MEDTOX® Journal

Public Safety Substance Abuse Newsletter

October 2009

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Would you like the opportunity to win a free Apple iPod? Answer the question below for your chance to win. One(1) winner will be selected from all correct responses.

You run 100 instant test devices, of those 100, ten (10) screen positive. You send those 10 samples to the laboratory for confirmation. The 10 samples are confirmed as positive by the laboratory. What is the accuracy rate of the instant test devices?

This is NOT a trick question.
Send your answers to: MEDTOX Question of the Month

The correct answer will be posted in next months newsletter.

"Dusting": A Rising Trend in Youth Inhalant Drug Abuse

Anonymous posts on an inhalant website message board:

***Blogger 1*:** "I was first introduced to computer duster when some friends of mine were inhaling it one night while I was driving them around. I'd never done a drug in my entire life, but this made me very curious. I've gotten a throat infection from it and my friend has nosebleeds. We also experience headaches. I've had a friend crash his car while on it. I have another friend who has seizures when he does it." "We are trying to stop, it's just hard. I have a doctor's appointment coming up and I know they're going to do blood work. How long does it take the chemicals to work their way out of your bloodstream?"

***Blogger*:** "Your last question made me sad; 'how long does it take for this stuff to be out of your system?"

***Respondent*:** "Sounds like you're worried about getting caught. No comment.[1]"

Inhalants are breathable chemical vapors that users "huff" to get a psychoactive high that produce mind-altering effects. A variety of products in the household and the workplace are easily accessible and often used by young people as a substitute for alcohol. Huffing has been a manner of drug use and addiction for generations. In the 50s and 60s the huffing of gasoline, paint and glue was widespread. In the 70s following the proliferation of potent marijuana, huffing became less popular. But over time, the search for quick and cheap drug highs has kept huffing around. Huffing is easy, dangerously easy. Volatile solvents have played a starring role in huffing, particularly toluene. Gasoline was and still is a reliable agent for huffing. The chemicals of the past are being eclipsed by the use of a new genre of inhalant. The inhalants of the new millennium are not volatile, not regulated and they're legal to possess.

A new trend in huffing is quickly on the rise; a practice known as "dusting." Dusting is the dangerous abuse of computer dust-off cleaning products. Most dusters contain one of the following chemicals: tetrafluoroethane (HFC-134a) or difluoroethane (HFC-152a). Dusting products are commonly found in

department stores such as Wal-Mart and Target. Users often shop to compare prices in stores and online. Abusers sometimes share cans of product at social events like dances and concerts. Frequent clearance sales on electronic parts cleaners at office supply chain stores make these types of inhalants a cheap and easy way to get high.

Effects of dusting resemble alcohol intoxication including mild stimulation, loss of inhibitions, and distorted perceptions. Physical signs of abuse include the following: glassy eyes, slurred speech, loss of appetite, problems in school, sores around the nose and mouth, and chemical odors on the breath or clothing. It's important to notice material signs of abuse because intoxication occurs quickly and lasts only a few minutes, making signs of impairment difficult to spot.

Young children and adolescents are the most likely to abuse inhalants. Because inhalants are so easily accessible, they tend to be a first drug of abuse. Although huffing usually begins around age 10 or 11, children as young as 6 begin experimenting with inhalants. Recent studies tend to indicate the practice of dusting also extends into young adulthood.

Over 2.1 million children ages 12-17 have used an inhalant to get high. Approximately 1 school-aged child out of 5 in America has intentionally abused a common household product to get high by the time they reach the 8th grade. According to a 2008 report of The National Survey on Drug Use and Health, (www.oas.samhsa.gov/2k8/inhalants/inhalants.htm) inhalants were the most frequently reported class of illicit drugs used in the preceding year among adolescents aged 12 and 13[2].

High blood concentrations of inhalants can cause death from suffocation by displacing oxygen in the lungs and in the central nervous system so that breathing ceases. Ironically, it is the sensation caused by oxygen starvation that is euphoric to the "duster." By inhaling these products, abusers push themselves to the limits of suffocation. As an abuser tips over into unconsciousness, it is possible for a slumping body to inadvertently depress a can's spray button down and open it. As a result, gas continues to stream into the person's airway.

This phenomenon has led to the discovery of children who were found dead sitting upright with a tube dangling from their lips. Some inhalant abusers have taken to the use of PAM (kitchen spray) and hair spray in order to experience similar effects. Oftentimes, this sort of abuser will aim the plastic straw attachment down their throat for a more direct spray of gas. All of these practices are inherently dangerous and can lead to sudden death. Heart failure is often the cause of what doctors call "sudden sniffing death" which can occur within minutes of a single session of inhalant use, even by an otherwise healthy young person. Lack of oxygen to parts of the brain can lead to memory disturbances.

