Synthetic Stimulant Drugs

Charlie Reznikoff
Feb 2012
Drugs

2C-E: Trevor Robinson mourned after overdose
[UPDATE]

By Jessica Lussenhop Fri., Mar. 18 2011 at 3:39 PM
Categories: Drugs

As some of the victims of a mass 2C-E overdose are leaving the hospital, more details are emerging about what happened before 19-year-old Trevor Robinson died.

"Trevor's the kind of guy where he likes to up his friends and do more than they can do," says Stephanie Larsin, a longtime friend. "I think he just took it too far."

The drug, also known as Europa, is a hallucinogen and is currently legal. It's a cousin of 2C-I, which is illegal. Neither substance has ever been linked to a death before.

A teenage boy decided to throw a house party in Blaine to celebrate spring break. He invited Robinson--a well-liked first-year college student--his friends, and several others. There was drinking and at some point, a guest who'd bought some 2C-E online began...
Trial set in case of Blaine man charged with supplying synthetic drug

Updated: February 8, 2012 - 9:02 PM

The final pretrial hearing in the case of a man charged with supplying the synthetic drug that killed a Blaine man last year produced no significant challenges that would delay the trial's start in April.

Timothy LaMere, 22, is accused of supplying a drug that killed Trevor Robinson, 19. Court documents say Robinson took the drug 2C-E at a party in Blaine in March and died hours later. Ten others also took the drug and became ill.

LaMere is scheduled for trial April 16. He has been in jail since March after he was charged with felony third-degree murder.

The case drew the scrutiny of law enforcement and politicians nationwide as it heightened concerns about synthetic drugs.

Web-based retailers have become an easy place to obtain synthetic drugs, even though many states, including Minnesota, have recently started enforcing laws aimed at reducing access to so-called research chemicals, bath salts and other synthetic substances.

Authorities say LaMere bought the drug over the Internet and brought it to the party.

He and Robinson weren't close friends, but LaMere had lived with Robinson's family for a few months, relatives of Robinson said.

According to preliminary autopsy reports, Robinson died from cardiac arrest attributed to toxicity associated with the presence of drugs in the "2C" family. The final autopsy is complete but hasn't been made public.
A Lethal Dose: The war on synthetic drugs

They carry names like Bliss and TranQuility, but don't be fooled: Synthetic drugs can be deadly. From a small town in Oklahoma to suburban Minnesota, these products have generated unusual violence and physical suffering. States have responded by banning chemicals found in these drugs, but manufacturers remain one step ahead of the law.

Blaine party survivors: 'All of us could have died that night'

Four young people talk about the synthetic drug that killed their friend and changed their lives.

Updated: Dec. 19, 2011 - 04:13 PM

Survivors of Blaine party tell their stories

A Lethal Dose: The war on synthetic drugs
How many designer drugs are there?
Related drugs

• Hallucinogen (psychedelic)
• Entactogen
• Stimulant
Monoamine spectrum
(Example: Phenethylamines)

Stimulant
Amphetamine
Adrenaline

Entactogen
MDMA
mixture

Psychedelic
Mescaline
Serotonin
Entactogen
(= Empathogen
  = Entheogen)
cognition

perception ↔ mood
Drug-Induced Psychosis

- **Hallucinogens**—LSD, shrooms, DMT
- **Entactogens**—variant of stimulant, XTC
- **Stimulants**—cocaine, methamphetamines
- **Deliriants**—psyche meds, locoweed
- **Dissociatives**—pcp, dxm, ketamine
- **Cannabinoids**—MJ, hash, synthetics (incense)
- **Sedative withdrawal**—xanax, klonipin, alcohol
Stimulant Binges
Stimulant toxicity

- Increased movement
- Rapid speech
- Emotionally unstable
- Skin picking
- Dilated pupils
- Increase in blood pressure, heart rate and body temperature
Overdose

- Stroke, heart attack
- Hyperthermia
- Muscle break down
- Liver failure, kidney failure
- Seizure
- Severe high blood pressure
- Low sodium
Sexual Behavior

• 50% stimulant addicts directly associate sexual behavior with drug use and vice versa
• Sexual behavior often becomes bizarre or includes behaviors outside of their sober norm
• Loss of normal (sober) sexual behavior
• High rates of HIV (in urban users)
Sexual Behavior

- Ask!
- Understand that there is tremendous shame
- Screen regularly for STIs
stimulant toxicity

Psychiatric
Legal
Medical
Social
Synthetics Examples

– Tryptamines
– Phenethylamines
– Cathinones
Synthetics Examples

- Tryptamines
  - DMT, LSD, “foxy methoxy”
- Phenethylamines
  - 2CE, 2CB
- Cathinones
  - “plant food” 4-Methylmethcathinone, mephedrone
  - “bath salts” Methyleneiodioxyxpyrovalerone, MDPV
“Bath Salts”

Amphetamine

Mephedrone

Cathinone

MDPV
Tryptamines (indoleamines)

• Found in psilocybin, DMT and melatonin
• Classic example: LSD
• More psychedelic
• Less agitation, less racing heart, less hyperthermia
Phenethylamines

- Found in nature: mescaline, chocolate
- Classic example: methamphetamine
- More adrenergic– amping the adrenaline system
- Hypertension, hyperthermia, racing heart, dilated pupils
Sasha Shulgin: Invented 230 drugs
Adrenergic Ligands

- Phenethylamine
- Methylphenethylamine
- Hydroxyphenethylamine
- Octopamine
- Norphenylephrine
- Dopamine
- Halostachine
- Synephrine
- Phenylephrine
- Methyldopamine
- Norepinephrine
- Epinephrine
Some examples of psychoactive phenethylamines

