

Sniffing Out Drugs

Abuse of Household Products Rising

When most people think of drug abuse, they think of illegal substances like heroin, cocaine and LSD. Would it surprise you to know that some of the most toxic substances abused by children and teens can be found in the home? Certain household and office products, including glue, shoe polish, gasoline and cleaning fluids can cause intoxication when their vapors are inhaled. Called “inhalants,” these vapors can have devastating side effects. They pose a particularly significant problem because they are readily accessible, legal and inexpensive. In a 2003 study, 12.7% of 10th graders and 11.2% of 12th graders said they had abused inhalants at least once.

When the chemical vapors released by inhalants are breathed in by nose or mouth, they are absorbed by the lungs and travel rapidly through the blood to the brain and other organs. In minutes, the user feels alcohol-like effects such as slurred speech, clumsy movements, dizziness and euphoria. These effects usually last only a few minutes, but the user can

extend them for hours by inhaling the vapors repeatedly. Successive inhalations can also break down inhibitions and self-control. Inhalants also have serious side effects, from headaches, nausea and vomiting to unconsciousness or even death.

How inhalants cause their effects is a topic currently being investigated by NIH’s National Institute on Drug Abuse (NIDA). The vapors in inhalants contain chemicals that change the way the brain works, causing the user to feel happy for a short time. But these vapors often contain more than one chemical. Some may leave the body quickly, but others are absorbed into fatty substances in the brain and **nervous system**, where they can stay for a long time.

One of these fatty substances is myelin—a protective cover that surrounds many of the body’s **nerve cells**. Nerve cells in your brain and spinal cord are sort of like “Command Central” for your body. They send and receive messages that control just about everything you think and do. If nerve cells are your body’s electrical wiring, then myelin is the rubber insulation that protects the electrical cords. The chemicals in

inhalants can break down myelin. If myelin breaks down, nerve cells may not be able to transmit messages as effectively.

As a result, people taking inhalants may have trouble solving complex problems and planning ahead. They

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Definitions

Nerve Cells

Cells responsible for sending and receiving signals between the body and brain.

Nervous System

System that receives and interprets sensations (like smells, sounds and sights), and coordinates activities (like muscle movements) throughout the body.

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might start losing control over their movement and coordination, making them slow or clumsy. They also may lose the ability to learn new things or have a hard time keeping track of simple conversations.

Regular abuse of inhalants can also cause serious damage to major organs, including the brain, liver, heart, kidneys and lungs. A single session of repeated inhalations can lead to cardiac arrest and death by altering normal heart rhythms or by preventing oxygen from entering the lungs, causing suffocation.

There are three general types of inhalants. Solvents include paint

thinners or removers, degreasers, dry-cleaning fluids, gasoline, glue, correction fluids and felt tip marker fluid. Gas inhalants can be found in butane lighters and propane tanks, whipped cream aerosols or dispensers (whippets), spray paints, hair or deodorant sprays and fabric protector sprays. The third type, nitrites, are commonly known as "poppers." Most poppers contain

the chemicals isobutyl nitrite or butyl nitrite. They are available illegally and come in small brown bottles, sometimes labeled as "video head cleaner," room odorizer or liquid aroma.

It's difficult to know how many emergency room visits and deaths inhalants cause. There are probably many more emergency room admissions due to inhalants than we know about. Inhalant use is easily hidden, and they leave the body quickly so they are long gone by the time someone gets to the emergency room.

NIDA continues to support new research on the prevention and treatment of inhalant abuse, but early identification and intervention remain the best ways to stop inhalant abuse before it causes serious health consequences. Parents should store household products carefully to prevent accidental inhalation by very young children. They should also remain aware of the temptations that these dangerous substances pose to children and teens in their homes. ■



Wise Choices

How to Recognize Inhalant Abuse

Parents, educators, family physicians and other health care practitioners should be alert to the following signs of a serious inhalant abuse problem:

- Chemical odors in breath or clothing
- Paint or other stains on face, hands or clothes
- Hidden empty spray paint or solvent containers and chemical-soaked rags or clothing
- Drunk or disoriented appearance
- Slurred speech
- Nausea or loss of appetite
- Inattentiveness, lack of coordination, irritability and depression

To get help finding treatment for someone abusing inhalants, call the Substance Abuse and Mental Health Services Administration at 1-800-662-HELP or visit findtreatment.samhsa.gov.

