

# **Can new non-toxic products eliminate petrol sniffing behaviours in remote Indigenous communities?**

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## **Abstract**

The current thesis presents an evaluation of the potential impact of the new non-toxic product ‘Opal Unleaded’ upon petrol sniffing behaviours in remote Indigenous communities. The ‘unsniffable’ Opal Unleaded was introduced to 37 Indigenous communities in February 2005 and has been hailed as having the potential to dramatically reduce petrol sniffing. Petrol sniffing refers to the practice of inhaling petrol fumes and results in significant consequences for individuals, Indigenous communities and wider Australian society. Chronic long term use can result in numerous effects including fitting, ataxia, acute encephalopathy, pneumonia, weight loss, stunted growth and impaired intellectual and physical functioning. Both occasional and chronic use can cause death.

The current thesis provides a policy analysis of the current literature through a review of the current intervention literature, the subsequent construction of an intervention assessment framework and the evaluation of the Opal Unleaded initiative according to this framework. Review of the current intervention literature revealed three key intervention components: a broad range of primary, secondary and tertiary interventions, community control, support and participation and the need to address the ‘social origins’ of petrol sniffing behaviour. The ‘social origins’ model states that health is affected by dynamic interactions between individual, family, community, environmental and wider economic and social structures and represents the most important component of this intervention assessment framework.

British Petroleum (BP) Australia, in conjunction with the Australian Institute of Petroleum, developed Opal Unleaded in 2004. It is deemed an unsniffable ‘unleaded’ petrol because it contains low levels of aromatics that provide petrol sniffers with a ‘high’. The Federal

government will subsidise the implementation and management of the program in 37 remote Indigenous communities. The Opal Unleaded initiative only partially addresses the elements of the assessment framework identified as necessary to constitute an effective intervention.

There are clear deficiencies in the extent to which the Opal Unleaded initiative addresses the need for a range of multi-faceted interventions, community support, control and participation and the social origins of petrol sniffing behaviour. Particular problems with the initiative include its singular supply restriction focus, the lack of regional coverage for the scheme, lack of community participation and the failure to engage with social origins of petrol sniffing behaviour such as the role of government.

The failure to adequately address the three key components of the assessment framework means that the Opal Unleaded initiative is unlikely to achieve real and sustained change in petrol sniffing behaviour. If the current deficiencies in the Opal Unleaded initiative are not addressed through structural program changes, or in the context into which it is introduced, then a significant opportunity to reduce petrol sniffing behaviour will have been lost.

## **Declaration by Candidate**

I, \_\_\_\_\_ declare that the work presented in the current thesis is my own work alone, except where due acknowledgment has been made. I also declare that this work has not been submitted previously, in whole or in part, to qualify for any other academic award.

\_\_\_\_\_

Brett Badger

Date \_\_\_\_\_

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## **Chapter One: Introduction and Research Methodology**

## **Section 1a. The Opal Unleaded Initiative**

This thesis presents an evaluation of the potential impact of the introduction of the new non-toxic product ‘Opal Unleaded’ upon petrol sniffing behaviours in remote Indigenous communities. In late 2004 the petrochemical company BP Australia announced that it had developed, in conjunction with the Australian Institute of Petroleum, an ‘unsniffable’ unleaded petrol called ‘Opal Unleaded’. This fuel was specifically designed for use in Indigenous communities. Opal Unleaded is deemed ‘unsniffable’ because it produces no ‘high’ when inhaled (ABC News November 10 2004a).

Opal Unleaded was introduced into 37 Indigenous communities throughout the Northern Territory, South Australia, Western Australia and Cape York in February 2005. The supply of Opal Unleaded to Indigenous communities is subsidised by the Commonwealth Government (Commonwealth Department of Health and Aging 2004b). The development has been hailed as a major breakthrough in the fight against petrol sniffing and as having the potential to dramatically reduce or even eliminate petrol sniffing (ABC News October 15 2004).

However some communities and community workers have expressed concerns over various aspects of the Opal Unleaded initiative. Criticisms of the initiative can be largely divided into two groups. The first refers to concerns over structural elements of the scheme that could limit its effectiveness such as insufficient and fragmented community participation. The second area of concern refers to conceptual criticisms that the scheme’s singular focus on supply restriction fails to deal with the underlying causes of petrol sniffing (Bradley 2005, Wilson 2005). The current thesis represents an attempt to further investigate such concerns in order to determine the potential efficacy of the initiative.

The aim of the current thesis is to evaluate the potential effectiveness of the Opal Unleaded initiative according to the key components that constitute a successful petrol sniffing intervention. These key intervention components have been identified from a review of current literature on past petrol sniffing interventions. The objectives necessary to achieve this aim are; a) An analysis of available literature and past interventions, b) The development of an intervention assessment framework based on this literature review, c) An investigation of the Opal Unleaded initiative, d) An evaluation of the Opal Unleaded initiative according to the developed assessment framework and e) Discussion arising from this evaluation and conclusions regarding the potential impact of the Opal Unleaded initiative.

### **Section 1b. Assessing the Opal Unleaded Initiative**

The potential impact of the Opal Unleaded initiative will be judged according to an intervention assessment framework (see chapter four). This assessment framework is derived from a review of current literature and previous interventions (see chapter three). This intervention assessment framework identifies three key components to an effective intervention: the need for a broad range of simultaneous interventions, the need for community control, support and participation in these interventions and the importance of addressing the social origins of petrol sniffing.

#### *‘Social Origins’*

The key component of this assessment framework is the ‘social origins’ of petrol sniffing behaviour. ‘Social origins’ refers to an ecological model of public health intervention which “assumes that differences in levels of health and well-being are affected by a dynamic interaction among biology, behavior, and the environment, an interaction that unfolds over the life course of individuals, families, and communities” (Syme 2000 p2). This means that the health of

individuals is varying influenced by biological and genetic functioning and predisposition, social and familial relationships, group behaviours, cultural and environmental contingencies, and broader social and economic trends. For the purpose of the current thesis, and in recognition of contemporary debates concerning Indigenous health interventions, it is important to note that whilst highlighting their importance and lack of research this approach does not solely emphasise broad social and economic conditions (Syme 2000, Syme 1998, Syme 1996).

The approach recommends a multi-level approach to health interventions. Accordingly interventions should address ‘individual-level’ phenomena such as individual lifestyles, ‘mainstream’ level factors such as population-based interventions and ‘upstream’ societal level phenomena such as public policy. The relevant social origins and targets of interventions are dependent upon accurate analysis of the situation in focus (Syme 2000, Syme 1998, Syme 1996).

The social origins of petrol sniffing behaviours will be analysed in order to determine the major causes of petrol sniffing behaviour and thus requisite ‘targets’ of any intervention to reduce or eliminate petrol sniffing behaviour. In this context it is understood that unless the identified social origins of petrol sniffing behaviour are addressed by the Opal Unleaded initiative, then it is unlikely to reduce or eliminate petrol sniffing behaviour.

### *Petrol Sniffing Behaviours*

As distinct from previous studies, the thesis will evaluate this potential impact upon the reported incidence and effects of ‘petrol sniffing behaviours’ rather than just petrol sniffing. This further enables the current thesis to evaluate the extent to which interventions achieve real and sustained change. Petrol sniffing behaviours are defined in the current thesis as the direct sniffing of petrol, abuse of other substances or other associated maladaptive and damaging behaviours,

such as violence or self-harm. Associations between these other substances and behaviours and the social origins of petrol sniffing behaviour are detailed in later chapters (see chapters two and six).

An intervention may reduce the direct incidence of petrol sniffing whilst, for example, failing to address the social origins of petrol sniffing. This could render the intervention unsustainable or mean that the effect of the intervention is simply transference from petrol sniffing to other substance abuse. Whilst this constitutes a reduction in petrol sniffing such a development would do little to reduce the damaging effects of such behaviours upon individuals, remote Indigenous communities and wider society.

## **Section 1c. Research Methodology**

### *Past Research*

There have been several major research studies of petrol sniffing in Indigenous communities, most notably the comprehensive ‘social meaning of petrol sniffing’ research by Maggie Brady (1992) and the review of interventions by Peter D’Abbs and Sarah Maclean (2000). Some commentators and communities have argued that a considerable amount of research into petrol sniffing has already been conducted (see D’Abbs & Brady 2003). According to Brady (1992) this is a misunderstanding due to brief and superficial surveys by government departments. Brady (1992) contends that the vast majority of research concerning Indigenous drug use in Australia has focused upon alcohol.

According to D’Abbs and Brady (2003), whilst limited research has been conducted, greater knowledge is needed in several areas. These include greater knowledge of epidemiological data and of the physical and mental effects of inhalants, conclusions supported by other researchers

(D'Abbs & Brady 2003, San Roque in Eickelkamp 2003, Alcohol and Substance Misuse Priority Group 2002, Divakaran-Brown & Minitjukur 1992). Greater knowledge is also required about the efficacy of interventions and the social, cultural and behavioural context that influences their effectiveness (D'Abbs & Brady 2003). This is supported by the Central Australian Aboriginal Congress (2002a) who have identified 'Social determinants of individual, family and community behaviours' and 'Other social determinants of health' as key Indigenous research areas. The current thesis represents an attempt to inform this research gap through a particular focus upon the need for the Opal Unleaded initiative to address the 'social origins' of petrol sniffing behaviour.

However, the objections of any Indigenous communities must be seriously noted given that Indigenous groups have complained of being "researched to death". In this context it is crucial that any research that is carried out is sensitive to these concerns and has practical implications upon attempts to reduce petrol sniffing behaviours (D'Abbs & Brady 2003). This concern is also met by the current thesis through its primary focus on documentary analysis and a practical focus upon the potential efficacy of the new and currently unresearched Opal Unleaded initiative.

#### *The Current Thesis*

The current thesis is based upon a documentary review of the relevant available literature concerning petrol sniffing behaviours in Indigenous communities. This documentary and policy analysis includes a significant amount of all available petrol sniffing literature. The relevant literature available on petrol sniffing typically takes the form of a review of a certain type of intervention or a general overview and history of the entire petrol sniffing problem. There are few specific program reviews available.

These documents have most commonly emanated from social science research, although medical reviews concerning the effects of petrol sniffing and government enquiries concerning the problem are also evident. Newspaper articles are also common, though much of the media coverage of petrol sniffing has been criticised for its ‘sensationalised’ approach towards the issue (D’Abbs & Maclean 2000).

A comprehensive document search was undertaken for the current thesis resulting in a preliminary bibliography of 263 relevant articles. This collection was primarily comprised of journal articles or government submissions from health professionals or Indigenous organisations, government publications and news outlets. These papers were found from a variety of sources including Social Science databases, several university libraries, general internet searching, the web sites of many Indigenous organisations and research bodies, State and Commonwealth Government departments and BP Australia. BP Australia did not respond to requests for additional information. Several unpublished papers were also obtained as a result of communication with past researchers and the Northern Territory Legislative Assembly. A full list of these sources may be found in Appendix A.

This literature largely informs the information provided regarding the background and context of petrol sniffing (chapter two) and the literature review of petrol sniffing interventions (chapter three). This review of the current literature includes several key documents including D’Abbs and Macleans (2000) comprehensive review of petrol sniffing interventions. Also of note is the coverage of two significant petrol sniffing documents, which have been published too recently to be included in most petrol sniffing research. These documents are the South Australian Coroner’s report (2002) into two petrol sniffing deaths in the Anangu Pitjantjatjarra Lands and the final report of the Northern Territory Select Committee into Substance Abuse (2004).

The recent three year (2001-2004) Northern Territory enquiry was particularly wide ranging in its research and represents the most comprehensive petrol sniffing enquiry ever conducted. Over 433 individuals appeared before the Committee representing the interests of 106 organisations or groups. The current thesis examined the enquiry documents including 104 written submissions and 63 meetings with relevant professionals and communities, as well as the committee reports, and much of this information informs the current thesis (Legislative Assembly of the Northern Territory 2004b, Legislative Assembly of the Northern Territory 2003a, Legislative Assembly of the Northern Territory 2003b, Legislative Assembly of the Northern Territory 2003c).

Other new literature included in this thesis concerns the detail and evaluation of the yet-to-be researched Opal Unleaded initiative. All available information detailing the initiative is presented in chapter five. Other literature evident in this policy analysis emerges from the intervention assessment framework and the extent to which the Opal Unleaded initiative addresses the key components of a successful intervention. Much of this information concerns the ‘social origins’ of petrol sniffing behaviour such as broader indigenous disadvantage, government funding and coordination of petrol sniffing programs and indigenous community value systems.

#### **Section 1d. Thesis Structure**

The current thesis is comprised of seven chapters. Chapter two provides a general overview of petrol sniffing including its history, prevalence and effects. Chapter three reviews the current available literature on petrol sniffing and past interventions. This review culminates in the development of the intervention assessment framework, which is detailed in chapter four. Chapter five details information regarding the specific nature of the Opal Unleaded initiative.



Chapter six provides an evaluation of the Opal Unleaded initiative according to the assessment framework. Chapter seven presents a discussion of the issues arising from the evaluation of the Opal Unleaded initiative and conclusions regarding its potential impact.

## **Chapter Two: Background and Context of Petrol Sniffing**

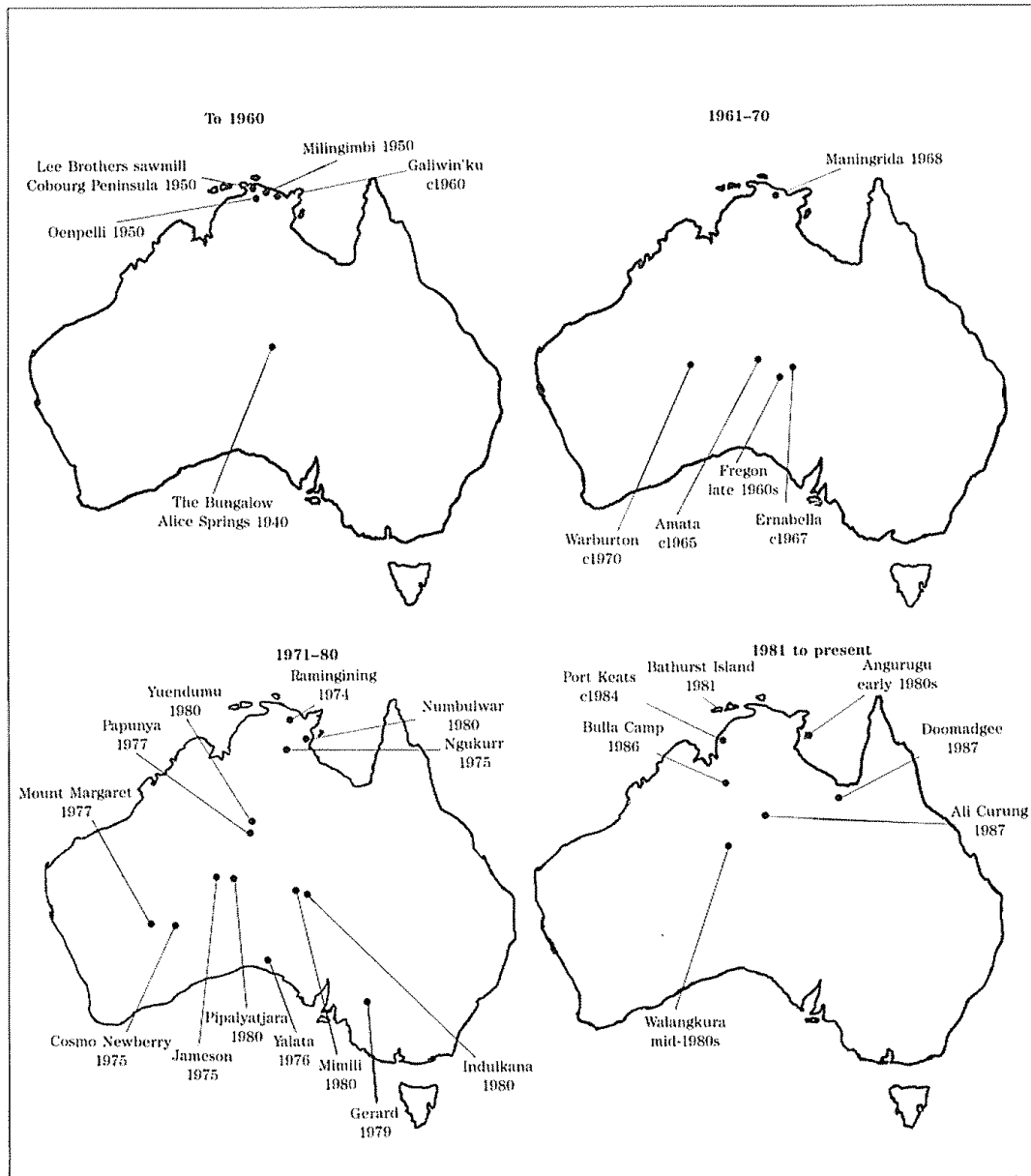
## **Section 2a. Petrol Sniffing**

Petrol sniffing refers to the practice of inhaling petrol fumes for its mind-altering effects and belongs to a broader category of substance use, most commonly referred to as ‘volatile substances’. It is particularly associated with young people and is neither a new or specifically Indigenous Australian problem (Australian Drug and Alcohol Council 2004a, Brady 1994). Despite sporadic reports of its practice in regional centres petrol sniffing in Australia has been largely confined to remote Indigenous communities. According to the 2001 Census the total Aboriginal and Torres Strait Islander population in Australia was 458,520. One in four of this population was recorded as living in ‘remote’ or ‘very remote’ areas (National Aboriginal and Torres Strait Islander Health Council 2003a).

According to anecdotal reports, petrol sniffing was introduced to Indigenous Australians by United States troops based along Northern Australian coastlines during WWII (Brady 1992). The veracity of these reports is unclear but sporadic use did begin in this region during the 1940s (Brady 1994). A lull occurred until 1960, followed by a gradual increase in use until the early 1970s in communities in South Australia, Western Australia and the Northern Territory. This use was largely experimental and very few individuals suffered long-term effects (Brady 1992).

A third phase began in the late 1970s and extended until the mid1990s in primarily the same regions as the second phase but involving more communities. This period included intense and habitual use by core groups of individuals and a rapid rise in morbidity and death (Brady 1992). Since the mid1990s there appears to have been a slight decline in overall use, subject to significant regional variation (see section 2c of current chapter) (Central Australian Aboriginal Congress 2002b). The first reported instances of petrol sniffing in Indigenous communities may be seen over the page in Figure 1.

Figure 1. First Reported Instance of Petrol Sniffing in Indigenous Communities up to 1992.



Source (Brady 1992, p143)

## **Section 2b. Technical and Demographic Information**

Petrol is “an organic substance derived from crude oil found underground” (Northern Territory Department of Health and Community Services 2002a ). Harm is caused by mixtures of toxic hydrocarbons and by the tetraethyl lead commonly added to petrol (Northern Territory Department of Health and Community Services 2002a, Parliament of Victoria Drugs and Crime Prevention Committee 2002). Variations on content for unleaded, Avgas and Opal Unleaded are discussed in chapters three and five.

Petrol sniffing typically involves a small amount of fuel being placed in a soft drink can, which is then inhaled (Eickelkamp 2003). Petrol sniffing is generally practiced by Indigenous males aged 8-30, most commonly by those aged 15-19. Most studies estimate 15-20% of petrol sniffers are female (Shaw in D’Abbs & Maclean 2000, Mosey 1997, Brady 1994). A distinction is drawn between ‘occasional’ and ‘chronic’ sniffers. Occasional sniffers engage in petrol sniffing experimentally or recreationally. Chronic sniffers engage in more frequent and intensive petrol sniffing and are thus more likely to suffer serious long-term effects (D’Abbs & Maclean 2000, Roper & Shaw 1996). An Arnhem Land study of chronic sniffers found that an average of 275ml of petrol was sniffed per night. Petrol sniffing was most common at night, with an average of 4-6 nights per week compared with 2 days (Burns et al. 1995b).

