

# CESAR *FAX* →

A Weekly FAX from the Center for Substance Abuse Research

University of Maryland, College Park

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## *CESAR FAX* Synthetic Cannabinoid Series

**May 9, 2011 to August 26, 2013**

(updated August 29, 2013)

CESAR  
Center for Substance Abuse Research  
University of Maryland  
4321 Hartwick Road, Suite 501  
College Park, MD 20740  
301-405-9770 (phone)  
301-403-8342 (fax)  
cesar@umd.edu  
www.cesar.umd.edu

**CESAR FAX Synthetic Cannabinoid Series**  
(updated 8/29/2013)

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## A Weekly FAX from the Center for Substance Abuse Research

University of Maryland, College Park

### *DEA Temporarily Classifies Synthetic Marijuana as a Schedule I Drug*

*Synthetic marijuana packaged as incense or potpourri has spurred more than 4,500 “fake pot” calls to U.S. poison centers since 2010, prompting the Drug Enforcement Administration to recently temporarily classify it as a Schedule I drug.*

**What is synthetic marijuana?** Synthetic marijuana is a blend of herbs and plant material sprayed with one or more synthetic cannabinoids, synthesized chemical compounds that bind to the same cannabinoid receptors as THC. Synthetic cannabinoids were originally created in a lab as potential pharmaceutical agents.

**What are other names for synthetic marijuana?** The most recognizable brand names are Spice and K2. More than 100 other brand names have been identified, including Blaze, Fire ‘n’ Ice, G-Force, Solar Flare, and Yucatan Fire.

**Where is synthetic marijuana sold?** Synthetic marijuana is packaged in small pouches or packets and sold as herbal incense or potpourri that is labeled “Not for Human Consumption.” Until the recent DEA ban, it was legally sold in head shops, smoke shops, liquor stores, convenience stores, gas stations, and over the internet.

**Who uses synthetic marijuana?** Qualitative evidence suggests that the primary users are teenagers and young adults as well as cannabis users. According to the DEA, a major private toxicology laboratory reported that 30% to 35% of specimens submitted by juvenile probation departments were positive for synthetic marijuana.

**What are the effects of synthetic marijuana use?** Research as to the potency and side effects is new and limited. However, it appears that the psychoactive effects of synthetic marijuana are similar to marijuana, and there is some evidence that synthetic marijuana may even be more potent depending on the specific synthetic cannabinoid. Adverse effects include increased heart rate and blood pressure, extreme anxiety, agitation, disorientation, paranoia, hallucinations, vomiting, and tremors. There were 2,874 calls received by U.S. poison centers about synthetic marijuana products in 2010. As of April 20, 2011, 1,639 calls had been received in 2011.

**Can you become dependent on synthetic marijuana?** The limited research available to date indicates that synthetic marijuana may have the potential for dependence. There has been one documented case of dependency based on both DSM-IV and ICD-10 criteria, including tolerance and physical withdrawal symptoms. The European Monitoring Centre for Drugs and Drug Addiction suggests that “it seems tolerance to these synthetic cannabinoids may develop fairly fast, and arguably this might be associated with relatively high potential to cause dependence” (p. 12).

**Can it be detected by drug tests?** While synthetic marijuana will not be detected by standard drug tests that screen for marijuana, several national laboratories offer tests for synthetic cannabinoids.

**What are the current laws regarding synthetic marijuana in the U.S.?** As of May 4, 2011, 24 states have enacted legislation and 24 states have legislation pending banning one or more synthetic cannabinoids. In March 2011, the DEA temporarily classified five of the synthetic cannabinoids used in synthetic marijuana as Schedule I drugs, which is reserved for those substances with high potential for abuse, no accepted medical use for treatment in the U.S., and a lack of accepted safety use of the drug under medical supervision. This classification can last up to one year, with a 6-month extension, allowing the DEA and the U.S. Department of Health and Human Services time to determine whether these chemicals should be permanently controlled. Based on Europe’s experience with regulating synthetic marijuana, it is possible that current laws will be circumvented by the production and use of new synthetic cannabinoids not covered by current legislation.

SOURCE: A complete list of sources is available by accessing the PDF version of this issue online at [www.cesar.umd.edu](http://www.cesar.umd.edu).

**CESAR FAX Volume 20, Issue 17 (May 9, 2011)**  
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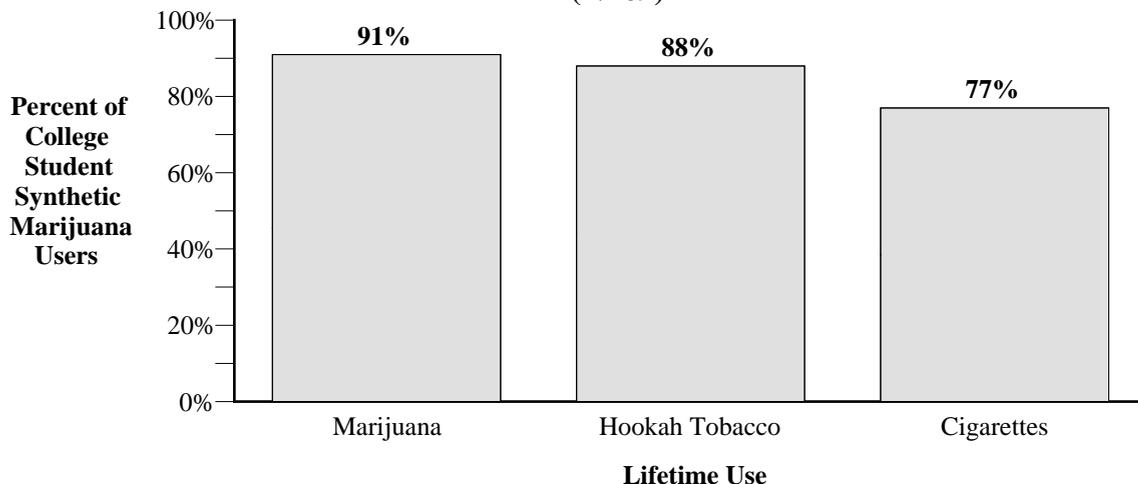
**A Weekly FAX from the Center for Substance Abuse Research**