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Inhalant Abuse:

www.inhalants.drugabuse.gov

NIDA for Teens: www.teens.drugabuse.gov



Statistics

Inhalant Abuse

- In 2002, the nation's hospital emergency departments reported almost 1,500 mentions of inhalant abuse by patients.
- Most inhalant abusers are younger than 25. Data suggest that inhalant abuse reaches its peak during the seventh through ninth grades.
- A NIDA survey of drug use by 8th-12th graders shows that lifetime inhalant use for 8th graders has increased significantly in the past year.

Source: National Institute on Drug Abuse, NIH

Teen Brains: Still Under Construction

Parents Play Important Role

Contrary to what most parents have thought at least once, “teens really do have brains,” quipped Dr. Jay Giedd, an NIH research scientist, in a recent lecture on the “Teen Brain under Construction.” In fact, researchers have not only confirmed that teens have brains; they are now beginning to understand the biological basis for their sometimes peculiar behavior.

Giedd, who studies brain development at NIH’s National Institute of Mental Health, explained that scientists have only recently learned more about the path of brain growth. One important finding, he said, showed that the frontal cortex area—which governs judgment, decision-making and impulse control—doesn’t fully mature until around age 25.

“That really threw us,” Giedd said. “We used to joke about having to be 25 to rent a car, but tons of industry data show that 24-year-olds are costing insurance companies more than 44-year-olds are.”



Child and Adolescent Mental Health:
www.nimh.nih.gov/healthinformation/childmenu.cfm



Wise Choices For Guiding Teens

- Until age 25, the part of our brain that governs judgment, decision-making and impulse control is still under construction, so a parent’s job as “foreman” usually isn’t over when teens turn 18.
- Teen emotions and behavior can be unpredictable. Watch for emotional fall-out, wear a hard hat and choose battles wisely.
- Be a good model; teach young ones and teens respectfulness by showing respect—to them, to others in the family and in the community, and to yourself.
- Assume they’re always listening, observing and learning, even when it seems like they’re not.

But why is that? “It must be behavior and impulse control,” he said. “Whatever these changes are, the top bad things that happen to teens involve emotion and behavior.”

Medically, Giedd said, in terms of cancer, heart disease and other serious illnesses, people in their teens and early 20s are incredibly healthy. But with accidents as the leading cause of death in adolescents and suicide following close behind, “this isn’t a great time emotionally and psychologically. We call it the great paradox of adolescence: right at the time you should be on the top of your game, you’re not.”

The next step in Giedd’s research, he said, is to learn more about what influences brain growth, for good or bad. “Ultimately, we want to use these findings to treat illness and enhance development.”

Until then, parents need to know that the science shows they really can influence their children’s brain development.

“From imaging studies,” Giedd said, “one thing that seems especially intriguing is this notion of modeling . . . that the brain is pretty adept at learning by example. As parents, we teach a lot when we don’t even know we’re teaching, just by showing how we treat our spouses, how we treat other people, what we talk about in the car on the way home. . . . Things that a parent says in the car can stick with them for years. They’re listening,” he said, “even though it may appear they’re not.”

So, what can we do to change our kids? “Well, start with yourself in terms of what you show by example,” Giedd advised. ■

Health Capsules

Getting Enough Sleep

Teens tend to get a lot less sleep once school starts. Without enough sleep, their performance in class and after-school activities can suffer, and their risk for sports-related and other injuries increases. Behind the wheel, they can be deadly.

