

### Recognition of abusable products

Because of the wide range of products that are abused and the rapid rate at which brand names and packaging are varied within the modern retail world, it is impossible to produce a comprehensive up-to-date list of all those products that can be abused. There are, in fact, hundreds of products on the market at present, which are abusable. Some of these are more commonly sniffed than others.

The products to be aware of include:

- Butane gas cigarette lighter refills
- Liquefied domestic gas
- Solvent based adhesives
- Deodorant aerosols
- Pain relief sprays
- Aerosol air fresheners
- Hairspray
- Other aerosols
- Some typewriter correction fluids
- Petrol
- Certain paints, paint thinners / removers
- Dry cleaning agents
- Petrol lighter fuel
- Nail varnish / varnish remover
- Halon (BCF) fire extinguishers (no longer manufactured)
- Some shoe / metal polish
- Plaster remover

However, if you are in doubt as to whether or not you should be concerned, there are certain signs to look out for on the packaging of the product. Many products carry a warning 'Solvent Abuse Can Kill Instantly'



### Pressurised gases

The first category of abusable products includes most aerosols and all forms of liquefied petroleum gas (gas lighter fuel, fuel for picnic stoves, etc.), which are 'sniffable' and will carry warnings such as 'flammable,' 'do not puncture or incinerate', 'do not use near fire or flame', etc.

Aerosols producing foam, paste, mousse or gels are not usually 'sniffed'.

### Flammable liquids

The second category of abusable products comes under the heading of highly flammable liquids. These products are usually in the form of liquids in metal containers or bottles. All will bear the words 'Highly-Flammable'; or other wording, and by UK law must display a black flame on a square orange background. In addition, the outer case of multiple retail packs will be marked either with the same symbol or with a diamond symbol.

### Non-flammable substances

The third category of abusable products are not in themselves flammable, but hints can be gained from reading the appropriate text on the packaging. Look out for the following chemicals, which are present in many abusable products:

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- Trichloroethylene
- Dichloromethane
- Tetrachloroethylene

These are three common chemicals found in such substances as non-flammable paints, fire extinguishers, adhesives and cleaning fluids.

### Gas Fuels

Gas fuels accounted for **46.8%** of deaths from VSA between 1971 and 2006, and this proportion appears to be increasing, with the figure for 2006 standing at 56.3%.

**Cigarette lighter refills** - Mortalities from cigarette lighter fuel refills constituted 81.7% of total gas fuel deaths between 1971 and 2006.

**Butane gas** is the main component chemical found in lighter refills, usually making up 90% of the product. As these flammable containers are activated under pressure, the fuel gas is released at a very low temperature, presenting a risk of cold burns through direct oral abuse, respiratory difficulties and death by vagal inhibition due to rapid cooling of the larynx. The vagal nerve runs through the neck and inhibition of this nerve leads directly to heart failure, slowing of the heart, and cardiac arrest.

Research into the long-term effects of abuse is inconclusive, but there are concerns that exposure to the impurities found in fuel grade butane might give rise to long-term health problems, such as carcinomas.

A recent initiative by industry aimed at reducing the potential for abuse, was the introduction of smaller 25ml cans. However, cans containing up to 300ml or more can still be purchased. Re-design of nozzles has also been considered, however it is always possible to access the gas by puncturing the outer skin of the container itself.

Efforts to control sales of lighter refills include storing them in cigarette kiosks where staff are able to monitor sales. It is unusual for lighter refills to be more openly displayed.

The information presented on labels is generally concerned with safe usage, though some manufacturers also include a specific warning which relates to abuse of the product, i.e. 'Deliberately inhaling the contents may be harmful or even fatal'. Disposable lighters, which are also being used, carry no labelling but contain only 5-10ml of gas. These are contained under lower pressure and therefore the speed of gas delivery is comparatively very slow, which means that they are less convenient to abuse.

**Other gas fuels** - 18.3% of all gas fuel deaths result from abuse of other gas products. Butane/propane gas containers, used for example in camping stoves and blowtorches, are less easy to abuse than lighter fuel containers. Instant access is less easy as the valve is not an integral part of the container, the release of the gas occurring through puncturing, but valved containers are available for camping or DIY purposes. Camping gas, propane cylinders, domestic bottled gas and British Gas each have their own formulation of stenching agents, which are added to produce a distinctive smell to their product. This acts as a safeguard against accidental leakage or misuse.

### Adhesives

Glues accounted for **15%** of deaths from volatile substance abuse between 1971 and 2006. In recent years, the frequency of glue-related deaths has decreased.

Plastic bags are associated with over 64% of all adhesive deaths. A greater proportion of deaths result from trauma, such as hanging and drowning, than with other substances.

The most commonly associated effect of direct contact with adhesive products is perioral eczema (glue-sniffer's rash), which is the result of direct contact of the solvent with the skin.

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Evidence suggests that long-term abuse of toluene-based products may affect the central nervous system and cause lung damage. There is also persuasive evidence of damage to the eyes, inner ear, muscles, nerves, heart and other organs, and evidence of chromosomal damage and possible damage to the foetus.

Modifications to reduce the potential for abuse include replacing the volatile element with water-based adhesives. The incorporation of additives, such as oil of mustard, imparts an offensive smell to the product, acting as a deterrent to abuse. Another additive used by manufacturers in other product areas is Bitrex, which is used in products such as bleach. This imparts a foul taste to the liquid, which means that should children accidentally drink it, they will quickly spit it out.

Usage and safety instructions on adhesives vary, but are typically incorporated within general health and safety warnings on containers, for example, 'Do not breathe vapour', 'Harmful by inhalation' or 'Irritating to eyes and respiratory system.'

### Aerosols

Aerosols accounted for **17.7%** of deaths from solvent abuse between 1971 and 2006.

There are three major product areas within this grouping, namely air fresheners (12.7% of the substance group 1971-2006), pain relief sprays (15.1%) and anti perspirants/deodorants (45.4%).

It is the **propellant** and **not the liquid** in aerosols, which is inhaled, with the majority of aerosol products use butane as the chief propellant. Butane replaced chlorofluorocarbons (CFCs), which were removed because of their effect on the environment, though a few specialist medical products still contain CFCs (although these are also being phased out). Nitrous oxide is also commonly used as a propellant for food preparations.

Most commonly, fatalities are associated with breathing the aerosol through a rag, using a plastic bag or spraying the fumes directly into the mouth.