

4 Problems associated with VSM

In identifying problems associated with a particular form of substance misuse, it is useful to distinguish between problems experienced by the users themselves and problems experienced by their families, the local community and the wider society of which they are part. These problems, as reported in the literature, are discussed in the following section. Table 4.1 provides a summary of reported problems. The table should be read with two qualifications in mind. Firstly, the problems identified are not universal; that is, they are not reported as being experienced by *all* sniffers, all families of sniffers, or all communities. Secondly, no implications of causality should be read into the table. The problems identified have been *associated with* VSM; as argued above, they are not necessarily directly attributed to it. For example, it is not at all clear from the literature whether the alienation from families widely associated with sniffing is purely a result of sniffing, or whether it might not in some cases have been a factor leading to sniffing.

Table 4.1: Key problems associated with VSM

Those experiencing	Problems
Those who misuse volatile substances	<ul style="list-style-type: none"> • Intoxication; auditory, visual and sensory hallucination; irrationality; grandiosity; aggression; disinhibition; confusion; incoordination; headaches; poor memory; slurred speech; vomiting; headache; fits • dependence • burns, pneumonia, vulnerability to accidental trauma, increased incidence of STDs • (Chronic sniffers): brain injury including cognitive impairment, impaired vision, hearing or movement; dementia; and damage to heart, lungs, liver and kidneys. Diverse medical consequences are produced by the variety of chemicals found in VSM products • possible effects on unborn children caused by sniffing during pregnancy • poor school attendance and performance • loss of opportunity to learn cultural knowledge • alienation from family support • social stigma and ostracism from non-sniffing peers, kin, other families • increased likelihood of involvement with the criminal justice system, homelessness and future problematic drug use • death

Families of volatile substance misusers	<ul style="list-style-type: none"> • Loss of control over sniffers, and associated shame • worry, grief and hardship due to caring for long-term disabled • fear of violence if they intervene to stop sniffing
Local community	<ul style="list-style-type: none"> • Intensification of inter-familial fighting through blaming • damage to property and other vandalism • flouting of Indigenous and non-Indigenous authority and associated social disruption • adverse effects on morale • loss, temporarily or permanently, of a proportion of community young people
Wider society	<ul style="list-style-type: none"> • Demands on hospital-based and other health resources, including aerial medical evacuations • long-term care health care for those disabled through VSM • demands on criminal justice system, arising out of sniffing-related crime

4.1 Problems experienced by volatile substance misusers

The effects of exposure to any of the chemicals contained in volatile substances depend not only on chemical composition but also on other factors including the method of administration, air concentration of the substance, and physical activity by the person at the time of exposure (Ridgeway, Nixon, & Leach, 2003; White & Proctor, 1997). Inhalant products have been classified as solvents, gases, aerosols and nitrites, as outlined in the table below.

Table 4.2: Chemicals in commonly used inhalants

Group	Substances	Some chemical components
Volatile solvents	nail polish remover	acetate, ethyl acetate
	paint stripper	toluene, acetone
	correction fluid and thinner	trichloroethylene
	dry-cleaning degreaser	tetrachloroethylene, xylene
	petrol	benzene compound, toluene, aliphatic hydrocarbons
	modelling glue	toluene, ethyl acetate
	'Kwikgrip' (superglue)	benzene, n-hexane, xylene
	rubber cement	

Aerosols	spray paint	butane, toluene
	hair, deodorant and cooking oil sprays	butane, propane toluene, acetate
Gases	gas and lighter fluid	butane, isopropane
	fire extinguisher	bromochlorodifluoromethane
	whipped cream bulbs	nitrous oxide
Nitrites	video head cleaner and room deodorisers	(iso)amyl nitrate (iso)butyl nitrate and isopropyl nitrate

Adapted from: Department of Human Services (2003, 1)

4.1.1 Immediate effects

Hydrocarbons present in volatile substances are easily absorbed into fatty tissues in the brain where they act as depressants (Dinwiddie, 1994; Evans & Balster, 1991). Intoxication is rapid and short-acting. Various stages of inhalant intoxication are reported: lower doses producing euphoria and then drowsiness or stimulation and disinhibition, and higher doses generating hallucination and leading in some circumstances to loss of consciousness and death. The initial phase of VSM has been compared with the intensity of injecting drug use (Dinwiddie, 1994). Other immediate effects include muscular incoordination, headache, tinnitus, palpitations, abdominal pain, nausea or vomiting, flushing, coughing or hyper-salivation. Intoxicated sniffers have suffered a range of traumatic injuries and burns through accidents where petrol or other products ignite.

