires and 57 in-depth interviews, showed that most athletes (71.4%) were untroubled by the drug testing experience, with some reporting other benefits, such as increased awareness and knowledge about drug harms, or changes in drug-associated behaviour. The remainder found it stressful, embarrassing, humiliating or upsetting. Some feared they may be wrongly identified and disqualified from competition for using cold or asthma medication or other over-the-counter medicines; others felt degraded and humiliated by the experience, or offended by the implied suspicion. For some, the prospect of drug testing led them to change the times or types of drugs they consumed to avoid detection, rather than reduce overall use. It is also possible that drug testing in schools may foster a culture of resistance where students take pride in beating the test or boast about testing positive.

Similarly, several negative outcomes, which are risk factors for increased substance use, were associated with the drug testing program implemented in the SATURN study described above (Goldberg et al., 2003). Compared with their peers in the control school, student athletes in the drug testing school:

- believed that random drug testing provided fewer benefits
- believed there were fewer negative consequences of random drug testing
- believed that authority figures were more tolerant of drug use
- had greater preference for risky drug use behaviour
- had poorer attitudes towards the school.

4.7 Potential adverse outcomes of drug testing programs

No studies have directly evaluated the safety of random drug testing of schoolchildren or any potential adverse outcomes. In a national consultation of 1700 Catholic secondary schools in Australia (660 000 students), the Jesuit Social Services examined how schools responded to incidents of illicit drug use by students (Norden, 2005). The *Keeping Them Connected* report concluded that, rather than reducing drug use by students, random drug testing, which was implemented in a handful of schools, forced the problem underground, reflecting a breakdown in trust and communication and making it harder for schools to handle. The messages received by students in drug testing schools were: 'don't allow your continuing drug behaviour to be detected by school authorities; and if you or another student has problems in relation to illicit drug use, don't approach school authorities for assistance' (Norden, 2005). Thus, 'the approach was seen to be effective in protecting the school's reputation as being "tough on drugs", but questionable with respect to the school's duty of care for the student concerned.'

Thus far, a number of potentially deleterious outcomes from implementing drug testing programs have been identified, including:

- breakdown in parent–child and/or school–child relationship, by creating an environment of resentment, distrust and suspicion (Kern et al., 2006) – this may lead to loss of school connectedness and runaway behaviour
- increase in school exclusions and truancies
- reduced participation in healthy extracurricular activities, which may result in pursuit of other more harmful risky behaviours
- diversion to other substances that are not tested, or less detectable, yet potentially more harmful, including alcohol, inhalants, ecstasy (Knight & Mears, 2007)
- unwarranted invasion of privacy – distressing, embarrassing, humiliating for child to be observed while urinating. Given that most students are not likely to be using drugs (non-users, occasional/experimental users), such psychological and emotional responses may affect a large proportion of children
- breach of confidentiality – students must declare prescription or over-the-counter medications
- false sense of drug-free environment – children with serious drug problems may still have negative test results if their drug use is outside the window of detection, or they have used masking agents or other evasion techniques (Knight & Mears, 2007)

- lack of developmentally appropriate adolescent treatment/interventions after testing positive (Knight & Mears, 2007)
- school time and resources used on drug testing programs instead of education
- ambiguous role for schools as monitors of students' drug use. Is drug testing an appropriate role for schools? Is this responsibility better suited to more appropriately qualified individuals, such as a primary health care provider?
- penalties for drug use – for example, loss of financial aid to United States students with a drug conviction, including cannabis possession (Students for Sensible Drug Policy, 2007). Such action discriminates against poorer students who need public aid to gain access to higher education.

Schools with drug testing programs have adopted a variety of policies, which often include a range of sanctions, in the event of a student returning a positive drug test result. Sanctions may range from a 'zero tolerance' policy, with exclusion from extracurricular activities, suspension or expulsion from school, to a non-punitive response, with education, counselling and support for students.

Despite drug testing policies implemented within United States schools being variously described by advocates as proactive, preventative and non-punitive, disciplinary measures invariably follow a positive drug test. This may be premised on the idea that for a random drug testing regime to be efficacious it 'would have to contain some additional element of punishment' (McKeganey, 2005). Even though school policies may vary substantially, commonalities between many programs include:

- Students participating in extracurricular activities from grades 7–12 are usually targeted.
- Students are unable to participate in extracurricular activities unless they agree to participate in the schools testing program.
- The most popular tests employed are urinalysis and saliva testing.
- Tests are conducted on a random and reasonable suspicion basis.
- Non-compliance with a request to produce a sample will be treated as a positive test result.
- While many policies have a voluntary component, a student who fails the test is still subjected to the same disciplinary measure as a student who is targeted for cause.
- Positive test results are followed with disciplinary measures.
- Positive results are communicated to parents, the school and the relevant activity coordinator.
- Positive results are kept in a file to be destroyed once a student leaves school.

(Brendtro & Martin, 2006; Hallfors, Pankratz & Hartman, 2007; McKeganey, 2005).

Out-of-school suspensions and expulsions give rise to another set of problems for students, schools and parents, namely safety concerns related to lack of professional support and adult supervision during the suspension period and discontinuity of education (Taras, 2003). For example, poor academic achievers are over-represented among substance users (Cox, Zhang, Johnson & Bender, 2007) and the population of young people who are at greatest risk of harm from regular use of substances may overlap with the population who are also at serious risk of self-harm, or who are victims of abuse by adults (Caan, 2005).

Ironically, students who are most likely to be suspended or expelled are also most in need of adult supervision. Suspension or expulsion from school may exacerbate any existing academic and learning difficulties, provide them with more opportunity to engage in risky or criminal activities, and predispose them to greater risk of substance use or to quit school permanently (Taras, 2003). Therefore, the context of substance use is important and should be considered before implementing drug testing programs. Potential humiliation and alienation of vulnerable students in an environment of mistrust may inadvertently potentiate risks to their long-term psychological wellbeing.

4.7.1 Connectedness and young people's psychosocial wellbeing

Several studies have explored the relationships between children's and adolescents' connectedness to their family, peers and/or school and health, psychosocial and educational outcomes (Bond, Patton, Glover, Carlin, Butler, Thomas et al., 2004; Bond, Butler, Thomas, Carlin, Glover, Bowes & Patton, 2007; Bonny, Britto, Klostermann, Hornung & Slap, 2000; Harrison & Narayan, 2003; Patton, Bond, Butler & Glover, 2003; Patton, Bond, Carlin, Thomas, Butler, Glover, Catalano & Bowes, 2006; Resnick, Harris & Blum, 1993).

School connectedness relates to children's and adolescents' sense of belonging to their school, feeling valued, and a belief that they are treated fairly by supportive and caring staff (Patton et al., 2003; Resnick et al., 1993). Students with high levels of school connectedness have been found to have significantly lower rates of substance use, violence, suicidal ideation or behaviour, and emotional distress as well as positive educational outcomes, compared with students scoring low on school connectedness (Resnick, Bearman, Blum, Bauman, Harris, Jones et al., 1997; Resnick et al., 1993).

> Young people who are not engaged with learning or who have poor relationships with peers and teachers are more likely to use drugs and engage in socially disruptive behaviours, report anxiety/depressive symptoms, have poorer adult relationships and fail to complete secondary school. (Bond et al., 2007, p.357.e10)

The Gatehouse Project was developed in Australia using a whole-school environment, multi-level approach to promote emotional wellbeing of children by increasing their connectedness to school (Bond et al., 2004). An evaluation of this project was undertaken in a randomised controlled trial in 26 metropolitan and regional secondary schools (2678 students) in Victoria. Four years after implementing the Gatehouse Project, children at the intervention schools had significantly lower rates of substance use, antisocial behaviour and early initiation of sexual behaviour compared to those at the control schools (Patton et al., 2006).

Any activities that lessen school connectedness may impact on students' health and emotional wellbeing and increase their likelihood of developing depressive symptoms and/or using alcohol or other drugs (Resnick et al., 1997). Students who feel resentful, embarrassed, humiliated or distressed by having to undergo drug testing may lose valuable connectedness with their school and school staff. Yamaguchi et al. suggest that the strongest predictor of student drug use is students' attitudes toward drug use and their perceptions of peer drug use (Yamaguchi et al., 2003c).

In addition, few physicians support random drug testing of schoolchildren. In a survey of 359 physicians in the United States, approximately 80 per cent of all respondents (family physicians, paediatricians and adolescent medicine providers) and 93 per cent of adolescent medicine specialists disagreed or strongly disagreed with recommendations to drug-test schoolchildren (Levy et al., 2006). Identification of drug use in children is an important role for the primary health care provider who is in a better position to identify, educate and provide appropriate treatment for children at risk, while maintaining privacy and confidentiality.

In summary, few studies evaluating drug testing programs in schools have assessed longer-term outcomes, such as students' physical or psychological health and wellbeing, or academic performance. Moreover, no studies have explored the potential adverse effects of drug testing in schools. It appears from the limited findings in these few studies (Brady, 2004; Coombs & Coombs, 1991; DuPont et al., 2002; Goldberg et al., 2003; McKinney, 2002; 2004a; 2004b; 2005; Yamaguchi et al., 2003a; 2003b) that drug testing has little effect in reducing overall drug use, while paradoxically increasing a wide range of risk factors for drug use and other risky adolescent behaviours. These inadvertent consequences of a drug testing program raise concerns about the full and longer-term impact of drug testing, which to date has not been evaluated adequately. Therefore, there is insufficient evidence to suggest that drug testing programs reduce harms associated with drug use.

5. Ethical and legal implications of drug detection and screening programs

In examining the ethical and legal implications of drug testing and screening, it is necessary to determine whether drug testing students is legal in Australia under existing legislation. Currently, there is no specific legislation that addresses this issue; thus, the legal status of schools to test students is undetermined. However, given that government schools derive their powers from State education legislation, any government school seeking to implement drug testing would need to ensure that the policy reflected the relevant State legislation. In contrast, non-government schools may incorporate a drug testing policy as part of their initial contract to enrol a student. This section addresses some common law issues that have been raised in workplace testing cases, as well as some legal and ethical issues surrounding the concept of consent in the medical field.

Issues examined below include:

- *Duty of care*: explored through an examination of the standard of care expected from Australian schools, the scope of the duty and the implications of deeming a school to have an *in loco parentis*[16] role.
- *Right to bodily inviolability*: considered through looking at the quality and nature of issues such as privacy, consent and necessity.
- *Rights of the child*: as determined with reference to Australian legislation and the ratification of international treaties.
- *Drug testing as a deterrence strategy.*
- *Similarities and differences between schools and the workplace*: with reference to the legal concept of reasonableness in the implementation and application of drug testing policies.

To date, drug testing and screening of schoolchildren has been employed as a drug prevention strategy in many schools within the United States. Their experience is also outlined here and contrasted with Australia's legal framework, which differs markedly from that of the United States in a number of important respects. The comparisons between Australian and United States legal perspectives (*New South Wales v Lepore*, 2003) are relevant to the issue of drug testing in schools as the United States experience is often presented to support the implementation of similar processes in this country.

16 According to the Butterworths' *Australian Legal Dictionary* (Nygh & Butt, 1997, p.577), the term *in loco parentis* means 'in place of the parent' and describes 'a person who looks after another's child for and on behalf of the parent and acts as a substitute parent and assumes responsibility for providing for the child in the parent's absence'.

5.1 Duty of care

The introduction of drug testing in schools invokes consideration of the extent of a school's duty of care towards its students.[17] In 2003, the High Court described the student–school relationship as similar to the duty of care imposed upon an employer and employee (*New South Wales v Lepore*, 2003). The duty of care stated in *Richards v Victoria* (1969) was considered to be reflective of the law in Australia and held that this duty:

> required only that the teacher should take such measures as in all the circumstances were reasonable to prevent physical injury to the pupil. This duty not being one to insure against injury, but to take reasonable care to prevent it, required no more than the taking of reasonable steps to protect the plaintiff against risks of injury which ex hypothesi [the teacher] should reasonably have foreseen. (*Richards v Victoria*, 1969)

A school's duty to take reasonable care is non-delegable. This means that a school cannot empower another person with the responsibility to take care; the school authority must ensure that reasonable care is taken. Due to the non-delegable duty of the school, if a school were to introduce drug testing, it would then become the school's responsibility to ensure that all children were adequately aware of the drug testing procedures and the risks inherent within the procedure. Further to this, schools would be responsible for ensuring that everyone conducting the tests handled the child and the sample produced in a manner that was sensitive to the child as well as ensuring that the confidentiality of the test results was secure.

In this sense, the duty of a school is positive. A school will be liable for harm caused if it fails to take positive steps to 'omit to protect children under their charge' (Yeo, 1998). However, this duty does not necessarily extend to 'an obligation to prevent any kind of harm' (*New South Wales v Lepore*, 2003). The school's duty of care has been described in the following terms:

1. To take all reasonable care to provide suitable and safe premises. The standard of care must take into account the well-known mischievous propensities of children, especially in relation to attractions and lures with obvious or latent hazards.
2. To take all reasonable care to provide an adequate system to ensure that no child is exposed to any unnecessary risk of injury; and to take all reasonable care to see that the system is carried out... (*Commonwealth v Introvigne*, 1982)[18]

As such, the positive duty of a school is to provide a safe and secure school environment.

17 Early reference to the duty of the school towards its pupils may be found in the High Court of Australia's rejection of the notion that 'the schoolmaster was bound to take care of his boys as a careful father would take care of his boys' (*Williams v Eady*, 1893). The duty of care found in the case of *Williams v Eady* over a century ago has been described as unreal and of little assistance in modern urban schools (*New South Wales v Lepore*, 2003).

18 This was a case where the Commonwealth through an intergovernmental agreement had control of the school, even though it had delegated the running of the school to the New South Wales State Government.

5.1.1 Scope of the duty of care

The scope of a duty of care has been said to be 'functional, as well as geographical and temporal' (*New South Wales v Lepore*, 2003). Justice Murphy described the scope of a school's duty of care as 'a duty to ensure that reasonable care is taken of them whilst they are on the school premises during hours when the school is open for attendance' (*Commonwealth v Introvigne*, 1982; *New South Wales v Lepore*, 2003).

The scope of the duty to ensure that reasonable care is taken in the supervision of children does not, however, extend to a duty of constant supervision. The High Court, in the case of *Roman Catholic Church v Hadba* (2005), considered it unreasonable to 'have a system in which children are observed ... for every single moment of time'. This was assessed as 'well beyond the bounds of reasonableness'[19] on the basis that such an increased level of supervision would:

- damage the teacher–pupil relationships by removing even the slightest element of trust
- retard the development of responsibility in children
- call for a great increase in the number of supervising teachers and in the costs of providing them.

(*Roman Catholic Church v Hadba*, 2005)

United States law, however, assesses the duty and scope of a school more broadly than Australian law. For example, schools in the United States have been identified as 'special needs' settings, allowing them to waive the requirement to establish probable cause to undertake a search for drugs. In the United States cases of *Board of Education of Independent School Dist. No. 92 of Pottawatomie County v Earls* (2002) and *Vernonia School District 47J v Acton et al.* (1995), the necessity of the school's drug testing policy was derived from the 'special needs' of a school environment due to its status of *in loco parentis*.[20] Schools were determined to have 'special needs' due to the necessity to 'establish discipline and maintain order...' (*New Jersey v TLO*, 1985) and the requirement of probable cause was considered overtly onerous for a 'Government which seeks to *prevent* the development of hazardous conditions'. Nonetheless, the judgement in *Vernonia* stated that schools had to demonstrate that there was a pervasive drug culture at the school or within the community in order to implement a random drug testing policy.

19 In this case, a young girl had sustained an injury while playing on a 'flying fox'. The school had developed a clear code of conduct for students while playing on this piece of equipment and they had assigned a teacher to oversee this area of the playground. However, the teacher had momentarily left the equipment after noticing some other children were not playing appropriately in another area of the yard. In arriving at their conclusion that the school had not breached their duty of care, the High Court Justices spoke of the necessity of the plaintiff to establish that some other form of supervision was not just available in a theoretical sense but could actually be observed in reality.

20 Unlike a search conducted to establish guilt in a criminal case, probable cause is not a requirement in the determination of a search conducted for administrative purposes – a belief that a particular circumstance exists is sufficient. Further to this, in the United States, searches do not need to be supported by probable cause when the search is being conducted by an institution described as having 'special needs' (*New Jersey v TLO*, 1985).

In contrast to the above finding, the United States Supreme Court in the more recent judgement of *Earls* considered that there was not an onus upon schools to demonstrate that a drug culture existed and argued that it would make little sense to wait until a drug problem had developed before allowing a school to implement a random drug testing program *(Board of Education of Independent School Dist. No. 92 of Pottawatomie County v Earls*, 2002). The Supreme Court rationalised in the *Earls* case that random student drug testing policies were reasonable due to the construction that school administrators and teachers were at the forefront in the 'war against drugs' and that drug use among young people was 'epidemic' (Hyman, 2006; Johnston et al., 2007).

The United States Supreme Court further reasoned that as a relationship of *in loco parentis* existed between schools and students:

> the need to prevent and deter substantial harm of childhood drug use provides the necessary immediacy for a school testing policy. *(Board of Education of Independent School Dist. No. 92 of Pottawatomie County v Earls*, 2002)

The necessity for schools to act was said to be 'founded in their relationship of having undertaken a special responsibility of care and direction for the children' *(Vernonia School District 47J v Acton et al.*, 1995). As such, the Supreme Court considered in *Earls* that 'when the government acts as guardian ... the relevant question is whether the search is one that a reasonable guardian ... might undertake.' In this regard, it was decided that due to their social status, children were less entitled to an expectation of privacy and freedom of interference from the State than an adult *(Board of Education of Independent School Dist. No. 92 of Pottawatomie County v Earls*, 2002).[21]

In Australia, however, the common law duty of care that a school has towards its pupils varies substantially from that in the United States. The principle of *in loco parentis* as applied in United States cases would be considered as apportioning too much responsibility to teachers and schools in general for the care and welfare of a child outside of school hours. This is because in Australia it is considered that 'teachers will not usually be responsible for ensuring that their pupils are fed while at school, for the choice of school study or activity undertaken by a pupil or for the company they keep' (Yeo, 1998). Further to this, under Australian common law, parents do not have a positive duty to protect their children from harm.[22] That is, a parent cannot be held liable for an omission, they can be held liable only for a positive action. Australian courts have limited the duty of care of parents for a number of public policy reasons:

- The imposition of a legal duty of care upon parents would intrude unduly into the private sphere of domestic relations.
- The impossibility of identifying a recognisable standard of care of parental supervision.

21 This statement as to the status of children was already established in the case of *New Jersey v TLO* (1985) 469 US 325 where a student who was suspected of smoking in the girl's room had her purse searched and the teacher found marijuana.

22 Some cases in the United States have extended the duty of care to parents in the event of an omission. In California the standard imposed is that of a 'reasonable parent': *Gibson v Gibson* (1971) 479 P 2d 648.

- Parents owe their children a moral duty to act in their best interests; therefore, the imposition of a legal duty is overly onerous.
- Permitting a child to benefit financially from their parents will not actually impart any benefit upon the child due to the parents being in a lesser position.

(Yeo, 1998)

The duty of care is not the only area where Australian and United States law varies substantially. The High Court of Australia has referred to the protection of privacy given by the Fourth Amendment in the United States Bill of Rights as being, in practice, of little assistance to the protection of individuals.[23] Due to the nature of public health law, ethical considerations such as the right to personal autonomy and bodily inviolability and the nature and quality of consent given to children are especially pertinent. Australian law interprets the rights of freedom from bodily interference and privacy as having derived from fundamental principles of democracy.

5.1.2 Privacy

The concept of privacy has traditionally been difficult to define and the judiciary in Australia has been reluctant to acknowledge that a tort of privacy exists.[24] This is due to the acknowledgement that, in many instances, a claim to privacy impedes the right of freedom of expression. However, in recent times, courts have acknowledged that privacy is a principle drawn from the fundamental value of personal autonomy *(ABC v Lenah Game Meats Pty Ltd*, 2001).[25] Privacy has been recognised as having four categories:

1. *Information privacy*, which involves the establishment of rules governing the collection and handling of personal data such as credit information, and medical and government records. It is also known as 'data protection'
2. *Bodily privacy*, which concerns the protection of people's physical selves against invasive procedures such as genetic tests, drug testing and cavity searches
3. *Privacy of communications*, which covers the security and privacy of mail, telephones, electronic mail and other forms of communication, and

23 In their judgement in *ABC v Lenah Game Meats Pty Ltd* (2001), the Justices referred to an article which claimed that 'privacy law in the US delivers far less than it promises'. This was considered because claims to privacy always failed when balanced against considerations of public interest.

24 However, in *Victoria Park Racing v Taylor* (1937), Justice Rich spoke of the capacity for the court to develop a tort of privacy especially with the advance of technological development *(Victoria Park Racing and Recreation Grounds Company Limited v Taylor*, 1937).

25 However, in *ABC v Lenah Game Meats Pty Ltd* (2001) the Court stopped short of developing a common law right to privacy, preferring instead to let the concept be dealt with under the head of other torts – nuisance, breach of confidentiality, defamation and trespass.

4. *Territorial privacy*, which concerns the setting of limits on intrusion into the domestic and other environments such as the workplace or public space. This includes searches, video surveillance and identity checks. (Australian Law Reform Commission, 2006)

Statutory law in Australia is generally focused on the regulation of information privacy and bodily privacy and is generally protected by the laws of assault and trespass. However, with vast advances in technological development there is growing concern that these legislative and common law provisions do not extend far enough (New South Wales Law Reform Commission, 2007).

The notion of privacy lies at the heart of liberty in a modern state. This is illustrated in the Canadian case of *R v Dyment* (1988) where the need to maintain privacy was determined to be essential for the wellbeing and development of an individual.[26] The Supreme Court of Canada concluded that the 'need to place restraints upon governments to pry into the lives of citizens went to the essence of a democratic state' and held that the state can conduct a search only when there was prior authorisation through either consent or a search warrant.