Some users have remarked that they couldn't remember when or where they last used a dusting product, but they had the evidence in their bedroom or car of expended cans and discarded plastic tubes that led them to believe that they had in fact gotten high sometime in the recent past. In fact, inappropriate numbers of discarded dusting canisters, red plastic tubes, (straws) and packaging are blatant signs to parents that a child may be engaging in this drug abuse. Trashcans, book bags, and dresser drawers that contain used and unused canisters are clear signs that a child is engaged in inhalant abuse.

A single session of repeated inhalations can cause permanent damage to a variety of systems. Organs affected by use include the following: lungs, brain, liver, heart, and kidneys. Harmful, irreversible effects may result, such as hearing loss, peripheral neuropathies or limb spasms, and central nervous system or brain damage. For the periodic or social user of these drugs, lesions in the mouth and throat can occur. The

propellants in the cans may dry out the throat and nasal passages. Abusers commonly report sudden nosebleeds. A non-productive dry hacking cough may also ensue from the use of these drugs; dry mouth and a raspy voice may also be experienced. Parents may even notice a change in the pitch of a child's voice as a result of chronic use. Depending on how often a product is used and how and where the gas is directed into the oral cavity, damage may be done to a user's vocal chords.

Blogger 2: "I know people who do it so much they can't remember the year, when sober. Or they don't remember how to spell simple words. Or are dead [1]."

Research has shown inhalant use is linked to depression. Depressed teens are three times more likely to engage in this drug use than kids who are not depressed[3]. A recent federal government report reports that adolescents who used inhalants were more likely to have a co-occurring mental health problem. 45% of inhalant abusers had a concurrent psychiatric disorder.

Dusting can become an addictive disorder. Although physical dependency is unlikely to occur with the abuse of these drugs, serious addictive behaviors may ensue following a period of chronic use. Because the effects of these drugs are short-lived, users will engage in patterns of use where they may spray up to 10 times an hour. A fatigue develops with frequent use of the drug. Some dusters report, "crashing" following a period of concentrated activity. An inhalant abuser may even exhibit some of the signs seen with abusers of methamphetamine and central nervous stimulant drugs. Weight loss, apathy, social isolation, and paranoia may occur in some cases.

For DAR or DRE trained readers, inhalants can be identified by their distinctive symptoms they present with. Typically these drugs cause users to experience nystagmus and non-convergence. Alcohol-like breath odor may be present, as some inhalants contain odorizers or other components that have distinctive fragrances. An examination of the oral cavity of a suspected user may reveal irritation up to and including oral lesions. (canker-looking sores and ulcerations) Some evaluators have reported damage to dental surfaces as well, conditions that appear similar to mild cases of "meth mouth." Chronic users of these drugs are prone to seizures and should be evaluated by a physician as a part of a comprehensive effort towards rehabilitation. Questions about inhalant symptomology can be directed to the DARS hotline at darsprogram@mac.com.

[1] Posted to Inhalant.org: http://messageboard.inhalant.org/post?id=2106068
[2] United States Substance Abuse and Mental Health Services Administration. National survey on drug use and health: inhalant use across the adolescent years. Washington, DC: Government Printing Office; 2008.
[3] United States Substance Abuse and Mental Health Services Administration. SAMHSA News: Statistics show young teens at risk. Volume 16:2; 2008

