Inhalants are breathed in through the nose or mouth in a variety of ways. Abusers initially inhale deeply, followed by taking several shorter breaths. Abusers may inhale by huffing chemical vapors directly from open containers or by huffing fumes from rags that are soaked in a chemical substance, such as nail polish remover.

In a practice known as bagging, fumes are inhaled from substances sprayed or deposited inside a paper or plastic bag. With bagging, inhaled air is re-breathed and resulting hypoxia and hypercapnia may add to the disorienting effects of the solvent. Other methods include spraying aerosols directly into the nose or mouth or pouring inhalants onto the user's collar, sleeves, or cuffs and sniffing them over a period of time. The fumes may also be discharged into small containers, such as soda cans, and then inhaled from the can. There are more than 1,000 products that are dangerous when inhaled. The chemical compound, toluene, an industrial solvent, is found in the most commonly abused inhalants.

**WHO IS AT RISK?** An estimated 3-4% of American teenagers abuse inhalants on a regular basis. By the 8th grade, it is estimated that one in five children will have used inhalants. Inhalant abuse often appears before the onset of other drug use, including tobacco or alcohol use. The incidence of inhalant abuse is highest in the 12 to 17 age group, followed by 18 to 25 year olds. Experimental use is equally common in males and females, but chronic use is most common in males. White children are more likely to abuse inhalants. Users can get “high” several times over a short period because inhalants are short-acting, but have a rapid onset. Inhalant abuse is especially attractive to teens who, characteristically, don’t like delayed gratification – the instant “high” is appealing. Additionally, products abused are legal, readily available, inexpensive and easy to hide. Inhalant abusers often have emotional problems, especially anger, rebellion, anxiety, depression and a low self-esteem.

**TYPES OF INHALANTS**

There are four general categories of inhalants - volatile solvents, aerosols, gases, and nitrites, and are based on the forms in which they are often found in household, industrial, and medical products. Nitrites often are considered a special class of inhalants.
Unlike most other inhalants, which act directly on the central nervous system (CNS), nitrates act primarily to dilate blood vessels and relax the muscles. While other inhalants are used to elevate mood, nitrates, also called “poppers” or “snappers” are used primarily as sexual enhancers.

Additionally, designer drugs, such as “Bath salts”, bearing innocent-sounding names, such as “Bliss” and “Tranquility”, are little packets or containers of powder being sold at some truck stops, gas stations, and online. They aren’t bath salts, at all. They are dangerous synthetic stimulants. Inhaling the white powder may cause hallucinations, paranoia and psychotic seizures.

**Volatile solvents** are liquids that vaporize at room temperature. They are found in a multitude of inexpensive, easily available products used for common household and industrial purposes. Model airplane glue, rubber cement, household glue, Super glue® type correction fluid and thinner (White Out®), toxic felt tip markers, butane lighter fluid, gasoline and exhaust, carburetor cleaner, octane booster, and air-conditioning refrigerant (freon®).

**Aerosols** are sprays that contain propellants and solvents. They include spray paints, spray deodorant and hair sprays, vegetable oil sprays for cooking, and fabric protector sprays. In certain parts of the country, for example, Texas, “Texas shoeshine,” a shoe-shining spray containing the chemical, toluene, is a local favorite.

**Gases** include medical anesthetics, as well as gases used in household or commercial products. Medical anesthetics include ether, chloroform, halothane, and nitrous oxide (commonly called “laughing gas”). Nitrous oxide is the most abused of these gases and can be found in whipped cream dispensers and products that boost octane levels in racing cars. Other household or commercial products containing gases include butane lighters, propane tanks, and refrigerants.

**What Inhalants Do To The Body:** Inhalants are physically and psychologically addicting, and are often inhaled alone, often at home. Users suffer withdrawal symptoms, which may last for weeks. Nearly all inhalants produce effects similar to anesthetics, which slow down the body’s function. Depending on the amount inhaled, the user can experience slight stimulation, a feeling of less inhibition or loss of consciousness. Sudden cardiac death, also called **Sudden Sniffing Death Syndrome** (SSDS), occurring from fatal cardiac arrhythmias, during or shortly after huffing, can also occur. Nearly 25% of inhalant abusers who die of SSDS have no history of previous inhalant abuse - they are first-time users. Other causes of death include asphyxiation, aspiration, or suffocation. Inhalant abuse can also be fatal in a number of other ways. Motor vehicle accidents, falls and other traumatic injuries (while “high” on inhalants) are common. Others die from suffocation, burns, choking on their own vomit, and suicide.