Intensive use of inhalants (even during only one session) may result in irregular heart rhythms and death within minutes, a syndrome known as 'sudden sniffing death'. This syndrome is particularly linked with inhalation of butane and propane fuels. Other causes of VSM-associated death include blocking of the oxygen supply, seizures, trauma, accidents, burns and suicide (National Institute on Drug Abuse, 2005; Steffee, Davis, & Nicol, 1996). Currie et al. (1994) suggest, however, that sudden death is less common as a result of petrol sniffing than from other inhalant misuse. Of 70 encephalopathic petrol sniffers evacuated to Royal Darwin Hospital, the subsequent seven deaths reported by Currie et al. were all related to septic complications, most commonly aspiration pneumonia. The risks associated with inhaling fuel gases signal potential problems when young people transfer to other forms of VSM.

4.1.2 Longer-term effects

The central nervous system (particularly the brain) is vulnerable to damage from VSM. Toluene and other solvents appear significantly responsible for neurological damage in long-term users. Chronic solvent exposure has been related to a range of changes to cognitive capacities including attention, problem solving, visuo-spatial skills and short-term memory. These problems range in

severity ‘from mild impairment to severe dementia’ (National Institute on Drug Abuse, 2005). Other deficits attributed to inhalant use include problems relating to movement, spasticity, and loss of hearing, feeling or sight. Inhalant-associated brain injury appears to be cumulative. In one study, white matter changes were apparent in those who had used toluene for more than four years (Aydin et al., 2002).

The extent of VSM-related brain damage is, however, contested. One study detected marked differences in cognitive skills among those reporting VSM; however, these differences became statistically insignificant when measures for socio-disadvantage were factored in (Chadwick et al., 1990; see also Jansen, Richter, & Griesel, 1992).

As well as the brain, chronic use of particular inhalants is also believed to damage the kidneys, liver, heart and lungs (National Institute on Drug Abuse, 2005). Long-term use is linked with muscle weakness, epilepsy, reduced bone density and possibly leukaemia and other cancers. Solvent exposure appears related to early onset and increased severity of Parkinson’s disease and other forms of neurological disorder (Hageman et al., 1999; Pezzoli et al., 2000; Ramon et al., 2003).

The World Health Organization (WHO) ISD-10 now recognises ‘mental and behavioural disorders due to use of volatile solvents’ characterised by the same physiological and behavioural indicators as other drug dependency (World Health Organization, 2003). Studies have detected tolerance and a ‘withdrawal syndrome’ of two to five days in toluene and butane users (Bowen & Balster, 2006; Dinwiddie, 1994; Evans & Balster, 1991; Páez-Martínez, López-Rubalcava, & Cruz, 2003; Wiley, Bale, & Balster, 2003). This dependence is generally considered mild in comparison with that produced by heroin or tobacco (Wiley, Bale, & Balster, 2003) and is experienced as craving, irritability, psycho-motor retardation, dry mouth, and insomnia (Shah et al., 1999).

As the neurological damage caused by petrol sniffing is cumulative, chronic sniffers are more likely to sustain permanent brain injury or to die as a result of this activity than infrequent sniffers. Maruff et al. (1998) found that blood lead levels and length of time sniffing correlated with the degree of neurological and cognitive impairment experienced by sniffers. Early studies depicted VSM-associated brain injury as permanent (Byrne, Kirby, Zibin, & Ensminger, 1991; White & Proctor, 1997). More recently, clinicians have suggested that significant recovery from the effects of either petrol sniffing or other solvent use is possible if the person becomes abstinent prior to the occurrence of cerebellar atrophy (Cairney, Maruff, Burns, Currie, & Currie, 2004a; Cairney, Maruff, Burns, Currie, & Currie, 2004b, 2005; Rosenberg, 1997; see also Schiffer et al., 2006).

Maternal inhalant use has been linked with spontaneous abortion, congenital malformation, increased risk of developmental delay and behavioural problems in later life for children (Bowen & Hannigan, 2006; Bukowski, 2001; Burry, Guizzetti, Oberdoerster, & Costa, 2003; Jones & Balster, 1998). A study of infants born to petrol sniffing mothers found increased prevalence of

still birth, low birth weight, low Apgar scores (assessments of newborn health), and likelihood of being admitted to a neo-natal ward or placed in protective care (Dodd, 2001), although the author cautions that it is difficult to isolate which of these are a result of the pharmacological effects of VSM and which are due to petrol sniffing-associated lifestyle factors. Sniffing presents additional complications to antenatal care, including maternal malnourishment, erratic behaviour including frequently missing antenatal appointments, often inadequate social support, and an increased likelihood of contracting sexually transmitted diseases (Dodd, 2001; Gell, 1995).

4.1.3 *Mortality and morbidity*

There is currently no systematic collection of inhalant-associated mortality or morbidity at either a national or state/territory level in Australia. The NIAT has recommended that data on morbidity and mortality be collated annually (National Inhalant Abuse Taskforce, 2006). Sniffers commonly present to clinics and hospitals with illness such as pneumonia or injury such as burns which have volatile substance inhalation as an underlying cause and are therefore not recorded as VSM-associated.