Numerous communities with petrol sniffing have reported high levels of associated poly-drug use, most commonly of cannabis and to a lesser extent alcohol. The increased abuse of cannabis and its relationship with petrol sniffing appears most significantly in Arnhem Land but is increasingly evident in the Anangu Pitjantjatjara Lands and the Northern Territory Western desert communities (Commonwealth Department of Health and Aging 2004a, Gray et al. 2003, Legislative Assembly of the Northern Territory 2004b, Legislative Assembly of the Northern

Territory 2004c, Legislative Assembly of the Northern Territory 2003a, Legislative Assembly of the Northern Territory 2003b, Legislative Assembly of the Northern Territory 2003c, Central Australian Aboriginal Congress 2002b, Clough et al. 2002a, Clough et al. 2002b, Legislative Assembly of the Northern Territory 2002a, Northern Territory Police 2002, Australian Drug and Alcohol Council 2004b, Burns et al. 1995a, Burns et al. 1995b).

Clough et al. (in Legislative Assembly of the Northern Territory 2003c) found that recent cannabis use in Arnhem Land communities had risen from 19% to 43% (55% of males and 13% of females) between 1997 and 2002. Clough (in ABC Science News October 11 2002) also observed that 52% of cannabis users were current or past petrol sniffers. Of particular concern within this relationship are the high and increasing reported levels of social and medical problems, such as mental illness associated with poly-drug use. Reported mental illness includes psychosis, mood disorders, anxiety disorders, self-harm and suicide (Legislative Assembly of the Northern Territory 2004e, Legislative Assembly of the Northern Territory 2003a, Legislative Assembly of the Northern Territory 2003b, ABC Science News October 11 2002, Clough et al. 2002b, The Sydney Morning Herald November 25 2002 p13).

The overall suicide rate in Aboriginal and Torres Strait Islander communities has been estimated at 40% higher than the general Australian population and substance abuse is seen as a major contributing factor (Commonwealth Department of Health and Ageing 2002). The practice of cannabis abuse along with petrol sniffing or compounded by a context of past petrol sniffing has been described as “an unusual clinical situation that might have not only clinical consequences but perhaps psycho-social consequences” (Clough in Legislative Assembly of the Northern Territory 2003a, p295).

Clough et al. (in Northern Territory Department of Health and Community Services 2002b) concluded that petrol sniffing was practiced interchangeably with cannabis and alcohol and that petrol sniffing was predictive of other substance use (Clough in Legislative Assembly of the Northern Territory 2003b). Whilst more Indigenous Australians than non-Indigenous Australians abstain from alcohol, those who do drink are 14% more likely to drink at short term risk levels (48.7% to 34.3%) and 12.2% more likely to drink at long-term risk levels (19.9% to 9.7%) than non-Indigenous Australians (Australian Drug Foundation 2004, Drug Information Clearinghouse 2004).

There are also isolated reports of abuse of paint and glue by Indigenous youth in two Arnhem Land communities, one Western desert community and in Indigenous youth visiting or living in Alice Springs, Townsville, Darwin and Tennant Creek. Whilst 250 substances commonly found in supermarkets are potential inhalants, its use in communities is likely to be restricted by lack of availability (Australian Drug and Alcohol Council 2003a, Australian Drug and Alcohol Council 2000, Baker 2003, Cheverton & Lucashenko 2003, Human Rights and Equal Opportunity Commission 2003a, Legislative Assembly of the Northern Territory 2003a, Legislative Assembly of the Northern Territory 2002a, ATSIC 2002, Central Australian Aboriginal Congress 2002b, National Indigenous Times May 8 2002 p5).

## **Section 2c. Regions and Prevalence**

According to Brady's (1992) comprehensive study the approximate number of total known chronic petrol sniffers in 1992 was between 600 and 1000. This figure represented only 2-3% of Indigenous youth in these areas aged between 10-24. The regions of highest prevalence were the Western desert region of the Northern Territory, the nearby tri-state region of Western Australia,

South Australia and the Northern Territory, the Eastern Goldfields and Eastern and Central Arnhem Land. A map denoting these regions may be seen over the page in Figure 2.

The number of communities engaged in petrol sniffing up to 1985 and their percentage of the Indigenous population by state may be seen below in Table 1. The distribution and location of these specific communities may be seen state by state in Appendix B.

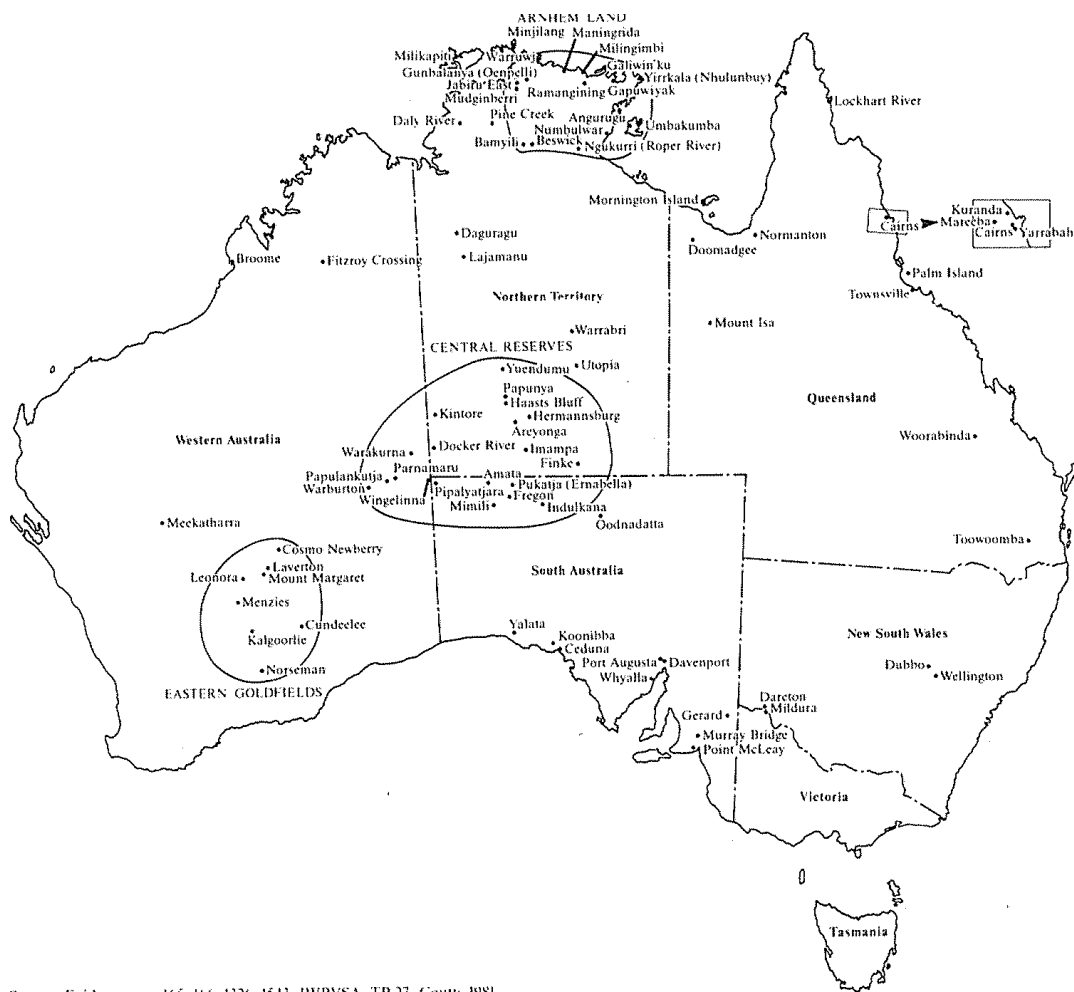
Table 1. Number of Indigenous Communities Engaged in Petrol Sniffing Up to 1985 and Their Percentage of the Indigenous Population by State.

<b>State / Territory</b>	<b>Percentage of Total Aboriginal Population</b>	<b>Number of Communities</b>	<b>Number of Communities with Petrol Sniffing</b>
Queensland/Torres Strait	26.91	81	4
New South Wales	25.92	84	2
Western Australia	16.6	165	11
Northern Territory	15.26	439	29
South Australia	6.28	63	10
Victoria	5.54	2	Nil
Tasmania	2.95	2	Nil
A.C.T.	0.54	1	Nil
<b>Total</b>	<b>100 %</b>	<b>837</b>	<b>56</b>

Source (Brady 1992, p28)



Figure 2. Regions Associated with Petrol Sniffing



Source (Parliament of the Commonwealth of Australia 1985, p150).

Since Brady's 1992 study, regions such as Eastern and Central Arnhem Land, the Ngaanyatjarra Lands and the Eastern Goldfields have reported significant reductions in petrol sniffing. The Anangu Pitjantjatjara Lands in South Australia have reported moderate reductions in use amidst continued chronic individual use and significant fluctuations. The Western desert communities of the Northern Territory continue to suffer from endemic sniffing and the practice has spread to other communities in this region and to Alice Springs. Surveys conducted between 1998 and 2000 estimated the number of petrol sniffers in these last two regions as between 360 and 500 (Central Australian Aboriginal Congress 2002b, Mosey in D'abbs & Maclean 2000).

A current representation of petrol sniffing in Northern Territory communities may be seen in Appendix C. Several new regions have reported the introduction of chronic sniffing, most notably the Gulf and Peninsula regions of Queensland and the East Kimberley (Commonwealth Department of Health and Aging 2004a, Human Rights and Equal Opportunity Commission 2003a, Central Australian Aboriginal Congress 2002b, Legislative Assembly of the Northern Territory 2002a, Northern Territory Department of Health and Community Services 2002b, D'Abbs & Maclean 2000).

It is important to note that the history of petrol sniffing demonstrates significant fluctuations with quiet periods followed by widespread outbreaks. It should also be noted that there are significant variations between individual communities (Brady 1992). All data presented in this section is approximate due to the inadequacy of epidemiological data and the difficulty of obtaining data due to factors such as community mobility and night time use (D'Abbs & Brady 2003, Divakaran-Brown & Minitjukur 1992).

## **Section 2d. The Effects of Petrol Sniffing**

Despite its low incidence petrol sniffing is considered to have ‘an impact beyond its numbers’ (Carrol in Brady 1992). The Central Australian Aboriginal Congress (2002b) ranks petrol sniffing as second only to alcohol in negative impact associated with substance abuse in Indigenous communities and concludes that for some communities it may be the most significant problem.

### *Individual*

There are a number of individual effects associated with petrol sniffing. These effects are moderated by extent of use, so that ‘occasional sniffers’ in particular may suffer few negative effects. (Brady & Torzillo 1994a). The acute effects of petrol sniffing variously include euphoria, intoxication, hyperactivity, confusion, vomiting, dizziness, photophobia, hallucinations, auditory distortion, lack of co-ordination, decreased sensitivity to pain, increased libido, aggression and disassociation (Northern Territory Department of Health and Community Services 2002a, Australian Drug and Alcohol Council 2000, D’Abbs & Maclean 2000, Lagan 2002, Chalmers 1992, Parliament of Commonwealth of Australia 1985).

These effects last three to six hours and take one to two days to dissipate (based on 15-20 inhalations of petrol) (Chalmers 1992, Parliament of Commonwealth of Australia 1985). Consequent depression of the central nervous system may result in depression, drowsiness, sleep and loss of consciousness (Parliament of the Commonwealth of Australia 1985). Petrol sniffing can also result in seizures and ‘sudden sniffing death’ whereby sudden exercise or alarm may cause a fatal heart attack, although this is more common with other inhalants (D’Abbs & Maclean 2000, Goodheart & Dunne 1994).

Associated acute effects of petrol sniffing are trauma and injury as a result of aggressive behaviour, burns from petrol ignition and increased incidence of STDs (Northern Territory Department of Health and Community Services 2002a, Roper & Shaw 1996, Gell 1994). Chronic sniffing has also been associated with lowered levels of employment and of attendance and performance at school (Stojanovski 2002a, D'Abbs & Maclean 2000, Burns et al. 1995b, Divakaran-Brown & Minitjukur 1992)

Long term effects from chronic sniffing include subjective effects such as low weight, depression, insomnia, memory loss, headaches, chest pain and disorientation (Parliament of Commonwealth of Australia 1985). More permanent effects can result from central nervous system dysfunction such as respiratory tract infections, pneumonia, ataxia and neurological impairment. The effects of neurological damage, most commonly acute encephalopathy, include lack of co-ordination, psychosis, visual cognitive defects, anaemia, nerve damage and cardiac and liver problems (Northern Territory Department of Health and Community Services 2002a, Dodd 2001, D'Abbs & Maclean 2000, Harper 1994).

The permanency of these effects appears to be moderated by extent of use, however recent research has indicated neurological damage caused by chronic petrol sniffing could be reversible (ABC News November 10 2004b, D'Abbs & Maclean 2000, Brady & Torzillo 1994b, Brady 1992, Parliament of Commonwealth of Australia 1985). Table 2, seen over the page, details the major clinical features associated with petrol sniffing. Individuals who suffer serious effects such as acute encephalopathy can require evacuation (D'Abbs & Maclean 2000). During 1991-1994 there were 70 admissions to Royal Darwin hospital for treatment of acute encephalopathy (Burns 1996).

Table 2. Major Clinical Features Associated with Chronic Petrol Sniffing.

<b>Number of Patients</b>	<b>20</b>
<b>Altered mental state</b>	<b>20</b>
Drowsiness	1
Delirium	12
Visual hallucinations	6
Aggression / irritability	9
Disinhibition	1
Stupor / coma	7
<b>Tonic-clonic seizures</b>	<b>14</b>
<b>Status eplilepticus</b>	<b>3</b>
<b>Ataxia (appendicular + truncal)</b>	<b>13</b>
<b>Other movement disorder</b>	<b>14</b>
Myoclonus	9
Choreoathetosis	8
Action tremor	4
<b>Hyperreflexia</b>	<b>12</b>
Generalised	11
Jaw jerk	5
<b>Horizontal nystagmus</b>	<b>6</b>
<b>Ocular flutter</b>	<b>3</b>
<b>Facial grimacing</b>	<b>5</b>

Source (Goodheart & Dunne 1994, p179)

It is estimated that 109 Indigenous people died from petrol sniffing between 1981-2003 (see table 3 over the page). Between 1981-1991 the majority of deaths occurred in the Ngaanyatjarra and Anangu Pitjantjatjarra Lands. This distribution changed markedly between 1998-2003 with a significant decrease of mortality in these regions and a significant increase in Northern Territory Western desert communities and the East Kimberley in Western Australia (see table 4 over the page). Five of these deaths in the Northern Territory Western desert communities occurred in 2003 (Commonwealth Department of Health and Aging 2004a, National Indigenous Times November 24 2004 p3, Brady 1994, Brady 1992).

A further worrying development is that the 1998-2003 figure includes ten petrol sniffing related suicides. There are no recorded petrol sniffing related suicides between 1989-1999 (Commonwealth Department of Health and Aging 2004a). There are also numerous anecdotal reports of related attempted suicide since 1999 (Commonwealth Department of Health and Aging 2004a, Madden 2004, National Indigenous Times March 31 2004 p12, Legislative Assembly of the Northern Territory 2003a, The Sydney Morning Herald November 25 2002 p13, ABC Science News October 11 2002).

More recent reports from 2004, record an alarming increase in mortality with four petrol sniffing related suicides (and eight attempted suicides) within one month on the Anangu Pitjantjatjarra Lands and six petrol sniffing related deaths in the Northern Territory (Debelle 2004, National Indigenous Times November 24 2004 p3, National Indigenous Times March 31 2004 p12, National Indigenous Times March 17 2004 p3). The recorded number of mortalities is thought to underestimate the actual number as death is typically attributed to the presenting cause such as pneumonia (Legislative Assembly of the Northern Territory 2003a, Roper & Shaw 1996).

Table 3. History of mortality from petrol sniffing 1981-2003

<b>Period</b>	<b>Number of Deaths</b>	<b>Location</b>	<b>Mean Age</b>	<b>Age Range</b>
1981-1991	63	Australia	19	11-32
1992-1999	9	WA/NT	25	12-32
1999-2003	37	SA/WA/NT	24	15-39

Source (Commonwealth Department of Health and Aging 2004a, p49)

Table 4. Regional Summary of Mortality 1998-2003

<b>Region</b>	<b>Number of Deaths</b>
Ngaanyatjarra Lands	5
Anangu Pitjantjatjarra Lands	11
Central Northern Territory	16
East Kimberley	3
Top End (Arnhem Land)	2
<b>Total</b>	<b>37</b>

Source (Commonwealth Department of Health and Aging 2004a, p49)

### *Community*

The effects upon individuals also flow on to communities. Petrol sniffing has been associated with aggression, violence (including murder), theft and property damage, offences which lead to a significant relationship between petrol sniffers and the justice system (Commonwealth Department of Health and Aging 2004a, Madden 2004, Legislative Assembly of the Northern Territory 2003b, Stojanovski 2002a, Toohey 2001a, Australian Drug and Alcohol Council 2000, D'Abbs & Maclean 2000, Lagan 2000, Divakaran-Brown & Minitjukur 1992, Parliament of

Commonwealth of Australia 1985). One Northern Territory community recently noted that property damage caused by petrol sniffers had resulted in \$78,000 in damage during one financial year, causing insurance premiums to soar (Areyonga Community 2003). There are suggestions of significantly higher damage costs per annum to communities where chronic sniffing takes place (Hudson 1995). Brady (1985) found that of 103 court cases in 1979-80 in the Anangu Pitjantjatjarra Lands, 40 involved petrol sniffing.

These actions can also create high levels of fear, conflict, stress, powerlessness and frustration within communities. Such suffering is most significant for the families and kin of petrol sniffers who can experience additional feelings of shame, guilt, grief, anger and tiredness (Brady 1992, Divakaran-Brown & Minitjukur 1992). Resultant stress and conflict can also cause further dislocation and isolation to petrol sniffers (D'Abbs & Maclean 2000, Brady 1992). It is important to note that similar social disruption is evident from abuse of other substances or poly-drug use (ABC PM October 4 2004, ABC Science News October 11 2002, Clough et al. 2002a, Clough et al. 2002b, Minister for Aboriginal and Torres Strait Islander Affairs 2002).

Harm to communities can also be caused through the defiance of traditional authority and the disclosure of sacred information (Divakaran-Brown & Minitjukur 1992). In recent times such violence and defiance has contributed to a school closure in Central Australia and the controversial removal of powers of the Anangu Pitjantjatjarra Council and imposition of State Government rule (ABC News March 10 2004, Liddle & Johns 2004, Liddle et al. 2004a). The extent of these effects varies significantly between communities depending on factors such as petrol sniffing levels and individual and cultural perspectives of these effects and petrol sniffing (Folds 2001, D'Abbs & Maclean 2000, see Chapter 7 'Social Origins').



### *Wider Society*

There are a number of further effects felt by wider Australian society. The cost of evacuation and treatment of a petrol sniffer is estimated at \$20,000 a case. The costs of prison care of individuals jailed for petrol sniffing related crime is estimated at \$3000-3500 per week (Hudson 1995). A lack of reliable data prevents a current estimate of the total costs per annum to government for the medical and justice systems. The cost of institutional care for brain damaged ex-petrol sniffers is estimated at \$150,000-160,000 (Legislative Assembly of the Northern Territory 2004b). It is estimated that there are currently 15 such individuals in the Northern Territory alone and that this could rise to more than 60 individuals in the foreseeable future. This would result in costs of more than \$9million per annum, a figure that precludes individuals being cared for by family members (Legislative Assembly of the Northern Territory 2004b).