**University of Maryland, College Park**

***Nearly One in Ten College Students Have Ever Used Synthetic Marijuana;  
Nearly All Also Report Using Marijuana, Cigarettes, and Hookah***

Nearly one in ten University of Florida college students (8%) reported ever using synthetic marijuana, according to the first study of lifetime prevalence of synthetic marijuana in college students. Synthetic marijuana, also known as K2 or spice, is an herbal blend sprayed with one or more synthetic cannabinoids with effects similar to marijuana when smoked (see *CESAR FAX*, Volume 20, Issue 17 to learn more about synthetic marijuana). Among these synthetic marijuana users, 77% reported smoking cigarettes, 91% reported smoking marijuana, and 88% reported smoking hookah tobacco. In addition, this study found that males and early college students (1<sup>st</sup> or 2<sup>nd</sup> year) were more likely to have ever used synthetic marijuana (data not shown). Unfortunately, “the latest national ban of five synthetic cannabinoids does not necessarily indicate the end of K2 or ‘spice’. For example, K2 manufacturers have already started to produce and sell a new generation of K2 products that are claimed to be ‘completely legal everywhere’ (using a similar product with another, not yet illegal, synthetic cannabinoid)” (p. 3).

**Percentage of College Students Who Have Ever Used Synthetic Marijuana Who Also Reported Smoking Cigarettes, Marijuana, or Hookah Tobacco in Their Lifetime, 2010  
(N=69)**



NOTE: Data was collected from 852 University of Florida students who responded to an email survey conducted in September 2010.

SOURCE: Adapted by CESAR from Hu, X., Primack, B.A., Barnett, T.E., and Cook, R.L., “College Students and Use of K2: An Emerging Drug of Abuse in Young Persons,” *Substance Abuse Treatment, Prevention, and Policy* 6(16), 2011. Available online at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3142218>. For more information, contact Xingdi Hu at [qmshjwhx@phhp.ufl.edu](mailto:qmshjwhx@phhp.ufl.edu).

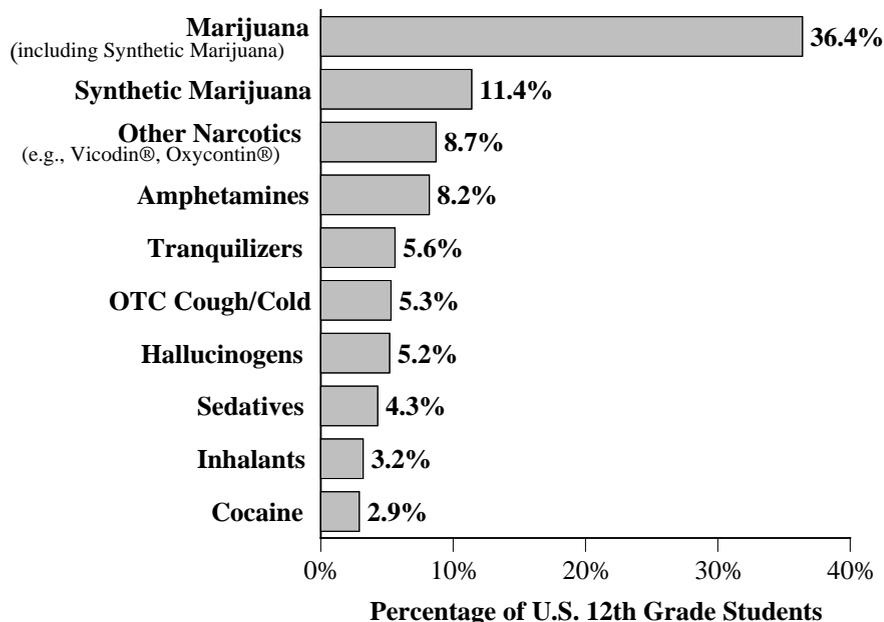
A Weekly FAX from the Center for Substance Abuse Research

University of Maryland, College Park

## *One in Nine U.S. High School Seniors Report Using Synthetic Marijuana in the Past Year*

Marijuana and synthetic marijuana are the most prevalent illicit drugs used by 12<sup>th</sup> graders, according to recent data from the 2011 Monitoring the Future (MTF) survey. Slightly more than one-third (36.4%) of high school seniors reported using marijuana in the past year, including 11.4% who reported using synthetic marijuana, compared with less than 10% for all other illicit drugs (see figure below). Synthetic marijuana, an herbal drug mixture that usually contains synthetic cannabinoids, was readily available on the internet and in smaller retail establishments until it was scheduled by the Drug Enforcement Administration (DEA) in March 2011 (see *CESAR FAX*, Volume 20, Issue 17, for more information about synthetic marijuana). Questions about synthetic marijuana use were included for the first time in the Spring 2011 MTF survey, and therefore measured use over a considerable period of time prior to the drug's scheduling. The authors note that "next year's survey results should reflect any effects of the scheduling by the DEA" (p. 5).

**Percentage of U.S. 12<sup>th</sup> Grade Students Reporting Past Year Use of Drugs\*  
Other Than Alcohol and Tobacco, 2011**  
(N=approximately 14,900)



\*Amphetamines include Adderall® (6.5%), Ritalin® (2.6%), Provigil (1.5%), methamphetamine (1.4%), and crystal methamphetamine (1.2%). Hallucinogens include salvia (5.9%), ecstasy (5.3%), LSD (2.7%), and PCP (1.3%). Other narcotic drugs used nonmedically include Vicodin® (8.1%) and Oxycontin® (4.9%). OTC Cough/Cold refers to use for the explicit purpose of getting high. Drugs with less than 2% prevalence were ketamine (1.7%), GHB (1.4%), Rohypnol® (1.3%), steroids (1.2%), and heroin (0.8%).

SOURCE: Adapted by CESAR from National Institute of Drug Abuse, *Monitoring the Future: National Results on Adolescent Drug Use*, 2011. Available online at <http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2011.pdf>.

