ENDING THE CREATION OF "LEGAL" SYNTHETIC DRUGS: A CRITIQUE OF THE CONTROLLED SUBSTANCE ANALOGUE ENFORCEMENT ACT AND PROPOSED SOLUTIONS

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ABSTRACT

Synthetic drugs have quickly become a major law enforcement and public health concern since a new wave of the drugs emerged in the United States just over ten years ago. Synthetic cannabinoids, cathinones, and opioids, otherwise known as controlled substance analogues, have wreaked havoc on drug abusers and have caused unpredictable side effects that place users and the public at risk. The federal legislation used to regulate the manufacture, distribution, and sale of controlled substance analogues is reactionary, inadequate, and does not provide the statutory framework within which to effectively control the recent proliferation of synthetic drug abuse.

When the Controlled Substance Analogue Enforcement Act (CSAEA) was originally enacted as an amendment to the Controlled Substance Act (CSA), the majority of controlled substance analogues were produced in makeshift laboratories in the United States. Today, however, analogues are produced in bulk in China and shipped to the United States for packaging and distribution, relegating the CSAEA to a reactionary piece of legislation that is useless at dismantling the sources of these substances. Overseas chemists that manufacture synthetic drugs pay close attention to what substances have been scheduled and intentionally manipulate the chemical structure of a scheduled drug in an attempt to make it "legal" and outside the reach of the CSA and CSAEA. Clandestine chemists slightly change the chemical structure of scheduled controlled substances to circumvent the regulations in the CSA to create legal substances that do not fall within the highly specific prohibitions found in the CSA. These slight changes to a drug's chemical structure generally have little effect on its pharmacological properties, but the changes do get the new drug around existing laws.

The CSAEA, the legislation used to prosecute manufacturers and distributors of controlled substance analogues, is an inadequate analogue enforcement statute. Chemists pay close attention to which analogues become scheduled and quickly make new changes to a drug's chemical structure and create a new "legal" substance, meaning that law enforcement is constantly a step behind the synthetic drugs currently on the

market. CSAEA requires prosecutors to prove that a synthetic drug is "substantially similar" to a scheduled controlled substance, which forces juries to make complex chemistry determinations based on competing expert testimony.

This Note advocates for the replacement of the CSAEA with legislation that abandons the current practice of individual substance bans in favor of structural class bans that prohibit specific chemical functional groups. Class bans will allow dozens of synthetic drugs to be scheduled at one time, and they will allow law enforcement to stay ahead of chemists who change the structure of drugs. Structural class bans are less burdensome for federal prosecutors to use than the CSAEA, which will encourage more prosecutors to pursue analogue cases. By implementing this change, analogues can be enforced just like their traditional controlled substance counterparts, and law enforcement can more effectively combat controlled substance analogue abuse.

INTRODUCTION

In most contexts, shiny foil packets of potpourri called Scooby Doo Snax and adorned with the famous cartoon dog would not cause alarm, especially when the packet indicates that the contents are bubble-gum scented.[1] Accompanied with the disclaimer "not for human consumption," the unsuspecting onlooker may believe that the packet truly contains potpourri; however, these contents have a more nefarious purpose than simply perfuming a room.[2] Indeed, these small, shiny packets contain synthetic cannabinoids, more commonly known as K2, that users purchase to obtain a cheap and powerful high.[3] Unlike its packaging, K2 is an incredibly dangerous and unpredictable drug that causes psychotic breaks, severe anxiety, rapid heart rates, and even death in its users.[4] For example, over the course of just one day in August 2018, more than seventy people in New Haven Green, Connecticut overdosed on K2 and in May 2018 in Brooklyn, emergency responders treated eighty-four individuals overdosing on K2 in a three-day period.[5] K2 mass-overdoses are

1. Ashley Southall & Sean Piccoli, *Overdoses From 'Dangerous Batch' of K2 Grows to 56 in Brooklyn*, N.Y. TIMES (May 22, 2018), https://www.nytimes.com/2018/05/22/nyregion/brooklyn-synthetic-marijuana-overdose.html.

2. *Id.*; *About Synthetic Cannabinoids*, CENTERS FOR DISEASE CONTROL & PREVENTION (Aug. 21, 2017), https://www.cdc.gov/nceh/hsb/chemicals/sc/About.html.