The United States Supreme Court considered that 'students within the school environment have a lesser expectation of privacy than members of the population generally' as evidenced by the compulsory requirement that children attend school (*New Jersey v TLO*, 1985). Further to this, the justices expressed the view that this lesser expectation of privacy was evidenced by the fact that children who attend school are required to be adequately immunised and receive medical sight, hearing and developmental testing while at school. As such, it was held that, in order for a school to properly maintain and discipline its students, the right to freedom from bodily invasion which exists in the United States Constitution does not extend to students. The inconsistency of the statement, however, may be found in the fact that sight, hearing and dental check-ups do not attract punitive punishments for failing to comply with societal standards. Further to this, while Australian children may also be subjected to hearing, sight and dental check-ups while at school, immunisation to date is not considered a prerequisite for school attendance. In Australia, as opposed to the United States, none of these health initiatives is compulsory and all are conducted after obtaining consent from the parents. The Australian Government has elected to promote these vital health initiatives through programs of public education, persuasion and financial incentives rather than compulsion and punishment.

In summary, duty of care in Australia is considerably more limited in its extent than in the United States. The duty of care of an Australian school does not normally extend to cover activities outside school hours and acknowledges the child's right to privacy (see below). On these grounds, it is unlikely that a case could be made that drug testing would be necessitated or justified as part of the school's duty of care.

26 In the case of *R v Dyment* (1988) a person who was being treated in hospital after a car accident had a vial of their blood given to the police without their consent. The judges in this case balanced the need, beneficence and importance of law enforcement against the needs of the public to be free from unjustified searches. The judges considered that an individual's right to privacy lay not in the physicality of the search but in the moral indignity of the search.

5.2 The fundamental right to bodily inviolability

In Australia, the right to freedom from bodily invasion is considered a natural and an absolute right. An individual's right to bodily integrity is entrenched within Australia's statutory laws as common assault.[27] It is often noted in judgements that since 'the law cannot draw the line between different degrees of violence ... it totally prohibits the first and lowest stage of it; every man's person being sacred, and no other having a right to meddle with it, in any the slightest manner' (Blackstone, 1830). The common law definition of common assault provides that:

> An assault is any act which intentionally – or possibly recklessly – causes another person to apprehend immediate and unlawful personal violence ... and the actual intended use of force to another person without their consent. *(Fagan v Commissioner of Metropolitan Police*, 1969)

It is relevant to note in the context of proposing to drug-test schoolchildren that the physical element of an assault is judged with reference to the mental state of the victim. In this respect, if a reasonable person in the position of the victim is put in fear, then the physical element of the assault has occurred. There are two defences available to a person who is charged with an assault: consent and necessity.

5.2.1 Consent

While there is a degree of uncertainty as to whether the onus is on the complainant or the defendant to prove consent, current Australian law has favoured that the defendant needs to prove consent (*Plenty v Dillon*, 1991). With regards to medical testing, there are two key legal elements of consent:

- provision to participants, at their level of comprehension, of information about the purpose, methods, demands, risks, inconveniences, discomforts and possible outcomes of the research (including the likelihood and form of publication of research results); and
- the exercise of voluntary choice to participate.

(National Health and Medical Research Council, 1999b)

The High Court decision in *Department of Health and Community Services v JWB and SMB* (1992) (*'Marion's case'*) recognised the ability of children to consent to medical treatment. In this case, the High Court applied what is referred to as the *Gillick* principle of competence. In *Gillick v West Norfolk and Wisbech Area Health Authority* (1986),[28] Lord Scarman stated that:

> As a matter of Law the parental right to determine whether or not their minor child below the age of sixteen will have medical treatment terminates if and when the child achieves sufficient understanding and intelligence to understand fully what is proposed.

27 Victoria is the only State which does not have statutory legislation for common assault. However, the crime still exists at common law within this jurisdiction. For the other States, the relevant legislation is: *Crimes Act 1900* (ACT), s.26; *Crimes Act 1900* (NSW), s.61; *Criminal Code* (NT), s.188; *Criminal Code* (Qld), s.335; *Criminal Law Consolidation Act 1935* (SA), s.39; *Criminal Code* (Tas), s.184; *Criminal Code* (WA), s.313.

28 This is an English case where a mother of five daughters challenged the legality of a medical document being circulated which gave advice about contraceptive devices to girls.

Preventative medical interventions (drug testing could be considered to belong to this class of activities) have been described by the courts as falling within the concept of 'non-therapeutic' medical testing due to its relation to the enforcement of 'social values or values other than the maintenance and enhancement of the natural attributes and functions of the ... child' (*'Marion's case'*).[29] Justice Brennan, in *Marion's case*, considered that non-therapeutic testing must have regard to:

- the fundamental right to bodily inviolability
- the gravity of the procedure and its ethical, social and personal consequences, and
- an invasion of bodily integrity can be justified only if it can be shown that the non-therapeutic purpose possesses some higher value than the preservation of personal integrity.

Many drug testing programs implemented within United States schools state that a refusal to submit to be tested results in the highest penalty available – total suspension from participation in all extracurricular activities. This is equivalent to the penalty handed out to someone who tests positive for drugs three times (McKeganey, 2005).

The attachment of disciplinary measures for refusing to participate in a drug testing program may be evidence of the need to gain consent through coercion. Further to this, in many school programs even if a student participates *voluntarily,* they are still subject to the same penalties for failure as a student who is asked to do a drug test 'for cause'. The inconsistency of such a proposition was discussed in *Australian Railways Union of Workers, West Australian Branch and Others v Western Australian Government Railways Commission* (1999). The Commissioner stated that it was not 'an employer's role to operate as a law enforcement agency nor as the social conscience of the community' and therefore considered that any drug and alcohol testing program designed as a means of improving worker safety and productivity should encourage the voluntary participation of employees by *not* penalising them.

Given the above, it is improbable that drug testing of a child could occur without their consent, or that of their parents. Moreover, failure to offer consent would be unlikely to be deemed an admission of guilt within the current Australian legal framework.

29 In *Marion's case* (*Department of Health and Community Services v JWB and SMB,* 1992) the parents of a 14-year-old severely disabled girl sought the court's permission to have their daughter sterilised. The judgement of the court was needed due to the inability of the girl to consent to the medical procedure. In this case, the views of Lord Scarman in the English case of *Gillick v West Norfolk and Wisbech Area Health Authority* were approved and applied by the High Court. The High Court stated that even though the role and duties of parents were borne out of natural law, they were not 'sovereign or beyond review and control'. In this respect, it was considered that 'parental rights are derived from parental duties and exist only so long as they are needed for the protection of the person and property of the child' (*Gillick v West Norfolk and Wisbech Area Health Authority*, 1986).

5.2.2 Necessity

Necessity is determined by circumstance and fact in situations of medical emergency, and the status of a child to refuse medical treatment is more complex. For example, a doctor may operate on an individual who is denying consent or who has been rendered incapable of giving consent by way of an accident or in an emergency situation without fear of being charged with assault or trespass. In the cases of *DOCS [Department of Community Services] v Y* (1999) and *Minister for Health v AS & Anor* (2004) the Court overruled the refusal to consent to medical treatment of both the parents and the child.[30] In both cases, the views and wishes of the parents were not considered as being reflective of the best interests of the child.

It is interesting to note that in the cases of *Earls* and *Vernonia* the United States Supreme Court invoked the doctrine of necessity, thereby negating the requirement of children or their parents to consent to the proposed non-therapeutic medical intervention. However, it is unlikely that the doctrine of necessity could be successfully invoked in Australia to override the rights of parents who might wish to prevent their child being drug-tested at school.

5.3 The rights of children

A central issue in drug testing, and a key area where there is significant difference in perspective and legal interpretation between Australia and the United States, is in relation to the rights of the child. The United States Supreme Court determined that children were less entitled to the full 'bundle of rights' enjoyed by adults. This raises not only ethical concerns, but also welfare concerns. The status position of the child within the United States has led to the determination that children are less entitled to freedom from interference of the state. The application in the United States of a lower standard of 'reasonableness' has resulted in children and teenagers being strip-searched, drug-tested and, in one school, the FBI raided the school with sniffer dogs and pointed guns at the children's heads (*Alexander et al. v Goose Creek Police Department et al.*, 2006; Stefkovich & Torres, 2003). Use of such tactics to control the behaviour of children must be examined in light of the fact that it is now well accepted that children within an institutional environment are at increased risk of material harm to their person. Significant harm has been, historically, brought about through the power imbalance that exists between pupil and teacher, and children and the state. By the time a case comes before the judiciary, an injury, whether physical or psychological, has already been sustained.[31]

30 In these cases both the child and their parents were refusing life-saving treatment endorsed by the doctors involved. Due to the urgent nature of the medical intervention needed (that is, the medical procedures in both cases were therapeutic as opposed to non-therapeutic), the Court exercised its inherent *parens patriae* jurisdiction and directed that the child should be placed under the care of the doctors who were able to treat the child as necessary.

31 Without commenting too much on the facts, in *New South Wales v Lepore (2003)*, a teacher under the guise of discipline would send students to a time-out room, ask them to strip and smack their body parts. While the teacher was found guilty of an assault, the State was held liable for the acts of the teacher.

As illustrated below, Australian law interprets the rights of the child quite differently from United States law. For this reason (among others), it is not appropriate to extrapolate or generalise from legal determinations by United States courts to the Australian situation. Australia has acknowledged that children are in special need of protection from the state through ratification of the international treaty – Convention on the Rights of the Child (CROC). Unlike the United States Bill of Rights,[32] the Convention on the Rights of the Child is a modern document, therefore its interpretation and intent are easier to discern according to modern values.

The Australian Law Reform Commission states that the medical profession has deferred to the theory of principalist ethics since the 1960s (Australian Law Reform Commission, 2003). In regard to medical testing,[33] the full bundle of rights should be defined as reflective of the principalist theory of ethics which employs values such as:

- *respect for persons*: a commitment to treating people as autonomous agents, and to protecting those with diminished capacity for autonomy. This principle encompasses concepts of respect for the inherent dignity of persons, human rights and the promotion of informed decision making
- *justice*: a commitment to ensure fair distribution of benefits and burdens and to avoid oppression of vulnerable groups
- *beneficence*: an obligation to maximise possible benefits and minimise possible harms (non-maleficence).

(Australian Law Reform Commission, 2003)

In contrast, consequentialist ethics is 'acting to achieve the best outcome'. It is a justification that is based upon consequences, not principles (Australian Law Reform Commission, 2003). Arguably, due to the difference in the nature of the relationship that exists between a doctor and patient and the state and its citizens, legislators are concerned with consequentialist ethics as they seek to balance individual rights with issues of public safety. As such, 'laws are norms that involve an evaluation of behaviour in terms of what it should be, an expectation as to what behaviour will be and particular reactions to behaviour, including attempts to apply sanctions or induce a particular kind of conduct' (Roach Anleu, 2000).

The recognition that children are 'politically disabled' (Harris, 1982) has led the Australian Law Reform Commission to warn that while 'age discrimination is an important process in law making so as to protect young people vulnerable to exploitation, it should be recognised such distinctions may also be imposed in an arbitrary manner so as to streamline administrative processes without actually incurring any benefit on the young person affected' (Australian Law Reform Commission, 1996).

32 In accordance with principles of interpretation, the United States Bill of Rights is often subjected to interpretation with reference to what the forefathers intended.

33 Drug testing was considered as being within the ambit of medical examinations by the United States Supreme Court in *Vernonia*, when it analogised that since the government required public school children to be vaccinated, the state exercised more control and supervision over children than it did over 'free adults'.

The Australian Constitution does not contain any express rights similar to the United States Bill of Rights. However, the rights of children are recognised within Australian law through Australia's ratification of the Convention on the Rights of the Child as well as in the *Family Law Act 1975* (Cth). The Convention on the Rights of the Child (CROC) was ratified by Australia in December 1990 and came into effect on 16 January 1991. The Convention on the Rights of the Child provides significant guidance as to the responsibilities of the state vis-à-vis the child. Article 16 of CROC provides that:

> no child shall be subjected to arbitrary or unlawful interference with his or her privacy, family, home or correspondence, nor to unlawful attacks on his or her honor or reputation. (Convention on the Rights of the Child, 1991)

While the Article refers generally to information privacy, it has also been interpreted to cover physical privacy (Australian Law Reform Commission, 2006). Further to this, Article 18 states that:

> States Parties shall use their best efforts to ensure recognition of the principle that ... Parents or, as the case may be, legal guardians, have the primary responsibility for the upbringing and development of the child. The best interests of the child will be their basic concern.

Articles 28 and 29 provide guidance as to the role of the state in providing education for children. It is written that States Parties should recognise the right of the child to education. The Convention obligates signatories to 'ensure that school discipline is administered in a manner consistent with the child's human dignity' as well as agree that, amongst other things, the education of the child shall be directed to:

- the development of the child's personality, talents and mental and physical abilities to their fullest potential
- the development of respect for human rights and fundamental freedoms, and for the principles enshrined in the Charter of the United Nations
- the development of respect for the child's parents, his or her own cultural identity, language and values, for the national values of the country in which the child is living, the country from which he or she may originate, and for civilizations different from his or her own
- the preparation of the child for responsible life in a free society, in the spirit of understanding, peace, tolerance, equality of sexes, and friendship among all peoples, ethnic, national and religious groups and persons of indigenous origin (Convention on the Rights of the Child, 1991).

While an international treaty is not generally considered binding, any State or federal legislation, policy or practice may place Australia in breach of its international obligations (Australian Law Reform Commission, 2006). Further to this, the 'best interests of the child' test is enacted in the *Family Law Act 1975* (Cth). This test has been assessed as paramount in that the 'protection of the child should be elevated above all other interests, although those other interests are not completely disregarded' (*Minister for Health v AS & Anor*, 2004).

In summary, Australia is a strong adherent to the principles set out in the Convention on the Rights of the Child. As such, Australian children are afforded special protection in terms of their right to privacy and protection from interference or acts that might negatively impact their reputation. Drug testing, without cause, may be viewed as a threat to this right.

5.4 Deterrence strategy

Drug testing of students is often proposed as a preventative strategy in various settings in the belief that it will operate as a deterrent. While the efficacy of random drug testing as an effective prevention strategy is hard to establish, a view is often held that drug testing will act as a deterrent to drug use, or at least curb use at proscribed times.[34]

For example, targeted student drug testing was implemented in one school in Oregon in 1995 (*Vernonia School District 47J v Acton et al.*, 1995). The school stated that it had introduced a drug testing policy due to reported drug use by the football team. It was a widely held belief within the community that the young people were rebelling due to the example set by the football team. The school argued that the implementation of a random drug testing policy would help deter the uptake of drug use and would therefore act as a possible preventive measure for drug use within the student community.

The policy was implemented as a prerequisite for participation in sports. However, one student and his parents refused to consent to the drug testing policy. Therefore, in accordance with the terms of the policy, the student was denied the opportunity to join the football team. The student then challenged the legality of the school's drug testing policy on the grounds that it violated his Fourth Amendment rights.[35] Implicit within the construction of the Fourth Amendment is the determination that searches are lawful, if they are considered reasonable. Reasonableness is determined by 'balancing its intrusion on the individual's Fourth Amendment interests against its promotion of legitimate governmental interests' (*Vernonia School District 47J v Acton et al.*, 1995). Further to this, it was considered that the protection of the Fourth Amendment extended to protecting only those rights that society regarded as legitimate (*New Jersey v TLO*, 1985).

The United States Supreme Court concluded that the drug testing policy was reasonable and in reaching this decision considered:

- the relationship of the parties
- the necessity of the drug testing policy, and
- whether any acts of 'positive law'[36] regulated the responsibilities and obligations of the parties.[37]

34 Implicit within this statement is the view that those who use drugs may be able to refrain from use while they are engaged in a proscribed activity. Road traffic laws are regulatory laws aimed at increasing road safety. Workplace codes and regulations are laws aimed at increasing worker safety and were introduced to ensure employers fulfilled their duty of care. However, a child's compulsory attendance at school is required by statute.

35 The Fourth Amendment provides that people have 'the right ... to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures'.

36 Positive law is statutory law; that is, law that has been made according to formal rules of validity.

37 If acts of statutory law exist, the potential for a drug and alcohol policy to be given lawful authorisation is more favourable (*Exxon Corp v Esso Workers' Union, Inc.*, 1997).

The relationship between schools and the federal government in the United States is distinctly different from the relationship that exists in Australia between schools and the Commonwealth or State governments. Since 2001, the federal government of the United States has provided achievement bonuses to schools that attained educational targets and promoted a safe school environment. In the United States, federally funded policy directed at improving the educational outcomes of children and schools is located within its 'No Child Left Behind' policy; of which Title V: *Safe Schools for the 21st Century* mandates the empowering of States and school districts in the education and prevention of drug use and violence within schools and effectively extends the 'war on drugs' to children (Bush, 2001). In the deliverance of the Supreme Court judgements in *Board of Education of Independent School Dist. No. 92 of Pottawatomie County v Earls*[38] and *Vernonia*[39] (detailed above), it was considered that in order to give efficacy to the concerns of the government and the school district, the random drug testing of students participating in extracurricular activities was not only reasonable, it was necessary.

The Supreme Court in *Vernonia* also considered that a student's participation in extracurricular activities was a privilege, not a right. This contention was upheld by the Supreme Court in *Earls* where it was stated that 'the *only* consequence of a failed drug test is to limit the student's privilege of participating in extracurricular activities' (*Board of Education of Independent School Dist. No. 92 of Pottawatomie County v Earls*, 2002) (author's emphasis). The declaration by schools, federal and State governments and the judiciary in the United States that the penalties imposed are non-punitive is based upon the fact that the students are not excluded from academic activities.

However, the blurred line between academic and non-academic subjects was acknowledged in the random student drug testing policy implemented at one school in the United States. The random student drug testing policy implemented at Electra Independent School District in Texas states that if participation in the extracurricular activity was required to contribute to the student's grade point average, then the student may need to find another alternative. When United States drug testing policies refer to extracurricular activities, this also includes participation in and attendance at school events. For example, students who test positive for drug use are often unable to attend any school dances, fetes, school sporting events and other school celebrations. In Arizona, the drug testing policy implemented by Chandler Unified School District No. 80 prohibits students who have tested positive for drugs from even entering locker rooms and wearing the school colours. Potentially, a student at Chandler could be excluded from participating in school events and extracurricular activities for up to six years.

38 This case involved the determination of whether it was reasonable to extend random drug testing to all students who participated in extracurricular activities.

39 At the time of *Vernonia*, the *Safe and Drug-Free Schools and Communities Act* (SDFSCA) was Title IV, Part A of the *Elementary and Secondary Education Act* (ESEA). This Act was later reauthorised as the *'No Child Left Behind' Act 2001*.

The United States judiciary has drawn a line of demarcation between compulsory attendance at school and choosing to participate in extracurricular activities. In the 2001 decision of *Tannahill v Lockney*, the United States Supreme Court found the drug testing policy implemented was too rigid and unreasonable. The school attempted to introduce mandatory random testing for all its students, regardless of whether they participated in extracurricular activities or not. In this case, the Supreme Court stated that the policies were too coercive in nature and impinged on a student's Fourth Amendment rights due to the fact that it was compulsory for children to attend school (*Tannahill v Lockney Independent School District*, 2001). In this way, the courts drew a distinction between participating in an activity by choice and participating in a statutorily required activity.

Australian children, like children in the United States, are required to attend school in most States until they are 16 (Hallfors et al., 2007). This is a compulsory, statutory requirement.[40] In fact, in *New South Wales v Lepore* the duty of a school to ensure that reasonable care is taken is said to derive from this statutory compulsion (*New South Wales v Lepore*, 2003). However, in the United States, an artificial demarcation exists between the statutory requirement to attend school and the choice of a student to actually participate within the school. As compulsory attendance at school usually ends when a child turns 16,[41] therefore, according to the United States demarcation of activities, by choice, any child who attends school after this age could be subject to the random student drug testing program or, alternatively, be excluded from school.

In Australia, elective participation in subjects often commences in high school and many so-called elective subjects offer students the opportunity to enhance their future ability to contribute to society in a meaningful way through developing work-related and life skills. When drawing the line between compulsory attendance in academic subjects and elective participation in a subject, it is important to remember that many students choose subjects that reflect their strengths and enhance their feelings of individuality and self-esteem. Further to this, the participation in many extracurricular activities could be considered an important part of promoting student health and wellbeing through the development of cultural, social and individual identity.

40 Relevant statutes in Australia are: *Education Act 2004* (ACT), s.9; *Education Act 1990* (NSW), s.3(1); *Education Act* (NT), s.4(1); *Education (General Provisions) Act 2006* (Qld), s.9; *Education Act 1972* (SA), s.5(1); *Education Act 1994* (Tas), s.4(1); *Education Act 1958* (Vic), s.3; *School Education Act 1999* (WA), s.6.

41 In some States, the age is 15 or upon completion of year 10.

5.5 Similarities and differences between workplaces and schools

Similar reasoning in regard to the potential deterrent effect of drug testing has been applied in relation to the workplace. The effectiveness of drug testing as a preventative measure of harm was discussed in the workplace drug testing case of *BHP Iron Ore Pty Ltd v Construction, Mining, Energy, Timberyards, Sawmills and Woodworkers Union of Australia Western Australian Branch* (1998) ('*BHP*'). In *BHP*, the Commissioner referred to evidence tendered by Professor Ross Homel which stated 'that random drug testing in all probability would act as a deterrent to the use of drugs in the workplace'. Professor Homel based his conclusion on data and experience with random breath testing in a road traffic environment.

In an Australian workplace drug testing case, the notion of *choice* was advanced by counsel for the employer in *Perkins v Golden Plains Fodder Australia/Macpri Pty Ltd* (2004). *Perkins* was an industrial relations case brought against an employer who had implemented a 'zero tolerance' random drug and alcohol testing policy.[42] Counsel for the employer advanced that an employee when faced with the prospect of random drug testing could:

- risk his job by continuing to smoke an illicit drug, or
- stop smoking marijuana altogether, or
- look for another job.

