

Inhalants

Inhalants are breathable chemical vapors that produce psychoactive (mind-altering) effects. A variety of products common in the home and in the workplace contain substances that can be inhaled. Many people do not think of these products, such as spray paints, glues, and cleaning fluids, as drugs because they were never meant to be used to achieve an intoxicating effect. Yet, young children and adolescents can easily obtain them and are among those most likely to abuse these extremely toxic substances.

Inhalants fall into the following categories:

Solvents

- *Industrial or household solvents or solvent-containing products*, including paint thinners or removers, degreasers, dry cleaning fluids, gasoline, and glue
- *Art or office supply solvents*, including correction fluids, felt-tip-marker fluid, and electronic contact cleaners

Gases

- *Gases used in household or commercial products*, including butane lighters and propane tanks, whipped

cream aerosols or dispensers (whippets), and refrigerant gases

- *Household aerosol propellants* and associated solvents in items such as spray paints, hair or deodorant sprays, fabric protector sprays, and aerosol computer cleaning products
- *Medical anesthetic gases*, such as ether, chloroform, halothane, and nitrous oxide ("laughing gas")

Nitrites

- *Organic nitrites* are volatiles that include cyclohexyl, butyl, and amyl nitrites, and are commonly known as "poppers." Amyl nitrite is still used for medical purposes. Volatile nitrites are often sold in small brown bottles and labeled as "video head cleaner," "room odorizer," "leather cleaner," or "liquid aroma."

Health Hazards ———

Although they differ in makeup, nearly all abused inhalants produce short-term effects similar to anesthetics, which act to slow down the body's functions. When inhaled in sufficient concentrations, inhalants can cause intoxication usually lasting only a few minutes.

However, sometimes users extend this effect for several hours by breathing in inhalants repeatedly. Initially, users may feel slightly stimulated. Repeated inhalations make them feel less inhibited and less in control. If use continues, users can lose consciousness.

Sniffing highly concentrated amounts of the chemicals in solvents or aerosol sprays can directly induce heart failure and death within minutes of a session of repeated inhalations. This syndrome, known as “sudden sniffing death,” can result from a single session of inhalant use by an otherwise healthy young person. Sudden sniffing death is particularly associated with the abuse of butane, propane, and chemicals in aerosols.

High concentrations of inhalants also can cause death from suffocation by displacing oxygen in the lungs and then in the central nervous system so that breathing ceases. Deliberately inhaling from a paper or plastic bag or in a closed area greatly increases the chances of suffocation. Even when using aerosols or volatile products for their legitimate purposes (i.e., painting, cleaning), it is wise to do so in a well-ventilated room or outdoors.

Chronic abuse of solvents can cause severe, long-term damage to the brain, the liver, and the kidneys.

Harmful irreversible effects that may be caused by abuse of specific solvents include:

- Hearing loss—toluene (spray paints, glues, dewaxers) and trichloroethylene (dry cleaning chemicals, correction fluids)
- Peripheral neuropathies, or limb spasms—hexane (glues, gasoline) and nitrous oxide (whipped cream dispensers, gas cylinders)
- Central nervous system or brain damage—toluene (spray paints, glues, dewaxers)
- Bone marrow damage—benzene (gasoline)

Serious but potentially reversible effects include:

- Liver and kidney damage—toluene-containing substances and chlorinated hydrocarbons (correction fluids, dry cleaning fluids)
- Blood oxygen depletion—aliphatic nitrites (known on the street as poppers, bold, and rush) and methylene chloride (varnish removers, paint thinners)

Extent of Use ———

Initial use of inhalants often starts early. Some young people may use inhalants as an easily accessible substitute for alcohol. Research suggests that chronic or long-term inhalant abusers are among the most difficult drug abuse patients to treat. Many suffer from cognitive impairment and other neurological dysfunction and may experience multiple psychological and social problems.

2004 Monitoring the Future Survey (MTF)*

According to the Monitoring the Future survey, NIDA's nationwide annual survey of drug use among the Nation's 8th-, 10th-, and 12th-graders, lifetime use by 8th-graders increased significantly in 2004 following a long and substantial decline in inhalant use through 2002 in all three grades. Between 1995 and 2002, 8th-graders' annual prevalence fell from 12.8 percent to 7.7 percent, as an increasing proportion of students came to see inhalant use as dangerous. However, annual prevalence rose significantly for 8th-graders, from 7.7 percent to 8.7 percent from 2002 to 2003. In 2004, 8th-graders' annual use was 9.6 percent.

2002 Drug Abuse Warning Network (DAWN)**

Emergency department mentions of inhalants increased 187 percent, from 522 in 2001 to 1,496 in 2002, returning to the approximate level observed in 2000.

2003 National Survey on Drug Use and Health (NSDUH)***

Among youths age 12 to 17, 11.2 percent were current illicit drug users in 2003, and 1.3 percent were current inhalant users. Among 12- or 13-year-olds, 1.4 percent used inhalants, the same percentage as 14- or 15-year-olds.

The number of new inhalant users was about 1 million in 2002. As in prior years, these new users were predominantly under age 18 (78 percent), and about half were male (53 percent).

Other Information

Sources _____

For additional information on inhalants, please refer to the following sources on NIDA's Web site, www.drugabuse.gov:

Inhalant Abuse—*Research Report Series*

Various issues of *NIDA NOTES* (search by "inhalants" or "solvents")

Community Drug Alert Bulletin—Inhalants

* These data are from the 2004 Monitoring the Future Survey, funded by the National Institute on Drug Abuse, National Institutes of Health, DHHS, and conducted by the University of Michigan's Institute for Social Research. The survey has tracked 12th-graders' illicit drug use and related attitudes since 1975; in 1991, 8th- and 10th-graders were added to the study. The latest data are online at www.drugabuse.gov.

** The latest data on drug abuse-related hospital emergency department (ED) visits are from the 2002 DAWN report, from HHS's Substance Abuse and Mental Health Services Administration. These data are from a national probability survey of 437 hospital EDs in 21 metropolitan areas in the U.S. during the year. For detailed information from DAWN, visit www.samhsa.gov/statistics/statistics.html, or call the National Clearinghouse for Alcohol and Drug Information at 1-800-729-6686.

***The 2003 NSDUH, produced by HHS's Substance Abuse and Mental Health Services Administration, creates a new baseline for future national drug use trends. The survey is based on interviews with 67,784 respondents who were interviewed in their homes. Not included in the survey are persons in the active military, in prisons, or other institutionalized populations, or who are homeless. Findings from the 2003 National Survey on Drug Use and Health are available online at www.DrugAbuseStatistics.samhsa.gov.