## **Chapter Three: Literature Review**

### **Section 3a. D'Abbs & Maclean (2000) Intervention Framework**

The most useful framework for analysing the current literature on petrol sniffing is the intervention framework employed by D'Abbs and Maclean (2000). D'Abbs and Maclean (2000) comprehensive intervention review distinguishes between three types of petrol sniffing interventions; primary, secondary and tertiary interventions. Primary interventions are distinguished as programs that attempt to prevent the emergence of petrol sniffing. An example of a primary intervention is the locking up of petrol supplies in communities. Secondary interventions are interventions that attempt to reduce the incidence of petrol sniffing by targeting 'at-risk' populations or those who are already engaged in petrol sniffing. An example of a secondary intervention is the use of outstations.

Tertiary intervention represents programs that are designed to rehabilitate chronic petrol sniffers such as hospital treatment. There is some overlap between these interventions. For example outstations could be employed as a secondary or tertiary intervention depending on the individual program (D'Abbs & Maclean 2000). This intervention framework is not only the most useful framework for analysing petrol sniffing interventions, but also a relatively standardised framework within the field. Accordingly, the current thesis has adopted this framework in its review of the current petrol sniffing literature. Key documents are reviewed within this context and highlighted in the next chapter's review conclusions. This review identifies the most important types and components of successful petrol sniffing interventions, so that an intervention assessment framework can be developed in order to assess the Opal Unleaded initiative.

### **Section 3b. Primary Interventions**

#### *Lock up Petrol / Add Deterrents to Petrol*

Upon the advent of petrol sniffing most communities have ‘locked up’ their petrol. This variously involves floodlights, caging pumps, locking petrol caps and guard dogs (Commonwealth Department of Health and Ageing 2004a, Gray et al. 2002, D’Abbs & Maclean 2000). This has been almost universally unsuccessful as petrol sniffers have cut fuel lines and broken into petrol tanks (Commonwealth Department of Health and Ageing 2004a, D’Abbs & Maclean 2000).

Some communities have added ethyl mercaptan to petrol to deter sniffers, which induces nausea and sickness when inhaled. This strategy was abandoned as it made other residents nauseous, caused parents distress and petrol sniffers learnt how to evaporate the ethyl mercaptan (Gray et al. 2002, Parliament of Commonwealth of Australia 1985).

#### *Unleaded Fuel / Avgas*

Unleaded petrol has been associated with reduced levels of morbidity requiring evacuation due to its absence of tetraethyl lead (Burns 1996). The long-term effects of sniffing unleaded petrol remain unclear and it is likely that the toxic hydrocarbons would still result in neurological damage (D’Abbs & Maclean 2000, Brady 1997, Burns 1996).

Avgas appears to have been a more effective supply reduction measure. Avgas contains few toxic hydrocarbons and despite anecdotal and media reports it produces no intoxication when sniffed. Thirty seven communities, primarily in the Ngaanyatjarra and Anangu Pitjantjatjarra Lands, currently participate in the subsidization of Avgas through the Federal Government’s Comgas scheme (Commonwealth Department of Health & Ageing 2004a, Legislative Assembly

of the Northern Territory 2004d, Toohey 2001a, D'Abbs & Maclean 2000, Burns 1996, Burns et al. 1995a).

A recent evaluation of this scheme recommended its continuation, concluding that it had generally experienced community support and positive impacts. The extent of these impacts has varied from substantial to minimal reductions in petrol sniffing (Commonwealth Department of Health and Ageing 2004a). A number of factors have been found to limit the effectiveness of supply restriction interventions, such as Avgas. These issues will be discussed within an evaluation of the supply restriction approach of the Opal Unleaded initiative.

#### *Night Patrols / Legal Sanctions*

Communities often employ individuals to patrol the community at night to prevent petrol sniffing or to apprehend sniffers and return them to their families (D'Abbs & Maclean 2000). Night patrols have widespread community support and present a crucial opportunity for community empowerment (South Australian Coroner 2002). However their efficacy remains unclear and there are problems associated with cost and with authority in the context of kinship relations (Legislative Assembly of the Northern Territory 2003b, D'Abbs & Maclean 2000).

There is considerable debate by researchers and communities as to whether petrol sniffing should be made illegal. Proponents claim that a similar by-law has proved successful in the Ngaanyatjarra Lands, whilst opponents argue that jail is not a deterrent and could cause further harm (Legislative Assembly of the Northern Territory 2004a, Legislative Assembly of the Northern Territory 2004b, D'Abbs & Maclean 2000, Lehmann 1998, Mosey 1997). It is illegal to knowingly supply petrol to petrol sniffers in all effected States, however it is difficult to prove this intent and few individuals have been prosecuted (Legislative Assembly of the Northern

Territory 2004d, Martin 2004, South Australian Coroner 2002, D'Abbs & Maclean 2000). Such laws are largely redundant when in many communities there is infrequent or no police presence (Legislative Assembly of the Northern Territory 2003a, South Australian Coroner 2002, D'Abbs & Maclean 2000).

### *Education / Information*

Education and information interventions typically function as primary and secondary interventions. Past research has found petrol sniffers are well aware of the dangers of petrol sniffing and that 'scare tactics' were counter-productive (D'Abbs & Maclean 2000, Brady 1997, Burns et al. 1995b). There is debate whether secondary education interventions should adopt harm reduction principles. Proponents argue that such strategies can save lives, whilst opponents contend they are permissive (Commonwealth Department of Health and Ageing 2004, Pearson 2004a, D'Abbs 2002, D'Abbs & Maclean 2000, Brady 1997).

Education and information interventions are useful for people such as health workers, parents and council members (D'Abbs & Maclean 2000, Brady 1992). There have been several notable examples, which have been ended or limited by lack of funding. One such program was the Central Australian Petrol Link-Up program, funded 1994-1995, to provide communities with information through workshops, newsletters and resource collation (see Appendix D for resource example: 'The Brain Story') (Commonwealth of Australia National Drug Strategy 2003a, Lehmann 1998, Shaw et al. 1995). Other successful examples include the current Central Australian Youth Link Up Service (CAYLUS) and the Australian Drug and Alcohol Council petrol sniffing resource manual (Australian Drug & Alcohol Council 2004b, Commonwealth Department of Health and Ageing 2004a, Gray et al. 2004, Australian Drug & Alcohol Council 2000).

### *Youth / Recreation Workers*

Recreation and youth workers also operate as primary and secondary interventions. These workers are engaged to provide positive alternatives for Indigenous youth and have found consistent support from researchers and communities (Legislative Assembly of the Northern Territory 2004b, Stojanovski 2002a, South Australian Coroner 2002, D'Abbs & Maclean 2000, Mosey 1997, Parliament of the Commonwealth of Australia 1985, Almeida 1994).

Research highlights the need for recreation activities to be exciting and meaningful and should not be restricted to sporting activities alone. In addition youth workers should be able to provide counseling and family support (Commonwealth of Australian National Drug Strategy 2003a, Legislative Assembly of the Northern Territory 2002a, Legislative Assembly of the Northern Territory 2002b, D'Abbs & Maclean 2000, Mosey 1997, Brady 1992). Other important conditions are that programs should target all youth rather than just petrol sniffers and in 'out-of-school' hours. Programs should also be permanent as many programs have ceased once a petrol sniffing 'crisis' is perceived to have passed (Legislative Assembly of the Northern Territory 2003a, Legislative Assembly of the Northern Territory 2002a, Stojanovski 2002a, D'Abbs & Maclean 2000, Roper & Shaw 1996).

### **Section 3c. Secondary Interventions**

#### *Traditional Culture*

Traditional culture can be used in order to teach and counsel petrol sniffers and to inculcate individual and community strength. These programs have been generally supported by researchers and particularly supported by communities (Hopkins 2004, D'Abbs & Maclean 2000, Brady 1992, Brady 1985). Their effectiveness is largely untested and difficult to measure. Their

value lies beyond a simple reduction in petrol sniffing levels. Forms of traditional culture intervention include painting, initiation ceremonies, Dreamtime stories and cultural law teachings (Hopkins 2004, D'Abbs & Maclean 2000). There has been reluctance from some communities to initiate petrol sniffers due to subsequent lapses and disclosures by initiated youth (Divakaran-Brown & Minitjukur 1992).

Other community and cultural based sanctions have included banishment, beatings and public shaming. Whilst these interventions have reportedly been successful in some communities they are generally considered as having moderate short term impacts but few long term effects. There is some debate over their effectiveness and appropriateness (Folds 2001, D'Abbs & Maclean 2000, Mosey 1997, Brady 1992). O'Malley (1994) has warned of the danger of governments emerging as the arbiter of Indigenous traditions.

### *Family*

Emanating from traditional culture, is the potential for intervention by family or kin relations. The kinship obligations within Indigenous communities are the most fundamental cohesive unit and define all social relationships (Human Rights and Equal Opportunity Commission 2003b). It is critical to correct the erroneous assumption that all petrol sniffers are simply 'neglected' children. Numerous studies have documented the efforts of many Indigenous families and kin engaged with petrol sniffers and the intractable nature of the problem (Human Rights & Equal Opportunity Commission 2003b, D'Abbs & Maclean 2000, Brady 1985). According to a study by Burns et al. (1995b) the most common reason for ceasing petrol sniffing was intervention by parents or senior relations.



The clearest formal example of this type of intervention is the Healthy Aboriginal Life Team (HALT). HALT achieved success in Yuendumu in the 1980s through its reintegration of petrol sniffers with their family systems and introduction of individual and family counseling to promote individual, family and community capacity (D'Abbs & Maclean 2000, Bryce et al. 1992, Divakaran-Brown & Minitjukur 1992, Franks 1989).

### *Law Enforcement / Justice System*

As a secondary intervention, law enforcement and the justice system are largely ineffective. According to a study by Burns et al. (1995) no former petrol sniffers reported that imprisonment or 'trouble' with police due to petrol sniffing related offences had been a reason they ceased sniffing. Bush courts are often held for only one day per month and suffer from case overload, inadequacy of sentencing options and communication and comprehension difficulties (Siegel 2003, South Australian Coroner 2002). Inadequacy of sentencing options such as bonds, undertakings and community service obligations due to insufficient officers or services result in higher rates of incarceration for petrol sniffing related crime (National Indigenous Times August 6 2003, Koori Mail July 30 2003 p5, Siegel 2003, South Australian Coroner 2003).

### *Outstations*

Outstations are most effectively employed as secondary interventions, however they may also be used as primary and tertiary interventions. Outstations offer petrol sniffers a physically and spiritually rehabilitative environment that is culturally appropriate, allows close supervision and is normally controlled by Indigenous people. Within the home community, outstations remove 'ringleaders' and provide respite for caregivers. They also reassert an expression of adult authority and attach a consequence to petrol sniffing. Despite cautious support from researchers and few program specific evaluations, outstations have significant community support

(Legislative Assembly of the Northern Territory 2002a, South Australian Coroner 2002, Stojanovski 2002a, D'Abbs & Maclean 2000, Lehmann 1998, Mosey 1997, Shaw et al. 1995, Brady 1985).

However many outstations have failed due to inconsistent and insufficient funding. Further problems include the provision of appropriate staff and resources for health care and communication. Moreover, some communities do not own an appropriate location and petrol sniffers can simply refuse to go to outstations (Legislative Assembly of the Northern Territory 2003b, South Australian Coroner 2002, D'Abbs & Maclean 2000, Lehmann 1998, Hudson 1995, Shaw et al. 1995, Brady 1992, Parliament of Commonwealth of Australia 1985).

### **Section 3d. Tertiary Interventions**

#### *Bush Clinics / Hospitals / Residential Treatment*

The first point of treatment for most chronic petrol sniffers is the community clinic (Legislative Assembly of the Northern Territory 2003b, Divakaran-Brown & Minitjukur 1992). Table 5, seen over the page, details petrol sniffing related contacts at a bush clinic serving 2500 people between 1992-93 (Gell 1994).

In the event of more serious effects the petrol sniffer is likely to be evacuated to hospital (Goodheart & Dunne 1994). The most common treatment for acute encephalopathy is chelation therapy, which attempts to reduce the levels of lead in the body by using chemical compounds that bind to heavy metals. This treatment is controversial because it ignores the potential role of toxic hydrocarbons, has mixed results and potential toxic side effects (D'Abbs & Maclean 2000, Brady & Torzillo 1994).

Table 5. Petrol Related Contacts at all Nganampa Health Clinics July 1992 - June 1993

<b>Medical Condition</b>	<b>Number of Contacts</b>
Respiratory	32
Trauma	32
Fitting	70
Minor aches / pains	23
Skin disease	59
Other	109
<b><i>Total</i></b>	<b>325</b>

Source (Gell 1994, p43).

This debate is now less pressing given that most communities only have unleaded petrol, and the ‘unsneiffable’ diesel or Avgas. Whilst associated with lower morbidity, the long-term effects of sneiffing unleaded petrol, and thus relevant treatments, remain unclear (Commonwealth Department of Health and Aging 2004a, D’Abbs & Maclean 2000, Lehmann 1998, Burns 1996, Currie et al. 1994, Brady 1992). More recent, yet to be published, research indicates that the long term effects of petrol sneiffing may in fact be reversible (ABC News November 10 2004b, Debelle 2004). For other presenting effects such as convulsions, cardiac arrhythmia, accident related trauma and coma, relevant universal medical procedures are applied (Lehmann 1998).

There are few rehabilitation services available, such as detoxification, counseling, residential care or respite that are specifically designed to treat chronic petrol sneiffers. This means that most chronic petrol sneiffers suffering serious effects return to communities after hospital care, remain

in their communities or are taken to outstations if available. Consequently there are few tertiary program assessments (Legislative Assembly of the Northern Territory 2003a, Gray et al. 2002, Northern Territory Department of Health and Community Services 2002b, D'Abbs & Maclean 2000, Hudson 1995). Other research has highlighted the lack of mental health and physiotherapy services available (Legislative Assembly of the Northern Territory 2003a, Legislative Assembly of the Northern Territory 2004d, Legislative Assembly of the Northern Territory 2003b).

## **Chapter Four : Assessment Framework**

Based upon this review of the current intervention literature, three components can be identified as the key elements that comprise a successful intervention. These three components form the assessment framework by which the Opal Unleaded initiative can be judged.

#### **Section 4a. Component One: Range of Primary, Secondary and Tertiary Interventions.**

Review of the literature indicates that the most effective petrol sniffing interventions have been education/information for relevant workers and parents, youth workers, Avgas, traditional culture, family, outstations, bush clinics and hospitals. The effect of other interventions such as night patrols and residential treatment remains unclear and requires greater research. Other interventions such as adding deterrents to petrol, locking up supplies and education of petrol sniffers appear largely ineffective. Considerable improvements could be made to interventions such as law enforcement, through increased police presence in affected communities, and legal sanctions, with the introduction of wider sentencing options. The nature, extent and context of their implementation also influences the effectiveness of these interventions (Legislative Assembly of the Northern Territory 2004b, Northern Territory Department of Health and Community Services 2002b, South Australian Coroner 2002, D'Abbs & Maclean 2000, Shaw et al. 1995).

The recent and comprehensive studies by the South Australian Coroner and the Northern Territory Legislative Assembly also highlight the fact that despite notable attempts and successes, many interventions have run on an inconsistent, insufficient and fragmented basis (Legislative Assembly of the Northern Territory 2004a, Legislative Assembly of the Northern Territory 2004b, Legislative Assembly of the Northern Territory 2003c, Office of the Chief Minister of the Northern Territory 2004, Parliament of the Northern Territory 2004a).

However, the clearest lesson that emerges from this review is that no one intervention is the best intervention, or sufficient on its own, to promote real and sustained changes in petrol sniffing behaviour. There is general consensus amongst researchers and communities that a broad range of simultaneous and permanent primary, secondary and tertiary interventions should be available to all affected communities (Legislative Assembly of the Northern Territory 2004b, Northern Territory Department of Community Development, Sport and Cultural Affairs 2002, Northern Territory Department of Health and Community Services 2002b, South Australian Coroner 2002, D'Abbs & Maclean 2000, Shaw et al. 1995, Parliament of the Commonwealth of Australia 1985).

A number of the reviewed interventions have resulted in positive impacts upon petrol sniffing behaviour in some communities. However, each of these measures has been most successful as one element in a broad range of interventions. For example the Avgas scheme evaluation stressed that Avgas should not be implemented as the sole intervention strategy and that it worked most effectively as one of a range of complementary interventions (Commonwealth Department of Health and Ageing 2004a, D'Abbs & Maclean 2000, Roper & Shaw 1996). Burns et al. (1995b) similarly concluded that community resolve and positive alternatives were just as significant in reducing petrol sniffing in an Arnhem Land community as the introduction of Avgas.

The most successful program of recent years in the Central Australian community of Yuendumu also highlights this conclusion. Yuendumu has adopted a multi-pronged youth program. Regular activities conducted from its youth centre include sport, discos, cooking, art, night school, radio programs, cultural workshops and youth forums. The community also operates Mt Theo outstation. Outstation activities include education, gardening, sporting activities, hunting and youth forums (Stojanovski 2003, Commonwealth Department of Family

and Community Services 2002, Stojanovski 2002a, Stojanovski 2002b, Stojanovski 2002c, Karissa Preuss pers comm).

The need for a broad range of interventions is a conclusion that has been drawn by multiple researchers covering all forms of intervention (Altnews 2004, Commonwealth Department of Health and Ageing 2004a, James 2002b, Northern Territory Department of Health and Community Services 2002b, D'Abbs & Maclean 2000, Mosey 1997, Burns 1996, Brady 1992). This means that whilst some interventions appear more effective than others, no one intervention represents a total solution. Each intervention has limitations. For example, outstations are not geographically possible for some communities and without sufficient in-community programs petrol sniffers can simply resume sniffing upon returning to the community.

Similarly, Avgas may reduce petrol sniffing but may also lead to the creation of a 'black market'. An increased police presence along with Avgas would be more likely to achieve a positive impact. This example also illustrates the importance of simultaneous introduction of a range of interventions. Interventions should also be permanent given the cyclic history of petrol sniffing (Legislative Assembly of the Northern Territory 2004b, Legislative Assembly of the Northern Territory 2002b, Northern Territory Department of Health and Community Services 2002b, South Australian Coroner 2002, D'Abbs & Maclean 2000).

A range of primary, secondary and tertiary interventions means that the different needs of individuals and communities are more likely to be met. Moreover this approach ensures that the specific and different problems of prevention, assisting chronic sniffers to cease sniffing, rehabilitation and treatment are accounted for. For example, if a community only introduces



primary interventions then individuals who do sniff petrol will receive no programmed support or rehabilitation.

The appropriateness of this multi-faceted approach has precedent within other substance abuse strategy, such as the National Drug Strategy, which promotes supply reduction measures (such as Avgas), demand reduction measures (such as youth workers) and treatment (Australian Drug and Alcohol Council 2003b, Henry-Edwards 2003, Gray & Saggers 2001). There is widespread consensus by researchers and communities that any range of primary, secondary and tertiary interventions must address supply reduction, demand reduction and treatment measures (Legislative Assembly of the Northern Territory 2004b, Northern Territory Department of Health and Community Services 2002b, South Australian Coroner 2002, D'Abbs & Maclean 2000, Shaw et al. 1995). This approach also accords with the drug-set-setting model proposed by Zinberg (1984). In this model effective interventions target the drug itself, such as Avgas, the set (individual attributes), such as counseling, and the setting (context of abuse), such as youth workers.