Developments in the Use of Buprenorphine (Suboxone & Subutex) in Addiction

Recent editions of the DARS Newsletter have explored the expanding role of buprenorphine in the treatment of opiate addicts. The DARS Program continues to receive frequent inquiries about buprenorphine, especially as a therapy for opiate dependency. The main ingredient in Suboxone and Subutex, buprenorphine is a mixed property (mu/sigma receptor antagonist/kappa receptor agonist) opiate that is uniquely fortuitous towards detoxification from opioid dependency. Following FDA approval for use in detoxification from opiate dependency, (heroin, oxycodone, hydrocodone etc.) the drug is now a choice for opiate replacement therapy. Buprenorphine is the first real pharmaceutical challenge to the use of methadone in substitute/replacement therapy for cases of opiate dependency and addiction. Where buprenorphine enjoys regional popularity, the drug is frequently chosen over methadone in the role of drug maintenance.
Methadone is a powerful narcotic that exhibits receptor affinities that are similar to morphine and other powerful analgesic medications. For half a century, methadone has been used as replacement therapy for patients addicted to heroin. Methadone's long half-life makes it a logical choice as a replacement for heroin addiction. But methadone has a split personality. Important as a pharmaceutical tool in treating opiate dependency, it regularly pops up on the street as a drug of abuse. There are many opiate addicts who seek out methadone because it causes a distinct euphoria. In some parts of the country, methadone is frequently added with other depressant drugs to create a euphoria that transcends heroin. For instance, in New York City, many addicts who live on the streets merge methadone with a benzodiazepine, Xanax. This drug combination creates a uniquely potent drug high. It also can lead to a dual drug dependency that can be extremely difficult to detoxify. But for those who are strictly abiding by the terms of a methadone maintenance regimen, there is an on-going potential for abuse and relapse. A methadone maintained opiate addict could easily add another narcotic and achieve a euphoria that is reminiscent of a heroin high. In fact, concomitant use of heroin while engaged in methadone maintenance is common. Opiate dependency is complicated and not easy to treat.
In the shadow of methadone maintenance has arisen Suboxone maintenance. In an off-label use of Suboxone, physicians have begun placing some opiate addicts on long-term regimens with the drug. Suboxone is a logical choice for opiate replacement therapy for addicts who have had multiple relapses and who present with cravings that are poorly controlled. Each patient is different, so there is no exact dosing formula for Suboxone maintenance.

Suboxone's unique pharmacology achieves two important objectives in the treatment of opiate dependency. First, the drug locks down opiate receptors and reduces related activity that spurs cravings. Second, the affinity of Suboxone for opiate receptors prevents access by other powerful agonists such as heroin and oxycodone. Should an addict lurch to relapse, the effort would be wasted because the receptors that are key to the high are blockaded. As a long acting drug, Suboxone takes time to be metabolized and eliminated. An addict intent on relapse would be hard pressed to wait out Suboxone in order to open his/her opiate receptors back up. Further, someone participating in a Suboxone maintenance regimen would have to carefully titrate off of the drug to avoid the potential for menacing opiate withdrawals. As it is, buprenorphine withdrawals are said to be as nasty as methadone and morphine.

For readers who work with opiate addict populations, it is likely that there will be growing populations of patients who are engaged in long-term Suboxone maintenance therapy. In comparison to methadone, Suboxone is quite expensive. So its use in public treatment programs may be limited. Nevertheless,

Suboxone's unique pharmacology makes it a pivotal tool that can be used to treat opiate addictions that have proven to be resistant to conventional methods of treatment. And who knows what the future may hold. Suboxone maintenance may at some point in the future become "the" conventional method of opiate treatment.

DARS HOTLINE CALL: Utilization of Gabapentin (Neurontin) to Reduce Cravings in Methamphetamine Addiction

A recent call was directed to the MEDTOX DAR hotline from a client who operates several sober living homes in California. The client said that many of her residents were in recovery from methamphetamine dependency. Some were identified as being dual diagnosis. She remarked that one of the greatest challenges she and her residents grapple with is the power and frequency of drug cravings. Methamphetamine cravings are uniquely powerful and can be triggered by what seem to be innocuous situations and events of life. For instance, a recovering methamphetamine addict who drives past a neighborhood park where he/she used to score drugs may stir up memories of the drug. Memories then lead to cravings, up to a point of relapse. Despite the best intentions to remain sober, drug cravings can easily overcome an addict who is unprepared for them. Methamphetamine is not unique in this way. Most addictive drugs are capable of stirring up cravings that can quickly overwhelm people and lead to relapse. Anyone who has quit smoking can attest to the influence that cigarette cravings have on the willingness to not smoke. Reducing the potency and frequency of drug cravings is a productive means of controlling rates of relapse.

The caller to the DAR Hotline said that a handful of her recovering methamphetamine addict residents had been prescribed gabapentin, a medication also known by its original product name of Neurontin. She was concerned that gabapentin was itself an addictive drug and that her clients were relying on the drug as a chemical crutch to help them limp through sobriety. She was also concerned that the use of gabapentin could lead to its diversion and abuse by other residents in her homes. She wanted to know why doctors were prescribing gabapentin and if the drug posed its own unique threat as a drug of abuse.

