

# INHALANTS

WHAT YOU NEED TO KNOW



**Australian Government**  
**Department of Health**

# WHAT ARE INHALANTS?

Inhalants, also known as volatile substances or solvents, are chemicals that evaporate and give off fumes at room temperature. These vapours can be inhaled through the nose and/or the mouth to give the user an immediate 'high'.<sup>1-4</sup> These substances are easily absorbed through the lungs and carried around the body affecting areas such as the brain and liver.<sup>4,5</sup>

There are four main types of inhalants:<sup>1,2</sup>

1. **Volatile solvents** are liquids or semi-solids. Examples include paint thinners and removers, glues, petrol and correction fluid (liquid paper).
2. **Aerosol sprays** which contain intoxicating propellant chemicals. Examples include some spray paints, deodorants and hairsprays, fly sprays and vegetable oil sprays.
3. **Gases** include medical anaesthetics (e.g. nitrous oxide) and gases used in household or commercial products such as butane, propane, refrigerants and fire extinguishers.
4. **Nitrites** are liquids such as amyl, butyl and cyclohexyl nitrite found in room deodorisers and leather cleaner. While nitrites are inhaled like other substances discussed here, they have different effects and are associated with different harms.

The first three categories of inhalants are depressant drugs. Depressants do not necessarily make a person feel depressed, rather they slow down the activity of the central nervous system (CNS).

Nitrites such as amyl nitrite don't slow down the CNS. Inhaling nitrites expands blood vessels, drops blood pressure and accelerates heart rate, causing a quick rush sensation.<sup>1,2</sup>

Nitrous oxide is also known as laughing gas, nitrous, whippets and bulbs. Amyl and butyl nitrate are also known as 'poppers'. Inhaling spray paint is also known as 'chroming'.<sup>2</sup>

Inhalants are usually highly flammable.

# HOW MANY PEOPLE USE INHALANTS?

According to the 2010 National Drug Strategy Household Survey, fewer than one in one hundred (0.6%) people (aged 14 years or older) used inhalants in the past 12 months.<sup>6</sup> In 2011, approximately one in five (17.3%) Australian students (aged 12-17 years old) reported having ever used inhalants.<sup>7</sup>

# WHAT ARE THE EFFECTS?

Once inhaled, the chemicals are rapidly absorbed into the bloodstream through the lungs and travel quickly to the brain and the rest of the body.<sup>1</sup> Most inhalants have an immediate effect (within seconds) but usually only provide a 'high' for a few minutes (although sometimes the effects can last several hours depending on the inhalant used, the amount inhaled and the method of inhalation). Since the effects wear off quickly users often keep inhaling to prolong the 'high'. In some cases this can lead to brain damage, loss of consciousness or death.<sup>1</sup>

The following information applies to volatile solvents, aerosol sprays and gases. Some of the short-term effects produced by using these inhalants are similar to alcohol and other depressants, and can include:<sup>1, 4, 8-10</sup>

- **Increased heart rate**
- **Feeling light-headed, dizzy, confused or drowsy**
- **Dulling of pain and reduction of anxiety**
- **Euphoria or a 'high'**
- **Impaired judgement and loss of inhibitions (leading people to do things they wouldn't normally do)**
- **Slurred speech and loss of coordination (e.g. staggering), loss of balance**
- **Headaches**
- **Nausea, vomiting**
- **Becoming irritable, agitated or aggressive**
- **Burning feeling or irritation to eyes, nose and throat**
- **Tremors or shakes**
- **Hallucinations (e.g. seeing or hearing things that aren't really there)**
- **Dissociation (e.g. disconnected from feelings and surroundings)**
- **Death (see later section)**

Nitrites such as amyl nitrite (poppers) cause a different set of effects and are associated with different harms, these include:

- **Increased heart rate**
- **Hot flushes, dizziness/vertigo**
- **Feelings of warmth and excitement (that usually last several minutes)**
- **Headaches and blackouts**
- **A major risk of using these drugs is having unsafe sex, which puts people at risk of catching and spreading infectious diseases such as HIV and hepatitis<sup>1</sup>**

# WHAT ARE THE RISKS?

Some of the effects of inhalants can be unpleasant or even dangerous, especially if they are used heavily or often. People who have used a lot or more frequently find that they experience a lot more negative effects compared to new users or people who don't use inhalants very often.<sup>8</sup>

Many inhalants contain a mix of one or more compounds which impacts greatly on their overall effects. If used in combination with other drugs or medications, this may also lead to serious adverse effects including nausea, vomiting, increased heart rate, seizures, loss of consciousness and death.