"Young drivers, especially young men, are at high risk for serious car crashes related to drowsy driving," Dr. Carl E. Hunt, director of NIH's National Center on Sleep Disorders Research, says. "Unfortunately, many teens regularly sacrifice hours of sleep to

accommodate life's increasing demands—school work, jobs, extracurricular activities and socializing—at a time when maturational changes delay the natural timing of feeling tired in the evening."

Both the body and mind need sleep. People who don't get enough sleep have more memory lapses and are more likely to develop behavioral problems and moodiness. Recent research even links disrupted sleep patterns with excessive weight gain and metabolic syndrome, a cluster of conditions that increases the risk of heart disease and stroke.

Along with pencils, binders and backpacks, make adequate nighttime sleep a "back to school" priority. Experts recommend at least nine hours of sleep per night for adolescents as well as younger, school-aged children for their health, safety and best performance in school and other activities. ■



Wise Choices Sleep Tips

- Set a regular time for bed each night and stick to it.
- Establish a relaxing bedtime routine.
- Avoid big meals close to bedtime.
- Avoid caffeine less than six hours before bedtime.

Dangerous Steroid Use

It's not just major league athletes who are taking shortcuts to bulking up these days. A recent survey supported by NIH's National Institute on Drug Abuse (NIDA) found that approximately 3.4% of high school seniors have used anabolic steroids—synthetic versions of the primary male sex hormone testosterone. Teens may take anabolic steroids in the hopes of looking more muscular or enhancing certain types of performance, but these are dangerous drugs that can cause a host of severe, long-lasting and sometimes irreversible health effects.

Anabolic steroids promote the growth of skeletal muscle and the development of male sexual characteristics. Doctors prescribe

them to treat delayed puberty, some types of impotence and wasting of the body caused by HIV infection or other diseases.

People take steroids orally or inject them, typically in cycles of weeks or months (referred to as "cycling") rather than continuously. Those who abuse steroids typically "stack" the drugs, taking two or more different steroids, mixing oral and/or injectable types and sometimes even including compounds that are designed for veterinary use.

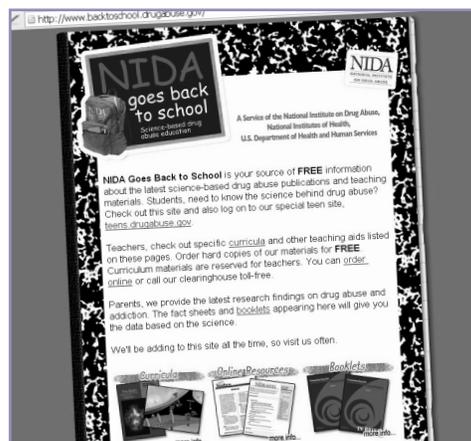
Abuse of anabolic steroids can lead to serious health problems, some irreversible. Studies show that, over time, abuse of steroids is associated with higher risks for heart attacks and strokes and increased risk of liver problems. It can also cause undesirable body changes, including breast development and genital shrinking in men, male characteristics like facial hair or a deeper voice in women,



Featured Web Site NIDA Back to School

www.backtoschool.drugabuse.gov

Free information for students, parents and teachers featuring the latest science-based drug abuse publications and teaching materials. *From NIH's National Institute on Drug Abuse.*



and acne and hair loss in both sexes. People who abuse steroids may exhibit aggression and extreme mood swings and delusions, sometimes leading to violent behavior. Those who inject steroids also run the added risk of contracting or transmitting HIV/AIDS or hepatitis, which causes serious damage to the liver.

Ironically, teens who abuse steroids may never reach their full adult height. The body is programmed to stop growing after puberty. When hormone levels reach a certain point, the body thinks it's already gone through puberty, so bones get the message to stop growing way too soon.

Parents aiming to prevent steroid abuse in their teens may find that a balanced approach to talking about both the risks and benefits of anabolic steroid use is most effective for convincing them about steroids' negative effects. It's much healthier to build up muscle the natural way, by eating right and exercising. ■



www.nhlbi.nih.gov/sleep



teens.drugabuse.gov/facts/facts_ster1.asp