<table>
<thead>
<tr>
<th>Phenethylamines</th>
</tr>
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<tbody>
<tr>
<td><em>Psilocybin:</em> 2C-B, 2C-B-FLY, 2C-C, 2C-D, 2C-E, 2C-F, 2C-G, 2C-I, 2C-N, 2C-P, 2C-SE, 2C-T, 2C-T-2, 2C-T-4, 2C-T-7, 2C-T-8, 2C-T-9, 2C-T-13, 2C-T-15, 2C-T-17, 2C-T-21, 2C-TF, 2C-YN, Allylescaline, DESOXY, Escaline, Isoprosaline, Jimsaline, Macromerine, MEPEA, Mescaline, Metaescaline, Methallylescaline, Pros-caline, Psi-2C-T-4, TCB-2.</td>
</tr>
<tr>
<td><em>Entactogens:</em> Lophophine, MDPEA, MDMPEA.</td>
</tr>
<tr>
<td><em>Others:</em> BOH, DMPEA.</td>
</tr>
</tbody>
</table>
Anecdote from Shulgin on drug labs...
#76. MBDB
1-(Benzo[d][1,3]dioxol-5-yl)-N-methylbutan-2-amine
(±)-N-Methyl-1-(1,3-benzodioxol-5-yl)-2-butanamine
2-Methylaminol-1-(3,4-methylenedioxyphenyl)butane
α-Ethyl-N-(methyl)-1,3-benzodioxole-3-ethanamine
N-Methyl-1-(1,3-benzodioxol-8-yl)-2-aminobutane
N-Methyl-1-(1,3-benzodioxol-5-yl)-2-butilamine
N-Methyl-1-(3,4-methylenedioxyphenyl)-2-butanamine

EDEN
MB
MBDB
Methyl-J

Registry Numbers

<table>
<thead>
<tr>
<th>CAS#</th>
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<tr>
<td>[126737-12-4]</td>
<td>Freebase [136796-90-3]</td>
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<tr>
<td>R-(-)-Isomer HCl salt [103882-49-1]</td>
<td>R-(-)-Isomer freebase [103882-53-7]</td>
</tr>
<tr>
<td>S-(+)-Isomer HCl salt [103882-50-4]</td>
<td>S-(+)-Isomer freebase [103882-54-8]</td>
</tr>
</tbody>
</table>

Synthesis and Chemistry

From piperonal (with Mg turnings, 1-bromopropane, diethyl ether) to 1-(1,3-benzodioxol-5-yl)butan-1-ol. (with KHSO₅, distillation) to 1-(1,3-benzodioxol-5-yl)butene. (with H₂O₂, HCO₃⁻) to 1-(1,3-benzodioxol-5-yl)butan-2-one. (with Al foil, HgCl₂, CH₂(NH₂)₂ to (±)-N-methyl-1-(1,3-benzodioxol-5-yl)-2-butanamine (Nichols et al., 1986a).
Cathinones

• Active ingredient in Khat
• Similar to phenethylamines
• Classic example: Mephedrone, MDPV
• Currently sold in USA as “plant food”, and “bath salts”
• Methcathinone in Russian “speed ball”
Somali pirates fight over Khat in Bari region

At least three people were seriously wounded following a clash within a group of Somali pirates in Baliga areas of Bari region over Khat-narcotic leaves.

Two sea pirates and a civilian who was hit by stray bullet sustained serious injuries during the incident.

Eyewitnesses told Bar-kulan that the pirates exchanged fierce gunfire following quarrel between them over a Khat (narcotic leaves mostly chewed by Somali men) from Galkayo town.

Pirate leaders in the area successfully managed to mediate the warring pirates to curb further hostilities within their group.
Jay Bahadur wanted to know firsthand how modern pirates live and operate, so he traveled to Somalia. He spent weeks meeting with pirates and government officials.

Bahadur tells their stories, debunks myths and examines the rise of piracy off the Somali coast in his new book, *The Pirates of Somalia*.

He spent three months in Puntland, the semi-autonomous region in Somalia that's home to the modern buccaneers. But his first interview in Somalia ended early, when one of the country's most notorious pirates, Boyah, left to pursue a fix of khat, the leafy stimulant that's the drug of choice for pirates. Before he left, though, Boyah described how he went from fisherman to pirate, after the reefs where he used to hunt lobster were destroyed by foreign trawlers.

But Boyah's known for hyperbolic speech. "Boyah was the self-appointed pirate spokesman," Bahadur tells NPR's Neal Conan. "He was always great for a good quote, and he was always very willing to talk to media."

Boyah liked to claim to be responsible for the hijacking of 25 to 60 ships, "which I think is an absolutely ridiculous number," says Bahadur. Like much of the information coming out of the mouths of pirates, he says, "it's a bit exaggerated," though Boyah certainly hijacked some number of ships.
Drug Abuse Trends in
Minneapolis/St. Paul, Minnesota: 2010

Carol L. Falkowski
Drug Abuse Strategy Officer
Minnesota Department of Human Services
June 2011

Khat, a plant indigenous to East Africa and the Arabian Peninsula and used for its stimulant effects in East Africa and the Middle East, maintained its persistent presence within the Somali immigrant community in the Twin Cities. Its active ingredients, cathinone and cathine, are controlled substances in the United States. Cathinone, a Schedule I drug, is present only in the fresh leaves of the flowering plant and converts to the considerably less potent cathine in approximately 48 hours. Users chew the leaves, smoke it, or brew it in tea. Statewide, narcotics task forces seized 54,916 grams of khat in 2004 and 484,955 grams in 2010 (over 1,000 pounds). See exhibit 15. Few arrests have ensued, however, attributed in part, to lack of significant penalties for its importation. Cathinone and cathine stemming from khat plants or dried khat leaves, known as “graba,” accounted for 1.8 percent of NFLIS items in 2010 (exhibit 8).
MEPHEDRONE: THE NEW NIGHTLIFE DRUG

Known as meow meow, sunshine, drone, and bubble, the newest designer dust combines the rush of coke with the sensory bliss of ecstasy. So why is it legal in 49 states?