#### **Section 4b. Component Two: Community Control, Support and Participation**

A vast majority of research has also concluded that community control (primary control), support and participation are crucial elements influencing intervention effectiveness. This is because community members best understand the nature of the community, have the most significant relationships with petrol sniffers and because community support influences intervention implementation and maintenance. Also, such an approach encourages community empowerment, leadership and capacity building, which develops the skills of community members in dealing with such problems (Legislative Assembly of the Northern Territory 2004b, Northern Territory Department of Health and Community Services 2004a, South Australian

Coroner 2002, D'Abbs & Maclean 2000, Brady 1992). The importance of this component was highlighted as long ago as the 1985 Federal Senate Select Committee on Volatile Substance Fumes, which recommended "all actions in response to petrol sniffing should originate from, and be controlled by, the Aboriginal people" (Parliament of the Commonwealth of Australia 1985, p216).

The significance of community control, support and participation is particularly evident in successful intervention examples such as Maningrida and Yuendumu. The Mt Theo program at Yuendumu was established as a grass roots community initiative and removes individuals considered 'at-risk' to be cared for by tribal elders (Burns et al. 1995b, Stojanovski 2002a). Indeed it has been suggested that community support has seen almost all of the detailed interventions be effective for at least one community at one time (Commonwealth Department of Health and Ageing 2004a).

The failure of many programs that have been externally imposed and/or lacked community support is well-documented (Danenbergh 2001, D'Abbs & Maclean 2000, Brady 1992, Divakaran-Brown & Minitjukur 1992). For example, whilst achieving success at Yuendumu, the family centred HALT program was unsuccessful when introduced to the Anangu Pitjantjatjarra Lands. The HALT team's intervention in the Anangu Pitjantjatjarra Lands was judged unsuccessful due to its external imposition, lack of relationship with these communities and resentment at the abandonment of existing projects (Mobbs 1993, Bryce et al. 1992, Divakaran-Brown & Minitjukur 1992).

However, this does not mean that communities are solely responsible and should be left alone to deal with the problem. On the contrary, as the South Australian Coroner has noted (2002),

communities require greater levels of support and responsibility from governments and the broader Australian community in dealing with this problem. The essential point is that this support should be provided to communities, who should then be the primary force in determining within which range of interventions these resources should be deployed.

Also relevant to communities, culture and family, is the notion of ‘social control’ (D’Abbs 2002). According to Pearson (2004) a permissive community ideology is a key factor in substance abuse within Indigenous communities and it is vital that any intervention addresses the social norms of a community. In order to be successful an intervention must address not only supply reduction, demand reduction and treatment but also establish ‘social control’ within a community. In this way an intervention must engage with the community to establish an uncomfortable environment for substances to be abused in, provides inadequate material, social and emotional costs for substance abusers and enforces treatment (Pearson 2004).

Within this context traditional culture should constitute an important element of community control, support and participation. Whilst its effectiveness in reducing petrol sniffing remains largely untested, the value of traditional culture lies beyond its direct impact on petrol sniffing levels. Traditional culture interventions promote community support, cohesion and capacity building and empowers Indigenous culture. Additionally the role of traditional family systems, involving parents and kin, can be very significant because of their powerful influence over social relationships and conduct. This form of intervention also contributes to community empowerment and capacity building (Stojanovski 2002a, D’Abbs & Maclean 2000, Burns et al. 1995b). Without a foundation in traditional culture, and most particularly without the involvement of family systems, interventions are unlikely to be supported, fully implemented and/or maintained.

#### **Section 4c. Component Three: Social Origins**

The most important component of the assessment framework is the extent to which interventions address the social origins of petrol sniffing behaviour. There is significant agreement that any range of interventions must target the causes of petrol sniffing behaviour. As noted, this means that interventions should adopt a multi-faceted range of interventions that will enable programs to target explicit causes of petrol sniffing behaviour such as excitement, lack of information and the ready availability of petrol. Researchers and communities have also stressed that interventions must be characterised by broad-based programs that address underlying causes such as Indigenous disadvantage, community values and practices, the health and wellbeing of Indigenous youth and the role of government (Legislative Assembly of the Northern Territory 2004b, South Australian Coroner 2002, Central Australian Aboriginal Congress 2002b, D'Abbs & Maclean 2000, Brady 1992, Parliament of the Commonwealth of Australia 1985).

Of particular relevance to the Opal Unleaded initiative was the recommendation that the Avgas supply restriction scheme should act as part of a range of complementary interventions that address the underlying causes of petrol sniffing (Commonwealth Department of Health & Ageing 2004a). Moreover, the recent studies by the South Australian Coroner and the Northern Territory Legislative Assembly have called for the broader Australian community, and governments in particular, to provide greater assistance to communities facing petrol sniffing. Both studies stressed the need to address underlying causes of petrol sniffing such as Indigenous disadvantage and the need for greater financial support, responsibility and co-ordination by State and Federal Governments (See Appendix E for full list of NT Legislative Assembly recommendations) (Legislative Assembly of the Northern Territory 2004a, Legislative Assembly

of the Northern Territory 2004b, Legislative Assembly of the Northern Territory 2003c, South Australian Coroner 2002).

The range and nature of interventions introduced should address the relevant individual, community and wider society elements that form the social origins of petrol sniffing behavior in order to produce sustained and real change. For example, youth programs may need to target meaningful employment where unemployment manifests as an important element in the social origins of petrol sniffing behaviour. It is important to note that some of the elements of the social origins of petrol sniffing behaviour, and that must be addressed in order to ensure the effectiveness of any intervention, may be beyond the direct control of communities. This may include lack of government funding and broader issues stemming from Indigenous disadvantage (Legislative Assembly of the Northern Territory 2004b, South Australian Coroner 2002, D'Abbs & Maclean 2000, Brady 1992, Parliament of the Commonwealth of Australia 1985). To avoid replication, the explication of the social origins of petrol sniffing behaviour will be conducted in chapter 6 (Section C), which will evaluate the extent to which the Opal Unleaded initiative addresses these social origins.

An intervention that does not address the social origins of petrol sniffing behaviour will invariably fail due to lack of sustainability or the transference of behaviour from petrol sniffing to other related maladaptive behaviour. This could variously include other substance abuse, mental health issues, violence, or self-harm (see Chapter 2). This would mean that even where the incidence of petrol sniffing was reduced, the effects associated with the failure to address these social origins for individuals, communities and wider society would continue to be harmful.

## **Chapter Five : Introduction to the Opal Unleaded Initiative**

## **Section 5a. The Opal Unleaded Initiative.**

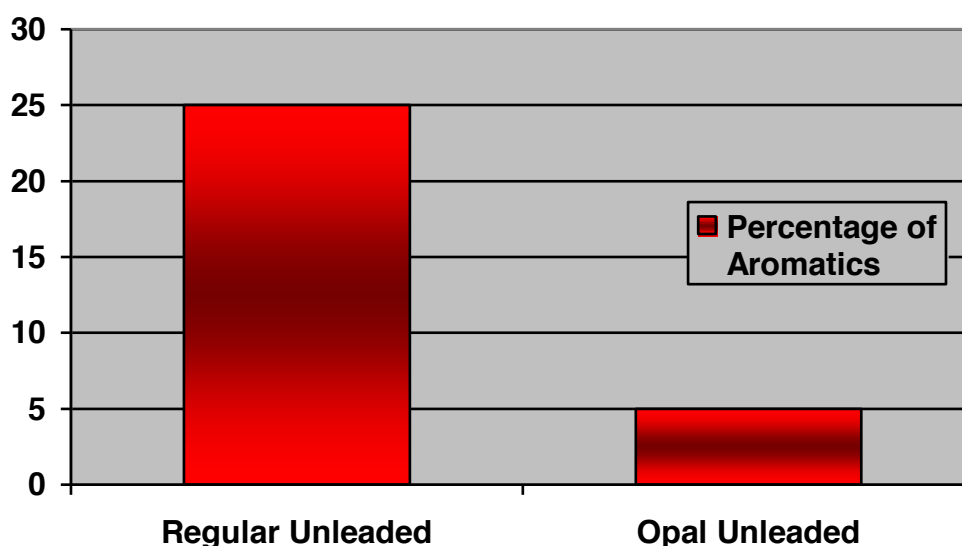
British Petroleum (BP) Australia, in conjunction with the Australian Institute of Petroleum, developed Opal Unleaded in 2004. It is deemed an unsniffable ‘unleaded’ petrol because it contains low levels of aromatics that provide petrol sniffers with a ‘high’. According to BP, “by taking this high out, we believe that young people may lose interest in sniffing fuel and thus avoid long term brain damage and early death” (BP Australia 2004a). This unleaded fuel is the first of its kind and was specifically developed as a petrol sniffing intervention (ABC News February 18 2005, BP Australia 2004a, BP Australia 2004b).

Opal Unleaded can be used in all applications that require unleaded fuel, including 4WDs and two stroke engines such as chainsaws and lawnmowers. It is not available for aviation use or in engines requiring leaded fuel. Independent tests commissioned by BP in October 2004 found no significant differences between vehicles running on Opal Unleaded and regular unleaded. Tailpipe exhaust emissions were equal to or less for a vehicle running on Opal than a vehicle running on regular unleaded. The fuel economy variation between a vehicle running on Opal compared to regular unleaded was 0.3 litres per 100km, which is well within the normal variation between petrol blends in the marketplace. Minimal differences in functioning were noted between Opal and normal unleaded fuel for two-stroke marine outboard engines. (BP Australia 2004c). Opal Unleaded will be produced at the BP Kwinana refinery in Western Australia, shipped to its Largs North Terminal in South Australia and distributed by road to communities (BP Australia 2004c).

Opal Unleaded is the least toxic of all available fuels (BP Australia 2004d). A comparison of the percentage of the aromatics in Opal Unleaded and regular unleaded fuel may be seen over the page in Figure 3. According to BP Australia there are several key advantages of Opal Unleaded:

the lack of lead content in the unleaded fuel “eliminates the potential of lead toxicity, the low aromatics content reduces the potential for toxic effects associated with both acute and chronic exposure to aromatic compounds and the low volatility of the product reduces the potential for inhalation exposure to volatile hydrocarbons” (BP Australia 2004a, p1). If it is inhaled, then the product is likely to cause irritation to the respiratory tract, nausea, dizziness, headaches and drowsiness. Further information such as the product specifications and material safety data sheet may be seen in Appendices F and G (BP Australia 2004e, BP Australia 2004f).

Figure 3 : Percentage of Aromatics in Unleaded Fuel and Opal Unleaded Fuel



Source : BP Australia 2004b.

The Opal Unleaded Initiative was launched on February 18, 2005 but will not be available for general distribution. It will only be distributed to the thirty seven communities currently participating in the COMGAS scheme located throughout the Northern Territory, Western Australia, South Australia and Cape York (ABC News February 18 2005, BP Australia 2004a, BP Australia 2004b). A list of these communities may be seen over the page in Table 6. Opal



Unleaded has been developed as an improvement of Avgas, which it will replace, and which had become unleaded due to environmental changes. This meant that it would contain high levels of toxic hydrocarbons and was no longer suitable to prevent petrol sniffing (Parliament of the Commonwealth of Australia 2005, Commonwealth Department of Health and Ageing 2004a).

The Commonwealth Government will subsidise the expensive production and distribution costs of Opal Unleaded so that it can be sold at the price of regular unleaded. This is estimated at \$1 million per year and means that despite its commercial origins, the management of the initiative is actually a Federal Government responsibility (ABC News February 18 2005, Parliament of the Commonwealth of Australia 2005, Commonwealth Department of Health and Ageing 2004a).

Table 6. List by State of Participating Opal Unleaded Communities in February 2005.

<b>State</b>	<b>Communities</b>
Northern Territory	Docker River, Kintore, Mt Liebig, Papunya, Kardu Numuda, Maningrida, Numbulwar, Milingimbi, Galiwinku, Ramingining, Warruwi, Minjalang, Gapuwiyak
Western Australia	Papulankutja, Cosmo Newbery, Mantamaru, Kiwirrkurra, Tjirrkali, Patjarr, Wannan, Warakurna, Warburton, Irrunytu, Tjukurla, Wirrimanu, Mulan, Kanpa
South Australia	Amata, Fregon, Indulkana, Kanyipi, Mimili, Pipalyatjara, Pukatja, Maralinga, Watarru,
Queensland	Aurukun

Source (Commonwealth Department of Health and Ageing 2005).

The development has been hailed within limited media coverage as a ‘major breakthrough’ in the fight against petrol sniffing and as having the potential to ‘dramatically reduce’ or even ‘eliminate’ petrol sniffing (ABC News November 10 2004a, ABC News October 15 2004, Boulton 2004, The Sydney Morning Herald November 2004 p7). The Federal Government has expressed its belief that the Opal Unleaded initiative can make an “important contribution to combating petrol sniffing”, a position supported by other State Governments (ABC News February 18 2005b, Commonwealth Department of Health and Ageing 2004b p1, Parliament of South Australia 2004).

The introduction of Opal Unleaded has also been welcomed by some relevant workers and communities as having ‘the potential to solve petrol sniffing’. These groups have warned that this potential is dependent upon a number of conditions. These conditions generally fall into two categories. The first refers to concerns over elements of the scheme that could effect its effectiveness. For example many communities and relevant workers have expressed concerns over the fragmented community participation in the scheme. Without regional coverage of the scheme, ‘sniffable’ fuel will continue to be available from other outlets such as nearby communities or town centres.

The second area of concern refers to criticisms regarding the schemes singular focus on restriction of supply. This has raised concerns that the Opal Unleaded initiative may fail to deal with potential underlying causes of petrol sniffing such as broader indigenous disadvantage and lack of program funding. Communities also point that past supply restriction measures, such as Avgas, were not ‘universal solutions’ to petrol sniffing behaviour (Bradley 2005, Wilson 2005, ABC News November 16 2004, ABC News November 11 2004). The next chapter represents a

detailed examination of some of these issues, and of the Opal Unleaded initiative, by providing an evaluation of the initiative according to the intervention assessment framework.

## **Chapter Six : Evaluation of the Opal Unleaded Initiative**

The potential efficacy of the Opal Unleaded initiative will be judged according to the three components of the assessment framework: a range of primary, secondary and tertiary interventions, community control, support and participation and the extent to which the initiative addresses the social origins of petrol sniffing behaviour.

#### **Section 6a. Component 1: Range of Primary, Secondary and Tertiary Interventions**

The Opal Unleaded initiative does not adequately address the first criteria identified by the assessment framework as necessary for an effective intervention. The Opal Unleaded initiative does not represent a broad range of permanent and simultaneous primary, secondary and tertiary intervention strategies. The program only adopts a singular method of primary and secondary prevention, through a strategy of supply reduction. This means that the initiative fails to address all of the demands of primary and secondary interventions and none of the demands of tertiary interventions.

BP Australia, along with Yirara College in Alice Springs has instituted a program in the Western Desert involving other primary and secondary interventions. This three-part program involves the implementation of Opal Unleaded, the provision of positive recreation alternatives and programs to return petrol sniffers to school. This admirable program does address the relevant requirements for an effective intervention. However this program is of a small nature, currently having only involved 11 individuals (BP 2004g, Legislative Assembly of the Northern Territory 2004a, Parliament of the Northern Territory 2004a). Most importantly, this program should not be considered as part of the Opal Unleaded initiative.

BP Australia, along with the Australian Institute of Petroleum, should be commended for their development of Opal Unleaded, however its distribution and management in Indigenous

communities is a Federal Government program. The Federal Government will subsidise the distribution and management of the Opal Unleaded initiative as an extension of the Federal Government's COMGAS scheme. The Federal Government has announced no accompanying program such as the BP three part program, let alone wide-spread introduction of such programs across all effected regions (Commonwealth Department of Health and Ageing 2004b).

The Opal Unleaded initiative only addresses primary and secondary prevention by restricting the availability of petrol within Indigenous communities. The initiative does not provide any other form of simultaneous primary or secondary intervention that targets demand reduction and provides no options for tertiary intervention. Possible and necessary demand reduction measures that could have accompanied the introduction of Opal Unleaded include youth workers, education and information programs for relevant workers and communities, night patrols, legal sanctions, wider sentencing options or outstations. Possible tertiary interventions could have included the establishment of regional rehabilitation or treatment centres.

Based on the literature review, the assessment framework identified that effective interventions required a broad range of primary, secondary and tertiary interventions that targeted supply reduction, demand reduction and treatment measures (Bradley 2005, Legislative Assembly of the Northern Territory 2004b, Central Australian Aboriginal Congress 2002b, Northern Territory Department of Health and Community Services 2002b, South Australian Coroner 2002, D'Abbs & Maclean 2000, Shaw et al. 1995). According to Blair MacFarland of the CAYLUS the Opal Unleaded initiative has "the potential to completely solve petrol sniffing" provided other appropriate primary and secondary interventions accompany its introduction. MacFarland contended that extra spending would "produce much larger savings in the future"

due to the continued health, social and personal costs associated with petrol sniffing (Bradley 2005, p8).

BP Australia and government representatives have held several meetings in regional centres to explain the properties of the fuel to relevant workers and community representatives. However, whilst valuable this cannot be considered to constitute an effective education or information petrol sniffing intervention. These meetings were not a permanent intervention aimed at addressing the established knowledge gap in education and information available to relevant workers and communities (ABC News November 10 2004, BP Australia 2004c, D'Abbs & Maclean 2000).

Despite the failure to establish a multi-faceted intervention, the supply reduction aspect of the Opal Unleaded initiative has been greeted by relevant workers and communities as a welcome development that should lead to a positive impact upon involved communities (Bradley 2005, ABC News November 16 2004, ABC News November 11 2004). The Opal Unleaded initiative is only being launched in the 37 communities currently involved in the COMGAS scheme (see Chapter 4) (Commonwealth Department of Health and Ageing 2004a). This means not all communities effected by petrol sniffing will be part of the Opal Unleaded initiative or experience any positive impact from the initiative.

For communities that have been involved in the COMGAS scheme, the restriction of supply has been associated with moderate to minimal positive impacts (Commonwealth Department of Health and Ageing 2004a). Restriction of alcohol supply to Indigenous communities has met with generally positive impacts of varying extent. These measures have also experienced relevant problems such as migration to regional centres where alcohol is available, 'black markets' and

abuse of 'substitute' substances (ABC News March 3 2005, The Sydney Morning Herald November 11 2004 p7, Guivarra 2004, Gray & Saggars 2001). The effectiveness of the supply reduction element of Opal Unleaded within the involved communities is likely to be moderated by several factors.

A number of factors have been found to influence the effectiveness of previous supply restriction interventions, such as Avgas. The most significant factor is the number of communities and fuel outlets involved in the scheme and the subsequent proximity of petrol to involved communities. In some communities unleaded petrol is still also available or petrol is available from nearby communities. Even where large distances are involved there is often high mobility between communities. The Comgas evaluation highlighted the need for a regional approach to supply restriction, currently evident only in the Ngaanyatjarra lands (Commonwealth Department of Health & Ageing 2004a).

Other sources of petrol can include the cars of tourists, visitors or returning residents, highways, regional centres and alternative supplies kept for equipment such as lawnmowers or boats. There are reports of sniffers relocating to other communities or regional centres such as Alice Springs where petrol is readily available (Legislative Assembly of the Northern Territory 2004d, Alcohol and Substance Misuse Priority Group 2002). There are also numerous reports of adults 'running' petrol into communities to sell to petrol sniffers and isolated reports of parents supplying petrol due to threatened violent or self-harming behaviour (Legislative Assembly of the Northern Territory 2004b, Legislative Assembly of the Northern Territory 2004d, Legislative Assembly of the Northern Territory 2003a, Shaw in D'Abbs & Maclean 2000).