Different inhalants have different effects and harms. For example, butane products seem to be particularly risky for 'sudden sniffing death'. Toluene, a substance found in glues and other products, has been strongly linked to brain damage.<sup>2</sup> Hearing loss has been most strongly associated with the use of spray paints, glues, dewaxers, dry-cleaning chemicals and correction fluids. Use of correction fluids and dry cleaning chemicals is also especially risky for liver and kidney damage. While using nitrous oxide still involves a risk of death from overdose it does not seem to cause the same kind of brain injury as inhalants that contain chemicals such as toluene and butane. Because different inhalants are made up of variety of chemicals, it is difficult to be sure about the effects and harms of each.

All inhalants displace air in the lungs resulting in hypoxia (lowered oxygen level) which can damage organs in the body including the brain. Inhalants can also destroy myelin, a fatty tissue that surrounds nerve fibres in the brain. As myelin aids in carrying messages around the brain and to the body, damage from inhalants can lead to spasms, tremors and difficulty moving.

There is no safe level of inhalant use. The risks associated with inhalant use can include:<sup>1, 4, 9-12</sup>

Short term risks:

- **Increased heart rate**
- **Headaches**
- **Agitation**
- **Nausea, vomiting**
- **Increased risk of experiencing accidents and injuries while 'high'**
- **Increased risk of serious burn injuries from using inhalants as some are highly flammable substances (e.g. butane and propane)**
- **Burning feeling or irritation to eyes, nose and throat**
- **Tremors or shakes**
- **Increased risk of pneumonia and breathing problems**
- **Coma**
- **Death (see later section)**

Heavier or longer term use has been linked with:

- **Dependence (addiction; see next page)**
- **Nose bleeds and sores around the mouth and nose**
- **Problems breathing**
- **Brain damage (leading to problems with movement, learning and cognitive processes such as attention, memory and decision-making)**
- **Neurological problems such as tremors, abnormal eye movements**
- **Hearing loss**
- **Sight loss**

- **Damage to other parts of the body including the immune system, bones, nerves, kidney, liver, heart and lungs**
- **Increased risk of leukaemia from petrol sniffing**

Regular inhalant use is associated with higher rates of depression, anxiety disorders and problems with other drugs and/or alcohol. This doesn't necessarily mean that inhalants cause these problems, users may already be prone to mental health problems, but the use of inhalants can bring on these issues or make them worse.

People who use inhalants are also more likely to experience stressful events such as having problems at school, at home or at work. There are reports of inhalant users committing serious crimes while intoxicated.

## DEATH

All inhalants carry the risk of death through:<sup>1,13</sup>

- **'Sudden sniffing death syndrome'. Inhaling the chemicals in solvents or aerosol sprays can cause an irregular and fast heart beat and can cause heart failure within a few minutes, even in people who are otherwise healthy**
- **Asphyxiation or suffocation (anything that blocks oxygen from going into the body including choking on vomit while intoxicated)**
- **Seizures**
- **Burns, accidents and injuries experienced while intoxicated can be fatal**
- **Coma**

## ARE INHALANTS ADDICTIVE?

It's possible to be dependent on (addicted to) inhalants, particularly if the person uses a lot or regularly.<sup>12</sup> People who are dependent on inhalants develop tolerance to the drug. This means that they need to take more of the drug to get the same effect. They may also become more sensitive to other drugs such as alcohol or cocaine.

People who are dependent on inhalants also find that using them becomes far more important than other things in their lives, such as work, sport, socialising or study. They crave the drug and find it very difficult to stop using it.

## INHALANT WITHDRAWAL

People who use inhalants frequently can experience withdrawal symptoms when they stop using them. The time taken for these to subside can depend on how regularly the person has been using the inhalant and for how long. Withdrawal symptoms can include:<sup>2,4</sup>

- **Headaches**
- **Cravings**
- **Irritability**
- **Sleep problems**
- **Dry mouth**
- **Muscle cramps**



## FOR MORE INFORMATION

For more information on inhalants, please see the National Inhalants Information Service

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

**We have listed some of the national telephone helplines and websites below.**

### **Australian Drug Foundation**

Provides information about drugs and links to services in each state and territory

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

### **DrugInfo Line**

Provides information about drugs and alcohol. Open 9am–5pm, Monday to Friday

**1300 85 85 84** or **03 8672 5983**. Or visit [www.druginfo.adf.org.au](http://www.druginfo.adf.org.au)

### **Just Ask Us**

Provides information about drugs, alcohol, health and well-being

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

### **Kids Helpline**

Free, private and confidential telephone and online counselling service for young people aged 5–25 years

Open 24 Hours **1800 55 1800**

### **Lifeline**

24 hour crisis line **131114**

Also available is one-on-one chatlines for crisis support, visit

[www.lifeline.org.au/Find-Help/Online-Services/crisis-chat](http://www.lifeline.org.au/Find-Help/Online-Services/crisis-chat)

### **Counselling Online**

Free, confidential counselling service for people using drugs, their families and friends

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

### **National Drugs Campaign**

Australian Government website provides information about illicit drugs and campaign resources.