By Kevin Gray, Photographs by Anthony Cotsifas

August 2010 Issue
Risks
Drugs Seen In Mass Overdose Seen At Hennepin Poison Center

March 18, 2011 8:57 AM

MINNEAPOLIS (WCCO) — It’s known by several names including 2 C-E and Europa. Officials say you can buy the drug online legally and it has the same effect as the drug Ecstasy. Wednesday night it was responsible for the death of a 19-year-old man and the hospitalization of 10 other young people in Blaine.

Kirk Hughes of the Hennepin Regional Poison Center said the drug is a legal man-made hallucinogenic stimulant that can be very dangerous. He said there are drugs in the same class as 2 C-E that are controlled.

“There are some within this class, there’s something called 2 C-B, and this is something they call a Schedule 1 drug. So there is no medicinal or medical reason to use it and has a high addictive potential. So that’s already been identified,” explained Hughes.

Several other analogs are uncontrolled but they do fall under what they call a Federal Analog Act, because their so similar and are treated like they can be controlled.

According to Hughes the drug are easy to obtain on the Internet and what is being sold may not actually be what your purchasing.
Severe Methemoglobinemia and Hemolytic Anemia from Aniline Purchased as 2C-E (4-ethyl-2,5-dimethoxyphenethylamine), a Recreational Drug, on the Internet — Oregon, 2011

In August 2011, two men in Oregon drank a liquid they believed to be 2C-E (4-ethyl-2,5-dimethoxyphenethylamine), a psychoactive stimulant used as a recreational drug, after purchasing it on the Internet. Fifteen minutes after ingestion, the men became cyanotic and subsequently were treated for refractory methemoglobinemia and hemolytic anemia. The Oregon Poison Center, Oregon Public Health Division, Drug Enforcement Administration (DEA), and Food and Drug Administration (FDA) jointly investigated to determine the cause of the poisoning and identify other cases. The Oregon Poison Center and Oregon Public Health Division promptly alerted health-care providers and public health agencies and searched for additional cases. DEA confiscated all product remaining in the men’s possession, and FDA identified the substance as aniline, an industrial solvent known to cause methemoglobinemia. One patient reported purchasing the substance from the Internet site of a Chinese chemical company. No additional cases were identified by investigators. Purchase of chemicals from unregulated Internet sources poses a serious risk to purchasers from product contamination and substitution.
Multi-Agency Investigation

During evaluation in the emergency department, the physician questioned patient A and patient B because of concern for possible consumer product contamination of their soft drink by a methemoglobin-inducing substance. After initial denials, they reported buying 2C-E as a recreational chemical from an Internet site. They described ingesting 4 mL of a bitter, yellow-tinted liquid that they had mixed with a soft drink to mask the taste. This description was inconsistent with 2C-E, which is available typically as a capsule or white powder.

Further questioning implicated a company based in Nanjing, China, that produces and sells 2C-E and industrial products manufactured using aniline. Consultation with FDA confirmed that 2C-E was a federally controlled substance, and that, since the product was purchased from an international distributor, the incident was under federal jurisdiction. DEA was notified. DEA obtained the leftover product that the patients had purchased, and FDA determined the liquid was pure aniline, with no evidence of 2C-E. Aniline is a common solvent used in manufacturing processes. Ingestion of aniline can cause methemoglobinemia and hemolytic anemia through the action of its metabolites, phenylhydroxylamine and aminophenol, both strong oxidizing agents (1–4).

The patients said they had not shared the product with others. Nonetheless, public health and poison control investigators conducted active case-finding because of concern that aniline might have been mislabeled and sold to other buyers seeking 2C-E. A case was defined as unexplained methemoglobinemia in a person who had ingested a chemical purchased through the Internet since January, 2011. The Oregon Poison Center queried poison center directors nationally and searched for reports of aniline poisoning in the National Poison Data System. CDC was notified, and investigators conducted supplemental symptom-based case-finding using the Oregon Health Alert Network and CDC’s Epidemic Information Exchange (Epi-X™) to query for cases of unexplained methemoglobinemia. No additional cases were identified.
Synthetic drugs

Synthetic drugs are those substances that are produced entirely from chemical reactions in a laboratory. Their chemical structure can be identical to naturally occurring drugs, such as cocaine and opium, but they are often designed to enhance effects from naturally occurring drugs, or to prevent side effects that are unwanted. Many purely synthetic compounds with no alternative natural source are classified by the chemical structure of the parent synthetic compound. Drugs that share a common core structure belong to a particular group. But members within a particular group may produce different effects. Pharmacological activity within a group may vary widely.