A 'black market' of petrol is common in many petrol sniffing communities, in which 2 litres can cost around \$50. Whilst the exclusionary nature of such a price may be associated with a reduced incidence of petrol sniffing, it has also been associated with higher levels of violence and theft in order to procure the necessary funds (Jolliffe 2005, ABC News November 16 2004, Commonwealth Department of Health and Ageing 2004a).

A further related factor that has influenced the success of supply restriction measures is consistency or rejection of use. Sixteen communities participated in the Avgas scheme only sporadically and other communities refused to participate in the scheme. This meant that sniffers in these communities often have access to petrol in their own or nearby communities. This has been most evident in the Anangu Pitjantjatjarra Lands, Western Desert communities of the Northern Territory and East Kimberley. The reasons for rejection reportedly include the damage done to cars and other machinery using Avgas, misinformation regarding these effects and external pressures such as its effect on tourists and community income (Commonwealth Department of Health & Ageing 2004a).

In recognition of these moderating factors, relevant workers, communities and the Northern Territory government have called for greater subsidisation of the Opal Unleaded initiative from the Federal Government. These bodies contend that the initiative should be extended to include all affected Indigenous communities, all fuel outlets within 30km of Indigenous communities and for the fuel to be available in regional centres so that cars returning to communities can be filled with Opal Unleaded. It is unlikely that petrol providers not included in the initiative would commit to Opal Unleaded due to its approximately 40cents per litre higher cost than regular unleaded without the government subsidy. The total cost of such a program is estimated at \$8 million per year (ABC News February 18 2005a, ABC News February 18 2005b, Bradley 2005,

ABC News November 22 2004). The Federal Government has refused to commit to such an extension but has promised to consider it at a later date (ABC News February 18 2005b).

Failure to include more communities and provide regional coverage for the scheme will see continued problems associated with petrol availability from nearby communities and regional centres. This is particularly important given that the failure of the Opal Unleaded initiative to include any demand reduction measures means that many petrol sniffers will most likely still be ‘looking’ for petrol to sniff. Moreover the nearby proximity of fuel and the failure to introduce an accompanying law enforcement focus may lead to the continued existence or growth of a ‘black market’.

#### **Section 6b. Component Two: Community Control, Support and Involvement**

The Opal Unleaded initiative also fails to adequately address the second key component of an effective intervention, the need to ensure that the community is involved and supports the initiative. The Opal Unleaded initiative has been welcomed in the media by some Indigenous communities, however these communities have also expressed concerns over its distribution and the need for other supporting interventions (ABC News February 19 2005, Bradley 2005, ABC News November 16 2004).

Relevant workers and communities have called for greater education and information programs concerning Opal Unleaded within individual communities. Despite scientific tests confirming the fuel did not damage vehicles or other equipment, significant levels of mistrust and misinformation exist within communities as a result of their experiences with Avgas. This must be countered in order to ensure widespread individual and community use of Opal Unleaded

(ABC News November 16 2004, BP Australia 2004c, Commonwealth Department of Health and Ageing 2004a).

However, the key deficiency of the initiative with regard to this component is its failure to provide an active mechanism, other than through using the fuel, through which the community can be involved in the initiative. This could manifest in a number of problems for the initiative. For example this could lead some individuals or communities to perceive Opal Unleaded as the singular solution to petrol sniffing, especially in the absence of other programs or any mechanism for community participation. In this context, any short term effectiveness of Opal Unleaded would ultimately be undermined.

Previous experience with Avgas in some communities demonstrated that many communities saw Avgas as the sole answer, or alternatively as a ‘whitefella’ solution, that required no community control or involvement. Many of these communities saw petrol sniffing reemerge as a significant problem some years later (Legislative Assembly of the Northern Territory 2002a, South Australian Coroner 2002, Australian Drug and Alcohol Council 2000, D’Abbs & Maclean 2000, Shaw et al. 1995). The mood in some communities after the initial successful introduction of Avgas was described by Shaw et al. (1995, p7) “many wondered whether there was any point in petrol sniffing programs and providing resources when the problem could be finished...at the time Avgas seemed all-encompassing”.

Community vigilance affecting supply restriction such as returning cars, ‘black market’ supplies, visits to communities or regional centres without Opal Unleaded and alternative personal fuel supplies is vital. This could also mean that community support and participation in the implementation and effectiveness of other existing or proposed primary or secondary

interventions could be effected by such a perception. Moreover the notion of ‘social control’ remains unaddressed by the Opal Unleaded initiative, in that the initiative fails to address the potentially permissive social ideology within communities experiencing substance abuse (Pearson 2004).

This concern is particularly important for family and kin of petrol sniffers. If traditional family systems remove themselves from involvement in petrol sniffing interventions then these interventions are unlikely to be effective in the long term (Danenberg 2001, D’Abbs & Maclean 2000, Brady 1992, Divakaran-Brown & Minitjukur 1992). Sole reliance on the Opal Unleaded initiative could see a devaluation of the perceived relevance and effectiveness of traditional culture or family based interventions. This would mean that significant opportunities for the prevention and rehabilitation of petrol sniffers and for community empowerment and capacity building, through the promotion of Indigenous culture and family systems, could be reduced or lost.

Also of concern is the failure of the Opal Unleaded initiative to provide any support mechanisms for petrol sniffers or their families. The restriction of supply imposed by the Opal Unleaded initiative could lead to difficult periods of psychological and physical withdrawal or stress for some petrol sniffers (D’Abbs & Maclean 2000). This could prove an especially challenging time for petrol sniffers and their family and kin, as well as for their community at large. Additionally, in these circumstances family and kin probably offer the best opportunity for creating real and sustained change in petrol sniffers and from preventing them from transferring from petrol sniffing to other maladaptive behaviours.

## **Section 6c. Component Three: The Social Origins of Petrol Sniffing Behaviour**

Review of the current literature indicated that the key component of any petrol sniffing intervention is the extent to which it addresses the social origins of petrol sniffing behaviour. Interventions should adopt a multi-faceted and broad-based approach in order to target the causes of petrol sniffing behaviour. Failure to address these social origins is unlikely to result in significant changes in the impacts associated with petrol sniffing behaviour for individuals, communities or wider society. If the causes of petrol sniffing behaviors are not resolved then chronic sniffers may continue to attempt to access petrol through theft, nearby communities, regional centres and the 'black market', abuse other drugs and experience related and unaddressed mental illness (Commonwealth Department of Health and Ageing 2004a, Legislative Assembly of the Northern Territory 2004b, Legislative Assembly of the Northern Territory 2004c, Human Rights and Equal Opportunity Commission 2003b, Northern Territory Department of Health and Community Services 2002b, South Australian Coroner 2002, Central Australian Aboriginal Congress 2002b, D'Abbs & Maclean 2000, Brady 1992, Parliament of the Commonwealth of Australia 1985).

A variety of social origins have been identified for petrol sniffing behaviour, which can be analysed in three different groupings: socio-political causes, individual and community practices and values and the role of government. Explication of these social origins will permit a judgement as to whether the Opal Unleaded initiative adequately addresses this component.

### *Socio-Political Causes*

The most commonly cited cause of petrol sniffing behaviour locates the practice within historical socio-political inequality. Proponents of the socio-political approach contend that over 200 years of economic and social dispossession, marginalisation and exclusion have led to poor

and unequal material environments and exclusion from resources. These conditions, and related despair, are purportedly responsible for high levels of ill health and substance abuse for Indigenous Australians (Gray et al. 2003, Central Australian Aboriginal Congress 2002b, Hudson 1995).

Numerous studies have highlighted a causal relationship between Indigenous ill health or substance abuse and structural determinants such as low levels of education, employment and social equity, inadequate housing and high levels of poverty (Atkinson 2003, Gray et al. 2003, National Aboriginal and Torres Strait Islander Health Council 2003a, Central Australian Aboriginal Congress 2002b, Legislative Assembly of the Northern Territory 2004b, Legislative Assembly of the Northern Territory 2002a, Legislative Assembly of the Northern Territory 2002b, South Australian Coroner 2002, Spooner et al. 2001, ATSIC 2000, D'Abbs & Maclean 2000).

For example, overcrowding in Indigenous housing has been associated with higher rates of respiratory disease, trachoma, urinary tract infections, intestinal parasites, diarrhea and anaemia (National Aboriginal and Torres Strait Islander Health Council 2003a). International studies have also demonstrated this link for ill health and substance abuse for Indigenous people in a range of English speaking countries such as the Maoris in New Zealand, Aboriginals in Canada and Native Americans (National Aboriginal and Torres Strait Islander Health Council 2003a).

Proponents of the socio-political approach argue that petrol sniffing behaviour is most common in remote Indigenous communities where the most socially and economically disadvantaged Australians live. Accordingly, it is these underlying socio-political inequalities that must be addressed in order to achieve real and sustained change in substance abuse such as

petrol sniffing (Gray et al. 2003, Central Australian Aboriginal Congress 2002b, Hudson 1995). Primary school attendance in remote communities is estimated to range between 30-60%, is intermittent and children often struggle with hunger or tiredness due to housing overcrowding and lack of nutrition. Fewer than one third of all Indigenous youth finish secondary school, compared with a national retention rate of around 70%, and secondary education is often only available from regional centres (National Aboriginal and Torres Strait Islander Health Council 2003a, Australian National Council on Drugs 2002, South Australian Coroner 2002, South Australian Department of Aboriginal Affairs 2002).

Indigenous Australians have the worst health status of any Australians. Indigenous infants are four and a half times more likely to die during childbirth and three times more likely to die during infancy than the national average. Life expectancy for Indigenous Australians is 20 years lower than the national average and there is significantly higher prevalence of diseases such as diabetes, hypertension and a range of communicable diseases. Moreover remote communities have significantly lower levels of access to appropriate health care than non-Indigenous Australians.

Mental illness is thought to be higher amongst Indigenous Australians than non-Indigenous Australians and few remote communities have access to any relevant services (Northern Territory Department of Health and Community Services 2004b, Gray et al. 2003, National Aboriginal and Torres Strait Islander Health Council 2003a, Australian National Council on Drugs 2002, Central Australian Aboriginal Congress 2002c, South Australian Department of Aboriginal Affairs 2002, ATSIC 2001, ATSIC 2000). Indigenous Australians, especially in remote communities, are significantly more likely to live in inadequate housing conditions including overcrowding, poorly maintained buildings, high housing costs relative to income and inadequate sanitation and water

supply (Gray et al. 2003, National Aboriginal and Torres Strait Islander Health Council 2003a, ATSIC 2000).

Remote communities also suffer from poor availability and high prices for nutritional food (National Aboriginal and Torres Strait Islander Health Council 2003a). Income pressures and associated poverty also result in low levels of food security (National Aboriginal and Torres Strait Islander Health Council 2003a, South Australian Coroner 2002). The mean weekly household income for Indigenous Australians is approximately 62% of that for non-Indigenous households (Gray et al. 2003). Indigenous unemployment is variously estimated at 20% compared to 8% for non-Indigenous Australians and this figure is thought to be at least double in remote communities (National Aboriginal and Torres Strait Islander Health Council 2003a, South Australian Department of Aboriginal Affairs 2002).

This figure is also thought to hide enormous underlying unemployment as 35,000 Indigenous Australians on remote communities engage in subsidised part time work through the Community Development Employment Programme (CDEP) scheme, which typically involves activities such as rubbish collection (National Aboriginal and Torres Strait Islander Health Council 2003a). This scheme has been variously criticised as tokenistic, humiliating, inconsistent, corrupt and as failing to establish any employment pathways for Indigenous people and is currently under review by the Federal Government (Koch 2005, Singer 2004, Siegel 2003, House of Representatives Standing Committee on Employment, Education and Training of the Northern Territory 1997).

According to the socio-political explanation the combination of high unemployment, lack of available education, poor school attendance, overcrowding in houses leads to high levels of



boredom amongst Indigenous youth which leaves them highly susceptible to substance abuse (Legislative Assembly of the Northern Territory 2002a, Central Australian Aboriginal Congress 2002b, Divakran-Brown & Minitjukur 1992). The South Australian Coroner (2002, p1) concluded “clearly, socio-economic factors play a part in the general aetiology of petrol sniffing. Poverty, hunger, illness, low education levels, almost total unemployment, boredom and general feelings of hopelessness form the environment in which self-destructive behaviour takes place”.

Other researchers and Indigenous people have rejected socio-political explanations on the grounds that they ignore important contributing factors to substance abuse from within communities, differences between communities and externalise blame (Pearson 2005, Pearson 2004, D’Abbs 2002, Pearson 2001, Brady 1993, Brady 1992, Brady 1991). Brady (1992) argues that the socio-political approach overemphasises external factors in order to avoid ‘blaming the victim’. The specific notion that ‘acculturation stress’, associated with cultural and physical dispossession, has resulted in petrol sniffing is challenged by Brady (1993). Brady (1993) identifies that petrol sniffing is most prevalent in remote communities where Indigenous traditions and land control have been least disrupted by colonisation.

Brady (1991) also points out that petrol sniffing abuse varies markedly between Indigenous communities, with many communities experiencing no petrol sniffing at all. In some regions one community may suffer from petrol sniffing whilst a neighbouring community may not. This undermines the contention that the similar historical, social and political stresses placed on Indigenous people represent a uniform explanation for petrol sniffing. Brady (1992) does also identify the lack of meaningful activity, such as employment, as a crucial contributing factor to petrol sniffing within communities.

Brady (1992) names regions such as Barkly Tablelands, the Victoria River district, the Kimberley (since changed) and the Pilbara being relatively untouched by petrol sniffing (See Appendix A for reference map). The striking commonality between communities from these regions is their history of employment and engagement with the cattle industry throughout the 20<sup>th</sup> century (Brady 1992). Brady (1992) acknowledges the prejudice and harshness of conditions historically experienced by Indigenous employed in the cattle industry, but argues that the experience was also associated with various positive and relevant outcomes. These include meaningful activity, skill development, better nourishment, self-esteem, valued identity and the ability to act autonomously and take risks. Brady (1992, p193) concludes that “there must be compelling and competing activities available to combat petrol sniffing, for people abandon a dysfunctional drug use only when it begins to interfere with too many other valued aspects of their lives”.

Pearson (2001) also argues that the sociopolitical model overemphasises external factors, however he contends that it emanates from a misunderstanding of the current context of Indigenous communities. According to Pearson (2001) the major factor that must be dealt within the current context is the epidemic of addiction to substance abuse. Addiction is psychosocially contagious and not just a symptom but a problem in its own right. It is not socio-political inequality that requires change but rather “the epidemics that perpetuate themselves” (Pearson 2004, Pearson 2001, p3). Pearson (2001) identifies five elements as relevant to substance abuse within Indigenous communities: 1. Substance availability, 2. Spare time, 3. Money, 4. Example of others in immediate environment and 5. Permissive social ideology.

Pearson (2004) draws particular attention to the existence of a permissive social ideology which is characterised by its failure to create an uncomfortable environment for substances to be

abused in, provides inadequate material, social and emotional costs for substance abusers and fails to enforce treatment. According to Pearson (2004), whilst socio-political inequality was a factor for much initial substance use, the growing extent of abuse that lead to widespread addiction meant that the most influential factor was the shift in social norms (Pearson 2004). Pearson (2004) identifies two factors as influential in the existence of ‘addiction epidemics’: 1. Failure to defend social standards in the community and 2. Permissive or hesitant government policies. These approaches highlight the importance of specific individual and community practices and values as contributing to factors in petrol sniffing behaviour, which will be examined in the next section.

### *Individual / Community Practices and Values*

#### 1. Autonomy, Generosity and Relationships.

Indigenous youth experience a high degree of autonomy and independence. They receive a wide degree of freedom and learn through experimentation and exploration, even to the extent that they may harm themselves. Unrestrained generosity towards youth is also highly valued (Central Australian Aboriginal Congress 2002b, Folds 2001, Stojanovski 2002a, Brady 1997, Brady 1992). According to Brady (1992) petrol sniffers are able to exploit this acceptance of personal autonomy and unconditional support because these values are important elements in the prescribed ‘holding’ of Indigenous youth. In this sense the demands by petrol sniffers that they are able to ‘do what they like with their own body’ represent an exploitation of a loophole in a highly workable social system (Brady 1992). Moreover petrol sniffers are said to have ‘no ears’ in the sense that they are without understanding and are thus unable to be held responsible for their actions (Folds 2001, Brady 1992).

These values and developments may influence the extent to which family and kin will act decisively against petrol sniffers. The demands of relatedness, *walytja*, may see family and kin angrily defending petrol sniffers from their own families not because they support the practice, but because their kinship requires them to unconditionally support the child (Folds 2001, Brady 1992). This also means that other community members have little 'right' to interfere with their own family member's actions. In addition to this many parents or community members may have engaged in 'occasional' sniffing during the 1960s or 70s with few ill effects, and in the absence of adequate information regarding chronic sniffing, may hold more accepting views of the practice (Brady 1991).

These traditional values of personal autonomy and unrestrained generosity have also been challenged by the relatively recent changes brought to Indigenous society through the forced and voluntary abandonment of small traditional hunter-gatherer camps and the development of large, permanent Indigenous communities. Combined with high birth rates, lowered infant mortality and low life expectancy, this development has seen the creation of large groups of adolescent youth. Some communities have reported that over 60% of their population are under 25 years of age (Legislative Assembly of the Northern Territory 2003b, Brady 1992). The social proximity and high mobility of these communities has also enabled the widespread communication of petrol sniffing (Brady 1992).

## 2. Availability, Fun, Risk-taking and Rebellion

The ready availability and cheapness of petrol is consistently emphasised as an important factor in its abuse (Burns et al. 1995b, Brady 1991). Petrol has been readily available in many communities through bowzers, cars and personal supplies and even where security efforts are made, some studies have found that up to 60% of petrol sniffers have reported obtaining petrol

through theft (Burns et al. 1995b). Researchers and communities have also identified that petrol sniffing is perceived as fun, exciting and pleasurable by 'bored' Indigenous youth, and falls within typical understandings of adolescent behaviour such as risk-taking (Australian Drug and Alcohol Council 2000, Brady 1997, Brady & Torzillo 1994a, Brady 1992). Particularly emphasised within this is the role of peer groups in petrol sniffing behaviours (Australian Drug and Alcohol Council 2000, Brady 1992). Burns et al. (1995a) found that 54% of petrol sniffers in one Indigenous community reported attributed beginning petrol sniffing to become part of a 'sniffing group' and 27% because it made them feel 'good'.

Petrol sniffing has also been identified as an act of rebellion by Indigenous youth. Petrol sniffing may represent subcultural cohesion and an opposition to mainstream Indigenous society. Petrol sniffers report feeling 'strong' and 'proud' and many communities have reported that petrol sniffers attempt to be 'bosses' over their own parents (Brady 1992). According to Brady (1992) petrol sniffing represents an expression of personal autonomy, through the control of one's own body such as 'gettin skinny', not against erosion of traditional culture but against those closest to them. Despite the high degree of personal autonomy afforded to Indigenous youth and their comprising a significant proportion of Indigenous society, Indigenous youth often have few 'rights'.

Young male Indigenous adolescents are often left out of men's business and activities (Divakaran-Brown & Minitjukur 1992). Funding allocation has typically been directed towards adults and Indigenous youth have no formal voice through which to express their interests (Brady 1993, Brady 1992). In this context, control over their own body may represent one of the few sources of power available to them (Brady 1992). Many youth have been observed to cease petrol sniffing upon entering the responsibilities of adulthood. However, incorporation into 'adulthood'

requires a sacrifice of this autonomy and petrol sniffing amongst older Indigenous youth may represent a refusal from these youth to surrender this freedom and assume the responsibilities of adulthood (Brady 1992). This rebellion may also be associated with the behaviour of adults or family members such as alcohol abuse (see next section).