The DAR medical staff conferred with the caller and assured her that the utilization of gabapentin in treatment of methamphetamine addiction is not new. Gabapentin is a prescription medicine. Gabapentin is in a class of drugs that are used to treat seizure disorders and neuropathic pain. Gabapentin is a close chemical cousin to the inhibitory amino acid transmitter gamma amino butyric acid. A pro-drug relative called pre-gabalin is also available by prescription; it's regularly sold under the product name of Gabatril. Gabapentin's potency stems from its chemical similarity to the neurotransmitter gamma amino butyric acid. Gabapentin has had notable success in the treatment of various forms of chronic pain. It seems that gabapentin reduces the spurious firing of pain messages that emanate from nerve-damaged areas of the body. By reducing the frequency of electrical activity in certain types of nerve cells, overall levels of pain can be reduced or in some cases eliminated. This chemical corralling action of gabapentin makes it useful in fighting addiction.

For those people in recovery, drug cravings are substantially controlled by the amount of excitability in neurotransmitter systems that were targeted or damaged by their drug of abuse. In methamphetamine abuse, the neurotransmitter dopamine is the chemical that mediates the euphoria and energy that the drug

generates. The various components of the nervous system that contain dopamine nerve cells remain in a hyper-excited state even after sobriety is attained. A chemical state of chronic agitation creates a visceral sense of need for the drug. These feelings for the addict are uncomfortable. From an addict's point of view and experience, the discomfort can only be relieved by a return to the original culprit. When this happens, relapse is just around the corner.

Like other membrane stabilizing drugs (Tegretol, Tripeptal) and calcium-channel blocking drugs (metoprolol), gabapentin works to slow down the rate of electrical firing in agitated transmitter systems. In doing so, gabapentin can reduce overall levels of drug cravings. To date, scientific study indicates that gabapentin is effective in this role. More research and inquiry needs to take place though. But going for now, it appears likely that gabapentin will continue to be used as an adjunct in the treatment of drug cravings, especially those experienced in recovery from methamphetamine addiction. Given their shared impacts on dopaminergic components of the central nervous system, it appears that gabapentin can be effective in treatment of cocaine and alcohol related cravings as well. It may be that some readers have clients or patients who have been prescribed the drug to treat cravings associated with those addictions.

As to the caller's concerns that gabapentin may be a drug of abuse in its own right, the evidence and experiences to date tend to discount that fear. Although there have been clusters of gabapentin abuse in parts of the country, the drug has not evolved into a street drug threat. There is no underground market for gabapentin. To be clinically effective, gabapentin must be taken in substantial doses (1000 mg or more daily) and must be taken regularly in order for it to reach significant levels in the blood. The drug's central effects are mildly sedating. Patients taking the drug to control drug cravings may be told to do so only during an acute period of withdrawal experienced in detoxification. Others may be prescribed the drug for a year or more according to the degree and persistence of their cravings.

The caller in this Hotline inquiry chose to allow the residents in question to proceed with their gabapentin treatment regimen. She called back several days later to inform us that she discovered that another resident in an unrelated facility had been prescribed the drug to treat a resistant form of bi-polar disorder. The caller was concerned that the patient had been prescribed too much of the drug and wanted to know if she should call the resident's psychiatrist. The resident was taking 3000 mg daily. The DAR medical team advised her that 3000 mg is a modest amount of gabapentin and that it probably was not worth her time to contact the doctor.

Gabapentin is eliminated from the bloodstream unchanged. The drug will not interfere with onsite (instant) drug testing kits. The drug is not a benzodiazepine, nor is it a controlled substance. Claims that gabapentin is a facilitator of false positive drug tests for THC and/or benzodiazepines are unfounded.

The MEDTOX Hotline receives frequent calls from clients who inquire about the use of psychotropic and anti-seizure drugs in the use of detoxification and management of cravings. Although there is a short list of drugs prescribed for this purpose, there are dozens of possible alternative drugs that physicians can turn to should a patient show sensitivity or a lack of response to a first choice. MEDTOX clients can obtain more information about these drugs by emailing the DARS Hotline at DARSProgram@mac.com

Newsletter Mystery Drug: A Real Knockout

The subject of this month's name that drug is a substance that periodically percolates into our nightly news broadcasts. For the benefit of those who are trained in the Drug Abuse Recognition (DAR) technique, this drug is classified as a central nervous system depressant. Someone under the influence of this drug will present with symptoms associated with CNS depressant use. The drug has a long and storied history that dates back into the mid 1800s. In those days, chemists were prone to manipulate ethanol in efforts to potentiate and vary the effects of alcohol. This drug is a product of such efforts. Despite its association with addiction and dependency, this drug is manufactured today and is available in most medical systems worldwide. In America, the drug is a controlled substance assigned to Schedule IV and can only be legally obtained by prescription.