**A Weekly FAX from the Center for Substance Abuse Research**

**University of Maryland, College Park**

***CDC Alert: Acute Kidney Injury Associated with Synthetic Marijuana Use in Six States***

Acute kidney injury following exposure to synthetic cannabinoids has been identified in six states from March to December 2012, according to a recent report from the Centers for Disease Control and Prevention (CDC). Synthetic cannabinoids, also known as synthetic marijuana, K2, and Spice, are psychoactive substances chemically similar to the active ingredient in marijuana that are applied to plant material and smoked (see *CESAR FAX*, Volume 20, Issue 17). Prompted by hospitalizations in Wyoming for unexplained acute kidney injury after recent use of synthetic marijuana, a collaboration among several state public health officials, poison center toxicologists, forensic laboratory scientists, individual clinicians, and the Arkansas K2 Research Consortium identified 16 cases of synthetic marijuana-associated acute kidney injury in 6 states (Kansas, Oklahoma, Oregon, New York, Rhode Island, and Wyoming (see table below). All of the patients were admitted to the hospital, and five required hemodialysis, a treatment for kidney failure. None of the patients reported preexisting renal dysfunction or use of medication that might have caused renal problems. Earlier this month, doctors in Alabama reported four cases of acute kidney injury after ingestion of synthetic marijuana among previously healthy young men.\* The CDC report suggests that “physicians caring for otherwise healthy adolescents and young adults with unexplained [acute kidney injury] should inquire about [synthetic marijuana] use, and cases of suspected [synthetic marijuana] poisoning should be reported to both the regional poison center and the appropriate state health department” (p. 97).

**Sixteen Acute Kidney Injury Cases Associated with Synthetic Marijuana Use, March 16-December 7, 2012**

State	Number of Cases	Ages (median 18.5 yrs)	Peak Creatinine (normal=0.6-1.2 mg/dL)	Implicated Product(s)
Kansas	1	26	7.7	Mr. Happy
Oklahoma	2	15	6.2-11.5	Flame 2.0
Oregon	6	15-27	4.7-10.6	synthetic cannabinoid; Mad Monkey or Clown Loyal; Lava
New York	2	30-33	3.3-9.0	Phantom Wicked Dreams; Spice Gold
Rhode Island	1	25	21.0	synthetic cannabinoid
Wyoming	4	15-21	4.1-6.8	synthetic cannabinoid; blueberry flavored; bubble gum flavored

\*Bhanushali, G.K., Jain, G., Fatima, H., Leisch, L., Thornley-Brown, D., “AKI Associated with Synthetic Cannabinoids: A Case Series,” *Clinical Journal of the American Society of Nephrology*, published online before print December 2012. Online at <http://www.ncbi.nlm.nih.gov/pubmed/23243266>. Also see press release at <http://www.uab.edu/news/latest/item/3133-uab-doctors-synthetic-marijuana-dangerous-for-kidneys>

SOURCE: Adapted by CESAR from Centers for Disease Control and Prevention, “Acute Kidney Injury Associated with Synthetic Cannabinoid Use—Multiple States, 2012,” *Morbidity and Mortality Weekly Report (MMWR)*, 62(6): 93-98, 2012. Available online at <http://www.cdc.gov/mmwr/pdf/wk/mm6206.pdf>. For more information, contact Michael D. Schwartz at [mschwartz@cdc.gov](mailto:mschwartz@cdc.gov) or 770-488-7282.

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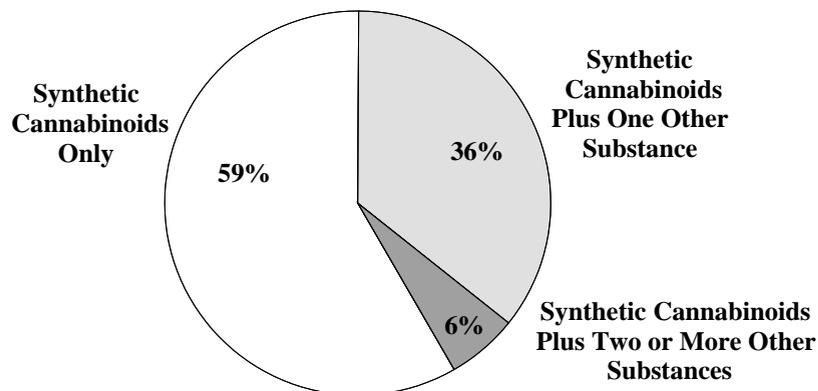
University of Maryland, College Park

## *Majority of U.S. Emergency Department Visits Involving Synthetic Cannabinoids Involve No Other Substances*

An estimated 11,406 U.S. emergency department (ED) visits in 2010 involved a synthetic cannabinoid product<sup>1</sup>, and three-fourths of these visits were made by patients ages 12 to 29, according to the most recent data available from the Drug Abuse Warning Network (DAWN). Synthetic cannabinoids, also referred to as synthetic marijuana, Spice, or K2, are substances designed to produce physical effects similar to marijuana (see *CESAR FAX*, Volume 20, Issue 17). In the majority (59%) of ED visits made by patients ages 12 to 29 that involved synthetic cannabinoids, no other substances were involved. Synthetic cannabinoid were used in combination with one other substance in 36% of the visits, and were used in combination with two or more substances in only 6% of visits<sup>2</sup> (see figure below). This is unusual in that the majority of ED visits involving other illicit drugs or the nonmedical use of pharmaceuticals also involve multiple drugs. For example, only 31% of ED visits involving marijuana were for marijuana alone; 69% involved other drugs (data not shown). The authors suggest that “educators can help prevent use of synthetic cannabinoids by addressing use of these substances in programs designed to prevent use of illicit drugs. Parents can also discuss the dangers of these drugs with their children and use parental controls for online purchases” (p. 3-4).