The members of the ecstasy group are also classified as “designer drugs”. They are structurally related to a controlled drug and produce certain psychoactive effects. They have been designed on the basis of the chemical structure of a given parent drug, and made specifically for sale on the illegal market and to bypass regulations on controlled substances. In response, regulations now commonly cover novel and possible analogues of existing psychoactive substances.
Emergency Department Visits After Use of a Drug Sold as "Bath Salts" --- Michigan, November 13, 2010--March 31, 2011

On February 1, 2011, in response to multiple news reports, the Michigan Department of Community Health (MDCH) contacted the Children’s Hospital of Michigan Poison Control Center (PCC) regarding any reports of illness in the state caused by the use of recreational designer drugs sold as "bath salts." Unlike traditional cosmetic bath salts, which are packaged and sold for adding to bath water for soaking and cleaning, the drugs sold as "bath salts" have no legitimate use for bathing and are intended for substance abuse. These products can contain stimulant compounds such as 3,4-methylenedioxyxymethamphetamine (MDMA) or 4-methylmethcathinone (mephedrone). The PCC told MDCH that, earlier in the day, the PCC...
<table>
<thead>
<tr>
<th>Signs and symptoms</th>
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<tbody>
<tr>
<td>Agitation</td>
<td>23</td>
<td>(66)</td>
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<tr>
<td>Tachycardia</td>
<td>22</td>
<td>(63)</td>
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<tr>
<td>Delusions/hallucinations</td>
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<td>(40)</td>
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<tr>
<td>Seizure/tremor</td>
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<td>(29)</td>
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<td>Hypertension</td>
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<tr>
<td>Drowsiness</td>
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<tr>
<td>Paranoia</td>
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<tr>
<td>Mydriasis</td>
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<tr>
<td>Disposition</td>
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<td>Percentage</td>
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<tr>
<td>Treated in ED and released</td>
<td>15</td>
<td>(43)</td>
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<tr>
<td>Admitted</td>
<td>17</td>
<td>(49)</td>
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<tr>
<td>Dead upon arrival</td>
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<td>(3)</td>
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<tr>
<td>Left against medical advice</td>
<td>2</td>
<td>(6)</td>
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## MDPV timeline

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<th>Stage</th>
<th>Oral</th>
<th>Insufflated</th>
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<tbody>
<tr>
<td>Onset</td>
<td>15 - 30 mins</td>
<td>5 - 20 mins</td>
</tr>
<tr>
<td>Coming Up</td>
<td>30 - 60 mins</td>
<td>15 - 30 mins</td>
</tr>
<tr>
<td>Plateau</td>
<td>30 - 180 mins</td>
<td>30 - 120 mins</td>
</tr>
<tr>
<td>Coming Down</td>
<td>30 - 120 mins</td>
<td>30 - 60 mins</td>
</tr>
<tr>
<td>After Effects</td>
<td>2 - 48 Hours</td>
<td>2-48 Hours</td>
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</tbody>
</table>

**Total duration:**
- Oral: 2.0-7.0 Hours
- Insufflated: 2.0-3.5 Hours
Officials fear bath salts becoming the next big drug menace

By Sheila Byrd
Sunday, January 23, 2011

FULTON, MISS. - When Neil Brown got high on bath salts, he took his skinning knife and slit his face and stomach repeatedly. Brown survived, but authorities say others haven't been so lucky after snorting, injecting or smoking powders with such innocuous-sounding names as Ivory Snow, Red Dove and Vanilla Sky.

Law enforcement agents and poison control centers say the bath salts, with their complex chemical names, are an emerging menace in several U.S. states where authorities talk of banning their sale. Some say their effects can be as powerful as those of methamphetamine.

From the Deep South to California, emergency calls are being reported over exposure to the stimulants the powders often contain: mephedrone and methylendioxypyrovalerone, also known as MDPV.

Sold under such names as Ivory Wave, Bliss, White Lightning and Hurricane Charlie, the chemicals can cause hallucinations, paranoia, a rapid heart rate and suicidal thoughts, authorities say. In addition to bath salts, the chemicals can be found in plant foods that are sold legally at convenience stores and on the Internet. However, they aren't necessarily being used for the purposes on the label.
Message from the Director on "Bath Salts" - Eme Products

"Bath Salts", the newest fad to hit the shelves (virtual and real), is the latest addition to a growing list of items that young people can obtain to get high. The synthetic powder is sold legally online and in drug paraphernalia stores under a variety of names, such as "Ivory Wave," "Purple Wave," "Red Dove," "Blue Silk," "Zoom," "Bloom," "Cloud Nine," "Ocean Snow," "Lunar Wave," "Vanilla Sky," "White Lightning," "Scarface," and "Hurricane Charlie." Because these products are relatively new to the drug abuse scene, our knowledge about their precise chemical composition and short- and long-term effects is limited, yet the information we do have is worrisome and warrants a proactive stance to understand and minimize any potential dangers to the health of the public.

We know, for example, that these products often contain various amphetamine-like chemicals, such as methylenedioxyamphetamine (MDPV), mephedrone and pyrvalerone. These drugs are typically administered orally, by inhalation, or by injection, with the worst outcomes apparently associated with snorting or intravenous administration. Mephedrone is of particular concern because, according to the United Kingdom experience, it presents a high risk for overdose. These chemicals act in the brain like stimulant drugs (indeed they are sometimes touted as cocaine substitutes); thus they present a high abuse and addiction liability. Consistent with this notion, these products have been reported to trigger intense cravings not unlike those experienced by methamphetamine users, and clinical reports from other countries appear to corroborate their addictiveness. They can also confer a high risk for other medical adverse effects. Some of these may be linked to the fact that, beyond their known psychoactive ingredients, the contents of "bath salts" are largely unknown, which makes the practice of abusing them, by any route, that much more dangerous.

Unfortunately, "bath salts" have already been linked to an alarming number of ER visits across the country. Doctors and clinicians at U.S. poison centers have indicated that ingesting or snorting "bath salts" containing synthetic stimulants can cause chest pains, increased blood pressure, increased heart rate, agitation, hallucinations, extreme paranoia, and delusions. It is noteworthy that, even though we are barely two months into 2011, there have been 251 calls related to "bath salts" to poison control centers so far this year. This number already exceeds the 236 calls received by poison control centers for all of 2010. In response to this emerging threat, several states, including Hawaii, Michigan, Louisiana, Kentucky, and North Dakota, have introduced legislation to ban these products, which are incidentally labeled as "not fit for human consumption." In addition, several counties, cities, and local municipalities have also taken action to ban these products.