Brady (1992, pp. 55–7), on the basis of coronial and other evidence, lists 35 Aboriginal deaths as having occurred in Australia between 1980 and 1988 as a result of petrol sniffing, all but one of them involving males. Victims were aged between 12 and 30, with a mean age of nineteen. These figures, Brady points out, almost certainly underestimate the true extent of petrol sniffing mortality. She estimates that between 1981 and 1991, 63 Aboriginal people died from petrol sniffing-related causes in Australia (1995). Of these, only three were female.

Between January 1984 and December 1991, 25 patients were admitted to Perth teaching hospitals for petrol-related illnesses. Eight of the 20 chronic sniffers subsequently died; all had altered mental state and most had generalised toxic-clonic seizures (Goodheart & Dunne, 1994)

A 2005 Coronial Inquest was advised that 50–60 Indigenous people in Central Australia had died in the past eight years as a result of petrol sniffing (Cavanagh, 2005). Thirty-seven petrol sniffing-associated deaths were recorded between 1998–2003 in the Central Australian region (Shaw et al., 2004).

Information about urban or rural VSM-associated deaths and illness is, if anything, even more scant. The best data was compiled from coronial files for the Victorian *Inquiry into the Inhalation of Volatile Substances* (Parliament of Victoria Drugs and Crime Prevention Committee, 2002). In Victoria from 1991–2000, 38 deaths were linked with inhalant products, with an average age at death of 16 years (Parliament of Victoria Drugs and Crime Prevention Committee, 2002).

No national data is available estimating VSM morbidity; however, some state-based data is collected. For instance, from 2002–2003, inhalant use was the main presenting drug problem in 1% of Victorian specialist drug treatment courses (comprising 474). This increased to 1.5% (726 courses) in 2003–2004 (Stoové et al., 2006). Inhalant-related ambulance attendances jumped by 22% between equivalent periods in 2002 and 2003 (to 197) (Matthews et al., 2005). Thirty-five

inhalant-related hospitalisations during 2003–2004 resulted in 214 bed days; more than in any preceding year (Stoové et al., 2006). Western Australia recorded an annual average of 32 VSM-related hospital admissions between 1994 and 2000 (National Inhalant Abuse Taskforce, 2006).

4.1.4 *Social effects*

The consequences of petrol sniffing discussed above all involve the health of sniffers. However, as Table 4.1 indicates, regular VSM also entails a number of social consequences.

In urban communities VSM is a highly stigmatising activity that, over time, damages family relationships, reduces users' chances of school completion and employability, and exacerbates the social isolation of those involved (MacLean, in press). Freeman (1986, p. 91), discussing petrol sniffing in a Pitjantjatjara community, states that many chronic sniffers were 'lost to the normal family support mechanisms', living divorced from their families in gangs which perpetrated much of the violence and breaking and entering on the community. Chronic sniffers suffer additional social problems such as social dislocation and an increased involvement with the criminal justice system. In Maningrida one study found that 80% of sniffers and ex-sniffers had criminal justice system involvement (Burns, Currie et al., 1995).

There is little written about Indigenous (or indeed non-Indigenous) perceptions of the spiritual effects of sniffing. Some Aboriginal people believe that petrol sniffing, like alcohol misuse, pushes out and replaces the spirit, and can eventually kill it (Brady, 1995; painting by Minutjukur in Healthy Aboriginal Life Team, 1991)

4.2 **Problems experienced by families**

Much of the sadness and worry about VSM falls on the families of those involved. The following extract from a story told by an elderly Pitjantjatjara woman to the Ngaanyatjarra Pitjantjatjara Yankunytjatjara (NPY) Disability Project illustrates the sense of helplessness felt by many carers:

I have three sons who sniff petrol and I have to care for them on my pension. I have to lose sleep to look after them. They make me so sad the way they throw rocks around and axes. I feel so sorry for them now they've become really sick.

He was my sister's son but she passed away and he's mine now. I try to look after him and I try to take good care of him, but he keeps throwing stones, even though I ask him not to. I give him good food, which I cook for him from my pension money. It's not much but I'm doing my best. I've been on my own for many years now. My husband passed away. I have to spend a lot of time looking after my son, even though he is a grown man now. He's been sniffing petrol for a long time now, since his father passed away. I can't do anything about it now. I'm a widow now and a woman alone, looking after a sick son. He is nyumpu (sick spirit) and weak and he is so sad and depressed. Though I try to feed him food he can't stop sniffing, poor thing.

His older sister she tries to look after him too. She is a good sister to him. But he is getting weak now from years of sniffing. Too many years have passed by now. He's very thin. I keep asking for extra financial help but I haven't got any.