### **Estimated Percentage of U.S. Emergency Department Visits Involving Synthetic Cannabinoids Only or in Combination with Other Substances, Patients Ages 12 to 29, 2010**

(N=8,557)



NOTE: Percentages add to more than 100 percent due to rounding

<sup>1</sup>The 11,406 ED visits involving synthetic cannabinoids represent less than 1% of all ED visits. However, the authors note that “because of limited availability of tests for synthetic cannabinoids, data collection efforts in the ED may have missed visits in which they were involved” (p. 4).

<sup>2</sup>When other drugs were used with synthetic marijuana, they were most commonly marijuana (17%), pharmaceuticals (17%), and alcohol (13%).

SOURCE: Adapted by CESAR from data from Substance Abuse and Mental Health Services Administration (SAMHSA), “Drug-Related Emergency Department Visits Involving Synthetic Cannabinoids,” *The DAWN Report*, December 4, 2012. Available online at <http://www.samhsa.gov/data/2k12/DAWN105/SR105-synthetic-marijuana.pdf>.

#### **CDC Reports Acute Kidney Injury Associated with Synthetic Marijuana Use in Six States**

The Centers for Disease Control and Prevention (CDC) reports that acute kidney injury following exposure to synthetic cannabinoids has been identified in six states from March to December 2012. See *CESAR FAX*, Volume 22, Issue 7 for more information (available online at <http://www.cesar.umd.edu/cesar/cesarfax/vol22/22-07.pdf>).

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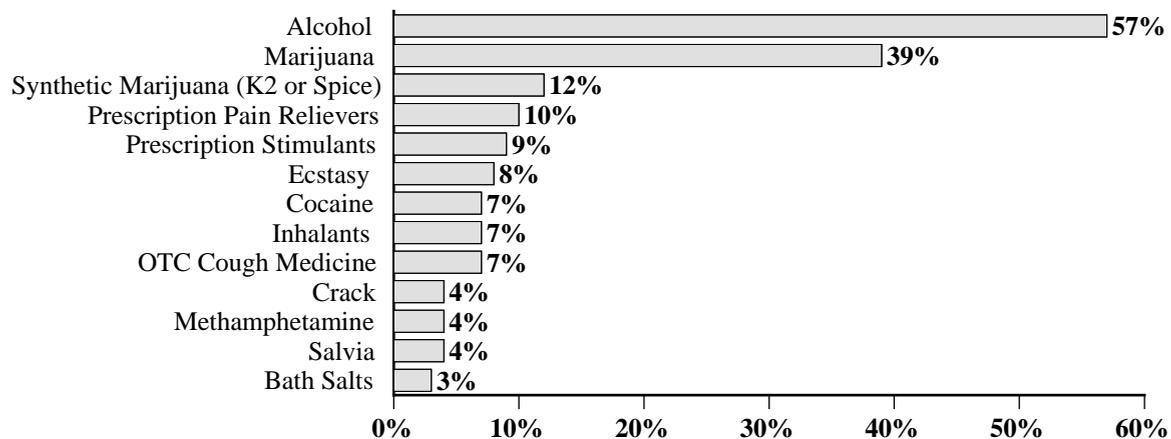
University of Maryland, College Park

## *Synthetic Marijuana Third Most Reported Substance Used by U.S. High School Students*

More high school students report using synthetic marijuana than any other substance besides alcohol and marijuana, according to data from a recently released survey of 9<sup>th</sup> to 12<sup>th</sup> graders. Alcohol and marijuana were the most prevalent drug used, with 57% reporting alcohol use and 39% reporting marijuana use in the past year in 2012. The third most prevalent substance used was synthetic marijuana (12%), often referred to as K2 or Spice. Use of all other substances was reported by 10% or less of high school students. Similar results have been found by other surveys of high school students (see *CESAR FAX*, Volume 21, Issue 5).

*Editor's Note: Synthetic marijuana products typically consist of plant material treated with synthetic cannabinoids, psychoactive substances designed to bind to and stimulate the same receptors in the brain as THC. Synthetic marijuana use in general has been linked with adverse effects such as increased heart rate and blood pressure, anxiety, agitation, and acute kidney injury (see CESAR FAX, Volume 20, Issue 17 and Volume 22, Issue 7). However, there are more than 140 different types<sup>1</sup> of synthetic cannabinoids, each with potentially different potency as well as adverse effects<sup>2</sup>. The exact synthetic cannabinoids contained in synthetic marijuana products is impossible to determine without specific testing—studies have shown that the types and amounts of synthetic cannabinoids can vary greatly between products, lots, and even within the same package<sup>3</sup>. In reality, youth who report using synthetic marijuana likely have no idea what specific synthetic cannabinoid they are using or what the effects will be.*

## Percentage of U.S. Students (Grades 9 to 12) Reporting Past Year Alcohol and Other Drug Use, 2012 (N=3,884)



<sup>1</sup>Hudson S, Ramsey J, "The Emergency and Analysis of Synthetic Cannabinoids," *Drug Testing and Analysis* 3(7-8):466-478, 2011.

<sup>2</sup>United Nations Office on Drugs and Crime, *Synthetic Cannabinoids in Herbal Products*, 2011. <sup>3</sup>Hillebrand, J, et al., "Legal Highs on the Internet," *Substance Use and Misuse*, 45(3): 330-340, 2010.

NOTES: Abuse of inhalants and OTC cough medicine is defined as use to get high. Abuse of prescription drugs is defined as use without a doctor's prescription. Surveys were conducted in schools by GfK Roper Public Affairs & Corporate Communications with 3,884 9<sup>th</sup> to 12<sup>th</sup> grade students from February to June 2012. The margin of error is +/- 2.1 percentage points.

SOURCE: Adapted by CESAR from The Partnership for a Drug-Free America and the MetLife Foundation, *The Partnership Attitude Tracking Study (PATS): Teens and Parents*, 2013. Available online at <http://www.drugfree.org/newsroom/research-publication/full-report-and-key-findings-the-2012-partnership-attitude-tracking-study-sponsored-by-metlife-foundation>.

