

Novel Psychoactive Substances (NPS): Establish Restrictions But Don't Criminalize Them

We are
the Drug
Policy
Alliance.

August 2015

A series of novel psychoactive substances have emerged that simulate the effects of prohibited drugs like marijuana, ecstasy (MDMA), opioids, cocaine and methamphetamine. Also called new synthetic drugs and largely unregulated, these drugs may cause considerably more harm than the substances they are designed to mimic. While states and Congress have rushed to prohibit these chemicals, manufacturers have simply invented new variations of the same substances to skirt the bans. DPA advocates for the responsible regulation of novel psychoactive substances and for ending drug war policies like marijuana prohibition that have led to the emergence of these substances.

Synthetic Cathinones (e.g. “Bath Salts”, “Flakka”, etc.)

A wide range of unregulated research chemicals – including butylone, dimethylcathinone, ethcathinone, ethylone, 3- and 4-fluoromethcathinone, mephedrone, methedrone, methylenedioxypyrovalerone (MDPV), methylone, and pyrovalerone – have come to the attention of lawmakers across the nation as potential drugs of misuse.¹ Often marketed and sold legally as bath salts or plant food, under brand names like “Ivory Wave,” “Purple Wave” and “Vanilla Sky”, these chemicals are said to simulate the psychoactive effects of cocaine, amphetamines and ecstasy.²

According to the federally funded *Monitoring the Future* survey, use among teens remains “very low”³ and appears to be on the decline.⁴ Indeed, a 2015 national study found that only 1.1 percent of high school seniors reported using “bath salts” in the past year.⁵ Recent reports of use have been fueled in large part by sensationalized media reports, and people who have tried these products often report unpleasant psychoactive effects.

In the U.S., all 50 states have banned some or all of these bath salt chemicals.⁶ In September of 2011, the Drug Enforcement Administration (DEA) used its temporary scheduling powers to prohibit mephedrone, MDPV and methylone on an emergency basis.⁷ Congress passed legislation in 2012 banning these and nearly 30 other research chemicals – reacting in knee-jerk fashion to ludicrous media reports claiming that widely publicized violent attacks were caused by these substances, although lab results after these events found no presence of any of these chemicals.⁸

Despite this ban, similar chemicals continue to appear on the streets and to fuel sensationalized news reports. So-called “second generation” bath salts, like alpha-Pyrrolidinopentiophenone (alpha-PVP or a-PVP), commonly known as “flakka” or “grave”, have created a frenzy in the media, despite limited information about actual prevalence of use or health effects.⁹ Once again, the DEA used its temporary scheduling powers to prohibit alpha-PVP and 9 other cathinone chemicals in 2014.¹⁰

Synthetic Cannabinoids (e.g. “Spice”, “K2”, etc.)

A host of herbal products, known by such names as “K2” or “Spice” intended to simulate the psychoactive effects of marijuana, have generated concern among media and policymakers.¹¹ Synthetic cannabinoid products were virtually unknown until news media reported their presence at tobacco and novelty shops.¹² People appear to have started using synthetic marijuana to evade drug tests – and it caught on once news reports publicized its existence.¹³

President Obama¹⁴ and all 50 state governors¹⁵ have signed legislation criminalizing various forms of synthetic marijuana. Yet enterprising chemists have discovered an endless array of marijuana-like chemicals that can be sprayed onto potpourri-like plant

matter and sold as "incense" to circumvent the ban.¹⁶

Synthetic cannabinoids do not appear to be of much interest to youth in the U.S.¹⁷ People who have tried them often report psychoactive effects that are comparable to marijuana, but notably less pleasurable. In fact, a 2013 global study found that over 90 percent of people surveyed who use synthetic cannabinoid products strongly prefer natural marijuana¹⁸ – suggesting that if marijuana were legally available, then demand for synthetic cannabinoids would largely disappear.

These substances are generally far more harmful than marijuana ever could be. For example, a team of state public health department officials, poison control centers and CDC researchers identified 16 cases of acute kidney injury related to synthetic marijuana in six states (Kansas, Oklahoma, Oregon, New York, Rhode Island and Wyoming).¹⁹ Synthetic cannabinoid use has been associated with thousands of poisonings and hospitalizations,²⁰ and deaths attributable to synthetic marijuana have increased – in recent years.²¹

Even as policymakers from across the political spectrum embrace drug policy reforms, the knee-jerk criminalization of new synthetic drugs demonstrates that elected officials still tend to prohibit first, and ask questions later.