We will continue to monitor the situation and promote research on the extent, pharmacology, and consequences of "bath salts" abuse. In the meantime, I would like to urge parents, teachers, and the public at large to be aware of the potential dangers associated with use of these drugs and to exercise a judicious level of vigilance that will help us deal with this problem most effectively.

Sincerely,

Nora D. Volkow, M.D.
Director
National Institute on Drug Abuse
Bolivian Bath Salts Review

January 14th, 2011 Posted at Bolivian Bath Salts, Bolivian Bath Salts Review, bath salts, bath salts drug, bath salts review, bathsals bath salts drug, bath salts review, bolivian bath salts, Bolivian bath salts review › | 6 Comments ›

Bolivian bath salts are a fairly popular blend on the market today. Its popularity was gained due to the claim that it was the exact same blend as in the Ivory Wave; the first bath salt blend that hit the market and started the whole uproar. Ivory wave was taken off the market because of how powerful it was, but the company claims they merely had to just change the bag because the salts were light sensitive and the packaging for ivory wave was too light, allowing sunlight in. This bathsalt is a considerable amount more than most other bathsals as well, which may enforce the claims of its potency. I purchased some online for 35 bucks and didn’t have to pay for shipping. It took a really long time to get here; so long I figured somebody swindled me, but to my surprise finally arrived 3 weeks after I had put my order in. The baggie was similar to the spice bags, with a picture of scarfase on the front. I poured out the 500mg, and with the warning the website gave in mind only separated roughly 15mg into a single bump. I was somewhat skeptical seeing as it usually takes anywhere from 50-100 to induce a feeling, but since it was my first experience I settled on the minuscule amount and proceeded to send it up into my nasal membrane. What happened next I can describe as the feeling of taking a half gram of good cocaine in one line; this was accompanied by a heavy feeling of stimulation that surged throughout my body. An hour later the effects from the bathsalt didn’t seem to be dying off at all and I still felt exactly the same as I did the minute after I had ingested the bolivian salt. This was a little disconcerting to me, because in the past I had come across such blends and they all tended to last anywhere from 12 hours up to 2 days with no possibility of sleep or normal interaction for that matter without someone thinking you’re a speed freak. The feeling of euphoria somewhat left about 3 hours after ingestion, and the only remaining effect was a very uncomfortable stimulation that lasted throughout all the night and into the wee hours of the morning. After cleaning everything in my house twice and alphabetizing anything that could be alphabetized I finally started to feel the effects somewhat die down. This weaning continued until I finally made it to bed around 7 in the morning. My next 2 hours were spent tossing about and attempting to quiet the thousand of thoughts swarming in my mind, until I finally dozed off somewhere between 9 and 10. This
Epidemiology of use...
Cheap to buy, easy to find and mistakenly seen by some users as a legal and mostly harmless alternative to cocaine and other stimulants, bath salts have become the source of a new wave of worried calls to poison control centers nationwide. Last year, those centers received about 300 calls about the synthetic drug.

Already this year, they have logged more than 4,700.

Emergency room doctors, meanwhile, are being forced to take extreme steps to treat some bath salt users who are showing up at hospitals intensely agitated, delusional and even violent. Law enforcement officers are also reporting struggles to subdue hallucinating users who are fighting imaginary people. Some bath salt users are ending up in psychiatric wards.

"It came on like a freight train," said Mark Ryan, long-time poison center director in Louisiana, where the bath salts craze hit early. Bath salts often seem to cause scarier hallucinations than LSD, Ryan said, and sometimes provide the super-human strength of PCP. Far more users experience severe effects compared to other drugs, he said.

"It was just creating havoc for us," Ryan said. "It's not like it's just a bad drug, it's like a superbad drug."

'All over the place'

Bath salts first appeared in the United States in 2009, according to the U.S. Drug Enforcement Administration (DEA). The drugs are so new that federal agencies are still analyzing their toll, but research conducted by the Star Tribune indicates the products have been confirmed or suspected in more than 15 deaths nationwide.

At least 30 states have banned certain bath salt chemicals, including Minnesota, but the products remain widely available on the Internet. Despite their name, the drugs are far different -- and far more
In Case You Missed It Sunday

Use of ‘plant food' drug explodes in Winona

By AMY PEARSON and JEROME CHRISTENSON | news@winonadailynews.com | Posted: Monday, May 30, 2011 7:30 am | Loading...

One man believed werewolves were attacking him. Another kneeled down, raised his hands above his head and recited Bible passages to the emergency room staff at Winona Health. Another saw his heart beating outside of his chest. These are just a few stories from Winona police, attorneys and doctors who these days rarely make it through a workday without encountering someone on “plant food.”

The drug is widely available locally and online. And it’s legal - at least until July 1.

Plant food is a powdery chemical with effects similar to cocaine, amphetamine and Ecstasy. The synthetic drug can be smoked, ingested or injected.

The active ingredient, mephedrone, produces euphoria - as well as intense hallucinations, heart palpitations, and other adverse effects that in the worst cases lead to death.
New synthetic drug growing popular in Winona
May 30, 2011

Winona, Minn. (AP) — A new synthetic drug is becoming more popular in Winona, raising concerns for local authorities who worry that a recent state law outlawing the drug might not go far enough in stemming its use.

The drug, called plant food, can be smoked, ingested or injected. Its active ingredient is mephedrone, which produces euphoria but can also cause intense hallucinations and heart palpitations. In some cases it can lead to death.