The Commissioner, however, considered the options advanced as being overly harsh and not representative of community views. The random drug testing policy introduced in *Perkins* was described by the Commissioner as an employer's document due to the recognition that the employer had simply imposed the document onto its employees without any negotiation and with very little regard to the consent of the employees. As such, the Commissioner in *Perkins* declared that the construction of the implemented policy should be interpreted in a manner less favourable to the employer (*Perkins v Golden Plains Fodder Australia/Macpri Pty Ltd*, 2004).

The test of reasonableness is a determining factor in Australian cases that have considered the application of workplace drug testing policies. Reasonableness is determined with consideration given to why the policy was implemented, whether the policy was fair and reasonable in its application, and whether the penalties implemented were consistent in meeting the stated objectives of the drug testing policy. The Australian judiciary has also placed particular emphasis on the quality and nature of consent in regard to workplace drug testing policies. This is due to the recognition that 'the introduction of a random alcohol and drug program can be counter-productive if there is overwhelming opposition to it' *(BHP Iron Ore Pty Ltd v Construction, Mining, Energy, Timberyards, Sawmills and Woodworkers Union of Australia Western Australian Branch*, 1998). In this regard, the amount of collective negotiation in the implementation of, drafting of and consent to the proposed random drug testing policy is considered imperative to the

42 The policy detailed that anyone who returned a positive drug test while at work would be dismissed immediately. Immediate dismissal resulted regardless of whether the test was conducted 'for cause' or on a random basis. Further to this, the policy stated that if an employee refused to submit a sample, then they would be treated as returning a positive test and dismissed.

consideration as to whether the program will achieve its desired outcome of prevention and deterrence (*Australian Railways Union of Workers, West Australian Branch and Others v Western Australian Government Railways Commission*, 1999; *BHP Iron Ore Pty Ltd v Construction, Mining, Energy, Timberyards, Sawmills and Woodworkers Union of Australia Western Australian Branch*, 1998).

Due to the differences in legislative intent, the introduction of random drug testing of employees within Australia has been met with mixed reactions by the judiciary. Workplaces that have attempted to implement mandatory drug testing schemes often cite that the schemes are necessary in order to comply with occupational health and safety legislation and industry regulations aimed to increase worker wellbeing and safety.[43] However, the Australian judiciary has been reluctant to impose standards that essentially speak to lifestyle issues rather than workplace conduct. This is due to the fact that, despite invading upon a person's bodily integrity, most drug testing methods are unable to determine impairment; they can determine use only. Impairment caused by drugs and alcohol is often the standard dictated by the legislature,[44] as opposed to mere use. However, it was conceded by the Union in *BHP Iron Ore Pty Ltd v Construction, Mining, Energy, Timberyards, Sawmills and Woodworkers Union of Australia Western Australian Branch* (1998) that:

> the current standards and expectations of the community concerning health and safety in the workplace, as evidenced by legislative prescriptions and judgements of courts and industrial tribunals, are such that there will, of necessity, be some constraints on the civil liberties at times and, in particular, an intrusion into the privacy of employees.

In regard to other Australian settings, workplace commissioners have not only considered reasons why a workplace wished to implement a drug testing policy, but also the manner in which the workplace drug testing policy had been implemented (*Australian Railways Union of Workers, West Australian Branch and Others v Western Australian Government Railways Commission*, 1999; *BHP Iron Ore Pty Ltd v Construction, Mining, Energy, Timberyards, Sawmills and Woodworkers Union of Australia Western Australian Branch*, 1998; *Perkins v Golden Plains Fodder Australia/Macpri Pty Ltd*, 2004; *Public Service Association and Professional Officers' Association Amalgamated Union of New South Wales (on behalf of Sandra Gay) and Department of Corrective Services*, 2006).

43 See the cases of: *Perkins v Golden Plains Fodder Pty Ltd* [2004] SAIRComm 5 (3 February 2004); *BHP Iron Ore Pty Ltd v Construction, Mining, Energy, Timberyards, Sawmills and Woodworkers Union of Australia Western Australian Branch* [1998] WAIRComm 130 (19 June 1998); *Australian Railways Union of Workers, West Australian Branch and Others v Western Australian Government Railways Commission* No. CR257 of 1998 [1999] WAIRComm 14 (20 January 1999); *Public Service Association and Professional Officers' Association Amalgamated Union of New South Wales (on behalf of Sandra Gay) and Department of Corrective Services* [2006] NSWIRComm 147.

44 The statutory legislation which refers to the duty of employees is: *Occupational Health and Safety Act 1989* (ACT), s.40; *Occupational Health and Safety Act 2000* (NSW), s.20; *Workplace Health and Safety Act 1995* (Qld), s.36; *Occupational Health, Safety and Welfare Act 1986* (SA), s.21(1b)(d); *Workplace Health and Safety Act 1995* (Tas), s.16; *Occupational Health and Safety Act 2004* (Vic), s.25; *Occupational Safety and Health Act 1984* (WA), s.20; *Occupational Health and Safety Act 1991* (Cth), s.21.

Best practice in terms of workplace drug testing programs dictates that a process of consultation and consensus between workers, management and unions be undertaken before any attempts are made to implement programs. Similar consultation processes would be expected in the school setting.

5.5.1 Compulsory and coercive testing

Consideration also needs to be given to situations in which compulsory or coercive testing might be appropriate. In doing so, each case needs to be assessed in terms of the 'responsibilities imposed on ... an employee and ... on the employer' *(Perkins v Golden Plains Fodder Australia/Macpri Pty Ltd*, 2004). In *Perkins*, it was considered by the Commissioner that, as section 21 of the *Occupational Health and Safety Act 1986* (SA) only requires an employee to attend work unimpaired by drugs or alcohol, a drug testing policy that could measure only use, not impairment, was disproportionate to the standard set by the legislature and therefore unreasonable. Even though the Commissioner in *Perkins* empathised with the predicament of an employer in fulfilling its statutory duties, it was considered unreasonable for an employer to implement zero-tolerance random drug testing policies in the absence of any public policy reasons. This was due to the recognition that the penalties imposed were not commensurate with the purpose of the policy. The Commissioner considered that, in the absence of public policy reasons, the only time that dismissal would be appropriate within the workplace for non-compliance with a drug and alcohol policy would be if:

- the employee was caught taking illicit drugs on the premises
- the employee had illicit drugs present on the premises, and
- the employee attended for work impaired by illicit drugs.

In this regard, the Commissioner considered that the workplace in *Perkins* was not one that could be determined as being 'safety sensitive'. As such, the Commissioner considered that the only recourse that the employer had in the event of a refusal to participate in the drug testing or in the event of a positive test result was a warning that the employee would be closely monitored for any sign of impairment and a recommendation that the employee undergo counselling.

The recommendation of counselling was considered an appropriate punishment due to the inability of testing methods to demonstrate impairment and is consistent with the approach taken by the Australian National Drug Strategy (Ministerial Council on Drug Strategy, 2004).

5.5.2 Safety-sensitive workplaces

In Australia, workplaces that have been deemed to be 'safety sensitive' or requiring 'special needs/public policy' reasons have implemented zero-tolerance random drug testing policies as a means of improving worker safety and wellbeing, assisting in the prevention and deterrence of drug use within the workplace and for the protection of the public.[45] Zero-tolerance policies mandate that both non-compliance and a positive test result will be subject to disciplinary measures. In Australia, workplace commissioners have been careful to distinguish these instances as 'exceptional' and have definitively stated that in the absence of any public policy reasons, they:

> cannot see how, for a great majority of workers at least, fairness and reason ('commonsense') would allow a prohibition extending to what a worker does in his or her own time well away from the workplace. (*Perkins v Golden Plains Fodder Australia/Macpri Pty Ltd*, 2004; *Public Service Association and Professional Officers' Association Amalgamated Union of New South Wales (on behalf of Sandra Gay) and Department of Corrective Services*, 2006)

An example of a workplace drug testing policy introduced for public policy reasons may be seen in *Public Service Association and Professional Officers' Association Amalgamated Union of New South Wales (on behalf of Sandra Gay) and Department of Corrective Services* (2006). Mandatory drug testing was introduced for all correctional services officers by the *Crimes (Administration of Sentences) Act* (NSW).[46] The policy had been developed on the advice of the Independent Commission Against Corruption after it investigated an incident at the Metropolitan Remand and Reception Centre, Silverwater, New South Wales (Independent Commission Against Corruption, 2004).[47] Even though it was considered important that the Department was a law enforcement agency and its officers should be seen as upholding the law, the primary reason for the imposition of a zero-tolerance drug testing policy was that it was necessary in order for the Department to discharge its duty of care. Once again, the policy was implemented only after extensive negotiation and after collective consent was obtained through the relevant union, the Public Service Association.

45 See cases: *BHP Iron Ore Pty Ltd v Construction, Mining, Energy, Timberyards, Sawmills and Woodworkers Union of Australia Western Australian Branch*, 1998; *Exxon Corp v Esso Workers' Union, Inc.*, 1997; *Public Service Association and Professional Officers' Association Amalgamated Union of New South Wales (on behalf of Sandra Gay) and Department of Corrective Services*, 2006.

46 Division 5: Testing of Correctional Staff for Alcohol and Prohibited Drugs, of Part 11: Administration.

47 An officer, who admitted to having a drug habit, had been caught smuggling drugs and mobile phones into inmates. The officer admitted during questioning that his abuse of drugs had escalated due to his relationship with the prisoners and the prisoners' 'contacts'. In this regard, the introduction of a drug testing policy was considered necessary due to the recognition that officers who had problems with drugs and alcohol were a security risk to themselves, other staff, the prisoners and the public (Independent Commission Against Corruption, 2004).

The difficulty with implementing zero tolerance policies within administrative systems such as workplaces and schools is that it is not the legislatures, but the managers and principals who determine what is reasonable in the circumstances. Laws are implemented on a continuum with formalised, institutional laws at one end of the spectrum and informal laws at the other end. The regulation and imposition of employer and employee workplace safety standards, duties and obligations may be said to fit along the spectrum as a form of quasi-law. Arguably, the penalties applied in quasi-laws may be seen as more diffuse and less punitive than traditional legal sanctions. However, with the introduction of zero tolerance policies within some administrative systems, it may be argued that human dignities such as the right to individual autonomy and personal inviolability may be disregarded under the guise of increasing public safety and productivity.

There exists a primary difference between a workplace and a school environment; employment is reflective of a contractual relationship while a student's requirement to attend school is a status relationship. Accordingly, issues with collective negotiation and consent are substantially different within a workplace and a school environment. Children and school teachers have a different relationship from employers and employees, and school environments often lack the avenues of redress and natural justice that are present within many workplaces. In the case of many workplaces, unions are often enlisted to negotiate on behalf of workers and there is access to a judicial hearing if the need arises.

Workplaces that have implemented drug testing policies have had a further responsibility to ensure that their employees were aware of the potential risks and penalties that may result from their workplace drug testing policy as well as to ensure that testing was conducted in a confidential, unobtrusive manner. Commissioners thought that, due to the limitations of available testing methods, review periods as well as a period in which the confidential information could be held by the employer were important considerations as to whether a policy was reasonable.

5.6 Summary

1. The Australian and United States legal perspectives differ greatly in regard to a number of key issues pertinent to drug testing. Hence, legal determinations by United States courts cannot be readily transferred to the Australian context.
2. Duty of care in Australia is considerably more limited in its extent than in the United States. The duty of care of an Australian school does not normally extend to cover activities outside school hours and acknowledges the child's right to privacy. On these grounds, it is unlikely that a case could be made that drug testing would be necessitated or justified as part of the school's duty of care.
3. It is improbable that drug testing of a child could occur without their consent or that of their parents. Moreover, failure to offer consent would be unlikely to be deemed an admission of guilt within the current Australian legal framework.
4. The Australian legal perspective places great(er) weight on the rights of the child (than does United States law) and affords the child significant rights to privacy and protection from interference especially where it may negatively impact their reputation. Australian law is also sensitive to the lack of avenues for redress and natural justice available to children.
5. Best practice in workplace drug testing recognises that testing is only one of a number of responses available to employers and consideration of testing involves extensive consultation processes with employees, management and unions to achieve consensus. Even then, it is considered reasonable only where specific workplaces are deemed safety-sensitive or special needs settings. Zero-tolerance random drug testing, in the absence of strong justification, has been judged to be unreasonable.

6. Submissions — summary of comments

To assess the views of key stakeholders on drug detection and screening in schools, input was sought from representatives of parent groups, teachers and principals, student groups (the latter groups included representation from private, state and non-secular schools), AOD experts (both researchers and clinicians), police and criminal justice workers, youth services workers, legal experts and civil liberties commentators, policy advisers, politicians and health economists. Obtaining community views was considered essential, and the methods employed were designed to ensure maximum input from relevant community members. The results of the submissions process are presented here.

6.1 Overview

A total of 33 submissions were received. Of these, 30 were from key stakeholder organisations and three were from individuals. The list of stakeholders who made submissions can be found at Appendix E.

Two of the organisational submissions were from the United States, one of which appeared to be affiliated with one of the key informant organisations from Australia.

Table 31: Number of submissions received from each State/Territory/country

State/Territory/country	Number of submissions
South Australia	10
Victoria	7
Western Australia	5
New South Wales	3
Australian Capital Territory	2
Queensland	2
Tasmania	1
Northern Territory	1
Overseas (USA)	2
Total	**33**

Respondents were categorised by stakeholder group, nominated by the respondents (Table 32). Some respondents belonged to more than one stakeholder group. Six respondents did not identify their stakeholder group(s).

Table 32: Respondents categorised by stakeholder group

Stakeholder group	Frequency
Policy maker	
• Education sector	12
• Alcohol and other drugs (AOD) sector	4
• Crime prevention	1
AOD worker/clinician/ agency/association	9
Parent	7
Teacher/principal/educator	6
Police	2
School student	2
Youth worker	1
Legal professional	1
Health professional	1

The average length of submissions was three to four pages. Four respondents elected for all parts of their submission to remain confidential, while two requested that components of the submission remain confidential.

6.2 Summary of responses

The summary of responses from stakeholders is presented in accordance with the themes and questions in the submission pro-forma (see Appendix C).

6.2.1 Viability, effectiveness, impact and implications of drug detection and screening

In favour / not in favour of drug detection and screening in schools

The majority of key stakeholder respondents (61%, n = 20) reported that they were not in favour of drug detection and screening measures in schools. These stakeholders included parent and school associations and various policy makers from the education, legal, and drug and alcohol sectors. Nine stakeholders (27%) were in favour of drug detection and screening in schools, one stakeholder reported that they would require further information to make an informed decision, and three stakeholders did not expressly state their opinion in this regard.

Advantages of drug detection and screening in schools

Among stakeholders who were in favour of drug detection and screening in schools, the most frequently cited advantages of implementing such a system were that it would:

- provide an opportunity for early detection and intervention
- act as a deterrent to drug use
- provide a legitimate reason for young people to refuse the offer of drugs and resist peer pressure.

Other advantages cited were that drug detection and screening measures could identify young people at risk and could benefit parents and the community in general by the reduction of drug use.

> Drug detection may reduce the incidence of drug trafficking in schools. It would assist in creating a safe environment for staff and students of the schools. It would also protect the public's safety, and enhance parents' confidence in the school. — *Policy maker*

Those who were not in favour of drug detection reported that the disadvantages of drug detection and screening in schools outweighed the advantages and that, to date, there was insufficient credible evidence on the effectiveness, or lack thereof, of such measures.

> The evidence collected to date (much of it from the USA) does not indicate any clear benefit in terms of a reduction in drug use... There seems to be no advantage for schools to engage in drug detection or screening procedures. — *Organisation from the alcohol and other drug sector*

Table 33: Frequency of responses for advantages of drug detection and screening in schools

Advantages	Frequency
Provides early detection	7
Acts as a deterrence	6
Provides opportunity for early intervention	5
Provides a credible reason to say no to peer pressure	4
Identifies young people at risk	3
Benefits to parents • enhances confidence in school system • parents involved throughout the testing process • power and opportunity to prevent child from self-destructing	3
Creates safe environment	1
Reduces incidence of drug trafficking	1
Improves quality of education	1
Benefits the community	1

Note: Stakeholders could provide more than one response.

Disadvantages of drug detection and screening in schools

Stakeholders identified a range of social, economic, ethical and legal disadvantages of school drug detection and screening. Social disadvantages included:

- potential stigmatisation, discrimination and alienation of students who are subject to screening and detection
- creation of mistrust, suspicion and loss of respect between teachers and students and/or parents and their children
- disengagement of young people from schools.

The high financial costs of drug screening measures were also noted, with some stakeholders commenting that it would be more beneficial to direct funds towards the implementation of drug education and treatment programs. Ethical issues associated with drug detection and screening were also raised, particularly the infringement of students' privacy and rights.

> Drug testing can infuse an insidious sense of suspicion into the delicate student–teacher relationship, which contributes to a hostile environment. This is of particular concern given the strong correlation between school connectedness and student success. — *Policy maker, education sector*

> if there were to be a proposal to introduce drug testing in schools which required the involvement of the NSWPF [New South Wales Police Force] there would be a number of ethical, logistical, legal and resourcing issues that would first need to be addressed. Furthermore, I would have significant concerns that any such proposal could undermine the good work currently undertaken by NSW Police in our schools which relies on developing a rapport between students and seeks to minimise the involvement of young people in the criminal justice system. — *Commissioner of Police*

Further disadvantages of current drug testing measures included the possibility that it could trigger a change of drug use to more harmful substances that are harder to detect or to substances that are not tested.

Stakeholders also commented that drug tests did not provide sufficient information or a contextual basis for drug use. For example, tests are not able to distinguish between regular and experimental use or address problems underlying drug use.

> drug testing actually reveals very little about the circumstances of a student's drug use. It does not show the extent of use, when or where the drug use occurred, nor the impairment caused by the use. — *Policy maker, alcohol and other drug sector*

Stakeholders also referred to the potential inaccuracy of drug testing tools and the scope for false positives to increase the legal liability of schools and create a series of negative consequences for students inaccurately identified as using drugs.

> Improper protocols, procedures and safeguards would give rise to allegations of discrimination against individuals, schools, school communities and school sectors. – *Parent, teacher, policy maker*

Also noted was the potential for long-term negative consequences for young people who were the recipients of punitive actions for their drug use. Stakeholders highlighted that if a student received a criminal charge or a negative school record as a result of their drug use, this may limit their education and employment opportunities in the future.

Some stakeholders provided counter-arguments to these disadvantages. For example, it was reported that the relationship between teachers, parents and students would not be negatively affected if the drug detection/screening program was seen as a measure to improve the school environment. Other stakeholders reported that there is no evidence of unintended harmful consequences as a result of school drug testing and that there would be no disadvantages provided that the confidentiality and rights of students and parents were protected and opportunities for treatment were offered.

> In our schools, students have responded positively to the idea of improving the school environment through drug testing and testing has become a part of the school culture. We have found no evidence of the erosion of trust in speaking to students and parents in our school community. – *Principal (US)*

Table 34: Frequency of responses for disadvantages of drug detection and screening in schools

Disadvantages	Frequency
Economic	
• Costly to implement	12
• Misdirection of funds (funds better spent on drug education/treatment programs)	7
Legal	
• Increases legal liability of school	5
• No legislative guidelines/protocols exist	2
• Hampers police efforts to minimise young people's involvement in the criminal justice system	1

Disadvantages	Frequency
Ethical	
• Invasion of privacy	10
• Infringement of rights	7
Social	
• Stigmatises/discriminates/alienates students	22
• Hampers relationship between teachers/school and students (e.g. creates mistrust, suspicion, loss of respect)	16
• Increases disengagement/absenteeism in schools	7
• Affects relationship between parents and children (e.g. promotes suspicion, undermines authority)	6
• May offend cultural/religious beliefs	2
Psychological	
• Trauma/humiliation/anxiety	4
Unreliability and other flaws of tests	
• Changing use to drugs that are harder to detect or using other substances to mask effects	9
• Provides no contextual basis for drug use / insufficient information about drug use	8
• Does not address underlying problem of drug use	5
• Changing drug use to drugs that are not tested (e.g. alcohol)	4
Other implications/consequences of testing	
• Punitive consequences may exacerbate the problem	8
• Affects quality of education / hampers role of providing education	6
• Prevents students from actively seeking support/assistance for their drug use	5
• Makes school environment less supportive / more threatening	4

Note: Stakeholders could provide more than one response.

6.2.1.1 Viability, effectiveness and appropriateness of drug detection and screening tools

Questionnaires

Stakeholders generally believed that questionnaires, although viable and appropriate to implement, were not very effective as they are usually based on self-report which is open to bias and subjective opinions and that students would not necessarily be truthful when reporting their drug use behaviours.

Interviews and clinical observations

Stakeholders believed that the effectiveness of interviews and clinical observations depended on the expertise and qualifications of the interviewer or clinician and the format of the interviews. Some stakeholders believed that it would be neither viable nor appropriate to implement this type of drug screening measure in schools.

Independent tests of body fluids/tissue

The majority of stakeholders believed that tests involving body fluid or tissue were not reliable, not feasible (too costly) and not acceptable (too invasive) to implement in schools. Other stakeholders believed that some tests were effective and appropriate if used with proper protocols or guidelines.

Non-invasive detection mechanisms

Most stakeholders reported that these forms of drug detection were not appropriate as they constituted a breach of privacy and that they were not very effective as innocent students could potentially be accused if drugs were intentionally placed with their belongings.

Table 35: Frequency of responses for viability, effectiveness and appropriateness of different types of drug detection and screening measures

Types of drug detection/ screening measures	Viable		Effective/reliable/ useful			Appropriate/ acceptable			Additional comments
	Yes	No	Yes	No	Maybe	Yes	No	Maybe	
Question-naires	4	1	1	12	4	7	3	0	Effectiveness depends on format, purpose of use
Interviews and clinical observations	2	5	0	5	11	3	7	1	Effectiveness depends on format, expertise of clinicians/ interviewers Acceptable if conducted with informed consent
Independent tests of body fluids (e.g. saliva, urine, sweat, breath, blood)	4	9	4	11	3	5	16	0	Effective or appro-priate if used with protocols/guidelines Some tests more reliable/ expensive/ time-consuming/ invasive than others
Independent tests of body tissue (e.g. hair, skin, nails)	3	9	2	9	3	0	15	0	Effective if used with protocols/ guidelines
Non-invasive detection mechanisms (e.g. sniffer dogs, scanning equipment)	2	5	1	8	2	1	13	1	Breach of privacy, acceptable if ordered by the courts, innocent students can be framed

Note: Stakeholders could provide more than one response.