Piperazines (e.g. benzylpiperazine or BZP, etc.)²²
Piperazines are a broad class of chemicals that includes synthetic stimulants such as benzylpiperazine (BZP) and trifluoromethylphenylpiperazine (TFMPP). They mimic the stimulant qualities of amphetamines and MDMA/Ecstasy.²³ Often sold as "party pills", these drugs are not as widely used in the U.S. as in other countries, such as New Zealand.²⁴ BZP was permanently placed in Schedule I in the U.S. in 2004.²⁵

Phenethylamines (e.g. 2-C, D-series, BromodragonFLY, etc.).
Phenethylamines are a large family of chemicals that include familiar drugs like ecstasy and methamphetamine, as well as a dizzying array of new "research chemicals" that have stimulant as well as psychedelic properties. Many were scheduled in the U.S. along with various bath salt chemicals and synthetic cannabinoids in 2012 – but new variations continually emerge.²⁶

Why Prohibition Won't Work

Prohibiting new synthetic drugs will have unintended detrimental consequences.

If these and future new synthetic drugs are banned outright, young adults could face immediate, devastating and life-long legal barriers to education, employment, voting and public benefits for drug law violations. Criminalizing possession and distribution of synthetic drugs is also tantamount to turning over control of these chemical compounds to the illicit market, inevitably leading to violence and criminality.

Criminalization replaces a legal market that can be sensibly regulated with an underground economy that empowers criminal activity.

Criminalization will not reduce drug misuse.

The health risks of drugs are exacerbated by criminalization, which pushes risky behavior underground where people who need help the most are the least likely to get it. Spice, bath salts, and a slew of new emerging chemicals can be acquired through online retailers, many based in foreign countries – a threat that will not be removed if these products are prohibited in the U.S.

Evidence suggests that demand for synthetic drugs is considerable. A 2011 Johns Hopkins study that found that one in five people who use synthetic marijuana reported that it was their drug of choice, and many reported continued use despite local legislation banning the drug.²⁷ Since the United Kingdom criminalized the chemical compound mephedrone ("bath salts") in 2010, it continues to be widely available and demand has not diminished.²⁸

Attempts to ban one new substance after another are totally futile – each time one gets banned, another new, untested and oftentimes more dangerous drug fills the void to replace it.²⁹ Since Congress and state legislatures banned an array of them over the past two years, manufacturers have simply changed their chemical formulations to one of the thousands of slightly different chemicals with similar effects.³⁰

"Basically, we're playing whack-a-mole. We smack [a compound] down, and the next week, something else pops up."

- DEA senior research chemist Arthur Berrier

While many synthetic cannabinoids have been banned, researchers note that “there are hundreds of further compounds with cannabinoid receptor activity and it can be assumed that further substances will appear on the market soon, which will be an ongoing challenge for toxicologists as well as for law enforcement.”³¹

Prohibition wastes taxpayer money.

The use of scarce government funds to enforce, prosecute and incarcerate people who use these substances would put further strain on criminal justice resources. According to one estimate, a single marijuana arrest alone costs taxpayers over \$10,000 on average.³² Expanding drug prohibition to include new synthetic drugs will result in significantly more wasteful drug war spending.

Prohibition hinders scientific research.

Placing these chemical compounds in Schedule I will jeopardize efforts by researchers and scientists to study potential medicinal benefits and health harms. Given that little is known about these substances, and that some are not even present in the United States, it doesn't make sense to hinder research.³³

Before rushing to criminalize a new drug, legislators ought to ask: What specific regulatory options can be used to control access to substances in a way that reduces the harm to individuals, families and society as a whole?

What Congress and the States Can Do: Regulate New Drugs

Establish sensible regulations, including age controls and other restrictions.

New synthetic drugs are not an example of effective regulation, but rather *non-regulation*. Yet outright criminalization would only drive the demand for these products to the black market, which provides no age restrictions or other regulatory controls.

Age controls, product labeling requirements, as well as marketing, branding and retail display restrictions, are proven to reduce youth access to tobacco products and impulse tobacco purchases among adults.³⁴ Congress and the states should pass legislation that regulates and controls adult sales of these products, expands comprehensive drug education, and conducts

a thorough scientific evaluation of these substances.

Comprehensive drug education.

This approach is working for tobacco, a far more harmful drug that has contributed to more deaths than alcohol and illicit drugs combined. As a result of education initiatives and marketing restrictions, tobacco use has declined dramatically over time.³⁵

Youth would be better served by education programs to dissuade synthetic drug use, and a proactive effort by Congress and the states to fund studies and evaluations that give the public, lawmakers and health authorities a better understanding of the health risks and benefits of synthetic drugs – as well as how to proactively reduce availability of these products to minors through market regulation. For instance, the misuse of household and industrial aerosol products by young people resulted in a government response that balanced public education with efforts by merchants and lawmakers to prevent minors from purchasing or acquiring aerosol products.