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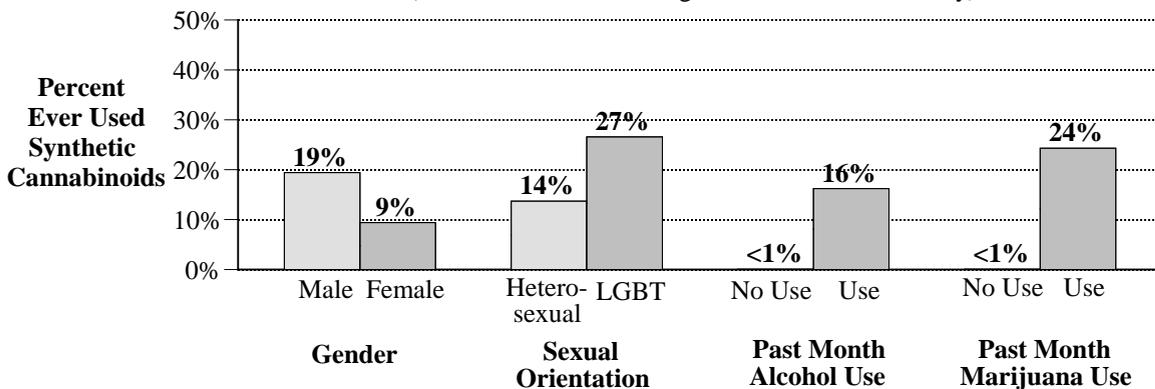
**University of Maryland, College Park**

***Study Finds That 14% of Undergraduate Students at a Southeastern University Report Synthetic Cannabinoid Use; Users More Likely to Be Male and Identify as LGBT***

Synthetic cannabinoid use among college students at a Southeastern university is concentrated in males and in the lesbian, gay, bisexual, or transgender (LGBT) community, according to the first known study to obtain a detailed profile of users of any type of synthetic cannabinoid.\* Overall, 14% of undergraduate students reported lifetime use of synthetic cannabinoids, with an average initiation age of 18. Males were twice as likely as females (19% vs. 9%) to report synthetic cannabinoid use. Sexual orientation was also found to be related to synthetic cannabinoid use. Students who self-identified themselves as LGBT were nearly twice as likely as heterosexual students (27% vs. 14%) to report lifetime use (see figure below), and reported use was equally high among both male and female LGBT students (data not shown). The study also found that lifetime use of synthetic cannabinoids was virtually non-existent among those who did not report past month alcohol (0.3%) or marijuana (0.4%) use, compared to 16% and 24%, respectively, of past month users of these substances. According to the authors, “future research should investigate the higher use among [LGBT individuals], and prevention efforts may be most effective when reaching out to the LGBT community” (p. 6).

*Editor’s Note: It is impossible to determine the types of synthetic cannabinoids contained in synthetic marijuana products without specific testing—studies have shown that the types and amounts of synthetic cannabinoids can vary greatly between products, lots, and even within the same package<sup>1</sup>. In reality, youth who report using synthetic marijuana likely have no idea what specific synthetic cannabinoid they are using or what the effects will be.*

**Percentage of Undergraduate College Students Reporting Lifetime Synthetic Cannabinoid Use, by Gender, Sexual Orientation, and Past Month Alcohol or Marijuana Use, 2011-2012**  
(n=2,349 students at a large Southeastern University)



\*According to the authors, their study “provides the first detailed profile of synthetic cannabinoid users from a random sample of young adults” that was “not limited to one of a few forms of synthetic cannabinoids, but instead asked about any of the compounds in that category” (p. 4). Respondents were asked if they had “used any synthetic marijuana (K2, Spice, Mr. Miyagi, Pot-Pourri, etc.) ever or in the last year” (p. 2). The survey “utilized the term ‘synthetic marijuana’ rather than the more scientific ‘synthetic cannabinoid’ since that language would be better understood by respondents” (p. 6).

<sup>1</sup>e.g., Hillebrand, J, et al., “Legal Highs on the Internet,” *Substance Use and Misuse*, 45(3): 330-340, 2010.

NOTES: Data were collected from a self-report survey administered to 2,349 undergraduate students in 40 classes at a large public university in the State of Georgia between November 2011 and March 2012.

SOURCE: Adapted by CESAR from Stogner, J.M. and Miller, B.L., “A Spicy Kind of High: A Profile of Synthetic Cannabinoid Users,” *Journal of Substance Use*, Advance online publication (doi:10.3109/14659891.2013.770571), 2013. For more information, contact Dr. Stogner at stogner@email.unc.edu.

## A Weekly FAX from the Center for Substance Abuse Research

University of Maryland, College Park

### *Synthetic Cannabinoid Users Report Using the Drug to Avoid Positive Drug Tests; Return to Marijuana Use When Not Being Tested*

Synthetic cannabinoids, also known as K2 or Spice, are not included in most routine drug test panels because they require specialized, more expensive testing. Furthermore, studies have shown that the types and amounts of synthetic cannabinoid (SC) metabolites can vary greatly between products, lots, and even within the same package<sup>1</sup>, making it difficult to decide which specific SC metabolite should be included in drug testing programs. Some SC users use the drug as a substitute for marijuana to avoid positive drug tests, according a qualitative study of SC users in Southern California. The study found that:

- The majority of synthetic cannabinoid users reported that they used the drug to avoid positive drug tests, either because they were under community correctional supervisions, seeking employment, residing in a sober living facility, or joining the military. According to one user, “Spice would give you a weed like effect without the positive test” (p. 220).
- “Most of the users of Spice-type products in this study consumed these products as a substitute for marijuana during drug-testing periods, and returned to marijuana use once that period ended” (p. 223). According to one user, “I was trying to get a job where they were going to drug test . . . so I got that stuff [Spice], and I liked it enough. I enjoyed it. I did it for a while . . . Then, my job search ended ‘cause I wasn’t going to do any of them. So I went back to the regular stuff” (p. 222).
- Nearly all the SC users learned of the drug from someone who was using SC to avoid detection on drug tests. For example, one user reported that he “was talking to some kids that went to a Christian school, and they get drug tested. So, all the kids there would smoke Spice instead of weed” (p. 222).
- All the SC users also used marijuana, and half had a history of drug problems, such as sobriety attempts, drug-related offending, and negative drug experiences.
- Some of the SC users expressed concern over the health effects of the drug. “I don’t know what they’re putting in it. It kind of scares me, so I try not to do it that often” (p. 222). Others experienced negative side-effects. “It [Spice] just doesn’t feel right. Way more of a stressor on your body, like your body is trying to deal with whatever cannabinoid that is in there, and it’s just like you experience it in a different way. It feels worse.” (p. 222).