The drug is legal, at least until July 1, so police don't have hard data on its prevalence. But Winona Police Chief Paul Bostrack say the number of people being taken to detox is up sharply since it was first mentioned in a police report in November.

In the last five years there has been an average of 63 local detox cases annually, he said. In less than five months this year, officers have already taken 47 people to detox, on pace for about 113 cases.

Plant food has been popular - and banned - in Europe for years but arrived in Winona only recently. Users aren't limited to Winona County but local authorities say other parts of the state don't seem to be having as much of an issue with it.

The issues can be serious, according to a Winona Daily News report. One man high on the drug thought werewolves were attacking him, and another said he saw his
Figure 1: US Poison Center Calls for Bath Salts & Synthetic Cannabinoids 2010-2011*4

- Bath Salt
- Synthetic Cannabinoid

* National data through 4/25/2011
**TABLE.** Demographic and clinical characteristics for 35 patients evaluated in emergency departments (EDs) after exposure to drugs sold as "bath salts" --- Michigan, November 13, 2010--March 31, 2011

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No.</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>16</td>
<td>(46)</td>
</tr>
<tr>
<td>Men</td>
<td>19</td>
<td>(54)</td>
</tr>
<tr>
<td><strong>Age group (yrs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20–29</td>
<td>22</td>
<td>(63)</td>
</tr>
<tr>
<td>30–39</td>
<td>5</td>
<td>(14)</td>
</tr>
<tr>
<td>40–49</td>
<td>6</td>
<td>(17)</td>
</tr>
<tr>
<td>Exposure route*</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Injected</td>
<td>22</td>
<td>(63)</td>
</tr>
<tr>
<td>Snorted</td>
<td>9</td>
<td>(26)</td>
</tr>
<tr>
<td>Ingested</td>
<td>4</td>
<td>(11)</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
<td>(14)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional drug use*</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marijuana</td>
<td>10</td>
<td>(29)</td>
</tr>
<tr>
<td>Opiates</td>
<td>8</td>
<td>(23)</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>5</td>
<td>(14)</td>
</tr>
<tr>
<td>Cocaine</td>
<td>4</td>
<td>(11)</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>2</td>
<td>(6)</td>
</tr>
</tbody>
</table>
Exhibit 16

Exposures to selected drugs reported to Hennepin County Regional Poison Center: 2009 - 2011

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>1st Q 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Bath Salts&quot;</td>
<td>0</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>2C-I and analogs</td>
<td>4</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>MDMA</td>
<td>63</td>
<td>38</td>
<td>13</td>
</tr>
</tbody>
</table>

SOURCE: AAPC Toxic Exposure Surveillance System (TESS), Hennepin County Regional Poison Center, May 2011.
Drug Abuse Trends in
Minneapolis/St. Paul, Minnesota: 2010

Carol L. Falkowski
Drug Abuse Strategy Officer
Minnesota Department of Human Services
June 2011

The primary users of these emerging synthetic drugs tend to be young males age 16 to 30, especially ones who are already in trouble with substance abuse, or the law, or both. For this group an added appeal of using these synthetic substances is that they are not routinely detected in standard urine screens. A statewide bill banning the sale and possession of bath salts, 2C-E analogues and synthetic THC, was recently enacted by the Minnesota legislature and signed into law, effective July 1, 2011.
Chemical mixtures that are sold online and in “head shops,” and labeled as “bath salts,” or “plant food,” in packages that state “not for human consumption,” are increasingly and intentionally consumed to produce effects similar to those experienced by ingesting stimulant illegal drugs, such as cocaine or MDMA. Mephedrone (4-methylmethcathinone or 4-MMC) is a substance of the phenylethylamine class and also shares similarities with methcathinone, a schedule I substance. These structural similarities to methcathinone open the door for possible prosecutions involving these products under the Federal Analog Act of the Controlled Substances Act. Exposures to bath salts reported to the Hennepin Regional Poison Center rapidly increased from 6 in 2010, to 26 in the first quarter of 2011 (exhibit 16). Adverse effects include chest pains, increased heart rate, elevated blood pressure, agitation, vomiting, dizziness, delusions, suicidal thoughts, psychosis, and paranoia. Mephedrone has been packaged and sold as bath salts, research chemicals or plant food. Bath salts are sold under names such as “Vanilla Sky,” “Bliss,” and “Ivory Wave.” Mephedrone alone is also known as “Meow Meow,” “M-CAT,” “Bubbles,” or “Mad Cow.” Bath salts, or synthetic cathinones, may also contain other related chemicals: MDPV (3,4-methyldioxypyrovalerone), Methylone (3,4 methylendioxymethcathinone or MDMC), Naphyrone (naphthylpyrovalerone or NRG-1), 4-Fluoromethcathinone or 3-FMC0, Methedrone (4-methoxymethcathinone or bk-PMMA or PMMC), or Butylone (beta-keto-N-methylbenzodioxolylpropylamine or bk-MBDB). A 19-year-old male in nearby Hudson, Wisconsin was pulled over for erratic driving in May, 2011, and upon questioning, admitted having recently snorted bath salts.