Regulate Marijuana.

The vast majority of synthetic cannabinoids wouldn't exist if not for the prohibition of marijuana itself, a plant that has been widely consumed around the world for thousands of years. These chemicals are far more dangerous than marijuana, and they will continue to emerge until we legally regulate marijuana for adults.³⁶

Voters in Colorado and Washington approved the legal regulation of marijuana in November 2012, and both states have created strictly-regulated systems – with age restrictions (21 and older) accompanied by meticulous government oversight of producers and distributors. On the other hand, synthetic marijuana – whether under-regulated or outright prohibited – hasn't ever been subject to an appropriate level of regulation.

Legal regulation means effective control measures geared toward the specific risks of each particular drug. Drugs (whether marijuana or synthetic marijuana) should not be legally regulated because they are safe – they should be legally regulated precisely because they can be harmful.

“Regulating psychoactive substances will help protect the health of, and minimize harm to, individuals who use these substances.”³⁷– New Zealand Ministry of Health, 2013

New Zealand: A Model for Regulating Emerging Synthetic Drugs

New Zealand realized that simply banning these substances was unrealistic and ineffective. In July 2013, the country's Parliament enacted an historic new law that aims to regulate and control – rather than criminalize – novel psychoactive substances.³⁸ New Zealand's approach is an innovative, health-centered alternative to failed prohibitionist policies.³⁹ However, implementation of this new law has been stalled.⁴⁰

¹ See, e.g. Winstock AR, Marsden J, and Mitcheson L. What should be done about mephedrone? *BMJ* 2010; 340: 1605; Winstock AR, Mitcheson LR, Deluca P, Davey Z, Corazza O, Schifano F. Mephedrone, new kid for the chop? *Addiction* 2010; published online Aug 23. DOI: 10.1111/j.1360-0443.2010.03130x; Winstock AR, Marsden J. Mephedrone: assessment of health risks and harms, 2010. In: European Monitoring Centre for Drugs and Drug Addiction. Risk assessment report of a new psychoactive substance: 4-methylmethcathinone (mephedrone); and Winstock, A.R., Mitcheson, L., Ramsey, J. & Marsden, J. (May 2011), 'Mephedrone: Use, subjective effects and health risks', *Addiction*, DOI: 10.1111/j.1360-0443.2011.03502.x

² J. M. Prosser and L. S. Nelson, "The Toxicology of Bath Salts: A Review of Synthetic Cathinones," *J Med Toxicol* 8, no. 1 (2012).

³ Lloyd D. Johnston et al., *Monitoring the Future, National Survey Results on Drug Use, 1975-2012: Volume I, Secondary School Students* (Ann Arbor: Institute for Social Research, The University of Michigan, 2013).

⁴ Lloyd D. Johnston et al., *Monitoring the Future National Survey Results on Drug Use: 2014 Overview, Key Findings on Adolescent Drug Use* (Ann Arbor: Institute for Social Research, The University of Michigan, 2015).

⁵ Joseph J. Palamar, "'Bath Salt' Use among a Nationally Representative Sample of High School Seniors in the United States," *The American Journal on Addictions* (2015).

⁶ National Conference of State Legislatures, (2015), <http://www.ncsl.org/issues-research/justice/synthetic-drug-threats.aspx>.

⁷ DEA moves to emergency control synthetic stimulants. <http://www.justice.gov/dea/pubs/pressrel/pr090711.html>.

⁸ See, e.g., "Face-Eating Cannibal Attack May Be Latest in String of 'Bath Salts' Incidents," *ABC News*, June 1, 2012. (Reporting of a bizarre violent attack in which a man attacked and then bit the face of another man. While police and media reported as fact that the attacker was under the influence of bath salts, in fact none of these substances were found in his system. See e.g. *Miami Herald*, June 27, 2012.)

⁹ See Jacob Sullum, "Fear of Flakka: Anti-Drug Hysteria Validates Itself," *Forbes*, April 16 2015. (Citing Laura Kenney, "New Designer Drug Flakka Gives Users Super-Human Strength" *Yahoo News*, April 6, 2015.)

¹⁰ "Schedules of Controlled Substances: Temporary Placement of 10 Synthetic Cathinones into Schedule I," *Federal Register* 79, no. 45 (2014).