3. Southall & Piccoli, *supra* note 1.

4. *Id.*

5. *Id.*; Ashley Welch, *New Haven Overdoses Highlight K2 Synthetic Marijuana Dangers*, CBS NEWS (Aug. 16, 2018), https://www.cbsnews.com/news/new-haven-overdoses-k2-synthetic-marijuana-dangers/.

regular events in areas hard hit by a revival of synthetic drug use because nobody knows when a particularly potent batch of the drug will be unleashed on the public.[6]

With the majority of the national conversation about drugs fixated on the opioid crisis, synthetic drugs like K2 have quietly resurged as a medical and law enforcement concern with little attention from the news media. The CSAEA has proven to be a workable piece of legislation used by federal prosecutors to broaden the reach of the CSA by providing a way for unscheduled controlled substance analogues to be treated as scheduled drugs.[7] The CSAEA, however, is far from perfect. It is cumbersome, tedious, and expensive for prosecutors to use and not all synthetic drugs are within its reach.[8] Clandestine chemists can easily dodge criminal liability by manipulating the chemical structure of a substance, so it does not fall within new analogue scheduling orders issued by the government.[9]

Most scholarship written on this subject takes a narrow view of the problems associated with the CSAEA by looking at one or two aspects of the broader conversation surrounding controlled substance analogues instead of taking an integrated approach to this dilemma.[10] This Note opts for the integrated approach by analyzing the constitutional restraints on drafting analogue statutes, prosecutorial decision-making, the legislation that governs controlled substance analogues, problems associated with that legislation, and offers solutions for redressing those problems. To remedy the problems with the CSAEA, this Note proposes enacting

6. *See* Southall & Piccoli, *supra* note 1 (noting that bad batches of drugs cause mass overdose events and that these events generally have "epicenters").

7. *See* McFadden v. United States, 135 S. Ct. 2298, 2302 (2015) (citing 21 U.S.C. § 813 (2012)).

8. Peter Hermann, *Synthetic Drugs Thwart Prosecutors*, WASH. POST, July 11, 2015, at B1.

9. *Id*.

10. *See generally* Andrew Payne Norwood, *When Apples Taste Like Oranges, You Cannot Judge a Book by its Cover: How to Fight Emerging Synthetic "Designer" Drugs of Abuse*, 39 U. ARK. LITTLE ROCK L. REV. 323 (2017) (discussing the science of analogue production and challenges with analogue prosecutions); Sarah Nishioka, *The "Grande Iced Nonfat Chai with a Shot of Espresso" Problem: Dealing with Designer Drugs in the Wake of McFadden v. United States*, 39 U. HAW. L. REV. 265 (2016) (discussing federal and state responses to synthetic drugs, analogue prosecutions in the wake of *McFadden*, and suggesting that the government should work with scientists to establish a workable analogue definition); Kathryn E. Brown, *Stranger than Fiction: Modern Designer Drugs and the Federal Controlled Substances Analogue Act*, 47 ARIZ. ST. L.J. 449 (2015) (discussing the popularity of synthetic drugs and the CSAEA's issues); Timothy P. Stackhouse, *Regulators in Wackyland: Capturing the Last of the Designer Drugs*, 54 ARIZ. L. REV. 1105 (2012) (providing a history of controlled substance analogue abuse, a chemistry-based discussion of analogues, and a proposed new definition for analogues).

structural class bans for all types of controlled substance analogues. Structural class bans are preferable to scheduling individual substances because it closes a big loophole in the CSAEA that allows chemists to make minor changes in a drug's chemical structure to avoid criminal liability and it makes analogue cases easier to prosecute.

Part I explains the institutional features of the criminal justice system that impact the way in which legislators can draft criminal statutes and the ways prosecutors make decisions regarding what types of cases and defendants to pursue. Part II provides a background within which to view controlled substance analogues and the relevant legislation. It describes the three most popular classes of controlled substance analogues and explains how the CSA and CSAEA regulate analogues. Part III discusses the practical difficulties prosecutors face when using the CSAEA and identifies many problems associated with that statute. Finally, Part IV advocates for structural class bans for each type of synthetic drug. It also argues that United States Attorney's Offices should pursue more analogue cases and that the Drug Enforcement Administration (DEA) should establish a national database that continuously collects data on controlled substance analogues.