The authors note that while synthetic cannabinoid products are labeled as not being for human consumption and thus cannot be regulated by the Food and Drug Administration (FDA), “this tactic for circumventing the law does not appear to detract potential users from purchasing and consuming these untested, unknown and potentially harmful substances” (p. 223).

NOTE: Findings are from in-depth, semi-structured interviews with 25 Southern California adults who had used K2, mephedrone, bath salts, or *Salvia divinorum* at least once. Participants were recruited using flyers distributed to head shops, cafes and other businesses; advertisements posted in free weekly newspapers; and snowball sampling. The “findings are neither intended to reflect the patterns of all users throughout the US nor users around the globe. Rather, they are intended to contribute to the need for accurate information about the growing use of these substances” (p. 223).

<sup>1</sup>e.g., Hillebrand, J, et al., “Legal Highs on the Internet,” *Substance Use and Misuse*, 45(3): 330-340, 2010.

SOURCE: Adapted by CESAR from Perrone, D., Helgesen, R.D., and Fischer, R.G., “United States Drug Prohibition and Legal Highs: How Drug Testing May Lead Cannabis Users to Spice,” *Drugs: Education, Prevention and Policy* 20(3):216-224, 2013. For more information, contact Dina Perrone at dina.perrone@csulb.edu.

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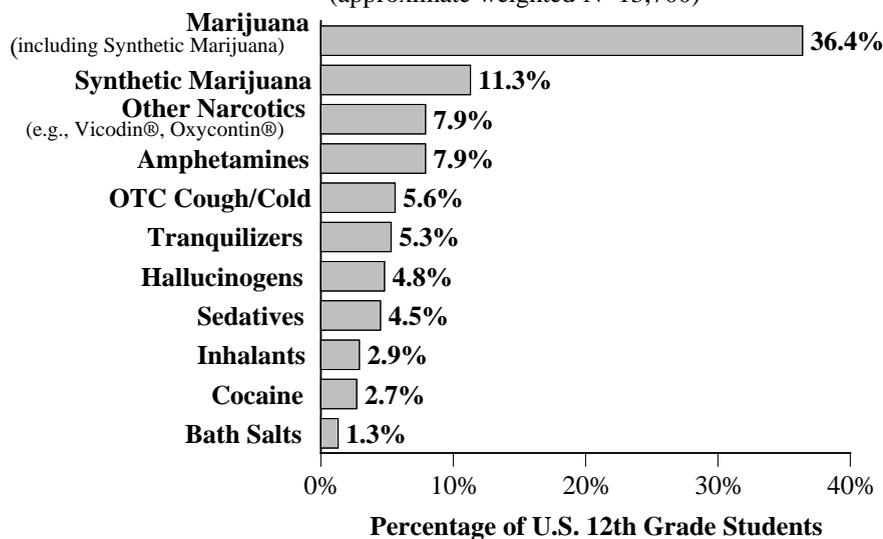
University of Maryland, College Park

## *One in Nine U.S. High School Seniors Report Using Synthetic Marijuana in the Past Year*

Marijuana and synthetic marijuana are the most prevalent illicit drugs used by 12<sup>th</sup> graders, according to data from the most recent national Monitoring the Future (MTF) survey. Slightly more than one-third (36.4%) of high school seniors reported using marijuana in the past year, including 11.3% who reported using synthetic marijuana, compared with less than 8% for all other illicit drugs (see figure below). These estimates of synthetic marijuana use among U.S. high school students are nearly identical to those found by another 2012 survey of high school students (see *CESAR FAX*, Volume 22, Issue 17). The MTF survey also found that approximately one-fourth (24%) of 12<sup>th</sup> graders perceive a great risk for harm in trying synthetic marijuana once or twice, and one-third (33%) think there is a great risk for harm in using the drug occasionally, compared to 15% and 21%, respectively, for marijuana. Previous research on high school students has shown that students' perceived risk is related to their likelihood of using a drug (see *CESAR FAX*, Volume 20, Issue 3).

### Percentage of U.S. 12<sup>th</sup> Grade Students Reporting Past Year Use of Drugs\* Other Than Alcohol and Tobacco, 2012

(approximate weighted N=13,700)



\*Amphetamines include Adderall® (7.6%), Ritalin® (2.6%), methamphetamine (1.1%), and crystal methamphetamine (0.8%). Hallucinogens include salvia (4.4%), ecstasy (3.8%), LSD (2.4%), and PCP (0.9%). Other narcotic drugs used nonmedically include Vicodin® (7.5%) and Oxycontin® (4.3%). Drugs with less than 2% prevalence were ketamine (1.5%), GHB (1.4%), Rohypnol® (1.5%), steroids (1.3%), and heroin (0.8%). Amphetamines, sedatives, tranquilizers, and other narcotics include only use “. . . on your own—that is, without a doctor telling you to take them.” OTC Cough/Cold refers to use for the explicit purpose of getting high.

NOTE: Youth who report using synthetic marijuana likely have no idea what specific synthetic cannabinoid they are using or what the effects will be, especially since the types and amounts of synthetic cannabinoids can vary greatly between products, lots, and even within the same package.

SOURCE: Adapted by CESAR from National Institute of Drug Abuse, *Monitoring the Future: National Results on Adolescent Drug Use, 1975-2012, Volume I: Secondary School Students*, 2013. Available online at [http://www.monitoringthefuture.org/pubs/monographs/mtf-vol1\\_2012.pdf](http://www.monitoringthefuture.org/pubs/monographs/mtf-vol1_2012.pdf).