6.2.1.2 Types of drug detection and screening measures that could be implemented in schools

More than half the stakeholders believed that no form of drug detection and screening should be implemented in schools (Table 36). The main reasons provided were that students who had problems with drugs would exhibit a range of problematic behaviours that would be observable by teachers and other school staff (testing would therefore be unnecessary), and that current forms of drug detection and screening were unreliable and may be detrimental. Several stakeholders reported a preference for saliva tests due to their higher levels of accuracy and effectiveness. Other stakeholders maintained that any measure would do if conducted within proper legal guidelines and with consensus from the majority of school staff, parents and students.

Table 36: Frequency of responses for preferred drug detection/screening measure

Preferred drug detection/ screening measure	Frequency	Rationale
None	18	Testing is unnecessary as students with drug problems will exhibit detectable problematic behaviours Tests are unreliable and may be detrimental Preference for education and awareness programs
Saliva tests	3	Highly accurate and effective; not invasive (e.g. Oraline)
Independent tests of body fluids/tissues	2	Provides accurate results Can be confidentially conducted
Questionnaires	2	Least invasive
Any tests	2	As long as conducted within proper legal framework With consensus from majority of school staff, parents and students and development of proper guidelines
Random searches and sniffer dogs	1	Reinforces message that schools are public property where drugs are inappropriate without legitimate reasons

6.2.1.3 Method of drug testing: random or targeted

Most stakeholders did not have a preference for either random or targeted drug testing as they were opposed to drug testing in schools in general. Several stakeholders reported a preference for random drug testing as only targeting certain groups for testing was seen as discriminatory, potentially leading to more social problems and distrust (Table 37).

6.2.1.4 Next steps taken once drug is detected

The majority of stakeholders recommended that some form of support and assistance should be provided to the student including education, counselling and referrals for treatment where required (Table 38). A consultative process with the student and their parents was suggested in many instances. Disciplinary actions were supported where considered appropriate. Police should be notified if the incidence was illegal.

Table 37: Frequency of responses for preferred method of drug testing

Method of drug testing	Supported		Rationale
	Yes	No	
Random testing	7	17	Reasons against: • Inappropriate • Inaccurate testing devices • Will identify only a small sample of users Reasons for: • Not discriminatory
Targeted testing	2	17	Reasons against: • Discriminatory • Leads to more social problems and distrust • Unethical • Inappropriate • Inaccurate testing devices Reasons for: • Should be conducted only when it is part of the rehabilitation process of an identified drug user

Table 38: Frequency of responses for measures taken after drug detection

Next steps after detection	Frequency
Assistance and support (e.g. education, counselling, referrals for treatment)	24
Communication with parents	12
Disciplinary actions taken where appropriate	7
Notify police where illegal incidences occur	6
No punitive measures should be taken	2
Students who test positive should be regularly tested thereafter	1

Note: Stakeholders could provide more than one response.

6.2.2 Viability, effectiveness, impact and implications of alternative measures

6.2.2.1 Alternatives to drug detection and screening

Most stakeholders suggested, as an alternative to drug detection and screening, the implementation of a well-developed drug education program that was evidence-based, comprehensive and part of a larger health and wellbeing program for schools (Table 39). Clearly articulated drug and alcohol policies and guidelines for schools were also suggested by several stakeholders as an alternative to drug detection and screening. Other strategies suggested include provision of counselling by qualified counsellors, options for early intervention and treatment programs, and programs and activities that focus on personal development, life skills, mentoring, peer support, and health.

> In the context of a holistic approach to student health, schools can provide evidence-based drug education programs that have realistic goals related to prevention, intervention and harm reduction. Included in their approach should be the development of policies that advocate for drug education as part of the health education program and provide specific guidelines that direct action, in the short, medium and longer term, when drug use incidents occur. — *Drug education service provider*

> Drug education in schools must be linked to a comprehensive welfare, health and wellbeing strategy that offers students a range of supports to help them deal with problematic alcohol and/or drug use. — *Policy maker, AOD sector*

In contrast, a few stakeholders believed there were no viable alternatives available or that education programs and policies would be effective only if implemented in conjunction with drug detection and screening.

> Unfortunately, we have reached a point in our society where the acceptance and use of illicit drugs amongst our youth [are] so prolific that mere education alone will not be enough to change this culture and prevent drug use. — *Recovered drug users' association*

Table 39: Frequency of responses for alternative measures to drug detection and screening

Alternative measures	Frequency
Drug education – evidence-based, best practice, informative, awareness raising, part of health and wellbeing program	23
Drug and alcohol policy and guidelines – well communicated, comprehensive, clear	11
Provision of counselling / qualified counsellors	10
Options for treatment / early intervention programs	7
Personal development programs, health education, life skills	7
After-school programs, extracurricular activities	6
Mentoring / peer support programs	3
Family drug prevention programs	3
Increased commitment to student welfare	3
Increased support for disadvantaged / at-risk students	3
Teachers trained and resources to deal with problems	2
Education alone is insufficient, need to be combined with drug detection and screening	2
Good communication between schools, students and parents	2
No viable alternative to drug testing	2
Not sure	1
Other:	
• no evidence that drug use is problematic among school students	1
• programs to support transition from primary to secondary schooling	1

Note: Stakeholders could provide more than one response.

Advantages of alternatives to drug detection and screening

Stakeholders believed that the alternatives would maintain student engagement and retention in schools which have been identified as protective factors for reducing drug-related harms (Table 40). The alternative strategies would also not be invasive or infringe upon the rights and privacy of students. The relationship between school staff, students and parents would also be preserved or strengthened with the encouragement of open communication and trust evoked from the implementation of alternative strategies.

Other suggested advantages of alternative measures include:

- They are cost-effective to implement.
- They would address the underlying problems of drug use.
- They provide prevention and early intervention strategies.

> Approaches which strengthen and enhance preventative school drug education programs and the management of drug related incidents are more likely to enable students to remain connected to the school setting, something universally accepted as an important protective factor. — *Policy maker, education sector*

> ... in addressing drug use in schools it is paramount that students receive appropriate support and early intervention, remain engaged with the school community and that any actions taken in response to illicit drug use do not cause more harm than the use of the drug itself. — *Commissioner of Police*

Conversely, alternatives were seen by one respondent to have:

> No advantage for children, parents or schools. Only for the drug traffickers who would continue to feast on the vulnerability of young children. — *Policy advocate, drug and alcohol sector (US)*

Table 40: Frequency of responses for advantages of alternative methods

Advantages	Frequency
Connectedness/engagement/retention in school maintained — protective factor in reducing drug-related harms	12
Increased effectiveness in reducing drug use	6
No invasion of privacy/rights	4
Encourages honest communication and trust, builds positive relationships between young people, parents and schools	4
Provides prevention and early intervention strategies	4
Cost-effective	4
Addresses overall health and wellbeing of students	4
Addresses underlying issues around drug use	3
Increased awareness about the effects of drug use	2
No discrimination	2
Consistent with role/duty of care of schools	2
Maintains school environment as safe and supportive	2
Offers positive, constructive assistance	2

Note: Stakeholders could provide more than one response.

Disadvantages of alternatives to drug detection and screening

Few stakeholders identified disadvantages to alternative strategies. Several respondents reported that there would be no disadvantages, while others commented that there would be no certainty that these alternatives would guarantee a reduction in drug use. Some stakeholders stated that schools that did not adopt testing and/or detection measures may be perceived as 'not doing enough' or that they were 'soft on drugs', but that these impressions could be prevented via active promotion and communication of drug education programs and policies.

Table 41: Frequency of responses for disadvantages of alternative methods

Disadvantages	Frequency
Cost	3
No guarantee that drug use will reduce / drug use will persist	2
Negative perception of schools – 'soft on drugs', not doing enough	2
Difficult if drug program not seen as a priority area	2
Teachers may not be confident/competent to deal with this area	2
Other:	
• Program may not be targeted at current users	1
• Those who do not attend schools will not be able to participate	1

Note: Stakeholders could provide more than one response.

6.2.2.2 Viability, effectiveness and appropriateness of alternative measures

Most stakeholders who responded to this question believed that alternatives were viable, effective and appropriate to implement in schools (Table 42). Some reported that there was more credible evidence on alternative measures compared to the available evidence regarding the effectiveness of drug detection and screening tools.

Other stakeholders commented that the effectiveness of alternative programs would depend on how well they were designed, whether or not they were based on evidence, and the level of commitment and actual application of the strategies. A few stakeholders indicated the need for more research and evaluation of these programs. A small proportion of stakeholders thought alternative measures were neither viable nor effective.

Table 42: Frequency of responses for viability, effectiveness and appropriateness of alternative measures

Viability, effectiveness & appropriateness	Frequency	Additional comments
Viable	10	
Effective	10	More evidence is available on the efficacy of alternatives than the efficacy of drug detection and screening
Appropriate	8	
May be effective	5	Effectiveness depends on: • regularity of application • long-term commitment and dedication • use of evidence-based strategies • how well it is designed
Not sure	3	Requires more research and evaluation of effectiveness
Not effective	3	
Not viable	2	
Not appropriate	1	

Note: Stakeholders could provide more than one response.

7. Online survey results

To obtain the views of a wider range of the professional and general community, NCETA also administered an online survey to seek views about drug testing in the school setting. The survey included eight questions addressing views about drug detection and screening in schools and alternatives to drug testing. The survey was developed by NCETA specifically for this project and was 'live' on the NCETA website from 10 July until 24 August 2007. The survey was open to anyone via the NCETA website.

7.1 Number of surveys

A total of 304 online surveys were recorded in SurveyMonkey at the closing date. The final number of surveys included for analysis was 284, as 20 surveys were incomplete and therefore ineligible for analysis. The key findings from the survey are presented below.

7.2 Demographics of respondents

The demographic characteristics of the respondents are presented in Table 43. The majority of survey respondents were female (66%, n = 186), aged between 36 and 55 years (54%, n = 153), married or living with a partner (61%, n = 171), with children (60%, n = 168), and employed (87%, n = 248). The majority of respondents worked in health care and social assistance (55%, n = 150) or in education and training (18%, n = 49) fields.

Respondents mainly resided in metropolitan locations (72%), in South Australia (28%), New South Wales (24%) and Queensland (21%).

The majority of respondents (n = 168) were parents or guardians (60% of respondents). Of these, 78 (46% of parents) had a child of primary school age or younger, 55 (33%) had a child in high school, and 77 (46%) had a child aged 18 years or over. These percentages total more than 100 per cent as parents could select more than one category.

Table 43: Demographic characteristics of respondents

Demographic	n (%)
Female	186 (66%)
Male	95 (34%)
Age range	
12–15 years	1 (0.4%)
16–18 years	4 (1%)
19–25 years	26 (9%)
26–35 years	63 (22%)
36–45 years	75 (27%)
46–55 years	78 (28%)
56–65 years	30 (11%)
66 years or older	5 (2%)

Demographic	n (%)
Marital status	
Married (including de facto, living with life partner)	171 (61%)
Never married	77 (27%)
Divorced/separated	31 (11%)
Widowed	3 (1%)
Parent/guardian	
Yes	168 (60%)
No	114 (40%)
Employment status	
Employed for wages, salary or payment in kind	247 (87%)
Engaged in full-time/part-time study	15 (5%)
Self-employed	7 (3%)
Retired on a pension	4 (1%)
Engaged in home duties	2 (1%)
Unemployed and looking for work	1 (0.4%)
Unable to work	0 (0%)
Other	8 (3%)
State/Territory	
South Australia	80 (28%)
New South Wales	67 (24%)
Queensland	59 (21%)
Victoria	36 (13%)
Western Australia	17 (6%)
Australian Capital Territory	15 (5%)
Tasmania	8 (3%)
Northern Territory	1 (0.4%)
Geographic location	
Metropolitan	202 (71%)
Regional	50 (18%)
Rural	32 (11%)
Remote	0 (0%)

7.3 Support for and opposition to school drug testing

Overall, 24 per cent (n = 66) of respondents supported drug testing in schools, while 71 per cent (n = 200) were opposed to it (see Table 44). Very few respondents (only 3%) were neutral (i.e. neither opposed to it nor in support of it).

Support for and opposition to specific methods of drug testing in school are presented in Table 45. Support ('support' and 'strongly support' combined) was highest for questionnaires (47%) and for interviews and clinical observations (47%). Opposition ('oppose' and 'strongly oppose' combined) was highest for sniffer dogs (85%) and nail analysis (85%).

Table 44: Support for and opposition to drug testing in schools

Response selected	n (%)
Strongly oppose	132 (47%)
Oppose	68 (24%)
Neither oppose nor support	9 (3%)
Support	31 (11%)
Strongly support	35 (13%)
Don't know enough to say	6 (2%)

Table 45: Number (and percentage) of respondents who oppose or support specific methods of drug testing in schools

Method of drug testing	Strongly oppose	Oppose	Neither oppose nor support	Support	Strongly support	Don't know enough to say
Questionnaires	36 (13%)	47 (18%)	84 (31%)	76 (28%)	19 (7%)	7 (3%)
Interviews & clinical observations	52 (20%)	48 (18%)	60 (23%)	82 (31%)	16 (6%)	9 (3%)
Sniffer dogs	182 (67%)	48 (18%)	10 (4%)	15 (6%)	15 (6%)	0 (0%)
Scanning equipment	162 (62%)	56 (21%)	16 (6%)	19 (7%)	8 (3%)	2 (1%)
Saliva test	162 (60%)	39 (14%)	14 (5%)	33 (12%)	19 (7%)	3 (1%)
Breath test	157 (60%)	40 (15%)	15 (6%)	36 (14%)	9 (3%)	4 (2%)
Sweat test	164 (63%)	39 (15%)	19 (7%)	18 (7%)	13 (5%)	7 (3%)
Blood test	182 (69%)	40 (15%)	17 (6%)	16 (6%)	9 (3%)	1 (0.4%)
Urine analysis	174 (66%)	44 (17%)	14 (5%)	21 (8%)	12 (5%)	0 (0%)
Hair analysis	170 (65%)	39 (15%)	12 (5%)	26 (10%)	9 (3%)	6 (2%)
Skin analysis	171 (66%)	44 (17%)	17 (7%)	12 (5%)	8 (3%)	8 (3%)
Nail analysis	171 (66%)	43 (17%)	16 (6%)	15 (6%)	8 (3%)	7 (3%)

7.4 Advantages and disadvantages of school drug testing

Respondents' perceptions of the advantages and disadvantages of school drug testing are shown in Table 46. Approximately half the respondents felt there were no advantages to drug testing in school (51%). The most common advantages cited were that 'students who use drugs can be identified and treated' (37%) and that 'it would be a deterrent to drug use among students' (27%). The most commonly cited disadvantages were that 'it would lead to mistrust between students and school personnel' (96%) and that 'it would stigmatise students with drug problems' (72%). Seven per cent of respondents thought there were no disadvantages to drug testing in schools.

The other advantages mentioned include reducing drug dealing in schools and making students aware of their responsibilities. Other disadvantages mentioned include students switching to using less detectable drugs and fundamental human rights being eroded.

Table 46: Respondents' perceptions of the advantages and disadvantages of drug testing in schools

Advantages	n (%)	Disadvantages	n (%)
It would be a deterrent to drug use among students	77 (27%)	It would be an invasion of privacy	187 (66%)
It would reduce the existing prevalence of drug use among students	54 (19%)	It would lead to mistrust between students and school personnel	215 (76%)
It would help parents to monitor/manage their children	51 (18%)	It would exacerbate drug use among students	59 (21%)
It would assist overall behaviour and discipline in the school	38 (13%)	It would stigmatise students with drug problems	204 (72%)
Students who use drugs can be identified and disciplined	22 (8%)	Students who use drugs would leave school	184 (65%)
Students who use drugs can be identified and treated	104 (37%)	It would be expensive to implement	158 (56%)
It would send out the right message about drug use	51 (18%)	Drug testing is unreliable and can produce inaccurate results	147 (52%)
It would improve public health	40 (14%)	It would override the role of parents	102 (36%)
There would be no advantages	146 (51%)	There would be no disadvantages	20 (7%)
Other advantages	14 (5%)	Other disadvantages	44 (15%)

7.5 Who should be tested if drug testing were implemented?

Participants were asked which students should be tested, if drug testing were implemented in schools (see Table 47). Respondents most commonly endorsed random drug testing (39%) in Years 7–9 (42%) and 10–12 (61%).

Table 47: Support for and opposition to drug testing in schools

Which students should be tested	n (%)
All students	84 (30%)
Tests should be done on a random basis	111 (39%)
Other	29 (10%)
Which year groups should be tested	**n (%)**
Years 1–3	4 (1%)
Years 4–6	12 (4%)
Years 7–9	118 (42%)
Years 10–12	174 (61%)
All years	31 (11%)

The most common alternatives suggested under the 'other' (for which student should be tested) were students who had been identified as 'problematic' or 'at risk' (n = 8, 3%), and students who had evidenced intoxication or were suspected of using drugs during school (n = 11, 4%).

7.6 What next steps should be taken if a student tests positive to drugs?

Table 48 indicates respondents' endorsement of the steps that should be taken next if a student tests positive to drugs. The most commonly endorsed steps were to provide referral for treatment (57%), provide voluntary counselling (51%), and inform the parents (51%).

Table 48: Number of respondents (and percentage) indicating which next steps should be taken if a student tests positive to drugs

Next step	n (%)
Inform the parents	144 (51%)
Inform the police	24 (9%)
Issue a warning	45 (26%)
Give them detention	3 (1%)
Suspend them	9 (3%)
Expel them	6 (2%)
Provide voluntary counselling	144 (51%)
Provide compulsory counselling	93 (33%)
Provide referral for treatment	161 (57%)
Other	39 (14%)

Some of the alternative steps suggested in the 'other' category include conducting follow-up drug tests, responding on a case-by-case basis, providing the student with information/education on drugs, and providing the student with support.

7.7 Alternatives to school drug testing

Table 49 indicates which alternatives to drug testing in schools the respondents endorsed. The most commonly indicated alternatives include incorporating drug and alcohol education programs into the school curriculum (80%) and providing drug and alcohol counselling services (66%).

Table 49: Number of respondents (and percentage) endorsing alternatives to school drug testing

Strategy	n (%)
Engage students in extracurricular activities	174 (61%)
Provide drug and alcohol counselling services	188 (66%)
Provide referrals to drug and alcohol treatment professionals	177 (62%)
Incorporate drug and alcohol education programs into school curriculum	227 (80%)
Implement drug and alcohol guidelines in school policy	178 (63%)
Improve parenting skills	174 (61%)
There are no alternatives that are as effective as drug testing	14 (5%)
Other	33 (12%)

Options mentioned in the 'other' category included providing alcohol and drug information to parents, and building resilience among students.

8. Alternatives to drug detection and screening in schools

Drug use by schoolchildren is influenced by a wide range of factors, and there is growing evidence of which drug preventive strategies are likely to be effective in the school setting. In recent years, considerable national[48] and international research effort has been directed towards identifying the risk and protective factors associated with the development of a range of potentially harmful adolescent behaviours, including drug use.

There have also been three Cochrane Collaboration reviews undertaken in recent years to identify which types of strategies provide best evidence of efficacy (Foxcroft, Ireland, Lowe & Breen, 2007; Faggiano, Vigna-Taglianti, Versino, Zambon, Borraccino & Lemma, 2005; Thomas & Perera, 2006). This has led to a strengthened knowledge base regarding the efficacy of various types of interventions in different settings, including schools.

In general, the research literature highlights the importance of addressing identified risk factors, while simultaneously enhancing protective factors associated with drug use by young people. These are areas where schools can play a variety of roles in the prevention of drug use and in the minimisation of drug harm among young people.

This section outlines a range of approaches[49] that can be taken to prevent and/or reduce school students' alcohol or other drug use. The approaches outlined here are presented as alternatives to various forms of testing and screening as described earlier in this document.

The key types of school-based interventions applicable to the school setting are categorised here according to one of four different broad approaches:

- curriculum-based interventions conducted in the classroom
- whole-school interventions focused on the school's role as an institution of socialisation
- targeted interventions addressing high-risk students
- family strengthening programs.

8.1 Types of alternative programs

8.1.1 Four categories of school-based interventions

The types of preventive strategies that are amenable to the school setting can be categorised according to one of four different broad approaches as shown in Table 50.

48 There have been a number of important projects undertaken in Australia to identify effective prevention strategies including: the Pathways to Prevention project (National Crime Prevention, 1999), the work on the social determinants of drug use undertaken by Spooner and colleagues at the National Drug and Alcohol Research Centre (Spooner et al., 2001); and a large project reviewing the evidence on the prevention of substance use by the National Drug Research Institute (Loxley et al., 2004).

49 The range of approaches covered here is not exhaustive. The major areas of interest including those for which there is the strongest evidence base are addressed. Other strategies, such as peer education and peer mentoring, DARE programs and social norming approaches may be of interest to some readers but are not specifically addressed.