¹¹ Vardakou, I., Pistos, C. & Spiliopoulou, C. "Spice drugs as a new trend: Mode of action, identification and legislation," *Toxicology Letters*, 197, no. 3 (2010): 157-62.

¹² See, e.g., Sarah Wire, "Cops: Imitation Pot as Bad as the Real Thing," *The Associated Press*, February 17, 2010; Steve Featherstone, "Spike Nation: Cheap, Unpredictable and Hard to Regulate, Synthetic Marijuana Has Emergency Responders Scrambling to Save Lives," *New York Times Magazine*, July 8 2015.

¹³ Dina Perrone, Randi D. Helgesen, and Ryan G. Fischer, "United States Drug Prohibition and Legal Highs: How Drug Testing May Lead Cannabis Users to Spice," *Drugs: Education, Prevention, and Policy* (2012).

¹⁴ Included in this legislation were various other new synthetics, including: 4-methylmethcathinone (Mephedrone); 3,4-methylenedioxypropylvalerone (MDPV); 2-(2,5-Dimethoxy-4-ethylphenyl); ethanamine (2C-E); 2-(2,5-Dimethoxy-4-methylphenyl)ethanamine (2C-D); 2-(4-Chloro-2,5-dimethoxyphenyl)ethanamine (2C-C); 2-(4-Iodo-2,5-dimethoxyphenyl)ethanamine (2C-I); 2-[4-(Ethylthio)-2,5-dimethoxyphenyl]ethanamine (2C-T-2); 2-[4-(Isopropylthio)-2,5-dimethoxyphenyl]ethanamine (2C-T-4); 2-(2,5-Dimethoxyphenyl)ethanamine (2C-H); 2-(2,5-Dimethoxy-4-nitro-phenyl)ethanamine (2C-N); (28) 2-(2,5-Dimethoxy-4-(n)-propylphenyl)ethanamine (2C-P). <http://www.govtrack.us/congress/bills/112/s3187/text>.

¹⁵ National Conference of State Legislatures, (2015), <http://www.ncsl.org/issues-research/justice/synthetic-drug-threats.aspx>.

¹⁶ European Monitoring Centre for Drugs and Drug Addiction, "New Psychoactive Substance in Europe: Innovative Legal Responses," (Luxembourg: Publications Office of the European Union, 2015).

¹⁷ Joseph J. Palamar and Patricia Acosta, "Synthetic Cannabinoid Use in a Nationally Representative Sample of Us High School Seniors," *Drug and Alcohol Dependence* 149(2015); Johnston et al., *Monitoring the Future* (2015).

¹⁸ A. R. Winstock and M. J. Barratt, "Synthetic Cannabis: A Comparison of Patterns of Use and Effect Profile with Natural Cannabis in a Large Global Sample," *Drug Alcohol Depend* (2013).

¹⁹ 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, <http://www.cdc.gov/mmwr/pdf/wk/mm6206.pdf>; Gautam Kantilal Bhanushali et al.,

"Aki Associated with Synthetic Cannabinoids: A Case Series," *Clinical Journal of the American Society of Nephrology* 8, no. 4 (2013).

²⁰ Palamar and Acosta, "Synthetic Cannabinoid Use in a Nationally Representative Sample of Us High School Seniors: Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality, "Update: Drug-Related Emergency Department Visits Involving Synthetic Cannabinoids," (Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014).

²¹ Max Kutner, "Synthetic Marijuana Deaths Tripled This Year," *Newsweek*, June 11 2015.

²² Sheridan, J., Butler, R., Wilkins, C. & Russell, B. (2007), 'Legal piperazine containing party pills – a new trend in substance misuse'. *Drug and Alcohol Review*, 26(3): 335-43, <http://www.ncbi.nlm.nih.gov/pubmed/17454024>; Wilkins, C., Girling, M. & Sweetsur, P. (2007), 'The prevalence of use, dependency and harms of legal 'party pills' containing benzylpiperazine (BZP) and trifluoromethylpiperazine (TFMPP) in New Zealand'. *Journal of Substance Abuse Treatment*, 12(3):213-218, <http://www.citeulike.org/user/tronica/article/1398060>; Wilkins, C., Sweetsur, P. & Girling, M. (2008), 'Patterns of benzylpiperazine/ trifluoromethylphenylpiperazine (BZP/TFMPP) party pill use and adverse effects in a population sample in New Zealand', *Drug and Alcohol Review*, 27(6):633-639.

²³ B. M. Cohen and R. Butler, "Bzp-Party Pills: A Review of Research on Benzylpiperazine as a Recreational Drug," *Int J Drug Policy* 22, no. 2 (2011).