I. REALITIES OF THE CRIMINAL JUSTICE SYSTEM

A. Drafting Criminal Statutes: Constitutional Constraints

When crafting legislation that criminalizes conduct, drafters must remain cognizant of the Government's obligation to provide notice and to write clear statutes. The vagueness doctrine, notice requirement, and criminal law's preference for meaningful mens rea requirements all constrain lawmakers' ability to draft valid criminal laws that pass constitutional muster.[11] Even though these protections are essential to maintaining fair criminal laws, they are the reason that drafting effective controlled substance analogue legislation is such a difficult task.

Due to the fact that the chemical structure of scheduled controlled substances can be slightly tweaked to get around existing laws, statutes that criminalize specific analogues are futile attempts to regulate analogues.[12] The continually evolving nature of analogues suggests that using a catchall provision, such as amending the CSA to include "and similar substances," would be the correct approach to criminalizing these drugs.[13] There are numerous constitutional protections, however, that

11. *See* Stackhouse, *supra* note 10 at 1110.
12. Hermann, *supra* note 8, at B1.
13. *Id.* (addressing the evolving nature of analogues).

impose limitations on the government when it defines criminal conduct and that eliminate this solution as an option.[14] Using the "and similar substances" language would allow police and prosecutors to define what "similar substances" actually means, which would violate the void-for-vagueness doctrine and make that clause unconstitutional.

The protection that will likely pose the most difficulty for any controlled substance analogue legislation is the prohibition of vague criminal statutes, which requires criminal laws to clearly state what conduct is criminalized.[15] "As generally stated, the void-for-vagueness doctrine requires that a penal statute define the criminal offense with sufficient definiteness that ordinary people can understand what conduct is prohibited and in a manner that does not encourage arbitrary and discriminatory enforcement."[16] The Supreme Court has recognized that while actual notice is an element of the vagueness doctrine, the more important requirement is that legislatures define minimal guidelines to govern the enforcement of the law.[17] Police and prosecutors are not permitted to define criminal conduct when they see it, which is why criminal laws must clearly identify the punishable conduct.[18] Scienter requirements help alleviate vagueness concerns because they narrow the scope of the law and limit police and prosecutorial discretion as well.[19]

The prohibition on ex post facto laws is another rule of constitutional law that protects against government overreach. Article I, Section 10 of the Constitution states that "no State shall . . . pass any . . . ex post facto Law."[20] "[T]he Legislatures of the several states, shall not pass laws, after a fact done by a subject, or citizen, which shall have relation to such fact, and shall punish him for having done it."[21] Laws that either criminalize innocent conduct or that aggravate the severity of an offense after the fact are harsh and oppressive, and the punishable quality attributed to conduct should not be changed after the conduct has been committed.[22]

14. *See* Stackhouse, *supra* note 10, at 1110.

15. *See* Gonzales v. Carhart, 550 U.S. 124, 148–49 (2007) (quoting *Kolender*, 461 U.S. at 357).

16. *Id.*

17. *Kolender*, 461 U.S. at 357–58 (quoting Smith v. Goguen, 415 U.S. 566, 574 (1974)).

18. *See Smith*, 415 U.S. at 575 ("Statutory language of such a standardless sweep allows policemen, prosecutors, and juries to pursue their personal predilections. Legislatures may not so abdicate their responsibilities for setting the standards of the criminal law.").

19. *McFadden*, 135 S. Ct. at 2307 (quoting *Gonzales*, 550 U.S. at 149).

20. U.S. CONST. art. I, § 10, cl. 1.

21. Calder v. Bull, 3 U.S. 386, 390 (1798).

22. Beazell v. Ohio, 269 U.S. 167, 170 (1925).

B. Prosecutorial Decision-Making

Like many government agencies, federal prosecutors face resource restrictions that influence their decisions about what cases to pursue and who to prosecute.[23] High caseloads, limited staff, time pressures, and courtroom efficiency all force prosecutors to decide how to put limited resources to use to maximize efficiency.[24] These restrictions are unlikely to subside, so "the incentive is to reduce the time and energy spent on each case."[25] Accordingly, analogue cases are typically overlooked because of the huge amount of time and energy they require.[26] Prosecutors can take on multiple cases involving other offenses, such as traditional controlled substance offenses, with the same amount of time that it would take for just one analogue case; therefore, prosecutors are not incentivized to pursue analogue cases on a regular basis.