Table 50: Types of school-based preventive strategies and their levels of efficacy

Strategy	Strategy descriptor	Efficacy
Curriculum-based	Curriculum-based school drug education (a universal prevention strategy)	A popular strategy with limited evidence to date of effective strategies that can be employed in the classroom situation
Schools as institutions of socialisation	Strategies that draw on the role of the school as an important institution of socialisation and which seek to enhance a student's degree of connectedness to schools (a universal prevention strategy)	A strong national and international evidence base from longitudinal studies. Strategies designed to enhance levels of connectedness to the school have positive impacts across a wide array of behaviours and health areas
Interventions targeted at high-risk students	Interventions targeted at students with identified risk factors for the development of drug use problems (selective or targeted prevention strategies)	A growing evidence base with novel approaches that combine the proven elements of brief motivational interventions with effective screening and selection tools targeting personality types prone to a range of antisocial behaviours including drug use. Again, the impact is positive for a range of behaviour problem areas
Programs to strengthen families	Programs designed to build the effective functioning of families	A good evidence base and a strategy that can work well in conjunction with 2 and 3 above. Recruitment of high-need families is a challenge

While these four categories are not exhaustive or exclusive (i.e. they can be implemented in conjunction with one another), they nonetheless provide an overview of the range of possible approaches that can be undertaken within the school setting. These four approaches also operate in parallel to the three levels of drug prevention efforts that have been identified (Allen, Coombes & Foxcroft, 2006), namely:

- universal prevention interventions, aimed at the general population of families and young people who are not identified on the basis of individual risk factors
- selective prevention interventions which target individuals, families or groups that have increased risk of drug use problems, and
- indicated prevention programs which are targeted at the multiple and complex risk factors.

Each of these four broad approaches, and the levels at which they usually operate, have different strengths and weaknesses and different levels of efficacy and each is outlined below.

8.2 Effectiveness of alternative programs

8.2.1 Curriculum-based approaches

Curriculum-based approaches form the group of interventions most often thought of when discussing school-based alcohol and drug prevention strategies. They have strong intuitive appeal and popular support. School-based drug education programs, as conceptualised historically, concern the ways in which schools can transmit knowledge, information or skills to young people so as to prevent them using alcohol or other drugs (Roche, 2006). This might be termed 'the drug education curriculum approach' to drug prevention in schools. This approach could, for example, involve drug-related themes, lessons and activities.

There are at least four categories of drug education programs (Allen et al., 2006). While these categories of programs are conceptually distinct from one another, in practice they are often employed together. Hence, young people may be exposed to a variety of approaches over time. These categories include:

Information models

Information models were some of the earliest drug education models, dating back to the 1960s. They sought to provide information about drugs, drug use and drug misuse and were based on the assumption that logical choices are made by young people and that drug misuse occurred as a result of a lack of knowledge about drugs and, if appropriately informed, students would act appropriately. The information model was largely discredited by the late 1970s (Allen et al., 2006). A variation on this approach was use of scare tactics, predicated on the belief that such an approach would invoke fear arousal which would, in turn, result in reduced drug use. This approach has also been found to be ineffective (Midford & Munro, 2006).

Values/decision-making models

These models were based on the assumption that young people use drugs to compensate for personal or social deficits (Allen et al., 2006). Therefore, the aim of this approach was to increase self-esteem, improve self-understanding and clarify personal values. Assessments of these models found that they could have significant impacts on young people's knowledge, but had no positive effect on behaviour.

Social competency models

Most current curriculum-based drug education programs utilise these models, which are based on the premise that young people use drugs because of social pressure from a variety of sources such as media and peers. In order to resist these pressures, young people are exposed to counter-arguments and trained in the skills necessary to carry out non-use choices (Allen et al., 2006). Evaluations of these programs have had mixed results, with some indicating that better conceptualised and more soundly implemented programs led to desirable behaviour changes, such as abstinence or delayed onset of drug use. On the other hand, other evaluations have reported very few long-term effects from this approach.

Harm minimisation model

Hawthorne (2001), as cited in Allen et al. (2006), identified a further category of drug education program, the 'harm minimisation' or harm reduction model. These models are based on the assumption that, given the appropriate skills and knowledge, young people will become more discerning about their drug use, which will result in a reduction of drug-related harm. Coombes, Allen & Foxcroft (2006) reported a lack of evaluations of this approach, making it difficult to draw conclusions about its effectiveness.

Curriculum-based approaches to drug prevention have been popular for some time and have been subject to evaluation over a 30-year plus time span. However, evaluations of classroom-based drug education have been consistently disappointing, with a few minor exceptions. In general, classroom-based interventions have not demonstrated sustained behaviour change, although some programs have been associated with short-term reductions in drug use.

Evaluating the effectiveness of curriculum-based drug education programs is a challenging task. The methodological problems associated with designing and carrying out evaluations of drug education programs have resulted in very few programs having been subjected to rigorous evaluations involving experimental designs or multi-level analyses (Allen et al., 2006). In addition, the majority of evaluations of drug education programs have taken place in the United States and have abstinence as their primary goal (Midford & Munro, 2006).

To date, three Cochrane reviews of the efficacy of classroom-based drug education have been undertaken (Foxcroft et al., 2007; Faggiano et al., 2005; Thomas & Perera, 2006). Across these reviews there is little high-quality evidence that classroom interventions can have any long-term effects (McCambridge, 2007). Moreover, the evidence base itself is limited and is characterised by significant methodological and inferential shortcomings. Critics of the classroom-based approaches, the underpinning evidence base and the overarching conceptual frame that shapes them, all highlight the need for a broadened conceptualisation of the nature of prevention which incorporates socioeconomic factors.

The Cochrane Collaboration review undertaken by Faggiano et al. (2005) examined 32 controlled studies of school-based drug prevention programs with the usual curriculum. Programs that focused on improving students' knowledge about drug use issues demonstrated some degree of success but they did not impact on behaviour. Programs that focused on the development of social skills effectively increased levels of drug knowledge, decision-making skills, self-esteem, resistance to peer pressure and reduced illicit drug use, but only in the short term. In critiquing this finding, Coombes et al. (2006) pointed out that, although the social skills training programs resulted in statistically significant changes, it is questionable whether the achieved effects were meaningful in a public health or prevention sense.

Faggiano et al. (2005) also noted that measures of change were often made immediately after the intervention, with very little longer-term follow-up or investigation of peer influence, social context and involvement of parents. Most of the trials examined were also conducted in the United States. Given that social context and broader drug policies have a significant influence on the effectiveness of the programs, the results of these evaluations may not be relevant to other countries.

In a cost–benefit analysis of soundly conducted curriculum-based school drug prevention programs in the United States, Caulkins, Pacula, Paddock and Chiesa (2002) reported societal returns of $840 in contrast to program costs of $150 per student. Benefits accrued from these programs came mostly from reduced tobacco, alcohol and cocaine use (39%, 28% and 20% of total benefits, respectively). Caulkins et al. (2002) also noted that programs are not cost-effective because they reduce a large proportion of drug use (which they do not); rather, they are effective because they have modest impacts on drug use and related harms, and when widely implemented, these small decreases can result in significant reductions in societal costs.

In summarising the evidence concerning the efficacy of school-based drug prevention programs, Coombes et al. (2006) reported that information models and values/decision-making models have been shown to be ineffective. Certain social influence programs have been reported to delay the onset of drug use under optimum conditions.

Loxley et al. (2004), in their comprehensive examination of school drug education programs, concluded that short-term reductions in drug use and progression to frequent drug use may be achievable via this approach but prospects for longer-term behaviour change are unclear.

On the one hand, the empirical research does not give a ringing endorsement to any particular form of curriculum-based drug education. On the other hand, Midford (2006) maintains that the funding parameters applied to research in this area do not lend themselves to the kind of context-driven longitudinal evaluations that would be necessary to demonstrate program effectiveness.

In summary, however, it is clear that there is not a strong empirical basis to demonstrate the effectiveness of curriculum-based school drug prevention programs in schools. Given this limitation, it is important to examine broader factors that impact on young people's behaviour (Australian Government Department of Education, Science and Training, 2004):

> We now know that the culture, relationships and opportunities in schools contribute to young people's social and academic outcomes and that these are relevant to a range of behaviours including drug use. Without reducing the role of drug education programs, research is demanding a shift in focus so that curriculum and classroom learning is seen as part of a broader and comprehensive approach to drug prevention and minimising the harm for students and the school community. (p.6)

8.2.2 Schools as institutions of socialisation

An alternative role for schools in drug prevention is in relation to their function as major institutions of socialisation. In this way, schools have an opportunity to be positive social institutions which nurture young people, create a sense of connectedness and belonging, enhance resilience, encourage optimism and promote healthy behaviours in a range of areas (such as alcohol and other drug use). This broader approach to prevention, without necessarily focusing on drug issues, seeks to create a nurturing school environment which addresses some of the risk and protective factors for drug use described earlier.

Historically, schools were viewed as convenient conduits through which knowledge, skills and attitudes concerning drug use could be channelled to young people in the hope that this would lead to behaviour change. However, in recent years, there has been an important change in the way the role of schools in drug prevention has been conceptualised. Greater emphasis is now placed on the role of the school itself as a social institution that can have a positive influence on the socialisation of young people.

School-based programs that teach social and emotional competence, also termed social and emotional learning (SEL) programs, have been developed to address the overarching goal of schools not only to produce students who are culturally literate, intellectually reflective and committed to lifelong learning, but also to encourage young people to 'interact in socially skilled and respectful ways; to practice positive, safe, and healthy behaviors; to contribute ethically and responsibly to their peer group, family, school and community; and to possess basic competencies, work habits, and values as a foundation for meaningful employment and engaged citizenship' (Greenberg, Weissberg, O'Brien, Zins, Fredericks, Resnik et al., 2003). While SEL programs may differ in content and application across schools, they commonly encompass the following areas: (i) self-regulation and management of emotions; (ii) empathy for others; (iii) self-awareness and recognising emotions; (iv) motivation; (v) conflict resolution; (vi) problem solution; and (vii) general social competence. These programs also include establishment of a supportive culture within the school environment and often extend to engaging parents in the program in order to reinforce what is learned within the school to facilitate implementation of skills throughout daily life.

Evidence from some studies suggests that participation in a SEL program develops attitudes in children that are inconsistent with harmful behaviours, including substance use (Durlak, Taylor, Kawashima, Pachan, DuPre, Celio et al., 2007; Tobler & Stratton, 1997). In an evaluation of over 200 such programs, Tobler and Stratton concluded that programs with a highly interactive approach, including social influences, comprehensive life skills and system-wide changes were more effective compared to more didactic models that focused on knowledge, attitudes, values and drug awareness resistance education (DARE)-type programs. In addition, programs were

more likely to foster lasting benefits when they were conducted across successive years and comprised multiple components that were reinforced in the broader environment with peers, family members, community and health professionals (also see studies conducted by Botvin and colleagues, which have been assessed in Cochrane reviews (Faggiano et al., 2005)).

This approach has gained considerable currency in recent years and focuses on the school as a whole addressing its role as an institution of socialisation. Such approaches are designed to make the school safer, more nurturing social institutions which enhance students' sense of connectedness. Student connectedness to their school acts as a strong moderator of a range of risk factors including drug use. The quality of student-to-student relationships, student–teacher relationships and ways in which students identify with the school as a social institution have been shown to be pivotal to drug prevention.

In addition to potentially providing a nurturing environment for young people, staying at school improves a young person's chance of finding employment or entering tertiary education (Munro, 1997), as cited in Roche (2006). Schools can also provide a link to the community, increase students' resilience to paths to addiction and provide them with an environment that continually challenges them to contemplate their future (Norden, 2005).

This kind of school-based drug preventive program is based on a social development model (Hawkins, Catalano, Kosterman, Abbott & Hill, 1999) whereby strong bonds to a school serve as protection against behaviours that violate socially accepted standards. Attachment (i.e. a positive emotional link) and commitment (i.e. a personal investment in the group) are the key elements of such bonds. When social groups produce strong bonds of attachment and commitment in members, and promote clear standards for behaviour, these groups increase their behaviour consistent with those standards and prevent behaviour that violates them.

There is strong evidence that the level of connectedness to family and to social institutions (such as schools) felt by young people profoundly impacts upon their quality of life and health-related behaviours, such as drug use. Recent Australian studies form an important contribution to this evidence base.

Victoria's Gatehouse Project was a multi-level, school-based intervention program designed to increase levels of emotional wellbeing and reduce rates of drug use problems associated with low levels of emotional wellbeing. The project sought to build a sense of security and trust within schools, increase skills and opportunities for effective communication, and build a sense of positive regard through valued participation in aspects of school life (Bond et al., 2004). Following the implementation of the intervention, there were significant differences between the intervention group and the control group. The authors concluded that a broader focus on a student's connectedness and school climate may be equally, if not more, effective in addressing health and problem behaviours than specific, single issue-focused education packages.

The Gatehouse Project followed on from earlier work undertaken in the United States and elsewhere, which found similarly positive results for these types of interventions. For example, in a study of 12 118 adolescents in the United States, Resnick et al. (1997) found that adolescents' sense of connectedness with their schools was associated with:

- lower levels of emotional distress and suicidal involvement among both younger and older adolescents
- somewhat lower levels of violence
- less frequent cigarette use
- less frequent alcohol use
- a delay in initiation of sexual activity
- less frequent cannabis use.

The researchers concluded that parent–family connectedness and perceived school connectedness were protective of a wide range of health risk behaviours examined.

Characteristics of schools that promote a sense of connectedness among students were identified in the United States National Longitudinal Study of Adolescent Health (McNeely, Nonnemaker & Blum, 2002). Data were drawn from 75 515 students across 127 schools to examine the impact of school characteristics on cigarette smoking, drinking to intoxication, suicidal ideation or attempt, first sexual intercourse and weapon-related violence. Adolescents who perceived their teachers to be fair and cared about them were found to be less likely to initiate any of the health risk behaviours examined.

Using the same dataset as McNeely et al., further analysis was undertaken by Dornbush, Erickson, Laird and Wong (2001). They reached similar conclusions about the influence of school and parental attachment on cigarette smoking, alcohol use, cannabis use, delinquency and violent behaviour, undifferentiated by gender, ethnicity and their community's level of economic deprivation. Adolescents' attachment to family and school reduced the prevalence of health-harming behaviours and their intensity and overall frequency. There were no exceptions to this pattern across the different groups examined. Dornbush et al. (2001) found that high levels of connectedness to schools clearly reduced deviant behaviour. Once this behaviour had commenced, however, the relative influence of school connectedness tended to be weaker.

Bonny et al. (2000), in a study of approximately 2000 adolescents in the United States, also reported that students who felt more connected to their schools reported better academic performance, required fewer school nurse visits and used fewer cigarettes and less alcohol.

The importance to young people of the level of connectedness they feel towards their schools has led to a number of interventions that have sought to increase this bonding. These programs have attempted to measure the impact of these interventions on various risky behaviours including drug use and to highlight the role that schools and social institutions can play in the prevention of risky behaviours, of which drug use is but one.

Catalano, Haggerty, Oesterle, Fleming and Hawkins (2004) summarised the findings of two projects, the Seattle Social Development Project (SSDP) and the Raising Healthy Children (RHC) project. Data collected as part of the SSDP consistently showed that school bonding during the middle and high school years was significantly and negatively associated with substance use, delinquency, gang membership, violence, academic problems and sexual activity in adolescence and young adulthood. The SSDP was a multi-faceted program which sought to enhance the attachment of elementary students to their schools. Following the implementation of the program, when participants were followed up in twelfth grade, the intervention group had higher levels of school attachment and commitment, and academic achievement, and lower levels of school problems, violence, alcohol misuse and risky sexual behaviour.

In the RHC project, Catalano et al. (2004) reported that, prior to implementation, level of school bonding was negatively associated with problem behaviour (measured by teachers and parents), substance use, aggression, school problems and delinquency (measured by child self-report). Moreover, school bonding had a stronger protective effect for children whose parents reported involvement in illicit drug use, heavy alcohol use and domestic violence than for those children whose parents were not involved in these behaviours. They also found that school bonding had a positive association with later academic achievement. Like the SSDP, participation in the RHC program was associated with increased social and cognitive competence, commitment to school and academic performance, and reduction in problem behaviours.

In summarising the findings of their research Catalano et al. (2004) indicated:

> These longitudinal studies have demonstrated the importance of school bonding in contributing to positive outcomes like academic performance and social competence. In addition, strong school bonding was associated with less tobacco, alcohol and drug use; criminal involvement; gang membership; and school dropout. (p.259)

Such approaches have also been found to be effective at the primary school level. Hawkins et al. (1999) undertook an evaluation of a package of interventions that trained teachers and parents to promote children's academic competencies and bonding to school, and that developed children's social competencies to resist health-compromising influences. The intervention took place during elementary (primary) school grades. It resulted in less school misbehaviour and better academic achievement six years after the intervention. The intervention seemed particularly effective in improving attachment to school, achievement and school behaviour of children from poorer families. In addition, the intervention reduced lifetime prevalence of violent criminal behaviour, heavy drinking, sexual intercourse and pregnancy. No effects were observed, however, for lifetime prevalence of use of cigarettes, alcohol, cannabis or other illicit drugs at 18 years.

Hawkins et al. (1999) reported that their findings:

> suggest that early and continued intervention in the elementary grades can help put children on a positive developmental course that is maintained through high school. The findings are consistent with our hypothesis that helping parents and

> teachers to strengthen children's commitment and attachment to school in the elementary grades can produce lasting differences in bonding to school that mediate risk and prevent health-compromising behaviours in adolescence. (p.231)

The authors made a further interesting observation concerning the durability of the effects of their intervention, given that it occurred during the elementary grades without any boosters or follow-up intervention in the following years. They stated:

> this intervention focussed on increasing school bonding and achievement rather than on developing norms or skills specifically related to avoiding health-risk behaviours. Developing a strong commitment to schooling in the elementary grades may set the children on a developmental path toward school completion and success that is naturally reinforced both by teachers being responsive to eager students and by the students' own commitment to schooling. (p.231)

There are close associations between the level of connectedness felt by students and the presence of health-harming behaviours such as drug use. Consequently, enhancing student bonding to schools has the potential to decrease these behaviours among young people. Critical to the successful implementation of these programs are measures that encourage students to bond with their schools as social institutions and to form trusting and nurturing relationships with staff and other students at the school. This represents one of the most important and empirically tested drug prevention strategies available to schools.

8.2.3 Interventions targeted at students

A third way of viewing the role of schools in drug prevention is the opportunity they afford to identify and intervene early in risk factors associated with the development of drug problems. Schools represent an important opportunity to implement these selective or indicated preventive programs, because risk factors can come to the attention of teachers or be highlighted by various screening processes. As well, the links between schools, students and families can be used to channel intervention programs.

In addition to universal drug preventive approaches (such as illustrated through the role of schools as institutions of socialisation, see 8.2.2 above), there is good evidence that selective and indicated programs can also be of benefit to schools. Where students have been identified as being at risk of developing drug use problems, there is a range of interventions that have shown some efficacy in terms of moderating the effects of risk factors. Where students have personality traits that could predispose them to difficulties with drug misuse, there is evidence that targeted interventions can reduce the potentially negative effects of these traits.

Brief interventions for young people

An intervention strategy that has applicability in school combines early screening of adolescent drug misuse with brief interventions aimed at encouraging behaviour change (Toumbourou et al., 2007). Brief motivational enhancement interventions using motivational interviewing principles have shown substantial promise in a range of spheres. Brief motivational and cognitive–behavioural interventions that are client-centred and

empathic are also known to be effective. Importantly, they focus on risk factors, rather than necessarily on problem behaviours. In this way, they provide an opportunity to intervene with the risk factors *before* they turn into problem behaviours, such as drug use. Motivational interviewing:

> is a patient centred interviewing style with the goal of resolving conflicts regarding the pros and cons of change, enhancing motivation, and encouraging positive changes in behaviour. The interview style is characterised by empathy and acceptance, with an avoidance of direct confrontation... Motivational interviewing and other interventions that focus on resolving ambivalence (e.g. evaluating the pros and cons of change versus no change) might increase intrinsic motivation by allowing patients to explore their own values and how they may differ from actual behavioural choices. (p.1396)

As Toumbourou et al. (2007) noted, many adolescents who drink heavily or use other drugs tend to grow out of this behaviour as they enter adulthood. This occurs largely because the costs or problems associated with the drug use outweigh the benefits gained, and because the cognitive–control centre of the brain which deals with logic and self-regulation (i.e. the brain's executive functions) becomes more fully activated. Motivational interviewing tends to sharpen the focus on the costs and benefits associated with problem behaviours, and provides an opportunity for change to occur earlier in drug use careers, rather than later.

Motivational interviewing has strong support from the scientific literature. Burke, Arkowitz and Menchola (2003), for example, conducted a meta-analysis of 30 clinical trials of motivational interventions. Motivational interviewing[50] was found to be at least as effective as other active treatments and more effective than no treatment and/or placebo in addressing problems involving alcohol and drug misuse, diet and exercise.

Although motivational interviewing-based brief interventions are well established with adults, the study of their use with young people is a newer endeavour (Winters & Leitten, 2007). Tevyaw and Monti (2004) reviewed several studies involving the use of motivational enhancement and other brief interventions specifically for adolescent substance users. They found that these approaches resulted in decreases in substance-related negative consequences and problems, decrements in substance use, and increased treatment engagement. Results were particularly strong for those with heavier substance use patterns and/or less motivation to change.

Tait and Hulse (2003) examined 11 relevant studies involving 3734 adolescents and also reported that brief interventions confer benefits to adolescent substance users across a diverse range of settings including schools, universities and substance misuse treatment centres. Brief interventions were found to have a small effect on alcohol consumption, but a very substantial effect on users of multiple substances.

50 The study involved clinical trials of what the authors termed *adapted motivational interviewing* because some of the interventions did not solely rely on motivational interviewing techniques.

Of particular interest in the school context is the study by Winters and Leitten (2007). They randomly assigned 79 students between the ages of 13 and 17, who presented for a school chemical health assessment,[51] to three groups. One group received assessment only (the control group), one group received two sessions of brief intervention, and the third group received two sessions of brief intervention, plus one session involving the student and a parent. The researchers reported significant improvements for both intervention groups. In addition, the group that involved a session with a parent exhibited greater and more consistent intervention effects compared with the adolescent-only intervention group.

An interesting development in brief interventions for young people has been that of interventions that target dimensions of personality associated with substance misuse. Conrod, Stewart, Comeau and Maclean (2006) identified a group of 297 Canadian high school students who had one of three groups of personality characteristics associated with the development of substance misuse. These high-risk characteristics were anxiety sensitivity, hopelessness and sensation seeking. Participants in the study were provided with cognitive–behavioural and motivational interventions tailored to the specific personality characteristics of each participant. When followed up at four months, the intervention group had a significantly higher level of abstinence, reductions in the quantity of alcohol consumed and the frequency of binge drinking and other alcohol problems, compared with the controls.