This drug's principal medical use is as a treatment for insomnia. It's a member of a sedative hypnotic class of drugs that technically includes the barbiturates (Seconal et. al), the benzodiazepines (Valium et. al) and imidazopyradines (Ambien et. al). The drug is available in liquid, capsule and suppository forms. Chronic use of this drug can lead to drug dependency. There have been recent cases where the drug has been abused and sold on the black market. Today, the drug is sometimes implicated as a chemical agent in drug facilitated sexual assault and chemical date rape. The drug is soluble in both water and alcohol; it is colorless and odorless in its pure form. As a treatment for insomnia, the drug was eclipsed by the emergence of the barbiturates and benzodiazepine. Nevertheless, the drug remained as an alternative treatment for patients who were less than responsive to the effects of more modern pharmaceutical preparations.

This month's drug is not GHB, although GHB is a frequently utilized intoxicant in drug facilitated sexual assault. This month's drug is manufactured via the chlorination of alcohol (ethanol). A famous German chemist discovered the drug. It quickly became popular, as the organic process for making it was easy to undertake. Early on, the drug was widely "prescribed" for various disorders where sedatives and sleeping tonics seemed warranted. As is the case with more modern sedatives and sleep-aids, chronic use of the drug led to addiction and its sequelae of bad behaviors.

This month's drug has been the subject of several Hollywood movie dramas, sometimes being depicted in the armamentarium of spies and covert agents. Although it's not entirely clear how this drug's reputation was first established, it is believed to have gotten its start with nefarious behaviors found in turn of the 20th century Chicago area barrooms. This drug's street name is associated with the name of a person who first recognized its value as means of picking pockets. The non-medical uses for this drug expanded. Bar maids of ill repute were said to have used this drug to increase the tips they received from their customers. In most cases, the patrons had not consented to the drug's use.

Michael Finn is alleged to have been a petty criminal and corrupt Chicago bartender who first discovered how this month's drug could fit into criminal enterprise. Rumor and loosely written history has it that Finn and a platoon of confederate prostitutes used this month's drug to spike the alcoholic beverages of male customers. As an odorless and colorless liquid, the drug could be covertly dissolved into an unsuspecting person's drink. The sedative effects of the drug quickly knocked out the unwitting victim. The now

unconscious customer would then be robbed and then dumped on the roadside to later awake with no memory of what happened. For spies, the drug performed similarly well; bad guys and agent provocateurs could be disabled by spiking their drinks with this month's drug.

To this day, this month's drug is called a Mickey Finn, a gangsterization of Michael Finn's name. The most common prescription form of the drug is Noctec; generically, the drug is called chloral hydrate. In syrup form, the average clinical dose ranges from 50-100 mg/ml. In suppository form, the drug ranges from 300-600 mg in dose. Tolerance to the effects of choral hydrate will occur over time. Overdoses are rare, but they do occur. Chronic users of this drug frequently experience gastritis and rebound insomnia. Withdrawal from choral hydrate dependency can cause symptoms similar to those experienced with the use of benzodiazepines. Some physicians have been known to partner choral hydrate with narcotics for better control of post-operative pain. The drug is fairly well tolerated and is sometimes warranted in the treatment of the elderly.

For DAR and DRE trained personnel, choral hydrate intoxication will present identically to those cases involving the use of zolpidem (Ambien). Most of these cases will present involving daytime use and sedation. The DAR/DRE exam will reveal symptoms that are very consistent with alcohol intoxication, save for the telltale odor. Questions that readers may have about choral hydrate (Noctec) can be directed to the DARS Hotline at DARSProgram@mac.com.

Name: Trichlorethanol (chloral hydrate)

MEDTOX Introduces LeadTech Wipes™

Numerous positive steps have been taken over the past decade to identify and highlight sources of lead (and other heavy metal) exposure, but it is well documented that dangers still remain in a variety of work settings, in addition to the home. Field studies have demon-strated that washing with common soap and water does not effectively re-move toxic lead and other heavy metals from the hands and exposed skin.

People with contaminated hands are at a significant risk of transferring these residues to their food and mouth and people with whom they have direct contact leading to poten-tially detrimental health effects. MEDTOX recently began manufacturing and marketing Lead-Tech Wipes™, a product designed specifically to target and remove lead and other toxic metals from the skin and other surfaces. There are countless products on the market that are able to clean the hands, but LeadTech Wipes have the unique ability to decontaminate them by removing 99% of lead and other toxic metals.

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