Petrol is killing him off and he is weakening. He's starting to refuse the food I make for him. He's too disturbed. He won't do anything for me and his older sister now. He can't understand anything any more. He can't talk, he doesn't ask about money, nothing. He can only see out of one eye and he is getting blind. I'm trying to get him to sleep more. His brain is beginning to shrivel and he's lost his mind.

He is very sick. Years ago when he was a child and living with his mother and father, grandmother and grandfather, he was a good kid and he did what he was told and he listened to us. My son listened to us properly. But as he grew up he started doing what he wanted to do and he demanded to have his own way. He'd say 'Ngayuku kututu nyangatja!' 'This is my spirit not yours!' He used to say that to us (quoted in Mosey, 1997, pp. 23–4)

Impacts on the families of long-term urban and rural users of volatile substances may be slightly different to those encountered in remote settings. A far greater range of welfare and drug treatment agencies is available in urban settings. Young people who regularly use inhalants in urban areas often become homeless and disengage from their families, rather than remaining in close proximity to them. Nonetheless, one urban mother's despair at her daughter's VSM echoes the sense of despair evident also in the account above made by an Indigenous mother living in a remote community:

My 16 year old daughter is slowly dying, her memory is fading, her sight, hearing, lungs, kidney, bone marrow and liver are being damaged. Her blood oxygen is being depleted and this can directly induce heart failure. Her personality has changed.

Her system is slowly being poisoned.

She buys a can of paint legally from a store, sprays it into a plastic bag and breathes the fumes deeply into her lungs.

She doesn't notice the paint stains on her mouth and hands. I do.

My beautiful daughter is a 'chromer'.

The girl I gave birth to 16 years ago is killing herself.

And I cannot stop her, help is too far away, hands are tied, this practice is not illegal ... (Parliament of Victoria Drugs and Crime Prevention Committee, 2002, p. 1)

4.3 Problems experienced by local communities

Even a small number of regular inhalant users can cause community-wide damage out of all proportion to their numbers. South Australian coroner Chivell concluded that the impact of petrol sniffing in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands in South Australia threatened ‘the very substance of the Anangu communities’ (South Australia Coroner’s Court, 2002).

VSM creates law and order problems in both urban and remote communities. Volatile substance users (or brain damaged ex-users) have committed crimes of violence such as murder and rape, both in remote Indigenous communities and urban settings (Jackson, 2002; Stojanovski, 1999). Property damage is also commonly associated with VSM. Intoxication-related crimes, friction between families, youth suicides and other damage to physical, mental and emotional health all debilitate communities. Energy which could be used to address long-term cohesion and health of the community is exhausted and depleted by the ongoing effects of petrol sniffing on community morale (Senate Community Affairs Reference Committee, 2006). The distressing nature of petrol sniffing and the media treatment that it attracts mean that its spectre often overshadows efforts to focus attention on positive achievements in preventing or addressing it, or deflects energy from other less sensationalist but nevertheless critical Indigenous health issues, such as diabetes.

Similarly, young people with experience of chrome paint inhalation in Melbourne argued that this intoxication released anger, often leading to violence. As one young user reported, ‘it makes you wanna hurt people and make them feel embarrassed’ (quoted in MacLean, 2006).

4.4 Problems experienced by the wider society

VSM also has an impact on institutions in the wider society, especially the juvenile justice and health systems. Access Economics (2006) estimated the total cost of petrol sniffing in Central Australia in 2005 as \$78.9 million, of which:

- \$38.1 million was the net cost of disease burden;
- \$16.2 million was the cost to the crime and justice system;
- \$8.3 million was productivity loss; and
- costs of health, long-term care and rehabilitation impacts were estimated at \$4.1 million, \$4.2 million and \$3.7 million respectively.

Similar estimates for other parts of Australia have not been made.

4.5 Summary

- VSM poses not just one problem but a bundle of problems; for users, families and communities.
- For individual sniffers, it poses significant threats to health, both short- and long-term, which require preventative and rehabilitative interventions.
- For the families and carers of sniffers, VSM is often extremely distressing and often adds to difficulties and hardships already being experienced by those families. Interventions should at best enhance, and at the least not undermine, these capacities of family and kinship systems.
- For Aboriginal communities, petrol sniffing by young people poses challenges both to traditional authority and cultural patterns and to more ‘Westernised’ authority systems. An important goal of at least some interventions must be that of promoting the community’s capacity to control petrol sniffing.
- VSM generates demands within the wider society, particularly on the juvenile justice and health systems.
- VSM cuts across the work of a range of Commonwealth and state/territory departments, as well as that of many local community councils and non-government organisations. Cooperation and consistent action across all these agencies and with affected families is therefore essential.