The authors suggested the factors that may contribute to the efficacy and efficiency of this approach included:

- targeting prospective risk factors rather than early signs of problems
- incorporating intervention techniques that specifically target individual risk factors
- making interventions personally relevant and easy for students to engage with.

While there have not been a large number of studies of brief intervention among adolescence, and still less in the school setting, this is an approach that offers considerable promise. Client-centred and empathic approaches, which are central to motivational interviewing, are also consistent with research that points to the value of schools being nurturing and supportive environments for young people.

51 Students were required to present for a chemical health assessment if they were caught using drugs at school, were caught with drugs in their possession, or were referred by a teacher who was concerned that the student was using drugs.

8.2.4 School-based approaches that strengthen families

Strategies that support families to reduce the risk factors for drug use are also important options for schools.[52] Indeed, some of the strongest supporting evidence for effective drug prevention programs comes from those that involve families. Given the important role that families play in the prevention (and development) of drug problems, there is growing support for implementing programs that strengthen parent–child communication and relationships (Allen et al., 2006). However, one of the major problems with such programs is the difficulties associated with engaging parents in them; of particular concern are the 'hard-to-reach parents', such as those from low income/socioeconomic status families, those experiencing divorce, unemployment, social isolation or high levels of family conflict. Families with these characteristics are more likely to have children with problem behaviours.

One of the most effective school-based family drug prevention programs is the Strengthening Families Program (SFP) (Allen et al., 2006). SFP is a multi-component, family skills training program that involves parent skills training, children skills training and family life-skills training. The Cochrane Collaboration examination of programs aimed at primary prevention of alcohol misuse among young people reported the SFP[53] was one of the few drug preventive programs that showed promise as an effective universal intervention over the longer term (greater than three years) (Foxcroft et al., 2007). Although the Cochrane Collaboration review focused on alcohol prevention efforts, prevention benefits for other drugs were also identified in the SFP evaluations (Allen et al., 2006).

Similarly, Spoth, Redmond and Shin (2001) recruited 667 sixth-grade students and their families into a trial of two types of brief intervention compared with a control group. The first intervention was a five-session program, Preparing for the Drug Free Years. The second was the seven-session Iowa Strengthening Families Program (ISFP). The intervention groups demonstrated delayed initiation into drug use, and reductions in current and composite use of cannabis, alcohol and tobacco. The follow-up was conducted four years after the intervention, which was at a time when students were at high risk of substance misuse behaviours. There was a greater number of significant effects found for the relatively more intensive ISFP.

Given the important role that families play in the development of drug use problems, it is encouraging that programs that strengthen families can reduce drug problems. Schools may be a useful launching point for these programs.

52 In outlining the evidence base for interventions of this type, it is recognised that while the interventions recruited subjects from schools, they may not have been conducted in schools, or involved school personnel.

53 The version of the SFP reviewed in the Cochrane Collaboration project was SFP 10–14.

8.2.5 Summary

Prevention research has consistently identified risk and protective factors associated with drug misuse as the primary targets for preventive intervention (Hawkins et al., 2002). Should a drug testing program be considered appropriate, it should not be implemented in isolation, but as only one of a range of options within a drug strategy. Further, a risk reduction / protection enhancement model is held to be the best available framework for addressing adolescent health and behaviour problems (Loxley et al., 2004; Spooner et al., 2001). Moreover, interventions that reduce multiple risk factors in individuals, and the environments in which they socialise, hold promise for preventing multiple adolescent health and behaviour problems including tobacco and other substance misuse, risky sexual behaviour, violence, delinquency and school drop-out (Hawkins et al., 2002).

Three important school-based drug prevention strategies or approaches

The traditional forms of curriculum-based drug education have generally failed to yield the types of outcomes hoped for after 30 years of concerted effort. Nevertheless, schools remain one of the most important settings for health promotion and preventive interventions among children and youth. Overall, the literature suggests that successful, safe negotiation through the adolescent–adult transition requires good regulatory capacity, including executive functioning and emotion regulation, and the opportunity to draw on social capital, such as connections or relationships with supportive adults, peers who have good regulatory capacity, and prosocial community organisations.

This review has identified four different approaches (briefly summarised below); of these, three are recommended as potentially useful ways in which schools can effectively work to prevent drug use problems among their student populations:

- support and develop connectedness
- brief interventions for high-risk youth
- family interventions.

8.3 Key findings

8.3.1 Curriculum-based interventions/programs

Curriculum-based approaches to drug prevention have not demonstrated sustained behaviour change, although some programs have been associated with short-term reductions in drug use. This does not necessarily imply that issues concerning drug use should not be included in the curriculum but that appropriate drug use issues be included in much the same way as a range of other health-related issues form part of the school curriculum. However, addressing drug use issues via the curriculum is unlikely, of itself, to lead to the desired behaviour change.

8.3.2 School-wide interventions

A group of approaches that show considerable promise are those that result in schools becoming safe, nurturing social institutions to which students become connected. The evidence concerning the degree to which student connectedness to schools mediates other risk factors for drug use is very strong. Important in this regard is the quality of student-to-student relationships, student–teacher relationships and ways in which the students identify with the school as a social institution.

8.3.3 At-risk individuals

For students exposed to a number of risk factors for developing substance misuse problems, there is a range of interventions that have shown some efficacy in terms of mediating the effects of these risk factors. Equally, where students have personality traits that predispose them to difficulties with substance use, targeted interventions using brief motivational and cognitive–behavioural interventions, which are client-centred and empathic, can reduce the effects of these traits.

8.3.4 Families

Strategies that support families to reduce the risk factors for drug use that occur in their domain are also important. Indeed, some of the strongest supporting evidence for effective drug prevention programs comes from those that involve families.

The drug use behaviour of students is clearly influenced by a range of factors, many of which are beyond the scope of schools to influence. Implementation of drug prevention programs in schools without considering the range of broader social influences on drug use is not likely to be effective. In considering the implementation of prevention programs, it is important to be clear about the aims of the program. For example, is the aim of the program to prevent all use of a substance/s or to reduce the harm associated with that use? No single strategy is likely to be effective in and of itself. A comprehensive suite of effective evidence-based strategies is proposed.

A final issue that warrants consideration is that, by its very nature, research into school-based drug prevention should not consider the efficacy of individual programs in isolation from other factors (or programs) that might influence drug use. Wilson, Gottfredson and Najaka (2001) made the point that:

> school-based prevention, in practice, is generally *not* a stand-alone curricular or other type of intervention. Rather, it is a *mix* of many different activities that schools implement. This suggests that at least as important as the question 'Which program works?' are questions such as 'Which combinations or sequences of strategies work best?' and 'How can schools effectively design comprehensive packages of prevention strategies and implement them in a high quality fashion?' (p.269, emphasis in original text)

In drawing all of this evidence together, it has been possible to develop a series of questions that should be asked in relation to any approach to drug prevention programs in schools. The answers to these questions will provide an insight into the extent to which any proposed drug prevention programs are evidence-based.

- Which of the identified risk and protective factors for drug use does the program seek to address?
- What evidence is there for the likelihood of the program impacting positively on those risk and protective factors?
- How will the project enhance student connectedness to schools and act to enhance trusting and nurturing relationships within the school environment?
- How will the program identify those students who have been exposed to a number of risk factors and are therefore at risk of developing substance misuse problems?
- How will the program respond to at-risk students in an empathic way which will mediate the effects of those risk factors? What evidence is there for the efficacy of this approach?
- How will the program assist families that have characteristics likely to enhance the risk profile of young people developing drug misuse problems? What evidence is there for the efficacy of this approach?

Clearly not all programs will seek to address all of these issues. Nevertheless, program proponents should be able to identify which issues they are seeking to address and the evidence base to support that approach.

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10. Appendices

10.1 Appendix A: Drug testing costs based on a 20 per cent positive POCT rate

Table A51: Cost estimates for the purchase of different test types, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine				Saliva			
Strategy	Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
Times tested p/a	1	3	3	1	1	3	3	1
POCT								
Quantity	500	50	25	10	500	50	25	10
Purchase cost	$18	$18	$18	$18	$21	$21	$21	$21
Subtotal (a)	**$9000**	**$2700**	**$1350**	**$180**	**$10 500**	**$3150**	**$1575**	**$210**
Laboratory confirmation								
Quantity (20%)	100	10	8	5	100	10	8	5
Cost	$55	$55	$55	$55	$80	$80	$80	$80
Subtotal (b)	**$5500**	**$1650**	**$1320**	**$275**	**$8000**	**$2400**	**$1920**	**$400**
Total cost per school								
Total (a + b)	**$14 500**	**$4350**	**$2670**	**$455**	**$18 500**	**$5550**	**$3495**	**$610**
Total student population 2006								
Government schools	2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	$65.2m	$19.6m	$12m	$2.1m	$83.2m	$25m	$15.7m	$2.7m
Non-government schools	1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	$32.5m	$9.7m	$6m	$1m	$41.4m	$12.4m	$7.8m	$1.4m
Total cost (All schools)	$97.7m	$29.3m	$18m	$3.1m	$124.6m	$37.4m	$23.5m	$4.1m

Note: [1] POCT devices are unavailable for hair analysis.
However, overseas laboratories can screen hair for drug use.

Sweat				Hair[1]			
Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
1	3	3	1	1	3	3	1
				Laboratory screen[1]			
500	50	25	10	500	50	25	10
$50	$50	$50	$50	$170	$170	$170	$170
$25 000	**$7500**	**$3750**	**$500**	**$85 000**	**$25 500**	**$12 750**	**$1700**
100	10	8	5	100	10	8	5
$45	$45	$45	$45	$200	$200	$200	$200
$4500	**$1350**	**$1080**	**$225**	**$20 000**	**$6000**	**$4800**	**$1000**
$29 500	**$8850**	**$4830**	**$725**	**$105 000**	**$31 500**	**$17 550**	**$2700**
2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
$132.6m	**$39.8m**	**$21.7m**	**$3.3m**	**$472.1m**	**$141.6m**	**$78.9m**	**$12.1m**
1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
$66.1m	**$19.8m**	**$9.8m**	**$1.6m**	**$235.2m**	**$70.5m**	**$39.3m**	**$6m**
$198.7m	**$59.6m**	**$31.5m**	**$4.9m**	**$707.3m**	**$212.1m**	**$118.2m**	**$18.1m**

Table A52: Cost estimates for the purchase of different test types plus additional on-costs, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine				Saliva			
Strategy	Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
Times tested p/a	1	3	3	1	1	3	3	1
POCT								
Quantity	500	50	25	10	500	50	25	10
Purchase cost	$18	$18	$18	$18	$21	$21	$21	$21
On-costs (+ $20)	$38	$38	$38	$38	$41	$41	$41	$41
Subtotal (a)	**$19 000**	**$5700**	**$2850**	**$380**	**$20 500**	**$6150**	**$3075**	**$410**
Laboratory confirmation								
Quantity (20%)	100	10	8	5	100	10	8	5
Cost	$55	$55	$55	$55	$80	$80	$80	$80
On-costs (+ $20)	$75	$75	$75	$75	$100	$100	$100	$100
Subtotal (b)	**$7500**	**$2250**	**$1800**	**$375**	**$10 000**	**$3000**	**$2400**	**$500**
Total cost per school								
Total (a + b)	**$26 500**	**$7950**	**$4650**	**$755**	**$30 500**	**$9150**	**$5475**	**$910**
Total student population 2006								
Government schools	2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	**$119 155 607**	**$35 746 698**	**$20 908 446**	**$3 394 782**	**$137 141 359**	**$41 142 426**	**$24 618 009**	**$4 091 724**
Non-government schools	1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$59 349 771**	**$17 804 979**	**$10 414 140**	**$1 690 898**	**$68 308 227**	**$20 492 523**	**$12 261 810**	**$2 038 036**
Total cost (All schools)	**$178 505 378**	**$53 551 677**	**$31 322 624**	**$5 085 680**	**$205 449 586**	**$61 634 949**	**$36 879 819**	**$6 129 760**

Note: [1] POCT devices are unavailable for hair analysis.
However, overseas laboratories can screen hair for drug use.

Sweat				Hair[1]			
Total school population	Random sample	Targeted groups	For cause	Total school population	Random sample	Targeted groups	For cause
1	3	3	1	1	3	3	1
				Laboratory screen[1]			
500	50	25	10	500	50	25	10
$50	$50	$50	$50	$170	$170	$170	$170
$70	$70	$70	$70	$190	$190	$190	$190
$35 000	**$10 500**	**$5250**	**$700**	**$95 000**	**$28 500**	**$14 250**	**$1900**
100	10	8	5	100	10	8	5
$45	$45	$45	$45	$200	$200	$200	$200
$65	$65	$65	$65	$220	$220	$220	$220
$6500	**$1950**	**$1560**	**$325**	**$22 000**	**$6600**	**$5280**	**$1100**
$41 500	**$12 450**	**$6810**	**$1025**	**$117 000**	**$35 100**	**$19 530**	**$3000**
2 248 219	224 822	112 411	44 964	2 248 219	224 822	112 411	44 964
$186 602 177	**$55 980 678**	**$30 620 756**	**$4 608 810**	**$526 083 246**	**$157 825 044**	**$87 815 473**	**$13 489 200**
1 119 807	111 981	55 990	22 396	1 119 807	111 981	55 990	22 396
$92 943 981	**$27 883 269**	**$15 251 676**	**$2 295 590**	**$262 034 838**	**$78 596 622**	**$43 739 388**	**$6 718 800**
$279 546 158	**$83 863 947**	**$45 872 432**	**$6 904 400**	**$788 118 084**	**$236 421 666**	**$131 554 861**	**$20 208 000**

Table A53: Cost estimates for the provision of testing services at an hourly rate, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine			
Strategy	**Total school population**	**Random sample**	**Targeted groups**	**For cause[3]**
Quantity tested	500	50	25	10
Tests p/hr	8	8	8	8
Hours needed	63	6	3	4
Hourly rate[1]	$80	$80	$80	$80
Times tested p/a	1	3	3	1
Subtotal (a)	**$5000**	**$1500**	**$750**	**$320**
POCT cost	$9000	$2700	$1350	$180
Lab confirmation cost	$5500	$1650	$3795	$275
Subtotal (b)[2]	$14 500	$4350	$5145	$455
Total cost per school				
Total (a)+(b)	**$19 500**	**$5850**	**$5895**	**$775**
Total student population 2006				
Government schools	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	**$87 680 541**	**$26 304 174**	**$26 506 514**	**$3 484 710**
Non-government schools	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$43 672 473**	**$13 101 777**	**$13 202 442**	**$1 735 690**
Total cost (All schools)	**$131 353 014**	**$39 405 951**	**$39 708 956**	**$5 220 400**

Notes:

[1] The hourly rate is costed on the lowest price of $80 per hour and calculated on the assumption that eight tests can be performed in one hour.

[2] As the lower hourly rates quoted by service providers do not include POCT devices and laboratory confirmations, these costs are added.

[3] As 'for cause' testing involves only one hour of testing, it is likely that a minimum service fee of four hours would be charged.

Saliva			
Total school population	Random sample	Targeted groups	For cause[3]
500	50	25	10
8	8	8	8
63	6	3	4
$80	$80	$80	$80
1	3	3	1
$5000	**$1500**	**$750**	**$320**
$10 500	$3150	$1575	$210
$8000	$2400	$5520	$400
$18 500	$5550	$7095	$610
$23 500	**$7050**	**$7845**	**$930**
2 248 219	224 822	112 411	44 964
$105 666 293	**$31 699 902**	**$35 274 572**	**$4 181 652**
1 119 807	111 981	55 990	22 396
$52 630 929	**$15 789 321**	**$17 569 662**	**$2 082 828**
$158 297 222	**$47 489 223**	**$52 844 234**	**$6 264 480**

Table A54: Cost estimates for the provision of testing services at a fixed fee per test (for a school population of 500 students)

Testing method	Urine			
Strategy	Total school population	Random sample	Targeted groups	For cause
Times tested p/a	1	3	3	1
POCT				
Quantity	500	50	25	10
Service fee	$48	$48	$48	$80
Subtotal (a)	$24 000	$7200	$3600	$800
Laboratory confirmation				
Quantity (20%)	100	10	8	5
Service fee	$55	$55	$55	$55
Subtotal (b)	$5500	$1650	$1320	$275
Total cost per school Total (a + b)	$29 500	$8850	$4920	$1075
Total student population 2006				
Government schools	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	$132 644 921	$39 793 494	$22 122 485	$4 833 630
Non-government schools	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	$66 068 613	$19 820 637	$11 018 832	$2 407 570
Total cost (All schools)	$198 713 534	$59 614 131	$33 141 317	$7 241 200

Saliva			
Total school population	Random sample	Targeted groups	For cause
1	3	3	1
500	50	25	10
$62	$62	$62	$115
$31 000	$9300	$4650	$1150
100	10	8	5
$80	$80	$80	$80
$8000	$2400	$1920	$400
$39 000	$11 700	$6570	$1550
2 248 219	224 822	112 411	44 964
$175 361 082	$52 608 348	$29 541 611	$6 969 420
1 119 807	111 981	55 990	22 396
$87 344 946	$26 203 554	$14 714 172	$3 471 380
$262 706 028	$78 811 902	$44 255 783	$10 440 800

Table A55: Cost estimates for the provision of testing services at a fixed fee per test plus on-costs and the purchase of POCT devices, applied to different testing strategies (for a school population of 500 students)

Testing method	Urine			
Strategy	**Total school population**	**Random sample**	**Targeted groups**	**For cause**
Times tested p/a	**1**	**3**	**3**	**1**
POCT				
Quantity	500	50	25	10
Service fee	$48	$48	$48	$80
POCT device cost	$18	$18	$18	$18
Subtotal (a)	**$43 000**	**$12 900**	**$6540**	**$1180**
On-costs ($20/test)	$20	$20	$20	$20
Laboratory confirmation				
Quantity (20%)	100	10	8	5
Service fee	$55	$55	$55	$55
Test cost	$55	$55	$55	$55
Subtotal (b)	**$11 000**	**$3300**	**$2640**	**$550**
Total cost per school Total (a + b)	**$53 000**	**$16 200**	**$9180**	**$1730**
Total student population 2006				
Government schools	2 248 219	224 822	112 411	44 964
Total cost (govt schools)	**$238 311 214**	**$72 842 328**	**$40 917 604**	**$7 778 772**
Non-government schools	1 119 807	111 981	55 990	22 396
Total cost (non-govt schools)	**$118 699 542**	**$36 281 844**	**$20 380 360**	**$3 874 508**
Total cost (All schools)	**$357 010 756**	**$109 124 172**	**$61 297 964**	**$11 653 280**

Saliva			
Total school population	Random sample	Targeted groups	For cause
1	3	3	1
500	50	25	10
$62	$62	$62	$115
$21	$21	$21	$21
$51 500	**$15 450**	**$7725**	**$1560**
$20	$20	$20	$20
100	10	8	5
$80	$80	$80	$80
$80	$80	$80	$80
$16 000	**$4800**	**$3840**	**$800**
$67 500	**$20 250**	**$11 565**	**$2360**
2 248 219	224 822	112 411	44 964
$303 509 565	**$91 052 910**	**$52 001 328**	**$10 611 504**
1 119 807	111 981	55 990	22 396
$151 173 945	**$45 352 305**	**$25 900 974**	**$5 285 456**
$454 683 510	**$136 405 215**	**$77 902 302**	**$15 896 960**

10.2 Appendix B: List of organisations invited to forward a submission

ACT Health
GPO Box 825
Canberra City ACT 2601
Phone: 132 281
Email: HealthACT@act.gov

Alcohol and Other Drugs Program
Ms Joanne Townsend, Director
Phone: 08 8999 2780
Fax: 08 8999 242
http://www.nt.gov.au/health/healthdev/aodp/aodp.shtml

Alcohol Education and Rehabilitation Foundation
Mr Daryl Smeaton, Chief Executive Officer
PO Box 19
Deakin West ACT 2600
Phone: 02 6122 8600
www.aerf.com.au

Alcohol, Tobacco and Other Drugs Service
GPO Box 8161
Brisbane QLD 4001
Phone: 07 3837 5989
(Brisbane and interstate)

Association of Principals of Catholic Secondary Schools
Ms Mary Ciccarelli, Executive Officer
PO Box 971
Cottesloe WA 6911
Phone: 08 9335 4835
Fax: 08 9335 4836
Email: opd@iinet.net.au
http://www.apcssa.edu.au/

Australian Anglican Schools Network
Mrs Lynne Thomson, President
GPO Box 421
Brisbane QLD 4001
Phone: 07 3839 0882
Fax: 07 3839 0879
Email: dandersen@aso.qld.edu.au
http://www.aasn.edu.au/

Australian Association of Christian Schools
Mr Robert Johnston, Executive Officer
PO Box 252
Springwood NSW 2777
Phone: 02 4751 9815

Australian Bar Association
Stephen Estcourt QC, ABA President
Level 5, Inns of Court
North Quay Brisbane QLD 4001
Phone: 07 3238 5100
Fax: 07 3236 1180
Email: mail@austbar.asn.au
http://www.austbar.asn.au/

Australian Catholic Primary Principals Association
Mr Brian Lacey, President
St Mary's Central School
PO Box 363
Wellington NSW 2820
Phone: 02 6845 1822
Fax: 02 6845 1339
Email: blacey@smcs.org.au

Australian College of Educators
Ms Cheryl O'Connor,
Chief Executive Officer
PO Box 323
Deakin West ACT 2600
Phone: 02 6281 1677
Fax: 02 6285 1262
Free call: 1800 208 586
Email: ace@austcolled.com.au
Website: http://www.austcolled.com.au

Australian Council of Social Service
Lin Hatfield Dodds, President
Locked Bag 4777
Strawberry Hills NSW 2012
Phone: 02 9310 4844
Fax: 02 9310 4822
Email: info@acoss.org.au