••301-405-9770 (voice) ••301-403-8342 (fax) ••CESAR@umd.edu ••www.umd.edu ••

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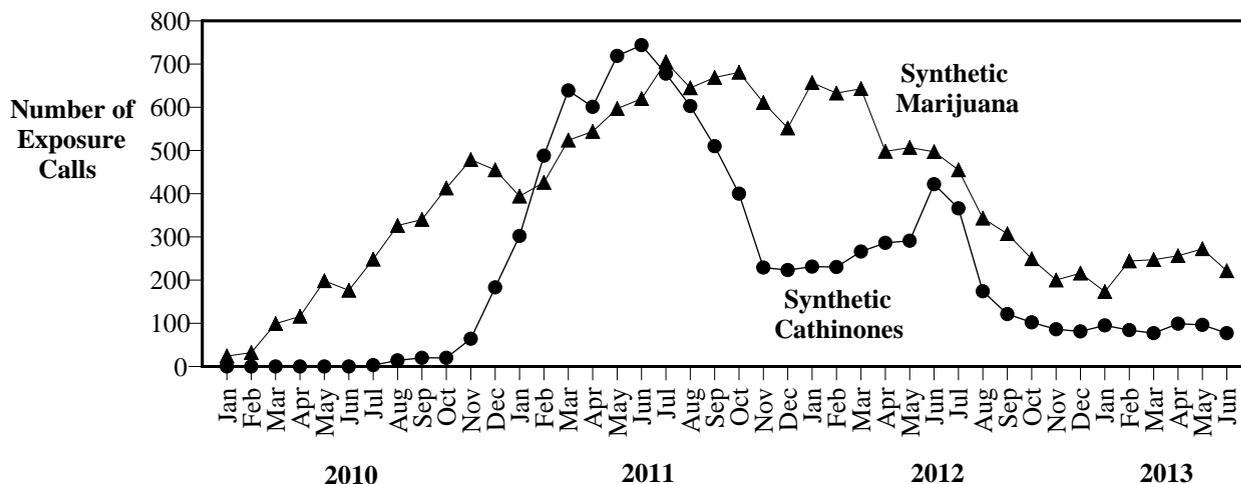
A Weekly FAX from the Center for Substance Abuse Research

University of Maryland, College Park

## *Number of Calls to U.S. Poison Control Centers About Exposure to Synthetic Marijuana and Synthetic Cathinones Stable at Lower Levels Than Recent Years*

The number of calls to U.S. poison control centers about exposure to synthetic marijuana and synthetic cathinones remained relatively stable in the first six months of 2013, according to data from the American Association of Poison Control Centers (AAPCC). After peaking in July 2011 at 705 calls, the number of calls for synthetic marijuana, also known as spice or K2, began to decline in 2012, reaching 173 in January 2013. Since then the number of calls for exposure to synthetic marijuana have remained relatively stable at around 250 calls per month, with a slight decrease from May to June 2013 (from 272 calls to 221 calls). A similar pattern emerged for synthetic cathinones, also known as bath salts. After peaking in June 2011 at 744 calls, the number of poison center calls for synthetic cathinone exposure declined sharply during the rest of 2011, stabilized for the first part of 2012, then declined again after a brief rise. The number of calls for exposure to synthetic cathinones has remained around 90 calls per month since September 2012. The decreases in exposure calls for synthetic marijuana and bath salts since 2011 may be related to the heightened media exposure about the negative effects of these drugs as well as recent federal and state legal bans on the substances.

**Number of Calls to U.S. Poison Control Centers About Exposure\* to Synthetic Cathinones and Synthetic Marijuana, January 2010- June 2013†**



\*The term exposure means someone has had contact with the substance in some way; for example, ingested, inhaled, absorbed by the skin or eyes, etc. Not all exposures are poisonings or overdoses.

†AAPCC data for 2012 and 2013 are considered preliminary because it is possible that a poison center may update a case anytime during the year if new information is obtained. In the fall of each year, the data for the previous year is locked, and no additional changes are made.

SOURCES: Adapted by CESAR from the American Association of Poison Control Centers (AAPCC), *Synthetic Marijuana Data June 30, 2013*, 2013. Online at [https://aapcc.s3.amazonaws.com/files/library/Synthetic\\_Marijuana\\_Data\\_for\\_Website\\_6.30.2013.pdf](https://aapcc.s3.amazonaws.com/files/library/Synthetic_Marijuana_Data_for_Website_6.30.2013.pdf); and AAPCC, *Bath Salts Data June 30, 2013*, 2013. Online at [https://aapcc.s3.amazonaws.com/files/library/Bath\\_Salts\\_Data\\_for\\_Website\\_5.31.2013.pdf](https://aapcc.s3.amazonaws.com/files/library/Bath_Salts_Data_for_Website_5.31.2013.pdf).

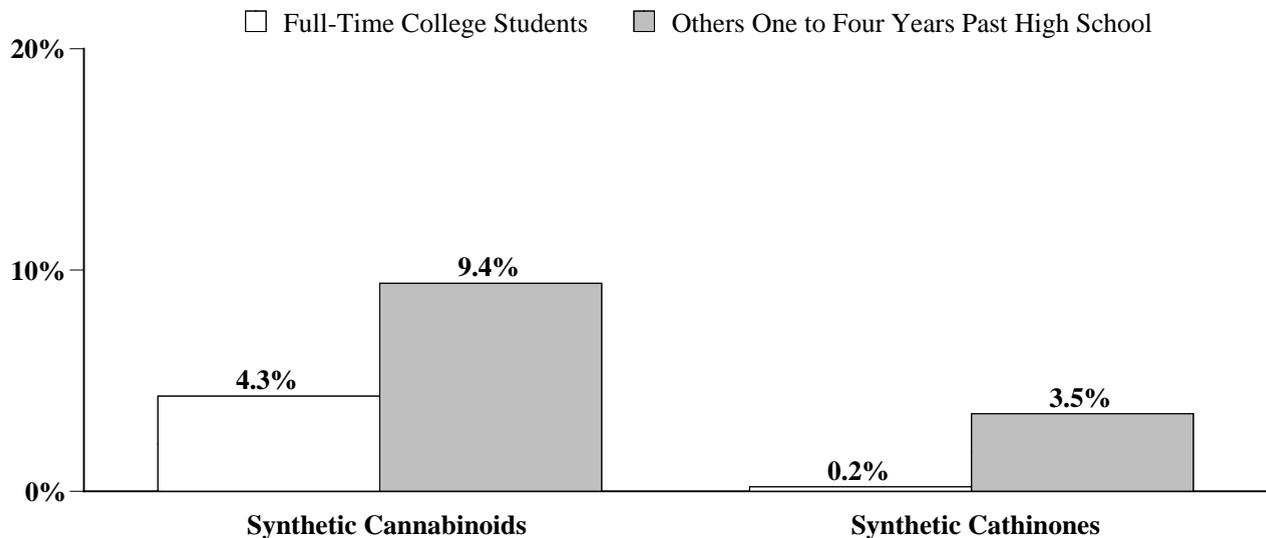
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University of Maryland, College Park