Additionally, the way in which crimes are defined shapes prosecutorial decision-making because of the resource pressures facing prosecutors.

> If crimes are defined in ways that make guilt hard to prove, the threat of trial will be less serious to many defendants, and the inducements to plead will be accordingly less substantial. If . . . crimes are defined as to make conviction easy, the threat value of trial . . .

increases and induces defendants to plead guilty.[27] Prosecutors' incentives to keep costs low and secure more convictions encourage more guilty pleas because they are much cheaper than taking a case to trial.[28] Thus, prosecutors are incentivized to pursue cases where guilt is easier to prove and guilty pleas are more common.[29] Currently, prosecuting analogue cases is a losing incentive because such cases take considerable time and energy away from cases that can more easily be resolved through guilty pleas.

II. BACKGROUND

First, this section introduces the three most popular types of controlled substance analogues: synthetic cannabinoids, synthetic

23. Don Stemen & Bruce Frederick, *Rules, Resources and Relationships: Contextual Constraints on Prosecutorial Decision Making*, 31 QUINNIPIAC L. REV. 1, 2 (2013).

24. *Id.* at 2–3.

25. William J. Stuntz, *The Pathological Politics of Criminal Law*, 100 MICH. L. REV. 505, 536 (2001).

26. *See id*. at 536–37.

27. *Id.* at 537.

28. *See id*. at 537–38.

29. *See id*.

cathinones, and synthetic opioids. Each type of synthetic drug is unique, but there are similarities that exist across all analogues. Next, there will be a brief overview of the CSA and the CSAEA. Recognizing the relationship between these two statutes is important in understanding why controlled substance analogue enforcement and prosecutions are different and more complex than that of scheduled controlled substances.

A. Popular Controlled Substance Analogues

The terms "synthetic drugs," "controlled substance analogues," and "designer drugs" are, for the most part, interchangeable.[30] All refer to man-made substances that are outside the reach of the CSA and are designed to mimic the effects of scheduled controlled substances without actually being specifically banned themselves.[31] The most common types of controlled substance analogues are synthetic cannabinoids, synthetic cathinones, and synthetic opioids.[32] Even though Congress has demonstrated a clear intent to ban controlled substance analogues, they are legal by default.[33] Law enforcement has failed to keep up with fast paced synthetic drug development, and the myth of legality surrounding these drugs has caused their popularity to skyrocket.[34]

1. Synthetic Cannabinoids

Synthetic cannabinoids are fabricated chemicals that mimic THC, the primary psychoactive substance in marijuana, and are most commonly sprayed onto shredded plant material or suspended in oil for use in e-cigarettes.[35] Synthetic cannabinoids are marketed as fake weed, potpourri, or herbal incense, all of which are misleading and dangerous.[36]

30. *See Dangerous Synthetic Drugs: Hearing Before the S. Caucus on Int'l Narcotics Control*, 113th Cong. 1 (2013) (statement of Joseph T. Rannazzisi, Deputy Assistant Adm'r, Office of Diversion Control, Drug Enf't Admin.).

31. Stackhouse, *supra* note 10, at 1112; Brown, *supra* note 10, at 451 ("In essence, a designer drug has three characteristics: 1) it is synthesized from common chemicals; 2) it is uncontrolled by the [DEA] due to the drug's unique chemical structure; and 3) it is usually marketed under exotic-sounding names.").

32. *Stop the Importation and Trafficking of Synthetic Analogues Act of 2017: Hearing Before the H. Subcomm. On Crime, Terrorism, Homeland Sec., and Investigations, Comm. on the Judiciary,* 115th Cong., 1 (2017) (statement of Demetra Ashley, Acting Assistant Adm'r, Diversion Control Div., Drug Enf't Admin.).