Australian Council of State School Organisations
Ms Jennifer Branch, President
PO Box 323
Curtin ACT 2605
Phone: 02 6282 5150
Email: acsso@acsso.org.au
http://www.acsso.org.au/

Alcohol and other Drugs Council of Australia
Ms Donna Bull, Chief Executive Officer
PO Box 269
Woden ACT 2606
Phone: 02 6281 0686
Fax: 02 6281 0995
Email: adca@adca.org.au
List-serve: update@adca-lists.org.au

Australian Drug Foundation
Mr Bill Stronach,
Chief Executive Officer &
Director, Information Services
PO Box 818
North Melbourne VIC 3051
Phone: 03 9278 8100
Fax: 03 9328 3008
Email: adf@adf.org.au

Australian Education Union
Australian Capital Territory Branch
Mr Clive Haggar
PO Box 3042
Manuka ACT 2603

Australian Education Union
Federal Office
Ms Pat Byrne, Federal President
120 Clarendon Street
Southbank VIC 3006
Phone: 03 9693 1800
Email: aeu@aeufederal.org.au
http://www.aeufederal.org.au/

Australian Education Union
Northern Territory Branch
Ms Nadine Williams, Branch Secretary
PO Box 41863
Casuarina NT 0811

Australian Education Union
South Australian Branch
Mr Andrew Gohl, State President
163 Greenhill Rd
Parkside SA 5063

Australian Education Union
Tasmanian Branch
Ms Jean Walker, State President
PO Box 117
North Hobart TAS 7002

Australian Education Union
Victorian Branch
Mary Bluett, Branch President
112 Trenerry Crescent
Abbotsford VIC 3067

Australian Federal Police
Commissioner M Keelty
GPO Box 401
Canberra ACT 2601

Australian Institute of Criminology
Dr Toni Makkai, Director
GPO Box 2944
Canberra ACT 2601
Phone: 02 6260 9200
http://www.aic.gov.au

Australian Joint Council of Professional Teacher Associations
Ms Anne Tumak, President
PO Box 1096
Leichhardt NSW 2040
http://www.ajcpta.edu.au/

Australian National Council on Drugs
Dr John Herron, Chairman
PO Box 1552
Canberra ACT 2601
Ph: 02 6279 1650
Fax: 02 6279 1610
Email: ancd@ancd.org.au
http://www.ancd.org.au

Australian Primary Principals Association
Ms Leonie Trimper, President
Education Development Centre
Milner Street
Hindmarsh SA 5007
http://www.appa.asn.au/contact/?IntCatId=15

Australian Professional Society on Alcohol and Other Drugs
Dr Ingrid Van Beek, President
PO Box 73
Surry Hills NSW 2010
Ph: 02 9331 7747/48
Fax: 02 9331 7789
Email: admin.officer@apsad.org.au
http://www.apsad.org.au

Australian Secondary Principals Association
Peter Martin, Executive Officer
No mail address available
Phone & Fax: 03 5358 4943 (Home)
Phone: 03 9326 8077 &
Fax: 03 9326 8147 (Work)
http://aspa.asn.au/index.php?option=com_frontpage&Itemid=1

Catholic Education Commission of Victoria
Dr Teresa Angelico,
Acting Chief Executive Officer
PO Box 3
East Melbourne VIC 8002
Email: tangelico@ceo.melb.catholic.edu.au

Civil Liberties Australia
Mr Bill Rowlings
PO Box 7438
Fisher ACT 2611
http://www.claact.org.au/

Council of Education Associations of South Australia
Mr Ian Smyth, Executive Director
Level 2, Education Development Centre
Milner Street
Hindmarsh SA 5007
Phone: 08 8463 5875
http://www.ceasa.asn.au/index.html

Department of Education, Tasmania
Mr John Smyth, Secretary
GPO Box 169
Hobart TAS 7001
Phone: 1300 135 513
Fax: 03 6231 1576
Email: ServiceCentre@education.tas.gov.au
http://www.education.tas.gov.au

Department of Education, Victoria
Prof. Peter Dawkins, Secretary
GPO Box 4367
Melbourne VIC 3001
Phone: 03 9637 2000

Department of Education and Children's Services, South Australia
Mr Christopher Robinson,
Chief Executive Officer
GPO Box 1152
Adelaide SA 5001
Phone: 08 8226 1000
Free call: 1800 088 158
Email: decscustomers@saugov.sa.gov.au

Department of Education, Science and Technology, Australian Government
Ms Lisa Paul, Secretary
PO Box 9880
Canberra City ACT 2601
DEST General Enquiries: 1300 363 079
Canberra Switchboard: 02 6240 8111

Department of Education and Training, New South Wales
Mr Michael Coutts-Trotter, Director-General
GPO Box 33
Sydney NSW 2001
Phone: 02 9561 8000

Department of Education and Training, Western Australia
Ms Sharyn O'Neill, A/Director-General
151 Royal Street,
East Perth WA 6004
Phone: 08 9264 4111
Fax: 08 9264 5005
http://www.det.wa.edu.au

Department of Education, Training and the Arts, Queensland
Ms Rachel Hunter, Director-General
PO Box 15033
City East QLD 4002
Phone: 07 3237 0111

Department of Employment, Education and Training, Northern Territory
Ms Margaret Banks, Chief Executive
PO Box 4821
Darwin NT 0801
Phone: 08 8999 5659
Email: infocentre.deet@nt.gov.au

Drug and Alcohol Nurses of Australasia
Via 'contact us' form:
http://www.danaonline.org//index.php?option=com_contact&catid=27&Itemid=14

Drug and Alcohol Office
PO Box 126
Mt Lawley WA 6150
Phone: 08 9370 0333
Fax: 08 9272 6605
Email: DAO@health.wa.gov.au

Drug and Alcohol Services, South Australia
Ms Marina Bowshall
161 Greenhill Road
Parkside SA 5063
Phone: 08 8274 3333
Fax: 08 8274 3399
http://www.dassa.sa.gov.au

Drug Free Australia
Mr Craig Thompson, National President
PO Box 497
Elizabeth SA 5112
Phone: 08 8287 6815

Drugs Policy and Services Branch, Department of Human Services, Victoria
Mr Paul Smith,
Director, Mental Health & Drugs Division
50 Lonsdale Street
Melbourne VIC 3000
Phone: 03 9096 5238

Education Network Australia
Greg Black, Chief Executive Officer
Level One, 182 Fullarton Road
Dulwich SA 5065
Phone: 08 8334 3210
Email: inform@educationau.edu.au
http://www.educationau.edu.au/

Independent Schools Council of Australia
Mr Bill Daniels, Executive Director
PO Box 324
Deakin West ACT 2600
Phone: 02 6282 3488
Fax: 02 6285 2926
Email: isca@isca.edu.au
http://www.isca.edu.au/

Intergovernmental Committee on Drugs
Chair
http://www.ancd.org.au/about/ndsf.htm

Law Council of Australia
Mr Tim Bugg, President
GPO Box 1989
Canberra ACT 2601
Phone: 02 6246 3788
Email: mail@lawcouncil.asn.au
http://www.lawcouncil.asn.au/

Life Education
Mr Jay Bacik, Chief Executive Officer
Life Education National Office
Level 7, 280 Pitt Street
Sydney NSW 2000
Phone: 02 8262 4300
Fax: 02 8262 4333
Email: national@lifeeducation.org.au

Lutheran Education Australia
Dr Adrienne Jericho, Executive Director
197 Archer Street
North Adelaide SA 5006
Phone: 08 8267 7318
Fax: 08 8267 7320
Email: lea@lca.org.au
http://www.lea.org.au

Lutheran Schools Association of SA, WA & NT
Mr Barry Kahl, Director
197 Archer Street
North Adelaide SA 5006
Email: lsa@sa.lca.org.au
http://www.lea.org.au/sa/

Ministerial Council on Drug Strategy
Kay McNiece, MCDS Secretariat
Media Liaison
Phone: 0412 132 585
http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/publishing.nsf/Content/mcds-lp

Ministerial Council on Education, Employment, Training and Youth Affairs
The Hon. Paul Henderson MLA, Chair
PO Box 202
Carlton South VIC 3053
Phone: 03 9639 0588
Fax: 03 9639 1790
Email: enquiries@mceetya.edu.au
http://www.mceetya.edu.au

Multicultural Communities Council of SA Inc
Dr Tony Cocchiaro AM MBBS, President
113 Gilbert Street
Adelaide SA 5000
Ph: 08 8410 0300
Fax: 08 8410 0311
Email: mccsa@mccsa.org.au
http://www.multiwebsa.org.au/

National Catholic Education Commission
Ms Joan Warhurst, Chief Executive Officer
GPO Box 3046
Canberra City ACT 2601
Phone: 02 6201 9830
Fax: 02 6257 7395
Email: ncec@ncec.catholic.edu.au

National Drug and Alcohol Research Centre
Professor Richard Mattick
University of New South Wales
Randwick Campus
22–32 King Street
Randwick NSW 2031
Phone: 02 9385 0333
Fax: 02 9385 0222

National Drug Research Institute
Professor Steve Allsop
Curtin University
GPO Box U1987
Perth WA 6845
Building 901, Level 2, 10 Selby Street
Shenton Park WA 6008
Phone: 08 9266 1600
Fax: 08 9266 1611
Email: enquiries@ndri.curtin.edu.au

National Union of Students Inc
Michael Nguyen, President
Suite 64, Trades Hall
54 Victoria Street
Carlton South VIC 3053
Ph: 03 9650 8908
Fax: 03 9650 8906
Email: nus@nus.asn.au

National Youth Roundtable
Department of Families, Community Services and Indigenous Affairs, Australian Government
Box 7788
Canberra Mail Centre ACT 2610
Email: theeditor@thesource.gov.au

New South Wales Network of Alcohol and Other Drug Agencies
Mr Larry Pierce, Executive Director
PO Box 2345
Strawberry Hills NSW 2012
Phone: 02 96988669
Fax: 02 96900727
Email: admin@nada.org.au

New South Wales Police Force
Commissioner Ken Moroney
Locked Bag 5102
Parramatta NSW 2124
Phone: 1800 622 571
http://www.police.nsw.gov.au

New South Wales Teachers' Federation
Ms Maree O'Halloran, President
Locked Bag 3010
Darlinghurst NSW 1300

Northern Territory Police
Commissioner Paul White
PO Box 39764
Winnellie NT 0821
http://www.police.nt.gov.au

Odyssey House

New South Wales
Drug and Alcohol Rehabilitation Program
Mr James Pitts, Chief Executive Officer
Odyssey House NSW
PO Box 459
Campbelltown NSW 2560
Phone: 02 9281 5144

Victoria
Community Services / Admissions
Mr David Crosbie, Chief Executive officer
Odyssey House Victoria
660 Bridge Road
Richmond VIC 3121
Phone: 03 9420 7610

Residential
Lower Plenty
28 Bonds Road
Lower Plenty VIC 3092
Phone: 03 9430 1800

Benalla
PO Box 671
Benalla VIC 3672
Phone: 03 5766 6399

Institute of Studies
660 Bridge Road
Richmond VIC 3121
Phone: 03 9420 7600

O@SYS Youth Service
22 Lt Chapel St
Prahran VIC 3181
Phone: 03 9521 4366

Shepparton
PO Box 74
Shepparton East VIC 3631
Phone: 03 5821 6501

Odyssey Peninsula Short Term Engagement (OPSTEP)
1/404 Nepean Hwy
Frankston VIC 3199
Phone: 03 9770 0822

Office for Children and Youth
Ms Fiona Lander, Acting Executive Director
Level 7, Dumas House
2 Havelock Street
West Perth WA
Phone: 08 6217 8400 or 1800 281 116
Fax: 08 9481 3074
Email: youngpeople@dcd.wa.gov.au

Office for Children, Youth and Family Support
Youth InterACT
Ms Lou Denley, Executive Director
GPO Box 158
Canberra ACT 2601
Phone: 02 6205 0632

Office for Youth
Dr Tahnya Donaghy, Director
GPO Box 320
Adelaide SA 5001
Phone: 08 8207 0660
Fax: 08 8207 0600

Office for Youth
PO Box 10817, Adelaide Street
Brisbane QLD 4000
Phone: 07 3405 5812
Fax: 07 3405 5801
Email: enquiries@generate.qld.gov.au

Office of Youth Affairs
Debra Zupp, Manager
GPO Box 4396
Darwin NT 0801
Free call: 1800 652 736
Fax: 08 8999 3722
Email: oya@nt.gov.au

Office of Youth Affairs
GPO Box 169
Hobart TAS 7001
Phone: 03 6233 7329
Email: OYA@education.tas.gov.au
http://www.youthaffairs.tas.gov.au

Queensland Alcohol and Drug Research and Education Centre
Professor Jake Najman, Director
School of Population Health
Level 1, Public Health Building
University of Queensland
Herston QLD 4006
Phone: 07 3365 5189
Email: qadrec@sph.uq.edu.au

Queensland Police Service
Commissioner Bob Atkinson
GPO Box 1440
Brisbane QLD 4001
Phone: 07 3364 6464
http://www.police.qld.gov.au

Queensland Teachers' Union
Mr Steve Ryan, President
PO Box 1750
Milton BC QLD 4064

SA Association of School Parents' Clubs Inc
Ms Jenice Zerna
GPO Box 2126
Adelaide SA 5001
Phone: 1800 724 640
Email: saparent@arcom.com.au
http://www.saaspc.org.au/

SA Network of Drug and Alcohol Service
Ms Lesley Edwards,
Acting Executive Officer
218 Wright Street
Adelaide SA 5000
Phone: 08 8231 8818
Fax: 08 8231 8860
Email: info@sandas.com.au

Social Inclusion Initiative
Social Inclusion Board
Monsignor David Cappo,
Social Inclusion Commissioner
GPO Box 2343
Adelaide SA 5001
Email: socialinclusion@saugov.sa.gov.au
http://www.socialinclusion.sa.gov.au/

South Australian Police
Commissioner Mal Hyde
GPO Box 1539
Adelaide SA 5001

State School Teachers' Union of WA Inc
Mr Mike Keely, President
PO Box 6140
East Perth WA 6892

Tasmanian Alcohol and Drug Service
North – Launceston (Regional Office)
13 Mulgrave Street, Launceston TAS
Phone: 03 6336 5577
Fax: 03 6336 5567

North West – Ulverstone Office
11 Grove Street, Ulverstone TAS
Phone: 03 6429 8555
Fax: 03 6429 8599

South – Hobart (Regional Office)
Clive Hamilton Building
St Johns Park, New Town TAS
Phone: 03 6230 7901
Fax: 03 6230 7922

Tasmania Police
Commissioner Richard McCreadie
GPO Box 308C
Hobart TAS 7001
Phone: 03 6230 2111
Email: tasmania.police@police.tas.gov.au
http://www.police.tas.gov.au

Turning Point Alcohol and Drug Centre
Professor Nick Crofts, Director
54–62 Gertrude Street
Fitzroy VIC 3065
Phone: 03 8413 8413
Fax: 03 9416 3420
Email: info@turningpoint.org.au
http://www.turningpoint.org.au

Victorian Alcohol and Drug Association
211 Victoria Parade
Collingwood VIC 3066
Phone: 03 9416 0899
Fax: 03 9416 2085
Email: vaada@infoxchange.net.au

Victoria Police
Chief Commissioner Christine Nixon
Victoria Police Centre
637 Flinders Street
Melbourne VIC 3005
Phone: 03 9247 6666
http://www.police.vic.gov.au

Western Australian Network of Alcohol and Other Drug Agencies
Ms Jill Rundle, Executive Director
City West Lotteries House
2 Delhi Street
West Perth WA 6005
Phone: 08 9420 7236
Fax: 08 9486 7988
Email: drugpeak@wanada.org.au

Western Australia Police
Commissioner K O'Callaghan
2 Adelaide Terrace
East Perth WA 6004
Phone: 08 9351 0699
http://www.police.wa.gov.au

Youth Central
Office for Youth
Department for Victorian Communities
GPO Box 2392
Melbourne VIC 3001
Email: youthwebsite@dvc.vic.gov.au

Youth NSW
Department of Community Services,
Communities Division
Locked Bag 28
Ashfield NSW 1800
Phone: 02 9716 2871
Email: youth@community.nsw.gov.au

Of Substance
Research Pulse
Australian Policy Online
Email: admin@apo.org.au
http://www.apo.org.au/

10.3 Appendix C: Submission package

Call for submissions

Drug detection and screening in schools

Drug use among school students has been a matter of increasing concern in recent years. To examine the effectiveness and impact of drug detection and screening measures in schools, the National Centre for Education and Training in Australia (NCETA), Flinders University, has been contracted by the Australian National Council on Drugs (ANCD) to undertake an independent, comprehensive and critical review of the issues.

The review has two key objectives:

1. To examine the positive and negative impacts and implications of the range of drug detection and screening measures currently available for schools in Australia; and
2. To assess the viability and effectiveness of alternatives to drug detection and screening programs for schools in Australia.

Public Submissions

As part of this review, input is sought from relevant stakeholders in the community such as parents, teachers and principals, students, alcohol and other drug experts (researchers and clinicians), police, criminal justice workers, youth services workers, legal experts, civil liberties commentators, policy advisors, politicians, and health economists.

NCETA would like to invite interested parties to submit their views on these issues. Submissions should address the key themes/questions in the submission pro-forma and follow the guidelines for submissions.

An electronic version of the submission forms can be downloaded from the NCETA website: www.nceta.flinders.edu.au

Submissions must be received by 5.00pm EST, Friday, 27th July 2007.

Submissions can be emailed (preferred method) or posted to:

NCETA
Australia's National Research Centre on AOD Workforce Development

Drug Detection & Screening in Schools
National Centre for Education and Training on Addiction (NCETA)
Flinders University
GPO Box 2100
Adelaide
South Australia 5001

Ph: 08 8201 7535
Fax: 08 8201 7550
Email: nceta@flinders.edu.au

Guidelines for Preparing Submissions

1. Submissions should be brief, up to 4 pages and should address the key issues in the submission pro-forma.
2. Electronic submissions are preferred. They must be saved as an MS Word document and emailed to nceta@flinders.edu.au. Written submissions should be typed or written clearly in black or blue ink on A4 paper.
3. The Submission Coversheet (see attached) must be completed and forwarded with your submission.
4. Unless there is a request for confidentiality, your submission may be made public and may be published. If you wish for all or part of your submission to be treated as confidential, please indicate this on the coversheet and highlight the relevant sections in your submission.

Drug Detection and Screening in Schools

Submission Pro-forma

Cover Sheet (next page)

Please complete the coversheet and forward with your submission to the review.

Instructions

Please address the key themes and questions below in your submission, providing comments or examples where relevant / applicable.

Theme 1: Drug Detection and Screening – Viability, Effectiveness, Impact and Implications (Social, Economical, Psychological, Ethical, Legal Perspectives)

1. Are you in favour / not in favour of drug detection and screening in schools?
2. What do you believe would be the advantages of implementing drug detection and screening measures in schools?
3. What would be the disadvantages (including potential unintended harmful consequences) of implementing drug detection and screening measures in schools?
4. How viable, effective and appropriate are the following types of drug testing or screening for schools?
    i. Questionnaires (pen and pencil / online screening forms)
    ii. Interviews and clinical observations (e.g. those used in a clinical interview assessment)
    iii. Independent tests of body fluids (e.g. saliva, sweat, urine, breath or blood)
    iv. Independent tests of body tissue (e.g. hair, skin or nails)
    v. Non-invasive detection mechanisms (e.g. sniffer dogs, scanning equipment)
5. Which type(s) of drug testing or screening do you believe should be implemented in schools? Please provide reasons for your response.
6. In your opinion, should drug testing be randomly conducted or targeted at selected groups? Please provide reasons for your response.
7. If drug usage is detected, what do you think the next steps should be to address the problem?

(Note: Questions on alternative measures continued on next page)

Theme 2: Other Alternatives – Viability, Effectiveness, Impact and Implications (Social, Economical, Psychological, Ethical, Legal Perspectives)

8. What alternatives to drug detection and screening programs do you believe would address drug use among school students?
9. What would be the advantages of implementing these alternatives?
10. What would be the disadvantages of implementing these alternatives?
11. How viable, effective and appropriate are these alternatives?

Additional Comments

12. Are there any other issues on drug detection and screening in schools that you would like to address?

Submission Coversheet

Type of submission (tick one):

☐ Individual

☐ Organisational

☐ Other *(please specify)*.....

Title (Dr/Prof/Mr/Mrs/Ms/Miss):

Name:

Name of organisation *(if applicable)*:

Contact person *(if applicable)*:

Authorised by *(if applicable)*:

Postal address:

Contact number:

E-mail address:

Is all or part of your individual or organisational submission to be kept confidential?

☐ No

☐ Yes – all

☐ Yes – part (indicate in submission which part)

Which stakeholder group do you belong to or are writing on behalf of?

☐ School student ☐ Parent ☐ Researcher

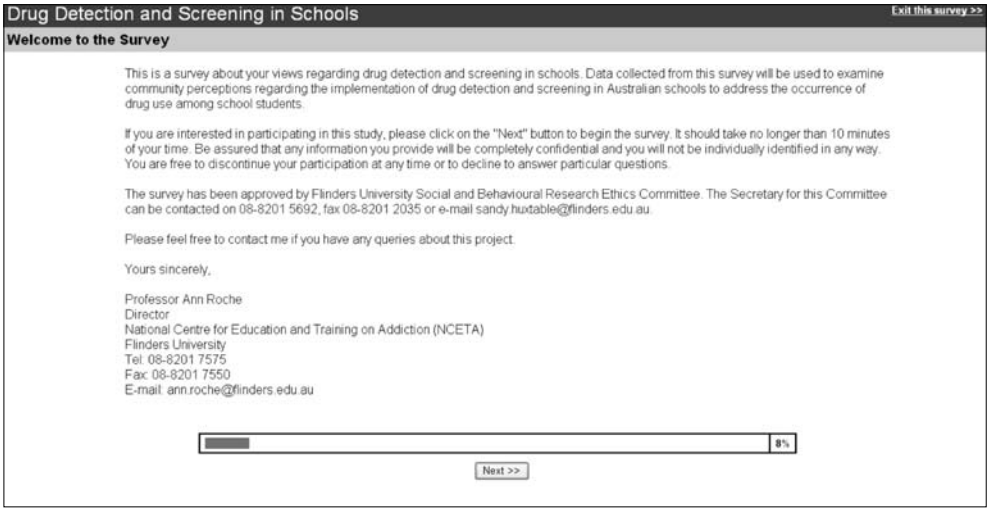
☐ Tertiary student ☐ Teacher / Principal / Educator ☐ Policymaker

☐ Other *(please specify)*.....

