Inhalant Abuse:
Deadly, on the Rise Again, Linked to Delinquency and Violence, and Preventable

John J. Hedl, PhD

ABSTRACT: Inhalants are not only one of the deadliest categories of psychoactive (mood/mind altering) substances available, inhalants are also the drugs most often used by children 9-14, with use beginning as early as age six. Inhalant abuse is the intentional inhalation of solvents, aerosols, gasses and nitrites to achieve a quick, temporary euphoric/intoxicated state of mind known as a "high." The high produced by most inhalants (except nitrites) is the result of central nervous system depression similar to that produced by anesthetics, which slow down brain and body functions. Nitrites are central nervous system stimulants. Repeated use of any inhalant tends to produce tolerance. Particularly heavy doses can result in extreme mental confusion, hallucinations, permanent brain damage, damage to other major organs, choking, asphyxiation, suffocation, coma, rapid pulse, cardiac arrhythmia, cardiac arrest and sudden death. One of the easiest inhalants for children to obtain is nitrous oxide, otherwise known as laughing gas, a powerful anesthetic. Nitrous oxide produces rapid blood pressure changes resulting in blackouts, depression of the heart muscle and death from lack of oxygen to the brain. There were 1.8 million new inhalant abuse initiates during 2002-2004 and a half million new users each year since. Of significant interest is the correlation between inhalant abuse and child delinquency and violence. Rainbow Days' Curriculum-Based Support Groups® have been found to be effective in reducing overlapping risk factors for inhalant abuse, delinquency and violence, reducing self-reported prior 30-day inhalant use, anti-social attitudes, rebellious behavior, and increasing non-use attitudes toward substance abuse.

Because the last time we had a national problem with inhalant abuse was in the 1990s[1] a significant number of younger educators and parents are unaware of the dangers associated with -and are unprepared to address - the major resurgence of inhalant abuse taking place today. They don't know that inhalants are not only one of the deadliest categories of psychoactive (mood/mind altering) substances available, inhalants are also the drugs most often used by children ages 9-14, with use beginning as early as age six.[1] This lack of awareness is understandable; the deadly substances known collectively as inhalants are found in over 1,400 products that are familiar, readily available, seldom secured, cheap, easy to obtain and found on school campuses and in almost every home and worksite in America.[2] Since they are not thought of as drugs, children and teens do not view these products as being risky to use. And, while their teachers and parents may be aware of other drugs, the dangers associated with inhalants routinely go unnoticed.[1]

Inhalant abuse is the intentional inhalation (vs. accidental overdose) of solvents, aerosols, gasses and nitrites to achieve a quick, temporary euphoric/intoxicated state of mind known as a "high."[1] Most of us have read the labels on nail polish, paints, paint thinners and removers, glues, solvents, cleaning products, shoe polish, and aerosol sprays – all warning us that the contents are volatile and must be used in a well-ventilated room to avoid harm. Imagine how inhaling, huffing or sniffing these chemicals from a paper/plastic bag, through a straw, from a rag or can, or in an enclosed area can increase the intoxicating – and harmful - effects.

The high that is produced by most inhalants (except nitrites) is the result of central nervous system depression similar to that produced by anesthetics, which slow down brain and body functions. Most abusers report that the immediate symptoms are similar to being drunk on alcohol and include lightheadedness, giddiness, and euphoria. Part of the lure of inhalants is that this high is achieved instantaneously. Entry of the inhaled vapors into the brain is so quick that the effects are like shooting up or snorting. The onset of the high is quick and temporary, lasting only a few minutes and is routinely accompanied by distorted senses, dizziness, slurred speech, disorientation, loss of physical coordination, muscle weakness, belligerence or apathy, and impaired judgment/mental functioning that appear to be

similar to alcohol intoxication. Symptoms of withdrawal are also immediate and mirror the hangover effects of alcohol withdrawal, including drowsiness, headache and nausea, the worst lasting about an hour or two. Since the pleasurable effects of inhalants are fast, but short lived, and the withdrawal symptoms are immediate and unpleasant, inhalant abusers frequently inhale/huff/sniff the toxic chemicals repeatedly.[1,2,3]

Repeated inhalant use tends to produce tolerance, and larger doses are needed to achieve the same level of pleasure originally achieved at a much lower dose. Particularly heavy doses can result in extreme mental confusion, hallucinations and paranoia. There is a significant risk for permanent brain damage with heavy inhalant abuse, resulting in an inability to pay attention, concentrate, learn or remember new information, and uncontrollable mood swings, tremors, convulsions, seizures, and a variety of symptoms mirroring those of other neurological diseases, such as multiple sclerosis. Heavy doses also increase the potential for other major organ damage, especially the liver, and multiply the risks for choking, asphyxiation, suffocation, coma, rapid pulse, cardiac arrhythmia (changes in heart rhythms), cardiac arrest, and sudden death.[1,2,3]

One of the easiest inhalants for children to obtain is nitrous oxide, otherwise known as laughing gas, a powerful anesthetic. And, one of the first questions asked by adults is "where would a child get nitrous oxide?" Answer: aerosol whipped-cream cans. The valve on top of aerosol whipped cream dispensers can be manipulated to allow inhalation of the aerosol propellant, which is nitrous oxide. Nitrous oxide produces rapid blood pressure changes which can result in altered perception, loss of motor coordination, loss of sensation, limb spasms, blackouts, depression of the heart muscle function, and death from lack of oxygen to the brain.[1,2,3] Unfortunately, younger children assume they are inhaling compressed air, which they expect to be harmless. It is important to note that medical grade nitrous oxide chargers are available at supermarkets from "make your own whipped cream" vendors and on the web, complete with free shipping.[8]