### 3. 'Modeled' Substance Abuse and Relationships

Researchers and communities have also highlighted a cross-generational relationship between adult substance abuse and petrol sniffing by Indigenous youth. The chronic levels of substance abuse, typically alcohol, within Indigenous communities may establish a 'model' for Indigenous youth (Central Australian Aboriginal Congress 2002a, Stojanovski 2002a). Substance abuse by adults and other potential effects such as neglect, physical and psychological abuse within Indigenous families or communities may also result in family and community crisis. This context may also contribute to the social origins of petrol sniffing behaviour in Indigenous youth (Central Australian Aboriginal Congress 2002a, Parliament of Victoria. Drugs and Crime Prevention Committee 2002, Northern Territory Department of Health and Community Services 2002d, Stojanovski 2002a, Hennessy & Williams 2001). It is important to note that proponents of the socio-political view would emphasise the role of socio-political inequality in the prevalence of other substance abuse such as alcohol.

#### *Role of Government*

##### 1. Government Funding

Federal and State government funding of petrol sniffing interventions over the past thirty years has been widely criticised as 'crisis-orientated' and inadequate (D'Abbs & Brady 2003, Human Rights and Equal Opportunity Commission 2003b, Legislative Assembly of the Northern Territory 2003b, National Aboriginal and Torres Strait Islander Health Council 2003b, Northern

Territory Department of Health and Community Services 2002b, Divakaran-Brown 1992). A recent assessment of spending on Indigenous primary health care estimated that current levels are less than half of what is required (Dwyer et al. 2003).

When interventions have been funded they have been characterised by small-scale pilot programs with one-off short term funding (D'Abbs & Brady 2003, Legislative Assembly of the Northern Territory 2004c, Singer April 28 2004, Central Australian Aboriginal Congress 2002d, Legislative Assembly of the Northern Territory 2002b, Divakaran-Brown & Minitjukur 1992, Royal Commission into Aboriginal Deaths in Custody 1996). Despite program staff reporting insufficient training and skills less than 4% of funding allocations in 1999-2000 was directed towards staff development (Gray et al. 2003).

This funding context has meant that when instituted petrol sniffing interventions have run on a small-scale, limited and inconsistent basis. According to Dr Paul Torzillo, the Medical Director of Nganampa Council government expectation regarding funding is “completely unrealistic... view that if funds are expended then the problem should be solved...I'm not aware of any reasonable government anywhere in the world who that sort of expectation in social policy elsewhere” (in South Australian Coroner 2002, p23-24).

Recent Federal and State government commitments have reflected a possible move towards greater levels of longer term funding. In 2001, the Federal Government announced that up to \$1 million would be allocated to several petrol sniffing interventions over three years under the ‘Tough on Drugs’ Initiative (Commonwealth Department of Health and Ageing 2004c, Commonwealth Department of Health and Ageing 2002, Prime Minister of Australia 2002, Prime Minister of Australia 2001a, Prime Minister of Australia 2001b). Whilst welcoming this greater

commitment and focus, researchers and communities have subsequently criticised this amount and time as inadequate, that funding was ‘bogged down’ by bureaucracy for too long, that some money went unspent and that funding was dependent upon the quality of grant submitted rather than the relative merit or need of the program submitted (Legislative Assembly of the Northern Territory 2004c, Legislative Assembly of the Northern Territory 2002a, National Aboriginal Community Controlled Health Organisation 2001, Toohey 2001b).

In 2003 the South Australian government announced that \$7 million would be allocated to the Anangu Pitjantjatjarra Lands to address petrol sniffing and related issues (Koori Mail July 30 2003 p5, National Indigenous Times June 11 2003 p7). Since subsequent deaths on the Anangu Pitjantjatjarra Lands, the government has been criticised on the grounds that bureaucratic delays had prevented the implementation of the funding (Liddle et al. 2004b, National Indigenous Times September 6 2004 p7, Kemp 2004, The Advertiser September 7 2004 p11). In October 2004, the Northern Territory government announced that \$10 million would be allocated to petrol sniffing initiatives over the next five years, which is yet to be allocated (National Indigenous Times October 13 2004 p9, Office of the Chief Minister of the Northern Territory 2004).

## 2. Government Co-ordination

A further and related problem of the role of government in the social origins of petrol sniffing behaviours is the historical lack of co-ordination between Federal and State governments and government departments. Lack of co-ordination between Federal and State governments and between government departments has resulted in fragmentation of effort and strategy, repetitive information gathering, confusion, competition and tension between programs, governments and departments, alienation of service providers and unsustainable interventions (D’Abbs & Brady 2003, Human Rights and Equal Opportunity Commission 2003b, Central Australian Aboriginal



Congress 2002b, Legislative Assembly of the Northern Territory 2002a, South Australian Coroner 2002, Robbins 1993, Brady 1992, Royal Commission into Aboriginal Deaths in Custody 1996).

This lack of co-ordination may be attributed not only to differences between State and Federal governments, but also to the failure to attribute responsibility petrol sniffing to one government department (Robbins 1993, Brady 1992). For example, Robbins (1993) outlined how 14 Federal and State government departments ran programs relevant to petrol sniffing in South Australia across areas such as health, education, housing, Aboriginal affairs, law enforcement, community welfare and substance abuse. This problem has continued to exist even with the return of responsibility in 1995 for administering funds for Commonwealth Indigenous alcohol and other drug programs to the health bureaucracy (D'Abbs & Brady 2003).

There are recent developments that indicate that governments are making a greater effort to achieve co-ordination. One of the aims of the current Council of Australian Government (COAG) trials, in areas such as the Anangu Pitjantjatjarra Lands, is to pilot 'whole-of-government, whole-of-community' approaches to address such governance issues (Commonwealth of Australia National Drug Strategy 2003b, South Australian Coroner 2002). Despite some positive initiatives, concerns have still been raised about the lack of productive co-ordination between relevant bodies, continued fragmentation of services, shift away from community controlled organisations and perceived increased bureaucracy (Human Rights and Equal Opportunity Commission 2003b, Northern Territory Department of Health and Community Services 2002b, South Australian Coroner 2002).

Similarly, the recent Northern Territory report has recommended that a central ‘over-arching’ body be established within the Northern Territory Department of Health and Community Services, in order to co-ordinate the Northern Territory’s petrol sniffing strategy and services (Legislative Assembly of the Northern Territory 2004b).

### 3. Government Responsibility

Perhaps underlying the historical lack of funding and co-ordination is the problem of government responsibility. According to many researchers and communities both State and Federal governments have failed to accept adequate responsibility for intervention against petrol sniffing and adopted the unfair expectation that communities should address substance abuse problems on their own. This is despite the fact that many communities and families have requested greater support from government and that many Indigenous people view petrol as a ‘whitefella’ substance without traditional precedent (Legislative Assembly of the Northern Territory 2004a, Legislative Assembly of the Northern Territory 2004c, Brady & D’Abbs 2003, Legislative Assembly of the Northern Territory 2003b, Human Rights and Equal Opportunity Commission 2003b, South Australian Coroner 2002, Brady 1992, Divakaran-Brown & Minitjukur 1992). As noted by Brady and D’Abbs (2003, p6), probably the crudest expression of the view of government was made by Aboriginal Affairs Minister Clive Holding in 1984 who stated “communities just opt out and say that all is needed to solve the problem is \$2.5 million...How much money do you need to take a petrol can from a kid”.

Critics point out that no other community in Australia is expected to solve substance abuse problems on its own and that these Indigenous communities have perhaps the least resources in the country to tackle such problems. Critics argue that governments have hid behind the rhetoric

of self-determination and that governments must take greater responsibility through increased levels of support and partnership with communities (Legislative Assembly of the Northern Territory 2004c, Brady & D'Abbs 2003, South Australian Coroner 2002, Folds 2001). Governments have relied on 'government at a distance' whereby elements of indigenous governance are deemed as incomprehensible or 'inappropriate'. These elements are then ignored, 'corrected', or selectively valorised and 'translated' in order to match the goals of liberal government (O'Malley 1996, O'Malley 1994).

Recent efforts by Federal and State Governments regarding funding and co-ordination could be seen to represent a more direct engagement. More explicitly, the recent Northern Territory report concluded "it is inappropriate to expect a community to deal with these issues alone... Remote communities are often called on to take ownership of problems to an extent that would never be expected of urban communities" (Legislative Assembly of the Northern Territory 2004a, p14).

#### *The Opal Unleaded Initiative and the 'Social Origins' of Petrol Sniffing Behaviour.*

The explication of the social origins of petrol sniffing behaviours reveals that in order to constitute an effective intervention the Opal Unleaded initiative is required to deal with several potential causes for petrol sniffing behaviours. Numerous factors involving socio-political structures, individual and community values and practices and the role of government may all act as social origins for petrol sniffing behaviours. There is considerable debate over the potential influence of socio-political inequality. The extent of socio-political inequality and the volume of research that associates such conditions with ill-health and substance abuse indicate that it should be identified as a significant social origin of petrol sniffing behaviour. However, socio-political inequality should not be considered a universal explanation for petrol sniffing behaviours.

The values and practices of individuals and communities and the historic role of governments in petrol sniffing interventions appear to represent more directly important elements in the social origins of petrol sniffing behaviours. These factors also fall more naturally within the specific scope of petrol sniffing interventions, such as the Opal Unleaded initiative. Socio-political inequality is more likely, and able, to be addressed by accompanying and broader health, education and community development programs. The Opal Unleaded initiative should address as many of the identified social origins as possible in order to meet this criteria for an effective intervention.

Two other factors are relevant in understanding the social origins of petrol sniffing behaviour and evaluating this component of the Opal Unleaded initiative. The relevance of each of the identified social origins is likely to vary between communities and regions, according to the history, context and services of each area. Moreover there is likely to be significant overlap between these factors. For example the reported 'boredom' of Indigenous youth may variously emerge from lack of resources due to socio-political inequality, community values and practices that fail to adequately address the needs of Indigenous youth and the failure of governments to contribute effectively to petrol sniffing interventions.

The Opal Unleaded initiative fails to adequately address the identified social origins of petrol sniffing behaviour. The supply reduction focus of the Opal Unleaded initiative does target the identified social origin of readily available petrol within Indigenous communities. The introduction of Opal Unleaded means that there is likely to be little or no petrol directly available within communities for petrol sniffers. However this reduction of supply is too limited as petrol may still be available within these regions through nearby communities, regional centres, the

‘black market’ and returning cars. The subsidisation of the initiative could also be judged as a greater effort by government to fund petrol sniffing interventions and support communities in this struggle.

The Opal Unleaded initiative clearly fails to address any of the other identified social origins of petrol sniffing such as socio-political inequality, individual community values and practices, and there is no explicit attempt to improve co-ordination between relevant governments. Importantly, even if the potential influence of socio-political inequality is ignored, the Opal Unleaded initiative does not address the crucial factors represented by the historical differences in meaningful activity between Indigenous communities that have and have not experienced petrol sniffing. Just as significantly the initiative does not address the current contextual problems, associated with ‘social control’, community capacity building or permissive social ideology, within which chronic petrol sniffing occurs.

The singular focus upon supply restriction means that the Opal Unleaded initiative fails to address many of the identified social origins of petrol sniffing behaviour. This means that even if petrol is largely unavailable the Opal Unleaded initiative provides no mechanisms or incentives to reduce the demand for petrol by petrol sniffers. This also means that it is likely that petrol sniffers will attempt to obtain petrol from alternative sources such as theft, the black market or other communities or may even begin abusing other substances. In this context the Opal Unleaded initiative is unlikely to significantly reduce the problems associated with petrol sniffing behaviours for individuals, communities and wider Australian society.

## **Chapter Seven : Discussion and Conclusion**

## **Section 7a. Discussion of the Opal Unleaded Initiative and the Assessment Framework**

### *Evaluation of the Opal Unleaded Initiative*

The Opal Unleaded initiative fails to adequately address the three components of the assessment framework identified as integral to an effective intervention. There are clear deficiencies in the extent to which the Opal Unleaded initiative addresses the need for a range of multi-faceted interventions, community support, control and participation and the need to resolve the social origins of petrol sniffing behaviour.

The failure to adequately address these elements means that the Opal Unleaded initiative is unlikely to achieve real and sustained change in petrol sniffing behaviour. The restriction of supply within Indigenous communities is likely to reduce the direct incidence of petrol sniffing within some Indigenous communities, at least in the short term. However the range of the program is too fragmented and limited. Some effected communities are not participating in the program and petrol would still be available to participating communities through nearby communities, regional centres, the 'black market' and returning cars. The Federal Government should extend the range of program in order to improve the extent of its impact.

Even if the range of the program is extended there are still significant deficiencies in the nature of the Opal Unleaded initiative that prevent it from representing an effective petrol sniffing intervention. The failure to target demand or to adequately address the social origins of petrol sniffing behaviour means that the Opal Unleaded initiative is unlikely to achieve real and sustained changes in petrol sniffing behaviour. Possible and necessary demand reduction measures that could have accompanied the introduction of Opal Unleaded include youth workers,

education and information programs for relevant workers and communities, night patrols, legal sanctions, wider sentencing options or outstations.

Of particular concern is the failure of the Opal Unleaded initiative to establish any education or active mechanism through which Indigenous communities, and most particularly family systems, can be involved in the efforts of the Opal Unleaded initiative to address petrol sniffing behaviour. These structural failures could serve to discourage active involvement of communities and family systems in the struggle against petrol sniffing. These failures could also further promote the erroneous perception that the Opal Unleaded initiative is a ‘magic bullet’ that will solve the cyclical history of petrol sniffing.

The failure to include a wide range of primary, secondary and tertiary options means that opportunities for prevention, rehabilitation and treatment are either limited or non-existent, a structure which severely restricts the potential impact of the Opal Unleaded initiative. By failing to address the social origins of petrol sniffing behaviour or the ‘demand’ element of petrol sniffing behaviour, petrol sniffers within Indigenous communities are provided with no incentive, reason or mechanism through which to abandon petrol sniffing behaviour.

This means that petrol sniffers will still actively seek to engage in petrol sniffing or other behaviours that meet the needs that are currently being met by sniffing petrol. This could occur through attempting to obtain petrol from other sources, moving to other communities or regional centres where petrol is available or engaging in other substance abuse. The transference of abuse between substances, most notably marijuana, has been already evident within some Indigenous communities.



The identified needs of petrol sniffers, and other Indigenous youth, such as lack of resources, meaningful activity, boredom and high levels of mental ill-health are not addressed by the Opal Unleaded initiative. The initiative partially addresses the social origins of readily available petrol and government funding but the scheme coverage and funding is inadequate. The Opal Unleaded initiative does not address any of the other identified social origins of petrol sniffing such as socio-political inequality, individual community values and practices, the concept of ‘social control’ and there is no explicit attempt to improve co-ordination between relevant governments. The significant negative psychological effects associated with petrol sniffing behaviour such as high and growing levels of mental-ill health and self-harm are unlikely to be significantly reduced by the Opal Unleaded initiative. The Opal Unleaded initiative fails to adequately address the causes of petrol sniffing behaviour and as a result Indigenous youth are likely to seek to continue to engage in petrol sniffing behaviours.

The failure of the Opal Unleaded initiative to address the key components required for an effective intervention means that many of the negative effects associated with petrol sniffing behaviours at the individual, community and wider society level are likely to continue. The likely initial positive impact of the Opal Unleaded will probably be restricted to the short term and limited to certain communities unless the initiative is re-structured so as to meet the key components necessary for an effective intervention. The initiative fails to adequately address the need for a range of primary, secondary and tertiary interventions, community control, support and participation and the social origins of petrol sniffing behaviour. As a consequence the Opal Unleaded initiative is likely to become a failed opportunity to make real and sustained changes in petrol sniffing behaviour in remote Indigenous communities.

## **Section 7b. The Context of the Opal Unleaded Initiative and Conclusion**

### *The Context of the Opal Unleaded Initiative*

The extent of the impact of the Opal Unleaded initiative and its ultimate success or failure in involved individual communities is likely to be moderated by the current intervention context of each community or region. If communities have existing programs that continue to be supported and that ‘fill’ the identified gaps in the Opal Unleaded initiative then the simultaneous running of these programs is likely to result in real and sustained reductions in petrol sniffing behaviour. However, despite notable individual efforts and successes, petrol sniffing interventions have typically run on an inconsistent, insufficient and fragmented basis. The examination of social origins of petrol sniffing behaviour revealed some recent efforts by governments that could represent a change to this context.

Recent announcements and efforts by Federal and State governments signify greater efforts to assist in the establishment of effective petrol sniffing interventions. The South Australian government and Northern Territory government have both recently committed to providing higher level and longer term funding for petrol sniffing interventions and have yet to allocate this funding. The South Australian government has targeted the need for greater co-ordination, most notably in the Anangu Pitjantjatjarra Lands. The Northern Territory government has explicitly addressed this problem by proposing a central ‘petrol sniffing agency’. According to the Northern Territory government “it is time for the Northern Territory to act decisively to wipe out petrol sniffing” (Legislative Assembly of the Northern Territory 2004b, p17). The introduction of the Opal Unleaded initiative presents a significant opportunity for these governments to ‘act decisively’ against petrol sniffing behaviours.

The recent introduction of the Opal Unleaded initiative lends urgency to the need for relevant governments to act. Greater and more refined efforts by relevant governments should be immediately addressed in order to introduce simultaneous programs that broaden, or complement, the structure of the Opal Unleaded initiative and thus maximise the significant potential effectiveness of the program. Greater efforts by relevant governments should include greater subsidisation of the Opal Unleaded initiative in order to broaden its range and the specific tailoring of funding to support primary, secondary and tertiary intervention programs that are not addressed by the Opal Unleaded initiative. Particular attention should be given to demand reduction measures, education interventions and greater community and family system involvement. Such efforts and programs would be more likely to address the identified social origins of petrol sniffing behaviour and, consequently, the key deficiencies evident in the Opal Unleaded initiative.

### *Conclusion*

The need for effective petrol sniffing interventions is evidenced by the continued seriousness and cyclical history of the petrol sniffing problem. Despite general reductions in petrol sniffing levels and associated morbidity there has also been a relatively high and increasing petrol sniffing related mortality rate over recent years. Chronic sniffing continues in several regions and is emerging in others. The development of Opal Unleaded represents a critical opportunity in the fight against petrol sniffing. However, the failure of the initiative to adequately address the key components necessary for an effective intervention means that the Opal Unleaded initiative could become a failed opportunity to make real and sustained changes in petrol sniffing behaviour in remote Indigenous communities.

A significant opportunity to increase the effectiveness of the Opal Unleaded initiative rests with the ability of Federal and State governments to change the broader program context of the Opal Unleaded initiative. Greater responsibility and effort by governments would lessen the burden upon Indigenous communities faced with this intractable problem and place the Opal Unleaded initiative within an effective range of interventions against petrol sniffing behaviour.

The introduction of Opal Unleaded represents a critical opportunity to achieve real and sustained reductions in petrol sniffing behaviour in remote Indigenous communities. If the current gaps in the Opal Unleaded initiative are not addressed then any positive impacts of the initiative are likely to be limited in scope and duration. If these deficiencies are not addressed then a critical and rare opportunity to significantly reduce, or even eliminate, petrol sniffing behaviours will have been lost.