## *Full-Time College Students Less Likely to Use Synthetic Cannabinoids or Cathinones Than Other Young Adults*

Young adults not in college are more than twice as likely to report using synthetic cannabinoids or synthetic cathinones than those attending college full time, according to the most recent data from the national Monitoring the Future survey. Nearly one in ten high school graduates who were one to four years out of high school reported using synthetic cannabinoids, also known as spice or K2, in the past year, compared to 4.3% of full-time college students. Similarly, 3.5% of young adults not attending college reported using synthetic cathinones, also known as bath salts, compared to 0.2% of full-time college students. While there are currently 18 synthetic cannabinoids and 3 synthetic cathinones illegal at the federal level, these laws are often circumvented by the production, sale, and use of new synthetic cannabinoid and cathinone metabolites not covered by current legislation.

### **Young Adults Not in College More Than Twice As Likely to Report Past Year Synthetic Cannabinoid or Synthetic Cathinone Use As Full-Time College Students\*, 2012**



\*Full-time college students were defined as persons one to four years past high school who said they were taking courses as full-time students in a two- or four-year undergraduate college at the beginning of March 2012.

SOURCE: Adapted by CESAR from Johnston, L.D., O'Malley, P.M., Bachman, J.G., and Schulenberg, J.E., *Monitoring the Future National Survey Results on Drug Use, 1975-2012, Volume 2: College Students and Adults Ages 19-50*, 2013. Available online at [http://www.monitoringthefuture.org/pubs/monographs/mtf-vol2\\_2012.pdf](http://www.monitoringthefuture.org/pubs/monographs/mtf-vol2_2012.pdf).

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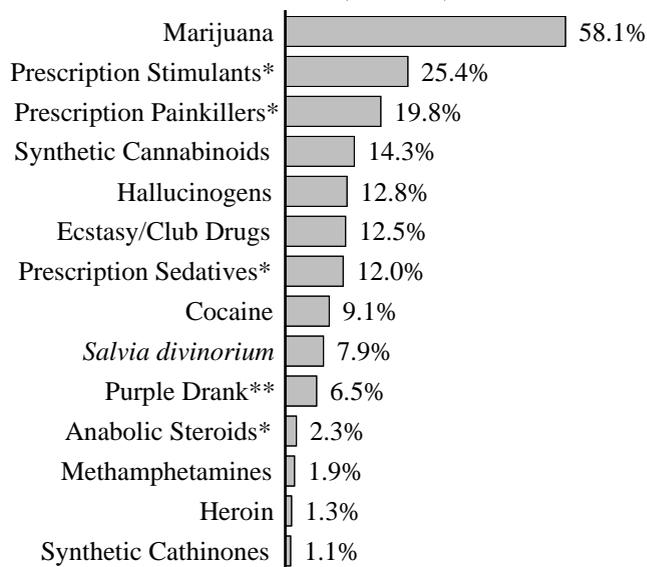
**University of Maryland, College Park**

***Despite Intense Media Attention, Study Finds Bath Salts Rarely Used by College Students at a Large Southeastern University***

“Despite extensive media coverage and the products continuing to be sold in local stores, use of synthetic cathinones was extremely rare in a random sample of young adults and was dwarfed by other novel drugs,” according to data from a survey of college students at a large southeastern university. Less than 1% of the students reported ever using synthetic cathinones, also known as bath salts—substantially less than those reporting lifetime use of other novel drugs, such as synthetic cannabinoids (14.3%), *Salvia divinorium* (7.9%), or purple drank (6.5%). The drugs most commonly used by college students were marijuana and prescription stimulants and painkillers used nonmedically (see figure below). In light of their findings, the authors suggest that “the media attention focusing on synthetic cathinone use as a growing epidemic may be largely misplaced.” Other national surveys of drug use in the past year<sup>†</sup> have found similarly low rates of bath salt use among high school students, college students, and young adults not in college.

**Percentage of College Students At a Large Southeastern University Reporting Lifetime Use of Substances Other Than Alcohol and Tobacco, 2012**

(N=2,349)



<sup>†</sup>See *CESAR FAX*, Volume 22, Issues 17, 28, and 33.

\*Questions specified recreational use and excluded use for legitimate medical issues.

\*\*Purple Drank typically refers to a mixture of codeine cough syrup, soda, and candy, with or without alcohol. Respondents were asked if they had “ever used ‘purple drank’ or mixed cough syrup with alcohol”.

NOTE: With the exception of heroin, lifetime use of each drug was reported by a significantly larger portion of the sample than was synthetic cathinones ( $P < 0.01$ ).

SOURCE: Adapted by CESAR from Stogner, J.M. and Miller, B.L., “Investigating the ‘Bath Salt’ Panic: The Rarity of Synthetic Cathinone Use Among Students in the United States,” *Drug and Alcohol Review*, Early View, May 29, 2013. For more information, contact Dr. John Stogner at [stogner@email.unc.edu](mailto:stogner@email.unc.edu).