Please forward this form with your submission to nceta@flinders.edu.au

Thank you.

10.4 Appendix D: Online survey



Drug Detection and Screening in Schools

Exit this survey >>

Welcome to the Survey

This is a survey about your views regarding drug detection and screening in schools. Data collected from this survey will be used to examine community perceptions regarding the implementation of drug detection and screening in Australian schools to address the occurrence of drug use among school students.

If you are interested in participating in this study, please click on the "Next" button to begin the survey. It should take no longer than 10 minutes of your time. Be assured that any information you provide will be completely confidential and you will not be individually identified in any way. You are free to discontinue your participation at any time or to decline to answer particular questions.

The survey has been approved by Flinders University Social and Behavioural Research Ethics Committee. The Secretary for this Committee can be contacted on 08-8201 5692, fax 08-8201 2035 or e-mail sandy.huxtable@flinders.edu.au.

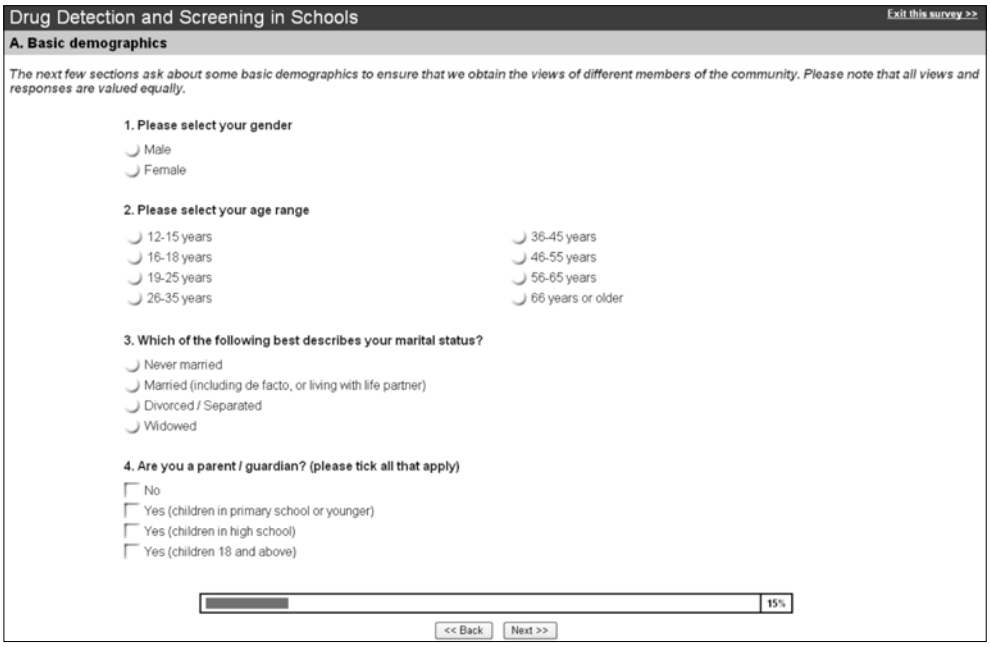
Please feel free to contact me if you have any queries about this project.

Yours sincerely,

Professor Ann Roche
Director
National Centre for Education and Training on Addiction (NCETA)
Flinders University
Tel: 08-8201 7575
Fax: 08-8201 7550
E-mail: ann.roche@flinders.edu.au

8%

Next >>



Drug Detection and Screening in Schools

Exit this survey >>

A. Basic demographics

The next few sections ask about some basic demographics to ensure that we obtain the views of different members of the community. Please note that all views and responses are valued equally.

1. Please select your gender

- Male
- Female

2. Please select your age range

- 12-15 years
- 16-18 years
- 19-25 years
- 26-35 years
- 36-45 years
- 46-55 years
- 56-65 years
- 66 years or older

3. Which of the following best describes your marital status?

- Never married
- Married (including de facto, or living with life partner)
- Divorced / Separated
- Widowed

4. Are you a parent / guardian? (please tick all that apply)

- No
- Yes (children in primary school or younger)
- Yes (children in high school)
- Yes (children 18 and above)

15%

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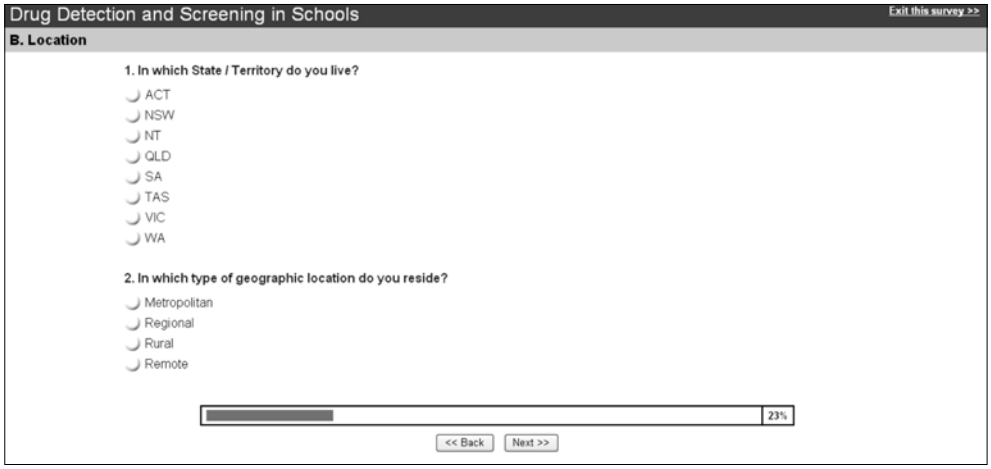
Drug Detection and Screening in Schools

Exit this survey >>

B. Location

1. In which State / Territory do you live?

- ACT
- NSW
- NT
- QLD
- SA
- TAS
- VIC
- WA

2. In which type of geographic location do you reside?

- Metropolitan
- Regional
- Rural
- Remote

23%

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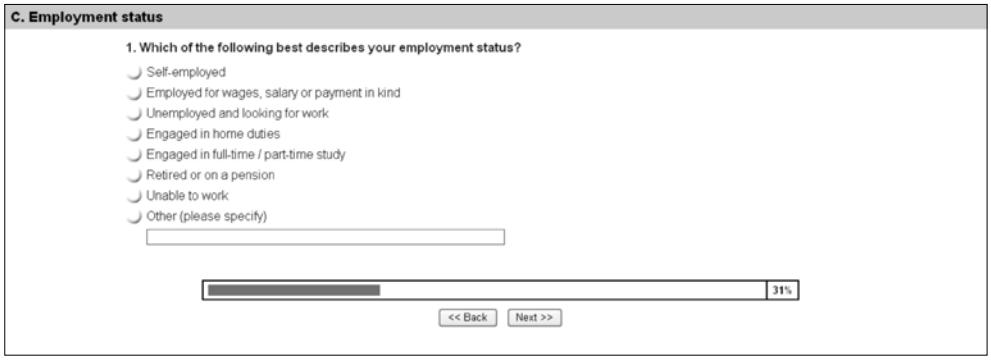

C. Employment status

1. Which of the following best describes your employment status?

- Self-employed
- Employed for wages, salary or payment in kind
- Unemployed and looking for work
- Engaged in home duties
- Engaged in full-time / part-time study
- Retired or on a pension
- Unable to work
- Other (please specify)

31%

<< Back Next >>

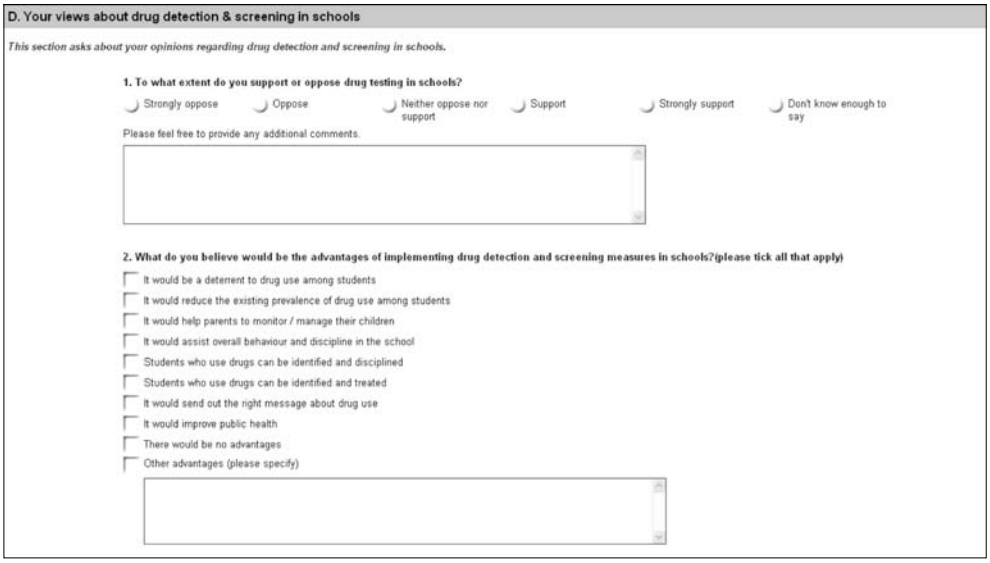

2. What is your occupation?

3. Which of the following best describes the industry that you work in?

- Accommodation & Food Services
- Administrative & Support Services
- Agriculture, Forestry & Fishing
- Arts & Recreation Services
- Construction
- Education & Training
- Electricity, Gas, Water & Waste Services
- Financial & Insurance Services
- Health Care & Social Assistance
- Information Media & Telecommunications
- Manufacturing
- Mining
- Professional, Scientific & Technical Services
- Public Administration & Safety
- Rental, Hiring & Real Estate Services
- Retail Trade
- Transport, Postal & Warehousing
- Wholesale Trade
- Other (please specify)

38%

<< Back Next >>



D. Your views about drug detection & screening in schools

This section asks about your opinions regarding drug detection and screening in schools.

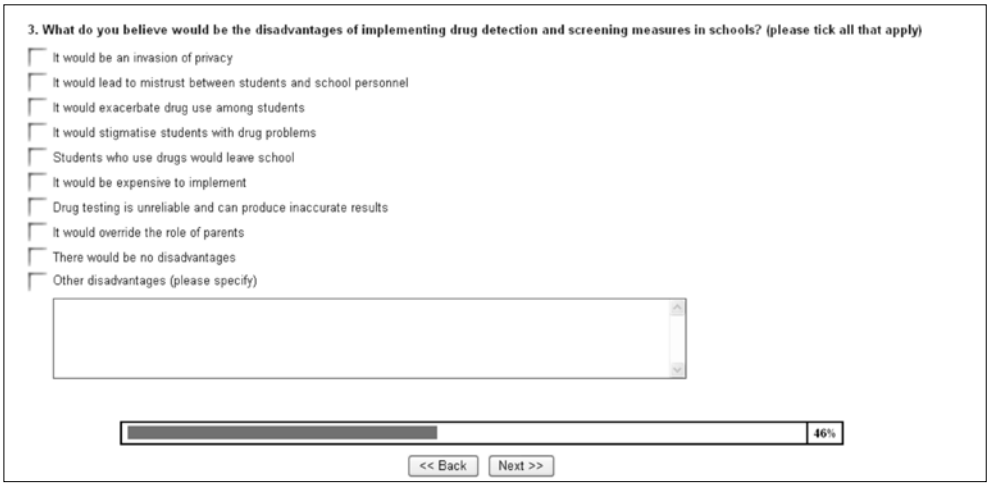
1. To what extent do you support or oppose drug testing in schools?

Strongly oppose | Oppose | Neither oppose nor support | Support | Strongly support | Don't know enough to say

Please feel free to provide any additional comments.

2. What do you believe would be the advantages of implementing drug detection and screening measures in schools?(please tick all that apply)

- It would be a deterrent to drug use among students
- It would reduce the existing prevalence of drug use among students
- It would help parents to monitor / manage their children
- It would assist overall behaviour and discipline in the school
- Students who use drugs can be identified and disciplined
- Students who use drugs can be identified and treated
- It would send out the right message about drug use
- It would improve public health
- There would be no advantages
- Other advantages (please specify)



3. What do you believe would be the disadvantages of implementing drug detection and screening measures in schools? (please tick all that apply)

- It would be an invasion of privacy
- It would lead to mistrust between students and school personnel
- It would exacerbate drug use among students
- It would stigmatise students with drug problems
- Students who use drugs would leave school
- It would be expensive to implement
- Drug testing is unreliable and can produce inaccurate results
- It would override the role of parents
- There would be no disadvantages
- Other disadvantages (please specify)

46%

<< Back | Next >>

4. What are your views regarding the following different types of drug testing or screening for school students?

	Strongly oppose	Oppose	Neither oppose nor support	Support	Strongly support	Don't know enough to say
a. Questionnaires (pen & pencil / online screening forms)	○	○	○	○	○	○
b. Interviews and clinical observations (e.g. those used in a clinical interview assessment)	○	○	○	○	○	○
c. Sniffer dogs	○	○	○	○	○	○
d. Scanning equipment	○	○	○	○	○	○
e. Saliva test	○	○	○	○	○	○
f. Breath test	○	○	○	○	○	○
g. Sweat test	○	○	○	○	○	○
h. Blood test	○	○	○	○	○	○
i. Urine analysis	○	○	○	○	○	○
j. Hair analysis	○	○	○	○	○	○
k. Skin analysis	○	○	○	○	○	○
l. Nails analysis	○	○	○	○	○	○

Please feel free to provide additional comments.

5. If drug testing was implemented, which students should be tested?
(please tick all that apply)

- ☐ All students should be tested
- ☐ Tests should be done on a random basis
- ☐ Other students (please specify)

6. If drug testing was implemented, which school grades should be tested?
(please tick all that apply)

- ☐ Years 1-3
- ☐ Years 4-6
- ☐ Years 7-9
- ☐ Years 10-12
- ☐ All years

7. If a student tests positive for drugs, what should be the next steps taken?
(please tick all that apply)

- ☐ Inform the parents
- ☐ Inform the police
- ☐ Issue a warning
- ☐ Give them detention
- ☐ Suspend them
- ☐ Expel them
- ☐ Provide voluntary counselling
- ☐ Provide compulsory counselling
- ☐ Provide referral for treatment
- ☐ Other (please specify)

69%

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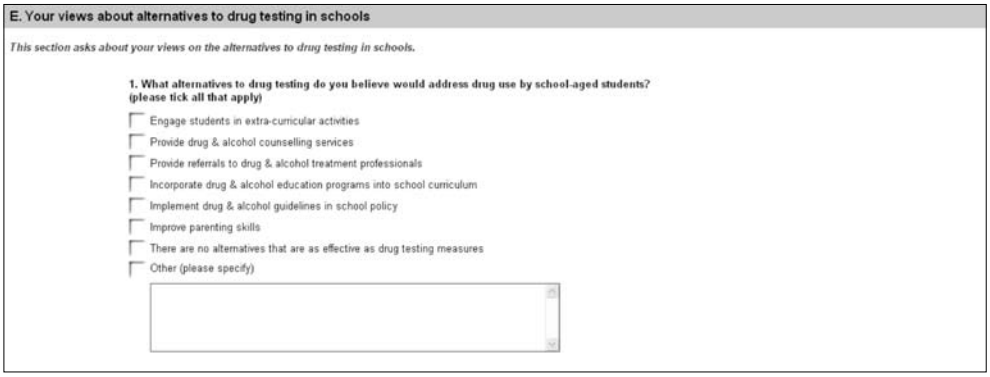
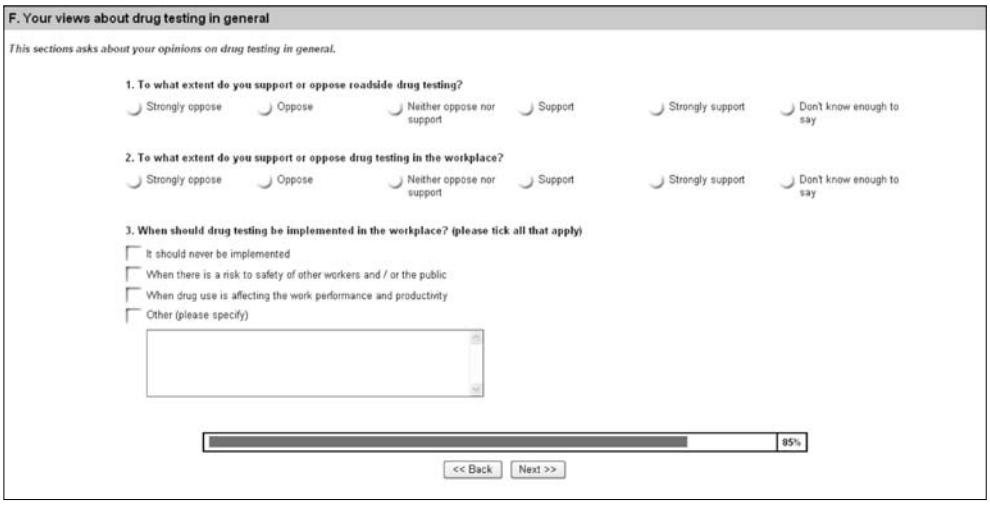


E. Your views about alternatives to drug testing in schools

This section asks about your views on the alternatives to drug testing in schools.

1. What alternatives to drug testing do you believe would address drug use by school-aged students? (please tick all that apply)

- ☐ Engage students in extra-curricular activities
- ☐ Provide drug & alcohol counselling services
- ☐ Provide referrals to drug & alcohol treatment professionals
- ☐ Incorporate drug & alcohol education programs into school curriculum
- ☐ Implement drug & alcohol guidelines in school policy
- ☐ Improve parenting skills
- ☐ There are no alternatives that are as effective as drug testing measures
- ☐ Other (please specify)



F. Your views about drug testing in general

This sections asks about your opinions on drug testing in general.

1. To what extent do you support or oppose roadside drug testing?

◡ Strongly oppose ◡ Oppose ◡ Neither oppose nor support ◡ Support ◡ Strongly support ◡ Don't know enough to say

2. To what extent do you support or oppose drug testing in the workplace?

◡ Strongly oppose ◡ Oppose ◡ Neither oppose nor support ◡ Support ◡ Strongly support ◡ Don't know enough to say

3. When should drug testing be implemented in the workplace? (please tick all that apply)

- ☐ It should never be implemented
- ☐ When there is a risk to safety of other workers and / or the public
- ☐ When drug use is affecting the work performance and productivity
- ☐ Other (please specify)

85%

<< Back Next >>

G. Alcohol and/or other drug use

This section is about personal alcohol and/or other drug use. Please note that your answers will be pooled and analysed as aggregate data only and you will not be individually identified.

1. Do you drink alcohol?

- Yes, I do
- No, I don't
- Other (please specify)

2. How often do you have more than 5 standard drinks (for females) or more than 7 standard drinks (for males)?

- Everyday
- Once a week or more
- About once a month
- Every few months
- Once or twice a year
- Never
- Other (please specify)

3. Are you a current smoker?

- No, I am a non-smoker
- No, but I am an ex-smoker
- Yes, I am a smoker
- Other (please specify)

4. Have you previously used...?

	Yes, I have	No, I have never used
cannabis / marijuana		
other illicit drugs		

5. In the last 12 months, how often have you used...?

	Everyday	Once a week or more	About once a month	Every few months	Once or twice a year	Did not use
cannabis / marijuana						
other illicit drugs						

92%

<< Back | Next >>

H. Additional Comments

Please feel free to provide any additional comments on drug detection and screening measures in schools.

100%

<< Back | Done >>

10.5 Appendix E: List of submissions

Submission number	Individual/organisation	State/ Territory/ country
1	Mr Jurgen Hemmerling	VIC
2	CONFIDENTIAL	
3	Pequannock Township Public Schools, New Jersey	USA
4	Office of Crime Prevention	WA
5	South Australia Police	SA
6	Ms Deborah Felton	NSW
7	Department of Education Victoria	VIC
8	Mr Robert Rands	TAS
9	Australian Drug Foundation	VIC
10	School Drug Education and Road Aware	WA
11	Lutheran Education Australia	SA
12	Victorian Alcohol and Drug Association Inc	VIC
13	CONFIDENTIAL	
14	Alcohol and Other Drugs Council of Australia (ADCA)	ACT
15	Drug Free Australia (DFA)	SA
16	National Institute of Citizen Anti-Drug Policy (NICAP)	USA
17	South Australian Parents and Friends Against Drugs (SAPFAD)	SA
18	Department of Education and Training Western Australia	WA
19	Recovered Drug Users League of South Australia (RDULSA)	SA
20	Department of Education, Training and Arts Queensland	QLD
21	CONFIDENTIAL	
22	Drug and Alcohol Office	WA

Submission number	Individual/organisation	State/ Territory/ country
23	Australian Council for Health, Physical Education and Recreation, SA Branch Inc (ACHPER)	SA
24	Odyssey House	VIC
25	South Australian Association of School Parents Clubs Inc	SA
26	Department of Education, Science and Training (DEST)	ACT
27	Uniting Care Moreland Hall	VIC
28	Legal Aid Queensland	QLD
29	Catholic Education Commission of Victoria Ltd (CECV)	VIC
30	South Australian Department of Education and Children's Services (DECS)	SA
31	New South Wales Department of Education and Training	NSW
32	CONFIDENTIAL	
33	New South Wales Police	NSW