33. Nishioka, *supra* note 10, at 265.

34. *Id.*

35. LISA N. SACCO & KRISTIN FINKLEA, CONG. RESEARCH SERV., R42066, SYNTHETIC DRUGS: OVERVIEW AND ISSUES FOR CONGRESS 6 (2016); DRUG ENFORCEMENT ADMINISTRATION, 2018 NATIONAL DRUG THREAT ASSESSMENT, 89, 91 (Oct. 2018) (hereinafter "NATIONAL DRUG THREAT ASSESSMENT").

36. Rannazzisi, *supra* note 30, at 6–7.

Cannabinoids are manufactured in Asia and shipped to the United States, where users can then buy popular name brands of the drug online or in gas stations and in head shops.[37] However "[u]nlike THC, which is a partial agonist of the brain's cannabinoid receptors, synthetic copycats are full agonists, meaning they completely saturate the receptors."[38]

Furthermore, synthetic cannabinoids can be between 100 and 800 times more powerful than THC, making dangerous side effects and overdoses more common.[39] Users can experience horrific reactions to the substance, including seizures, psychosis, violence, increased agitation, heightened blood pressure, and panic attacks.[40] There is a wide range of chemical structural variation among synthetic cannabinoids, which suggests "further reformulation of 'synthetic marijuana' is available to clandestine operations in their effort to attempt to confound detection and slip outside legal barriers."[41]

2. Synthetic Cathinones

Synthetic cathinones, more popularly known as bath salts, are central nervous system stimulants manufactured to mimic the effects of amphetamines, such as cocaine, ecstasy, meth, and 3,4-methylenedioxymethamphetamine (MDMA).[42] Like synthetic cannabinoids, synthetic cathinones leave users with alarming side effects such as paranoia, panic attacks, hallucinations, increased blood pressure and heart rate, and violence.[43] Bath salts have even been described as having "the worst characteristics of [lysergic acid diethylamide (LSD), phencyclidine (PCP), ecstasy,] cocaine, and methamphetamine."[44] Because synthetic cathinones are stimulants and include amphetamine-like chemicals, they present high risks of abuse and addiction.[45]

37. NATIONAL DRUG THREAT ASSESSMENT, *supra* note 35, at 94–95.

38. Christopher Moraff, *Synthetic Weed is Back, Bigger Than Ever, and Scary as Hell*, DAILY BEAST (June 2, 2018), https://www.thedailybeast.com/synthetic-weed-is-back-bigger-than-ever-and-scary-as-hell?ref=scroll.

39. NATIONAL DRUG THREAT ASSESSMENT, *supra* note 35, at 89–90.

40. *See* SACCO & FINKLEA, *supra* note 35, at 7.

41. F. Ivy Carroll, et al, *Designer Drugs: A Medicinal Chemistry Perspective*, 1248 ANNALS OF THE N.Y. ACAD. OF SCI. 18, 32 (2012).

42. SACCO & FINKLEA, *supra* note 35, at 9, 11.

43. *Id.* at 12.

44. Brown, *supra* note 10, at 456.

45. SACCO & FINKLEA, *supra* note 35, at 12. Soon after bath salts became widely available in 2012, emergency rooms saw a significant increase in users having bad reactions or overdosing, but doctors did not have adequate information on synthetic cathinones to properly treat users and reverse the effect of the drugs. Brown, *supra* note 10, at 456.

These substances are manufactured in Asian countries and packaged for distribution overseas and then United States retailers sell the prepackaged substances or repackage them under specific brand names.[46] Although users may seek out name brands of bath salts, "[t]here is no uniformity of drug, strength or ingredients in products of a specific brand."[47] This means that users never know what exactly they are using when they purchase synthetic cathinones, which leads many users to take too much at one time and overdose.[48]

3. Synthetic Opioids

Finally, synthetic opioids are most commonly analogues of fentanyl, the highly addictive drug that has been a major contributor to the ongoing opioid epidemic.[49] The vast majority of synthetic opioids are produced in China and then shipped to the United States, where they are added to the domestic heroin supply or pressed into pills resembling prescription medication.[50] Synthetic opioids are highly potent and have a low dosage amount that allows distributors to easily make more than one million dollars in profit from the sale of one kilogram of synthetic fentanyl.[51] In February 2018, the DEA placed "all fentanyl-related substances" on Schedule I of the CSA using its temporary scheduling authority in an attempt to combat the opioid epidemic.[52] Because "all fentanyl-related substances" are now temporarily scheduled on Schedule I of CSA as of February 2018, this Note will not discuss synthetic opioids in depth and will instead focus on synthetic cannabinoids and synthetic cathinones.[53]