The National Institute on Drug Abuse (NIDA) lists the most commonly abused inhalants. A brief review includes the nitrites - amyl nitrite, butyl nitrite, alkyl nitrites, and isobutyl nitrite - which are called "poppers." The term "popper" has been around a long time, but the abused products have changed. Originally, a popper was a capsule of amyl nitrite prescribed by doctors for heart patients to break or pop to release vapors. Nitrites are central nervous system stimulants which make the heart beat faster and produce sensations of heat and extreme excitement. Nitrites also raise the pressure of the fluid in the eyes, leading to glaucoma and blindness. Amyl nitrite is made and sold illegally, but today, most poppers are isobutyl nitrite or butyl nitrite sold in small brown bottles as "video head cleaner, "room deodorizer" or "leather cleaner." Other common inhalants are benzene found in gasoline; butane and propane found in lighter fluid, hair and paint sprays; Freon used as a refrigerant or aerosol propellant; methylene chloride found in paint thinners, paint removers and degreasers; nitrous oxide, the anesthesia commonly known as laughing gas; toluene found in correction fluid, paint thinners, paint removers and gasoline; and trichlorethylene found in spot removers and degreasers.

Of significant interest to educators is the correlation between inhalant abuse and child delinquency and violence. A 2005 National Survey on Drug Use and Health (NSDUH) Report found that youth aged 12 or 13 who used inhalants in their lifetime were more than twice as likely to have been in a serious fight at school or work in the past year as youth who had never used inhalants. These youth were also six times more likely to have stolen or tried to steal something worth more than $50 than youth who had never used inhalants. Finally, the report found that about 35% of youth aged 12 or 13 who used inhalants in their lifetime had also used another illicit drug, as compared to 7.5% of youth who had never used inhalants. It is clear that inhalant use increases the likelihood of other

problem behaviors including increased risks for delinquency, violence and substance abuse.[4]

Another area of special concern to educators is the fact that children age 6 to 14 are going through a critical period of new brain development, during which the health of the hippocampus is critical.[5] The chemicals in inhalants directly attack the structure and function of the hippocampus and are responsible for rapid deterioration of brain function and cognitive abilities. The earlier the use of inhalants begins, the greater the risk of permanent brain damage and developmental disabilities.[1,3,4]

Since 2001, children's perceptions of harm associated with inhalant abuse have gone down, while use has gone up.[1,3,6] According to The NSDUH Report there were 1.8 million new initiates over three years (2002-2004) and over a half million new users annually since then.[7] In May of this year the American Academy of Pediatrics (AAP) suggested that inhalant abuse education be included in all substance abuse prevention curricula in the primary and secondary grades, using approaches that warn the dangers of inhalant abuse, without also teaching youth about available substances.[1]

Of interest: A 2003 randomized control trial (RCT) found Rainbow Days' Curriculum-Based Support Groups® (CBSGs) to be effective in reducing immediate overlapping risk factors for substance abuse, delinquency and violence in a selective population of urban students (n=661) in Grades 3, 4 and 5, including reduced anti-social attitudes, reduced rebellious behavior, improved non-use attitudes and intentions toward substance use, and reduced self-reported 30-day substance use of inhalants. The CBSGs intervention is a behavioral health promotion and problem prevention program for children living in high-risk situations, with a focus on helping them overcome adversity, increase their coping competencies, and stay drug free. CBSGs combines a cognitive-behavioral curriculum for teaching coping, social, and problem-solving skills; a trained group leader/facilitator who provides psychological support and serves as a mentor; and a highly-structured support group process. Over 16,000 CBSGs facilitators are trained in over 30 states nationally, and over a half-million children have participated in one or more CBSGs programs in schools, homeless family/domestic violence shelters and other community-based settings.

The AAP also suggested the widespread use of resources such as the National Institute on Drug Abuse (NIDA) publications (available at www.drugabuse.gov/DrugPages/Inhalants.html), which include the signs and symptoms of inhalant abuse:

- ☑ A sweetish, chemical smell on body or clothes
- ☑ Red, inflamed nostrils, a rash around the mouth or nose, or frequent nosebleeds
- ☑ Paint or other stains on face, hands, clothes or stained fingernails
- ☑ Pale, bluish skin
- ☑ Bloodshot eyes, watery eyes, dilated pupils
- ☑ Slurred speech, slow, disconnected speech patterns
- ☑ Inappropriate laughter; inattentiveness, inability to respond appropriately
- ☑ Drunk or disoriented behaviors, slurred speech, clumsy gait
- ☑ Inordinate forgetfulness or difficulty concentrating, anxiety
- ☑ Extreme sleep disturbances, bouts of insomnia and/or inability to wake up
- ☑ Empty spray or aerosol containers, including aerosol whipped cream cans
- ☑ Empty soda cans, paper/plastic bags, or discarded straws with chemical odors
- ☑ Nausea, loss of appetite, or revulsion at food smells
- ☑ Irritability, mood swings, depressive moods
- ☑ Coughing, wheezing, excessive salivation

The sad fact is that once we were able to smother the inhalant epidemic of the 1990s, we shifted our attention. Well, the winds have shifted along with our attention, and now we have a growing fire on our hands again. It will take us all to fight it.

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AUTHOR

John J. Hedl, Jr., Ph.D.
Chair, Health Services Administration
Southwestern Allied Health Sciences School
The University of Texas
Southwestern Medical Center at Dallas

Education: Ph.D., Florida State University, 1971

Interests: Community health analysis and surveys; health- program evaluation; management development; personality and learning; sociocultural aspects of health behavior variability; alcohol and substance abuse.

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