[www.australia.gov.au/drugs](http://www.australia.gov.au/drugs)

### **Family Drug Support**

For families and friends of people who use drugs or alcohol

**1300 368 186**

## Some state and territory based helplines are listed below.

Alcohol and Drug Information Service (ADIS)(free, confidential advice about drugs and alcohol).  
Some services operate 24 hours.

State/Territory	City contact	Regional/Rural contact (free call from landline)
New South Wales ADIS	02 9361 8000	1800 422 599
Queensland ADIS	1800 177 833	1800 177 833
Victoria Directline	1800 888 236	1800 888 236
Western Australia ADIS	08 9442 5000 08 9442 5050 (for parents)	1800 198 024 1800 653 203
Australian Capital Territory Alcohol & Drug Program	02 6207 9977	
Northern Territory Alcohol & Other Drug Services	08 8922 8399 (Darwin) 08 8951 7580 (Alice Springs)	1800 131 350
Tasmania ADIS	1800 811 994	1800 811 994
South Australia ADIS	1300 131 340	1300 131 340

Callers in Victoria can also contact the Youth Substance Abuse Service (YSAS) on 1800 014 446  
(24 hour toll free service)

## SOURCES

1. National Institute on Drug Abuse, 2005. Research Report Series— Inhalant Abuse, National Institute on Drug Abuse, National Institutes of Health: Bethesda, MD.
2. D'Abbs, P. and MacLean, S., 2008. Volatile substance misuse: a review of interventions. Monograph Series No. 65, Australian Government Department of Health and Ageing: Canberra.
3. MacLean, S., 2008. Volatile bodies: stories of corporeal pleasure and damage in marginalised young people's drug use. *International Journal of Drug Policy*. 19(5): p. 375-83.
4. Cruz, S.L., 2011. The latest evidence in the neuroscience of solvent misuse: an article written for service providers. *Substance Use and Misuse*. 46 Suppl 1: p. 62-7.
5. National Drug and Alcohol Research Centre, 2011. Inhalants, National Drug and Alcohol Research Centre, University of New South Wales: Sydney.
6. Australian Institute of Health and Welfare, 2011. 2010 National Drug Strategy Household Survey report, AIHW: Canberra.
7. White, V. and Bariola, E., 2012. Australian secondary students' use of over-the-counter and illicit substances in 2011, Australian Government Department of Health and Ageing: Canberra.
8. Garland, E.L. and Howard, M.O., 2010. Phenomenology of adolescent inhalant intoxication. *Experimental and Clinical Psychopharmacology*. 18(6): p. 498-509.
9. MacLean, S., Cameron, J., Harney, A. and Lee, N.K., 2012. Psychosocial therapeutic interventions for volatile substance use: a systematic review. *Addiction*. 107(2): p. 278-88.
10. Howard, M., Bowen, S., Garland, E., Perron, B. and Vaughn, M.G., 2011. Inhalant use and inhalant use disorders in the United States. *Addiction Science and Clinical Practice*. 6(1): p. 18-31.
11. Dingwall, K.M. and Cairney, S., 2011. Recovery from Central Nervous System Changes Following Volatile Substance Misuse. *Substance Use and Misuse*. 46(s1): p. 73-83.
12. American Psychiatric Association, 2000. Diagnostic and statistical manual of mental health disorders, fourth edition, text revision, Washington, DC: American Psychiatric Association.
13. Dell, C.A., Gust, S.W. and MacLean, S., 2011. Global issues in volatile substance misuse. *Substance Use and Misuse*. 46: p. 1-7.

© National Drug and Alcohol Research Centre 2014

This booklet was funded by the Australian Government Department of Health. It was written by Emma Black, Sarah MacLean and Jhodie Duncan in consultation with Anthony Shakeshaft, Nicola Newton, Maree Teesson, Michael Farrell and Daniel Rodriguez. Design and layout by Greg Stephenson of Netfront.

ISBN 978-0-7334-3226-2



**Australian Government**

---

**Department of Health**