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## Appendices

## **Appendix A. Full List of Documentary Sources**

### *Library / Database Collections*

1. 'Google' Internet Search
  - 4100 results ('aboriginal petrol sniffing')
2. RMIT University Library
  - 4 files ('aboriginal petrol sniffing')
3. Coolcat (Collections of all Victorian Universities)
  - 54 files ('aboriginal petrol sniffing')
3. The University of Queensland
  - Selected files not found at other Universities
4. QUT
  - Selected files not found at other Universities
5. RMIT University Databases
  - INFORMIT Databases (283 files)
  - E Library (74 files)
  - Pandora Archive (28 files)
  - Taylor and Francis (5 files)
  - State Library of Victoria (43 files)
  - PubMed (65 files)
  - Science Direct (40 files)

### *Government Related Websites*

<http://www.health.gov.au/>

Federal Government Department of Health

<http://www.ruralhealth.gov.au/>

Federal Government Rural Health

<http://www.nt.gov.au/>

Northern Territory Government

<http://www.wa.gov.au/>

Western Australian Government

<http://www.sa.gov.au/>

South Australian Government

<http://www.health.gov.au/pubhlth/strateg/drugs/illicit/>

National Illicit Strategy on Drugs

[National Drug Strategy Aboriginal and Torres Strait Islander Peoples' Complementary  
Action Plan 2003-2006](#)

This Action Plan provides a nationally co-ordinated and integrated approach to reduce drug-related harm among Aboriginal and Torres Strait Islander People. Prepared by the National Drug Strategy Reference Group for Aboriginal and Torres Strait Islander Peoples with help and support from Siggins Miller Consultants, The Intergovernmental Committee on Drugs, the Australian National Council on Drugs, Aboriginal and Torres Strait Islander people in every State and Territory, the National Aboriginal Community Controlled Health Organisation, and a broad range of other key stakeholders.

<http://www.aihw.gov.au/>

[www.ancd.org.au](http://www.ancd.org.au)

The Australian National Council on Drugs : the peak advisory body to Government on drug policy

[Aboriginal and Torres Strait Island family history of alcohol and other drug use](#)

Problematic alcohol and other drug use is becoming engendered within sections of the Aboriginal and Torres Strait Island (ATSI) community. This project aims to determine the level of this problem by tracing the family histories of a number of ATSI people. In particular, the family histories will focus on the alcohol and other drug problems within selected families, over many generations. 2002

[Cape York Indigenous Issues](#)

Report based upon a recent visit to the Cape York region by members of the ANCD. This report provides an opportunity for the collective experience of ANCD members in alcohol, drug and Indigenous issues to be brought forward such that they may be used to assist the Queensland Government, and others, in their consideration of the issues facing this Region and indeed many other communities. 2001.

[Indigenous drug and alcohol projects 1999-2000.](#)

A report from the ANCD on projects aimed specifically at Indigenous people who are experiencing drug and alcohol problems. ANCD research paper;no.4.) 2002

[Diversion of Aboriginal and Torres Strait Island youth from juvenile detention](#)

An increasing number of Aboriginal and Torres Strait Island (ATSI) youth (ie under 18 years of age) are being placed within juvenile detention centres (or the equivalent).

Firstly, this project aims to identify the number and proportion of ATSI youth being

detained, including the number for alcohol and other drug related crimes. Secondly, the project will identify available options for diversion of ATSI youth into alcohol and other drug treatment programs, if any, in each Australian jurisdiction. 2002

<http://ndarc.med.unsw.edu.au/ndarc.nsf>

National Drug and Alcohol Research Centre (Uni of NSW/Gov't funded)

[http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/Office+for+Aboriginal+and+Torres+Strait+Islander+Health+\(OATSIH\)-1](http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/Office+for+Aboriginal+and+Torres+Strait+Islander+Health+(OATSIH)-1)

Office for Aboriginal and Torres Strait Islander Health

#### [Review of the Commonwealth's Aboriginal and Torres Strait Islander Substance Misuse Program](#)

This report, produced in December 1999, provides a review of Australian Government funded Aboriginal and Torres Strait Islander substance misuse programs. The methodology included site visits, submissions, literature review and research. The report incorporates priorities for future action.

#### [Drug and Alcohol Service Report - 1999-2000: Key Results](#)

This report contains a summary of the key findings from the 1999-2000 Drug and Alcohol Service Report (DASR) data collection. Service level data is collected by questionnaire from Government funded stand-alone Indigenous substance use services. The information collected includes episodes of care provided, service resources, staffing profiles and the broad range of activities undertaken to help prevent and treat substance use covering a twelve month period. It provides unique and valuable information that OATSIH and the sector can use in formulating policy, in planning, and to profile the work of stand-alone

Indigenous substance use services.

[Drug and Alcohol Service Report - 2000-2001 Questionnaire](#)

These are the 2000-2001 Drug and Alcohol Service Report (DASR) questionnaires that were distributed to Government funded stand-alone Indigenous substance use services.

The 2000-2001 DASR collects information about episodes of care provided, service resources, staffing profiles, and the broad range of activities undertaken to help prevent and treat substance use. The information collected is unique and valuable and will be used by OATSIH and the sector in formulating policy, in planning, and to profile the work of the Indigenous substance use sector.

*Health Related Websites*

<http://www.hreoc.gov.au>

Human Rights and Equal Opportunity Commission

<http://www.adac.org.au>

Aboriginal Drug and Alcohol Council (SA)

<http://www.naccho.org.au>

NACCHO National Aboriginal Community Controlled Health Organisation

<http://www.healthinfonet.ecu.edu.au>

The Australian Indigenous HealthInfoNet

<http://www.adin.com.au>

Australian Drug Information Network



<http://www.adf.org.au>

Australian Drug Foundation

[Aboriginal People and Drug Use](#)

South Australian Drug Summit

An Issues Paper presented at the SA Drug Summit. This paper highlights some of the issues related to the nature and extent of Aboriginal substance misuse, the impact on families, underlying issues and availability and appropriateness of services and programs.

June 2002

<http://www.druginfo.adf.org.au/index.asp>

Drug Info Clearinghouse

[www.danaonline.org](http://www.danaonline.org)

Drug and Alcohol Nurses of Australasia

<http://www.db.ndri.curtin.edu.au/>

Indigenous Australian Research Program Database

<http://www.sph.uq.edu.au/qadrec/>

QADREC homepage

<http://www.darwinresearchcentre.com>

Darwin Research Centre

<http://www.acys.utas.edu.au/>

ACYS - Australian Clearinghouse for Youth Studies

<http://yarn.edfac.unimelb.edu.au/>

Youth Affairs Resource Network

<http://www.ndri.org.au/>

National Drug Research Institute (includes aboriginal health database)

<http://www.craah.org.au/>

Cooperative Research Centre for Aboriginal & Tropical Health

<http://www.cuzcongress.com>

Cuz Congress

<http://www.koori.usyd.edu.au/research/default.html>

Koori Centre Uni of Sydney

<http://www.amsant.com.au/>

Aboriginal medical services alliance

[http://www.menzies.edu.au/servlet/page?\\_pageid=145&\\_dad=portal30&\\_schema=PORTAL30](http://www.menzies.edu.au/servlet/page?_pageid=145&_dad=portal30&_schema=PORTAL30)

[0](#)

Menzies School of Health Research

<http://phmovement.org/>

People's Health Movement

[http://www.postgradandbeyond.mq.edu.au/enewsletter/health/issue\\_1\\_stories/story4.htm](http://www.postgradandbeyond.mq.edu.au/enewsletter/health/issue_1_stories/story4.htm)

Macquarie University (see lecture series)

<http://naru.anu.edu.au/>

Australian National University: Northern research unit

### *Indigenous Institutions*

[http://www.atsic.gov.au/tools/Links\\_search.asp](http://www.atsic.gov.au/tools/Links_search.asp)

ATSIC

<http://www.aiatsis.gov.au/>

Australian Institute of Aboriginal and Torres Strait Islander Studies

<http://www.clc.org.au/>

Central Land Council

<http://www.caacongress.com.au/intro.html>

Central Australian Aboriginal Congress

[http://waru.org/organisations/npywc/npy\\_petrol.php?PHPSESSID=f65e21d129850fbc6e96b57da6c84bce](http://waru.org/organisations/npywc/npy_petrol.php?PHPSESSID=f65e21d129850fbc6e96b57da6c84bce)

Petrol Sniffing Project

<http://www.boysfromthebush.org.au/aboutprogram.htm>

Cape York youth program

[Journal of Australian Indigenous Issues](#)

Journal of Australian Indigenous Issues

<http://www.deadlymob.org/default.cfm>

Deadly Mob

<http://www.areyonga.nt.gov.au/home/home>

Areyonga community

[http://www.areyonga.nt.gov.au/home/about\\_us/annual\\_report](http://www.areyonga.nt.gov.au/home/about_us/annual_report)

Sadly petrol sniffing among average eight of our own community children has become a regular activity. This has led to high property damage to houses, vehicles, laundry, rec hall, community store break-ins and elsewhere throughout the community. Approximately \$78,000 in damage this financial year, hence insurance premiums have skyrocketed.

Domestic violence is also on the increase.

[http://64.233.161.104/search?q=cache:biFichNA\\_jsJ:www.uow.edu.au/arts/sealcp/ngunews/news2.pdf+aboriginal+petrol+sniffing&hl=en](http://64.233.161.104/search?q=cache:biFichNA_jsJ:www.uow.edu.au/arts/sealcp/ngunews/news2.pdf+aboriginal+petrol+sniffing&hl=en)

Ngukurr News

*News Related Websites*

ABC News

[www.abcnews.net.au](http://www.abcnews.net.au)

ABC Message Stick Indigenous News

<http://www.abcnews.net.au/message/>

The Age Newspaper

[www.theage.com.au](http://www.theage.com.au)

News Limited Australia Newspapers (100 Australian Newspapers)

<http://www.news.com.au/newspapers/>

National Indigenous Times

[www.nit.com.au](http://www.nit.com.au)

Koori Mail

[www.koorimail.com](http://www.koorimail.com)

*Contact with Researchers (Sent papers/advice)*

- Dr Maggie Brady

Centre for Aboriginal Economic Policy Research

Australian National University

- Anna Stearne

Manager Indigenous Australian Alcohol and Other Drugs Database

Curtin University

- Dr. Ute Eickelkamp

Honorary Associate

Macquarie University

- Karissa Preuss

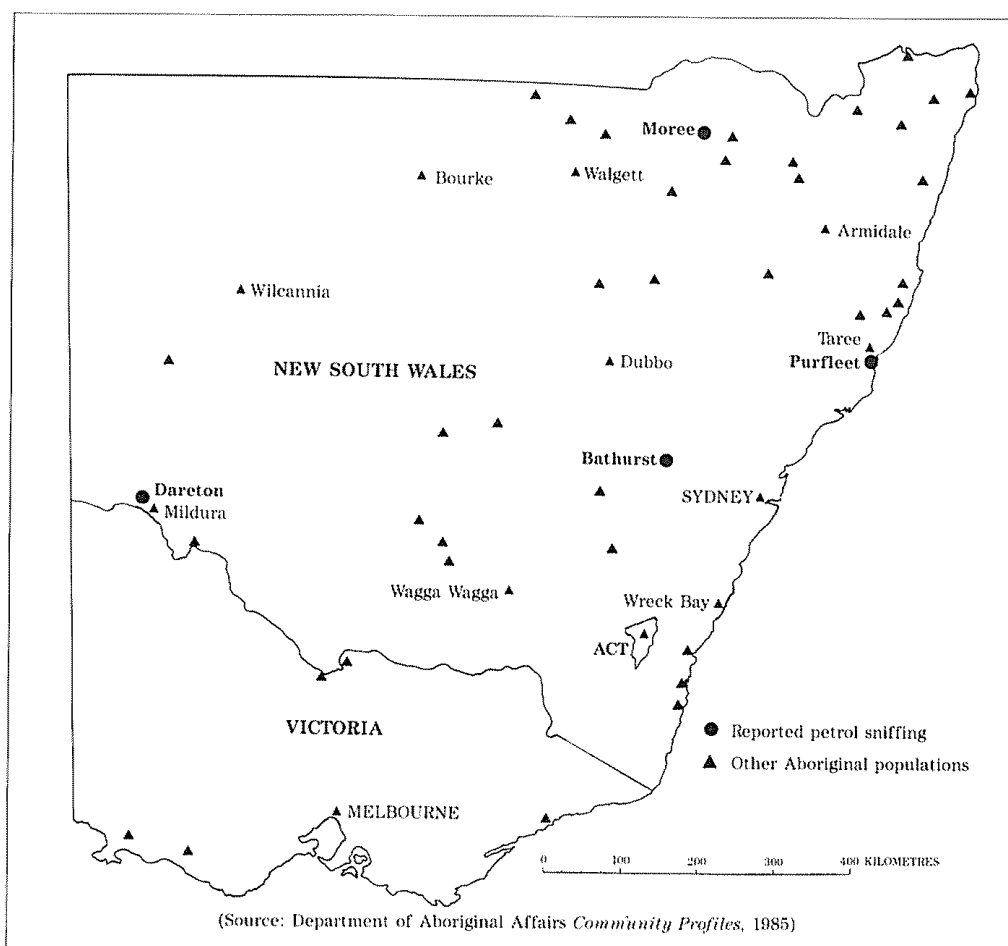
Jaru Pirjiddi Coordinator

Yuendumu Community

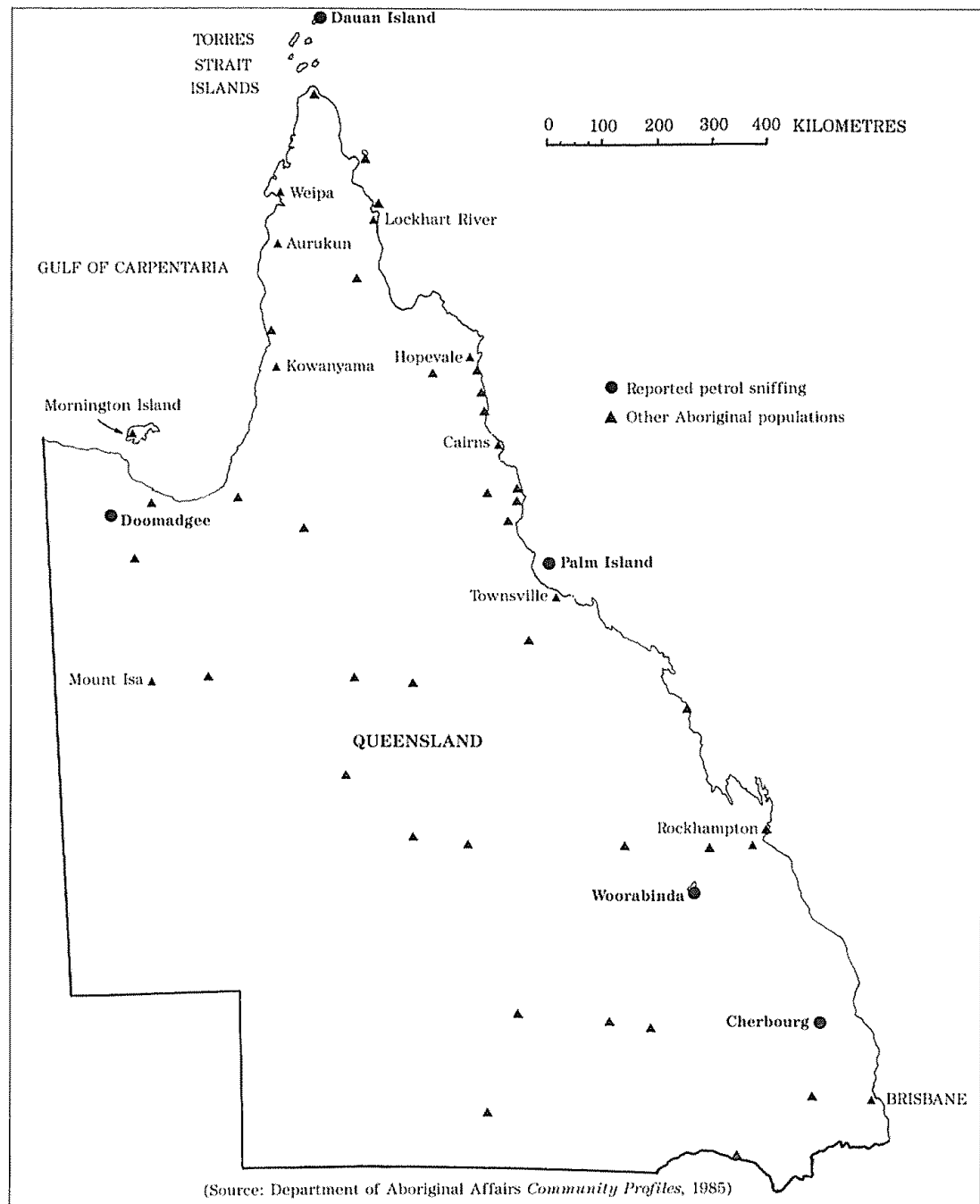
**Appendix B. Indigenous Communities Engaged in Petrol Sniffing up to 1985 (State by State).**

Source : Brady (1992)