²⁴ See Erowid.org and Dancesafe.org. See also, MixMag, *the Global Drugs Survey* (2014), www.globaldrugsurvey.com.

²⁵ DEA issued a temporary scheduling order for both BZP and TFMPP in 2002, but removed TFMPP when it permanently scheduled BZP in 2004.

²⁶ S. L. Hill and S. H. Thomas, "Clinical Toxicology of Newer Recreational Drugs," *Clin Toxicol (Phila)* 49, no. 8 (2011); European Monitoring Centre for Drugs and Drug Addiction, "New Psychoactive Substance in Europe: Innovative Legal Responses."

²⁷ Ryan Vandrey, Kelly E. Dunn, Jeannie A. Fry, Elizabeth R. Girling, "A survey study to characterize use of Spice products (synthetic cannabinoids)," *Drug and Alcohol Dependence*, August 9, 2011

²⁸ Adam Winstock et al. "Mephedrone: still available and twice the price," *The Lancet*, Vol. 376, p. 1537, November 6, 2010

²⁹ UNODC, 2013, "The Challenge of New Psychoactive Substances";

http://www.unodc.org/documents/scientific/NPS_2013_SMART.pdf; European Monitoring Centre for Drugs and Drug Addiction, "New Psychoactive Substance in Europe: Innovative Legal Responses; Fiona Measham et al., "Tweaking, Bombing, Dabbing and Stockpiling: The Emergence of Mephedrone and the Perversity of Prohibition," *Drugs and Alcohol Today* 10, no. 1 (2010).

³⁰ "Tweaking, Bombing, Dabbing and Stockpiling: The Emergence of Mephedrone and the Perversity of Prohibition; Doris Payer, "Novel Synthetic Drugs: A Neuroscience Perspective," in *Club Health* (San Francisco: Drug Policy Alliance, 2013); Adam Winstock and Chris Wilkins, "Legal Highs' the Challenge of New Psychoactive Substances," *Series on Legislative Reform of Drug Policies, Number Amsterdam: Transnational Institute* (2011).

³¹ Auwärter V et al., "Spice' and other herbal blends: harmless incense or cannabinoid designer drugs?," *Journal of Mass Spectrometry*, 2009, 44, 832–837.

³² Gettman, John B. "Crimes of Indiscretion: Marijuana Arrests in the United States." George Mason University School of Public Policy; 2005

³³ Hill and Thomas, "Clinical Toxicology of Newer Recreational Drugs; Cohen and Butler, "Bzp-Party Pills: A Review of Research on Benzylpiperazine as a Recreational Drug."

³⁴ See, e.g., Becky Freeman, Simon Chapman, and Matthew Rimmer, "The Case for Plain Packaging of Tobacco Products," *Addiction* 103 (2008): 580-90; Janine Paynter & Richard Edwards, "The Impact of Tobacco Promotion at the Point of Sale: A Systematic Review," *Nicotine & Tobacco Research* 11 (2009): 25–35; and Lawrence Deyton, Joshua Sharfstein, and Margaret Hamburg, "Tobacco Product Regulation — A Public Health Approach," *New England Journal of Medicine* 362 (2010):1753-1756.

³⁵ Substance Abuse and Mental Health Services Administration, "Results from the 2013 National Survey on Drug Use and Health," (Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014); Johnston et al., *Monitoring the Future* (2015).

³⁶ Jolanta B Zawilska and Jakub Wojcieszak, "Spice/K2 Drugs—More Than Innocent Substitutes for Marijuana," *The International Journal of Neuropsychopharmacology* (2013); W. E. Fantegrossi et al., "Distinct Pharmacology and Metabolism of K2 Synthetic Cannabinoids Compared to Delta(9)-Tc: Mechanism Underlying Greater Toxicity?," *Life Sci* 97, no. 1 (2014).

³⁷ New Zealand Ministry of Health, <http://www.legalhighs.co.nz/synthetic-cannabis/ministry-of-health-nz-psychoactive-substances-regulatory-authority-update/2013>.

³⁸ Psychoactive Substance Act of 2013, <http://www.legislation.govt.nz/act/public/2013/0053/latest/DLM5042921.html>.

³⁹ Chris Wilkins et al., "The New Psychoactive Substances Regime in New Zealand: A Different Approach to Regulation," *Journal of Psychopharmacology* 27, no. 7 (2013).

⁴⁰ Ross Bell, "War on Drugs: The Kiwi Comedown Has Lessons for All," *New Scientist*, January 12 2015.