**Recognition of Inhalant Abuse:** The teen who is huffing may present with a variety of symptoms depending on the duration and amount of toluene in the vapor or gas that was inhaled. Acute inhalant abuse findings may include paint or stains on the face, hands or clothing.

Mucosal irritation - burning mouth, red eyes and throat, is also a common finding. Toluene poisoning has a presentation similar to alcohol intoxication, such as dizziness, balance problems, slurred speech, decreased level of consciousness, and confusion. Twenty percent of inhaled toluene is expired from the lungs, unchanged. Therefore, the patient’s breath, as well as hair and clothing, may have a distinctive sweet smelling odor.

Some substances chemically block the oxygen carrying capacity of the blood. Therefore, the patient may be short of breath, wheezing, tachypneic and/or cyanotic. The patient may also be experiencing nausea, vomiting and abdominal pain.

With chronic abuse, many inhalants are thought to dissolve the protective myelin sheath that surround neurons - brain cells. Cellular death in the cerebral cortex causes permanent personality changes, memory impairment, hallucinations and learning disabilities. Inhalant-related damage of the cerebellum, the center that controls balance and coordination, results in loss of coordination and slurred speech. Chronic abusers experience tremors and uncontrollable shaking. Toluene inhalation also destroys cells that relay sound to the brain. Chronic abusers can become deaf. It may also affect the ophthalmic nerve, resulting in sight problems, including blindness.

**Chronic inhalation of nitrous oxide (whipped cream propellant) and hexane (found in some glues and camp stove fuels) results in damage to the peripheral nerves. Symptoms can include numbness, a tingling sensation or total paralysis. Chronic use can lead to liver, lung, and kidney problems, as well as muscle wasting.**

**Implications**

Diagnosis of inhalant abuse is difficult and relies almost entirely on a high index of suspicion. No specific laboratory tests confirm solvent inhalation. Most parents (and adolescents) are unaware of the extreme dangers of huffing inhalants. Although many parents are appropriately concerned about illicit drugs, such as marijuana and cocaine, they often are unaware of or ignore the dangers posed from inhalant abuse, which is often a gateway to other forms of substance abuse.

Most of the time parents are alert if they have alcohol missing in the house. But it’s inconceivable that parents can keep track of household items. Instead, parents should be educated about the prevalence of huffing and warning signs of inhalant abuse. Although the incidence of huffing is highest in adolescence, it often starts innocently in children, even as young a 6 years old. Parents should be encouraged to talk with their children about huffing. Speaking to children’s schools regarding an anti-inhalant abuse program is also helpful. Experts believe school anti-drug programs don't focus on inhalants. In fact, teens report huffing school supplies, such as toxic markers, during class.

**Inhalant abuse can cause serious, permanent health problems, as well as death. It is a nationwide problem, yet it often occurs without detection. Healthcare providers play a key role in education to prevent and identify inhalant abuse.**

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1. Inhalant abuse is the intentional breathing of gas or vapors with the purpose of reaching a “high.”
   a. True
   b. False

2. Which of the following is NOT a common method used for huffing?
   a. Inhaling chemical vapors directly from an open container.
   b. Breathing rags soaked in a substance and then held to the face.
   c. Drinking substances that have been discharged into a container.
   d. Inhaling fumes from substances sprayed into a bag.

3. Common products used as inhalants include all of the following EXCEPT:
   a. hairspray.
   b. soap.
   c. spot remover.
   d. vegetable cooking spray.

4. What chemical compound is found in the most commonly abused inhalants?
   a. Toluene
   b. Benzene
   c. Nitrous oxide
   d. Hexane

5. Jeff, 13 years old, appears intoxicated. Which of the following would specifically cause you to suspect inhalant abuse?
   a. Slurred speech
   b. Loss of coordination
   c. Red eyes
   d. Paint on clothing
6. Inhalants are likely to be abused after the teen experiments with other drugs, such as cocaine.
   a. True
   b. False

7. Inhalants are commonly used by adolescents for all of the following reasons EXCEPT that they are:
   a. inexpensive.
   b. slow-acting.
   c. easy to hide.
   d. readily available.

8. Adolescents may die the first time they abuse an inhalant.
   a. True
   b. False

9. Which of the following is an acute sign of inhalant abuse?
   a. Liver damage
   b. A sweet smelling odor
   c. Total paralysis
   d. Memory impairment

10. Many inhalants are thought to dissolve the protective myelin sheath that surrounds brain cells.
    a. True
    b. False