1. Location of New South Wales Communities Engaged in Petrol Sniffing up to 1985.

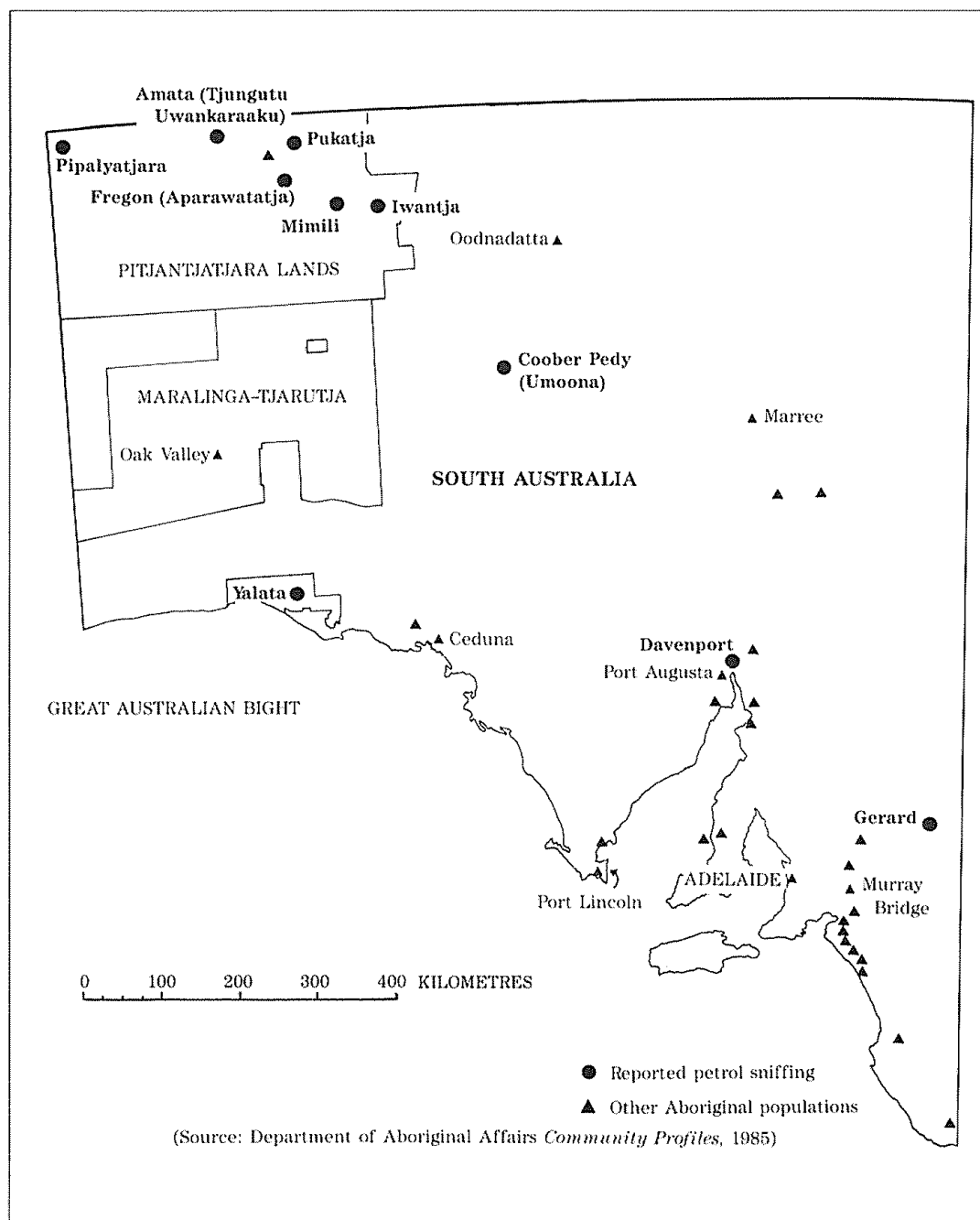


## 2. Location of Queensland Communities Engaged in Petrol Sniffing up to 1985.

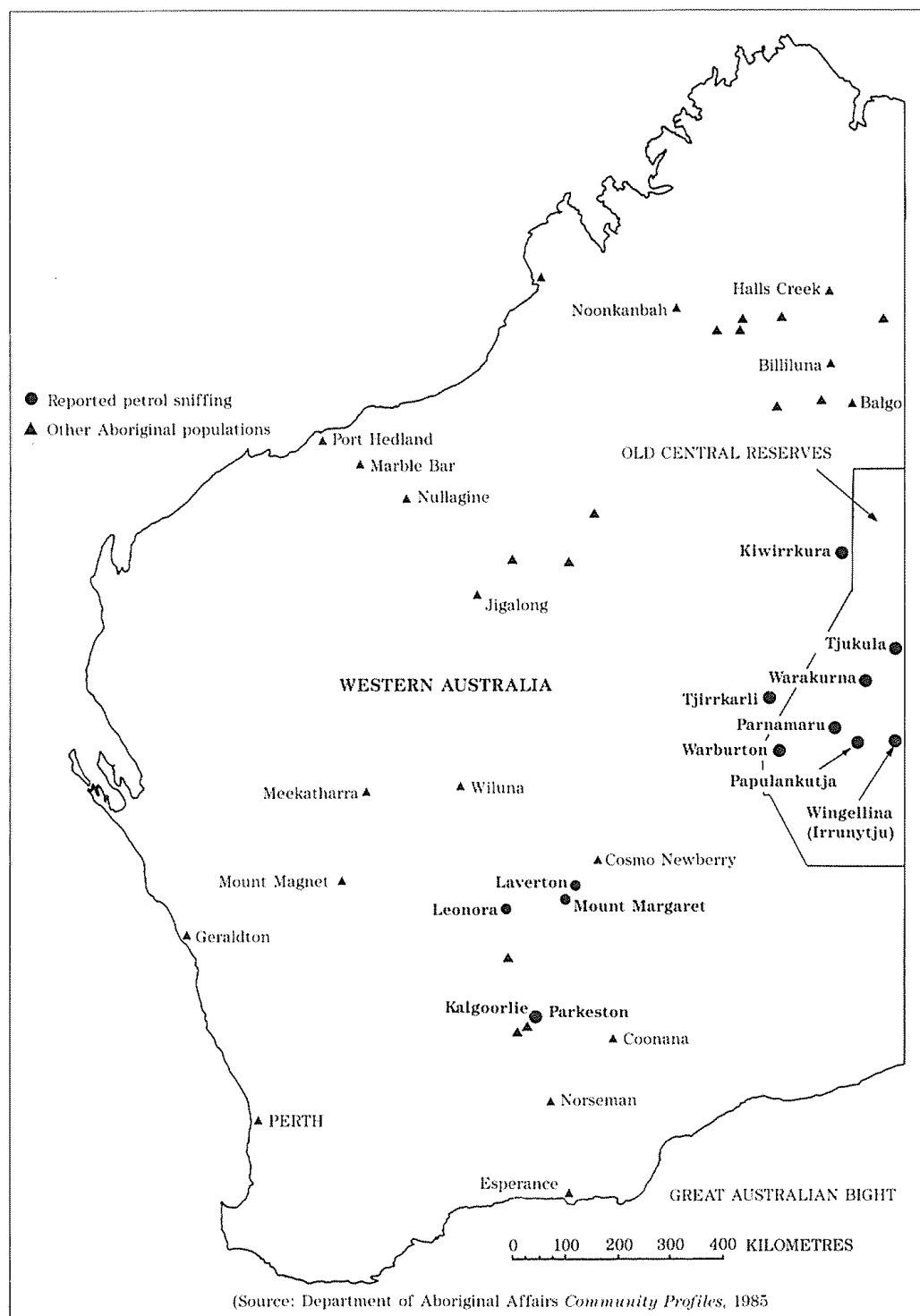




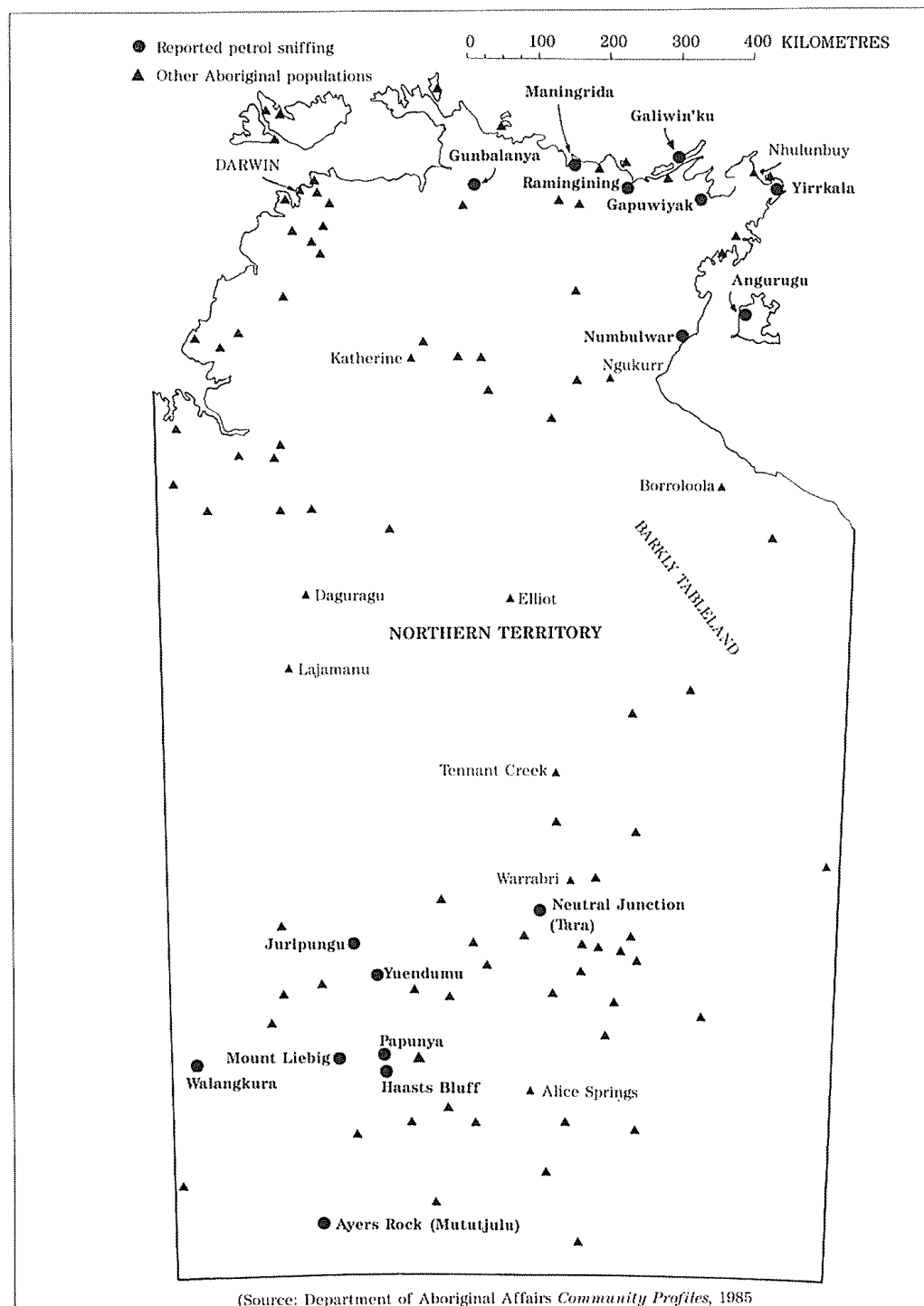
### 3. Location of South Australian Communities Engaged in Petrol Sniffing up to 1985.



4. Location of Western Australian Communities Engaged in Petrol Sniffing up to 1985.



5. Location of Northern Territory Communities Engaged in Petrol Sniffing up to 1985.



Source : Northern Territory Department of Health and Community Services (2002c)

Source : Northern Territory Department of Health and Community Services (2002c)



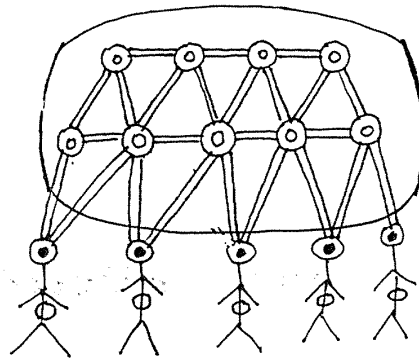
## Appendix D. 'The Brain Story'

Source : Shaw et al. (1995)

# THE BRAIN STORY

1.

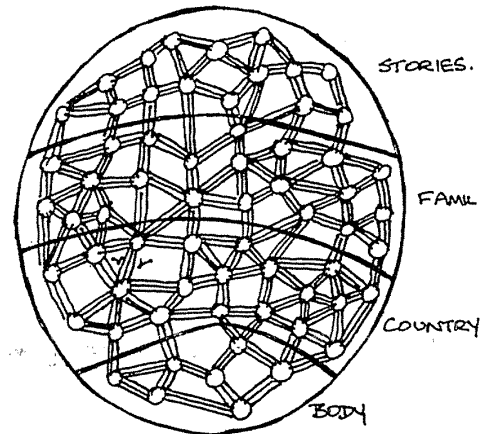
5 Japanankas.



Japanankas share the same stories. Their stories keep their culture strong and keep their spirit strong.

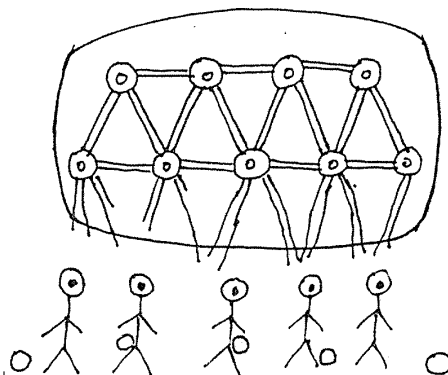
3.

A Healthy Brain



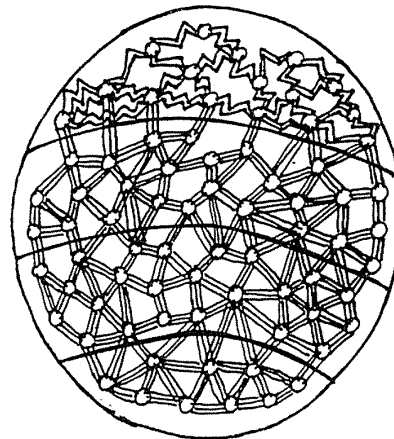
Japanangka's brain before he sniffs. Parts of his brain look after his body, country, family and stories. all the parts join up.

2 5 Japanangka's start to sniff  
Petrol



They start to forget their stories, and forget that they are brothers. They start to lose their spirit.

4. Japanangka sniffs a little bit.

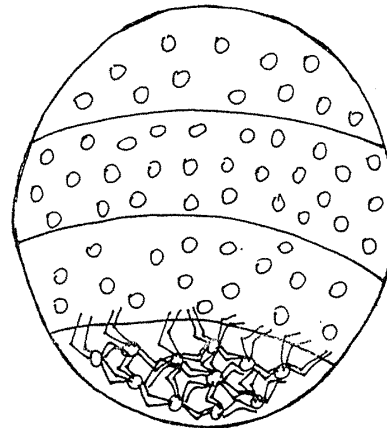
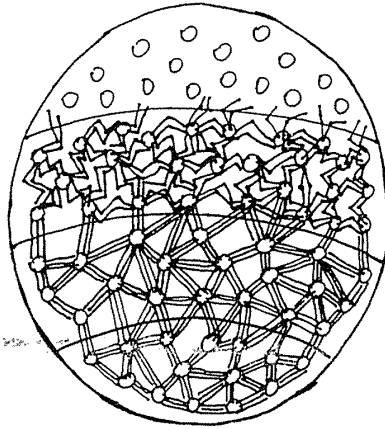


This is a picture of Japanangka's brain when he is sniffing petrol a little bit. If he stops now he will be OK.

# CONTINUED

5. Japanangka keeps sniffing

7. Japanangka has been sniffing for a long time.

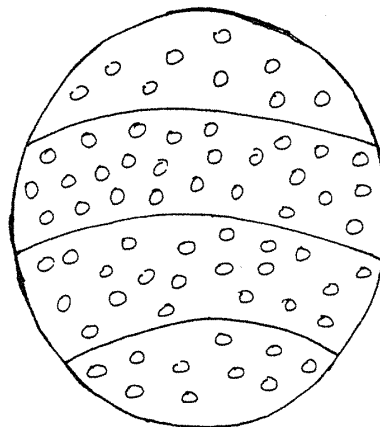
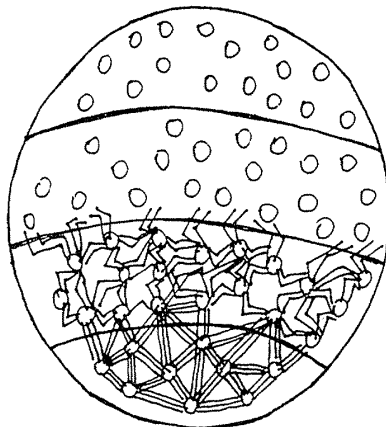


Japanangka starts to forget his stories. He sometimes fights with his family and acts wrong way. If he stops now he'll be OK in a while.

Japanangka is very sick now. The petrol is in his spirit. He can't walk or talk straight. He gets the shakes. He's very very skinny. He might go to hospital.

6. Japanangka sniffs more and more.

8. Japanangka passes away.



Japanangka has forgotten his stories. He doesn't care. He fights with his family and forgets where he is. He might be in trouble with the Police by now.

Japanangka passes away. The petrol has been through his story brain, his family brain, his country brain, and now it has taken his life. Everyone is very sad.

© PETROL LINK UP PROJECT

## **Appendix E. Full list of NT 17 Recommendations.**

Source : Legislative Assembly of the Northern Territory (2004a)

### **SELECT COMMITTEE ON SUBSTANCE ABUSE IN THE COMMUNITY**

#### ***Report on Petrol Sniffing in Remote Communities***

##### ***Chair's Tabling Statement***

1. That Federal and Northern Territory Government services be closely networked to ensure their respective petrol sniffing programs and services are co-ordinated, including crossborder co-ordination between the Northern Territory, Western Australian and South Australian Governments' programs and services, in line with the cross-border co-operation model adopted by Police;
2. That overall responsibility for the co-ordination of the Northern Territory's petrol sniffing strategy be vested in one agency which would provide a co-ordinating role for an interdepartmental body representing all relevant agencies, including non-Government organisations, to oversee the networking of all programs and services;
3. That interventions be geared to the specific needs of individual communities and developed in consultation with those communities;
4. That a team or teams of workers trained to respond quickly to support communities to implement intervention strategies when outbreaks occur be established;
5. That part of the intervention strategies include training of and support for people within the community to provide for sustainability of positive outcomes;
6. That legislation similar to that which provides for apprehension without arrest of intoxicated persons under the *Police Administration Act* , be introduced, to allow for persons under the influence of petrol to be taken into protective custody;
7. That appropriately staffed 'safe' houses or refuges be established in communities to provide immediate shelter and protection for persons so apprehended;

8. That the legislation allows for intervention for assessment and provision of ongoing treatment to be delivered, if appropriate, at these facilities;
9. That relevant certified courses to provide training in substance abuse work to community members through community education centres be investigated;
10. That specific training in dealing with petrol sniffing and supporting a community during a petrol sniffing outbreak be incorporated in the cross-cultural awareness programs undertaken by community-based Government employees;
11. That the Northern Territory Government lobby the Federal Government to review the CDEP Program with a view to providing full, gainful employment on communities;
12. That the delivery of sporting and recreational programs in remote communities be geared to the needs of the client, recognising that they are often most at risk outside usual working hours;
13. That steps be taken to ensure that where petrol sniffing is a contributing factor that this is recorded in data collections by all Government agencies, and regularly reporting to the body responsible for the co-ordination of the Northern Territory Petrol Sniffing Strategy;
14. That an integrated program of advertising and education about the physiological effects of petrol sniffing in the short, medium and long term be developed for delivery within remote communities;
15. That co-operative approaches with industry for diversionary and lifestyle programs be explored;
16. That the Northern Territory and Commonwealth Governments work with industry to encourage further research into developing fuels which are not intoxicants; and
17. That the feasibility of the expansion of alternative fuel provision to areas outside of communities be investigated.



## Appendix F. Opal Unleaded Product Specifications

Source : BP Australia (2004e).

**Supply Area :** Remote Communities

**Product Code :** OPAL

**Application :** For spark ignition engines in remote communities. Not for Aviation use. Complies with the Fuel Quality Standards Act 2000 Petrol Determination of 2001.  
Does not contain oxygenates added as components, contains very low levels of aromatic compounds and benzene.

TEST	UNIT	LIMIT	METHOD
Appearance		Clear & bright	Visual
Colour		Yellow	Visual
Density @ 15°C	kg/L	Report	ASTM D1298
Distillation			ASTM D86
10% evaporated	°C	75 max	
50% evaporated	°C	115 max	
90% evaporated	°C	180 max	
FBP	°C	210 max	
Reid Vapour Pressure	kPa	45 min	ASTM D323, D519
Flexible Volatility Index		90 max	calculated

**The following properties are legislated under the National Fuels Quality Standard of 2000 Petrol determination of 2001.**

Total Sulphur	mg/kg	150 max	D2622,D5453,D633
Copper Corrosion Test- 3 hr @ 100°C		1 max	ASTM D130
Gum Existent	mg/L	50 max	D381
Lead Content	gPb/L	0.005 max	D3237,D5059
Phosphorous content	g/l	0.0013 max	D3231
Induction period	minutes	360 min	D525
Research Octane		91.0 min	D2699
Motor Octane		81.0 min	D2700
Total Aromatics	%vol	5 max	D525
Benzene content	%vol	1 max	D5845, D3606
Total Olefins	%vol	3 max	D1319,D6293, D62
Total Oxygenate content	%vol	1 max	D4815

**Issued :** 24th November 2004 Opalv3**Supersedes :** 10th September 2004 Page 0 of 1

BP guarantees that this product is fit for the purposes described above, and meets all legislative requirements. BP reserves the right to vary this specification from time to time without notice provided the product continues to meet legislative requirements.

BP Australia Pty Ltd A.B.N 53 004 085 616