Chemical mixtures that are sold online as “research drugs” that are “not intended for human consumption,” were intentionally consumed by a group of young people in suburban Blaine, Minnesota in March, 2011. The chemical compound known as 2C-E (2,5-dimethoxy-4-ethylphenethylamine) was snorted by eleven young people who were seeking effects similar to the stimulant drug, MDMA or “ecstasy”. All experienced profound hallucinations and became distressed. They were eventually hospitalized and one 19-year old male was pronounced dead at the hospital. The Blaine man who supplied the substance has since been charged with felony third degree murder. Some later reports said that some people thought they were ingesting 2C-I, a chemical cousin of 2C-E, that has allegedly milder effects. Exposures to 2C-I and related analogues reported to the Hennepin Regional Poison Center numbered 4 in 2009, 7 in 2010, and 12 in the first quarter of 2011. 2C-E and 2C-I are also in the phenylethylamine class, and share significant structural similarities with 2C-B, a schedule I substance. The structural similarities of 2C-E to the schedule I substance, 2C-B, create the possibility of prosecution under the Federal Analog Act of the Controlled Substances Act.
Legal status of synthetic drugs...
Mephedrone sold online as...
An Alarming New Stimulant, Legal in Many States

So-called bath salts are labeled “not for human consumption,” which helps them skirt a law that would make them illegal.

By ABBY GOODNOUGH and KATIE ZEZIMA
Published: July 16, 2011

Dr. Jeffrey J. Narmi could not believe what he was seeing this spring in the emergency room at Schuylkill Medical Center in Pottsville, Pa.: people arriving so agitated, violent and psychotic that a small army of medical workers was needed to hold them down.

They had taken new stimulant drugs that people are calling “bath salts,” and sometimes even large doses of sedatives failed to quiet
States race to ban risky 'bath salts' drug

By Jessie Halladay, USA TODAY

A growing number of states are moving to ban a new synthetic drug known as "bath salts" that can cause severe side effects, including paranoia, hallucinations and sometimes violent behavior.

Emergency bans have been issued in Louisiana, North Dakota and Florida. Legislators in Hawaii, Kentucky, North Dakota and Mississippi have introduced bills to ban the drug, which can be sold legally in stores and
Klobuchar to Introduce Legislation to Ban Synthetic Drug 2C-E

Synthetic substance resulted in the death, injuries of Minnesotans this past week; Klobuchar says dangerous substance should be illegal, will work to add synthetic drug to legislation she cosponsored with U.S. Senator Chuck Grassley

March 21, 2011

Washington, D.C. –U.S. Senator Amy Klobuchar announced that she will offer legislation to ban the synthetic drug 2C-E, which resulted in the death of one Minnesotan this past week and hospitalized several others. Klobuchar said the synthetic drug should be illegal and will work to include it as part of the bipartisan bill she cosponsored with U.S. Senator Chuck Grassley (R-IA), which banned other harmful chemicals commonly used in synthetic drugs such as “K2” or “Spice.” The drugs have resulted in numerous reports of individuals acting violently while under the influence of these drugs, leading to deaths or injuries to themselves and others.

“These dangerous drugs pose serious risks to the public and have tragically killed and injured Minnesotans,” said Klobuchar. “These drugs should be made illegal and the chemicals used to make them should be banned so that they can no longer be easily purchased online and in stores around the country. We need to take action now before these substances endanger any more lives.”

Late last week, Klobuchar introduced legislation, the Dangerous Synthetic Drug Control Act of 2011, with Grassley and 5 other Senators that would permanently ban five chemicals found in K2 that the DEA has temporarily banned. The legislation would treat K2 and other synthetic drugs like other banned narcotics such as methamphetamines and cocaine.
DEPARTMENT OF JUSTICE
Drug Enforcement Administration
21 CFR Part 1308
[Docket No. DEA–357]

Schedules of Controlled Substances:
Temporary Placement of Three Synthetic Cathinones Into Schedule I

AGENCY: Drug Enforcement Administration, Department of Justice.

ACTION: Notice of Intent.

SUMMARY: The Administrator of the Drug Enforcement Administration (DEA) is issuing this notice of intent to temporarily schedule three synthetic cathinones under the Controlled Substances Act (CSA) pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). The substances are 4-
methyl-N-methylcathinone (mephedrone), 3,4-methylenedioxy-N-
methylcathinone (methyline), and 3,4-
methylenedioxyppyrovalerone (MDPV). This action is based on a finding by the Administrator that the placement of these synthetic cathinones into schedule I of the CSA is necessary to avoid an imminent hazard to the public safety. Any final order will be published in the Federal Register and may not be issued prior to October 11, 2011. Any final order will impose the administrative, civil, and criminal sanctions and regulatory controls of schedule I substances under the CSA on the manufacture, distribution, possession, importation, and exportation of these synthetic cathinones.

FOR FURTHER INFORMATION CONTACT:
Imelda L. Paredes, Office of Diversion Control, Drug Enforcement Administration, 8701 Morrissette Drive, Springfield, Virginia 22152; Telephone (202) 307–7165.

SUPPLEMENTARY INFORMATION:
Background
News Release [print-friendly page]
FOR IMMEDIATE RELEASE
October 21, 2011
Contact: DEA Public Affairs
Number: 202-307-7977

Chemicals Used in "Bath Salts" Now Under Federal Control and Regulation
DEA Will Study Whether To Permanently Control Three Substances

OCT 21 - WASHINGTON, D.C. – The United States Drug Enforcement Administration (DEA) today exercised its emergency scheduling authority to control three synthetic stimulants (Mephedrone, 3,4-methylenedioxypyrovalerone (MDPV) and Methylene) used to make products marketed as "bath salts" and "plant food". Except as authorized by law, this action makes possessing and selling these chemicals, or the products that contain them, illegal in the United States. This emergency action was necessary to prevent an imminent threat to the public safety. The temporary scheduling action will remain in effect for at least one year while the DEA and the United States Department of Health and Human Services (DHHS) further study whether these chemicals should be permanently controlled.

The Final Order was published today in the Federal Register to alert the public to this action. These chemicals will be controlled for at least 12 months, with the possibility of a six month extension. They are designated as Schedule I substances, the most restrictive category under the Controlled Substances Act. Schedule I status is reserved for those substances with a high potential for abuse, no currently accepted use for treatment in the United States and a lack of accepted safety for use of the drug under medical supervision.
Over the past several months, there has been a growing use of, and interest in, synthetic stimulants sold under the guise of “bath salts” or “plant food”. Marketed under names such as “Ivory Wave”, “Purple Wave”, “Vanilla Sky” or “Bliss”, these products are comprised of a class of chemicals perceived as mimics of cocaine, LSD, MDMA, and/or methamphetamine. Users have reported impaired perception, reduced motor control, disorientation, extreme paranoia, and violent episodes. The long-term physical and psychological effects of use are unknown but potentially severe. These products have become increasingly popular, particularly among teens and young adults, and are sold at a variety of retail outlets, in head shops and over the Internet. However, they have not been approved by the FDA for human consumption or for medical use, and there is no oversight of the manufacturing process.

In the last six months, DEA has received an increasing number of reports from poison control centers, hospitals and law enforcement regarding products containing one or more of these chemicals. Thirty-seven states have already taken action to control or ban these or other synthetic stimulants. The Comprehensive Crime Control Act of 1984 amends the Controlled Substances Act (CSA) to allow the DEA Administrator to temporarily schedule an abused, harmful, non-medical substance in order to avoid an imminent hazard to public safety while the formal rule-making procedures described in the CSA are being conducted.

“This action demonstrates our commitment to keeping our streets safe from these and other new and emerging drugs that have decimated families, ruined lives, and caused havoc in communities across the country,” said DEA Administrator Michele M. Leonhart. “These chemicals pose a direct and significant threat, regardless of how they are marketed, and we will aggressively pursue those who attempt their manufacture and sale.”
GOVERNMENT

Ban on "bath salts," synthetic marijuana delayed in Senate

House-passed legislation would add them to the list of controlled substances that have no medical use.


Washington -- House lawmakers in December 2011 approved legislation that would prohibit the sale of synthetic marijuana and other drugs known as "bath salts" and "plant food," which have been compared to dangerous hallucinogenic drugs when used illicitly. The measure, however, faces an indefinite delay in the Senate due to a lawmaker's hold on the bill.

Representatives on Dec. 8 voted 317-98 to ban the synthetic drugs, which can mimic the effects of marijuana, cocaine and methamphetamines. Sen. Charles Grassley (R, Iowa) has introduced similar legislation in the Senate, but the bill is being held up by an objection from Sen. Rand Paul, MD (R, Ky.), according to Grassley's office. Dr. Paul's office did not respond to repeated inquiries seeking comment on the
Dr. Paul’s office did not respond to repeated inquiries seeking comment on the legislative hold, which senators sometimes place on bills over matters unrelated to the legislation in question.

- "Bath salts" could be in same drug class as heroin
- See related content

Organizations representing physicians and public health officials support the House-passed legislation because they say there is no known medicinal use for the substances. The number of patients seeking treatment in hospital emergency departments after using the synthetic drugs also has skyrocketed during the last year.

The American Assn. of Poison Control Centers reported 5,853 calls to poison centers that were related to bath salt exposure from January to November 2011, a dramatic increase from 303 such calls in 2010. Centers reported that they received 6,348 calls related to synthetic marijuana in 2011.

Responding to concerns about the abuse of these products, the American Medical Association in June adopted a policy to support a national ban.

"These chemicals, when inhaled or injected, cause effects similar to those caused by cocaine and methamphetamine, including paranoia, hallucinations and suicidal thoughts, which have led to self-mutilation, violent behavior and several deaths," wrote AMA Executive Vice President and CEO James L. Madara, MD, in a September letter to the House supporting legislation banning bath salts.

Calls related to bath salts to U.S. poison centers went from more than 300 in 2010

Rep. Charlie Dent (R, Pa.), the House bill’s sponsor, said he first learned about the dangers of the synthetic drug from his constituents. One man had injected himself with bath salts, suffered liver failure and was hospitalized for more than two
DEA Schedule 1

• High potential for abuse, no accepted use, and lack of safety.
• In 2010– 41 new chemicals were given a schedule 1 classification
• The biggest category was cathinone derivatives
DEA Schedule 1

- Drug “analogue act”
- Analogues of schedule 1 drugs can be sold not for human consumption
- Aids in the research and development in (pharmaceutical) industry
Diagnosing synthetic use
Urine tox for designer drugs

• Community labs– maybe false positive amphetamine (phenethyllamine) and LSD (tryptamine) on immunoassay
• Labs with Mass spec can look for anything ($)
• Less expensive and easier commercial tests in the works
Still a syndromic diagnosis!

- Young adults
- Agitation, paranoia, psychosis
- Tachycardia, hypertension, hyperthermia
- Urine tox +/- for amphetamines, lsd
- High risk sex
- Variable half life
Treatment

• 1. Medical evaluation and treatment
• 2. A.R.T.
  – Acceptance-reassurance-talkdown
• 3. Benzos (lorazepam, diazepam)
• 4. Antipsychotics second line
Take home points

1. Understand the stimulant-entactogen-psychedelic spectrum
2. Dozens of legal synthetic drugs available by the internet
3. Laws in flux
4. Diagnosis is syndromic
5. Medical/psychiatric evaluation is necessary
6. IV use and high risk sex – screen for HIV!
Thank you!
Work up

• Vitals— including temperature, blood pressure, heart rate
• Labs— HIV ab, other STI, creatinine, sodium, liver enzyme, muscle enzyme, consider cardiac enzyme, lactate
• Electrocardiogram, possible cardiac monitor
• Chest Xray if indicated
• Stroke work up if indicated