B. The Controlled Substance Act of 1970

The CSA individually lists, or "schedules," dangerous substances and prohibits their possession, manufacturing, use, and sale.[54] The CSA defines a controlled substance as "a drug or other substance, or immediate

46. Rannazzisi, *supra* note 30, at 12.

47. *Id.*

48. DRUG THREAT ASSESSMENT, *supra* note 35, at 89.

49. Ashley, *supra* note 32, at 2. Fentanyl itself is classified as a Schedule II controlled substance. *Id.*

50. *Id.* at 2

51. *Id.* (explaining that "one kilogram of fentanyl purchased in China for $3,000-$5,000 can generate upwards of $1.5 million in revenue on the illicit market."); *see also* Carroll, *supra* note 41, at 21 (explaining that synthetic opioids can be up thousands of times more potent than morphine).

52. Schedules of Controlled Substances, 21 C.F.R. § 1308.11(h)(30)(i) (2018).

53. 21 C.F.R. § 1308.11(h)(30)(i).

54. 21 U.S.C. § 801 (Supp. V 2017).

precursor, included in schedule I, II, III, IV, or V" of the CSA.[55] For the first time in history, the CSA instituted a unified system of control for psychotropic and narcotic drugs and soon after its enactment, President Nixon established a consolidated federal agency, DEA, to enforce the CSA.[56]

The CSA schedules individual substances by chemical name and composition, which makes enforcement of these drugs relatively straightforward.[57] If law enforcement encounters a substance that is not scheduled by the CSA, however, the law has very little effect.[58] This loophole was recognized by "domestic clandestine chemists" who manipulated the chemical structures of scheduled controlled substances to synthesize new drugs that had the same pharmacological properties of a controlled drug, but did not expose the chemist to criminal violations under the CSA.[59] This loophole created a new problem of substances that were not scheduled by the CSA, but had similar chemical structures as scheduled drugs and were being abused in almost identical ways as their scheduled controlled substance counterparts.[60]

In the 1970's and 1980's, for example, amateur chemists synthesized 1-Methyl-4-Propionoxy-4-Phenylpyridine (MPPP), an analogue of the scheduled drug heroin, because it did not fall within the CSA and thus provided a legal high.[61] MPPP manufacturers were sloppy with their chemistry and failed to keep the drug at the correct temperature and acidity during the synthesizing process.[62] Unbeknownst to the chemists, the changes in temperature and acidity introduced the poisonous chemical 1-Methyl-4-Phenyl-1,2,3,6-Tetrahyropridine (MPTP) into the drug, which still provides users with a high similar to MPPP, but leaves users with catastrophic side effects.[63] MPTP induces Parkinsonism in users, which

55. 21 U.S.C. § 802(6) (Supp. V 2017).

56. Jeremy Mandell, *Tripping Over Legal Highs: Why the Controlled Substances Analogue Enforcement Act is Ineffective Against Designer Drugs*, 2017 U. ILL. L. REV. 1299, 1307 (2017).

57. 21 U.S.C. §§ 841(a)(1), 844(a) (Supp. V 2017); *see also* 21 U.S.C. § 812 (Supp V. 2017).

58. Mandell, *supra* note 56, at 1308.

59. Rannazzisi, *supra* note 30, at 1.

60. *Id.*

61. Gregory Kau, *Flashback to the Federal Analog Act of 1986: Mixing Rules and Standards in the Cauldron*, 156 U. PA. L. REV 1077, 1078 (2008). Interestingly enough, the amateur chemists that were the driving force behind MPPP were two lawyers who made the drug out of their law office. *Id.*

62. *Id.*

63. *Id.*

presents itself as late-stage Parkinson's disease with symptoms like rigidity, tremors, loss of postural reflexes, and difficulty moving.[64]

In California, hundreds of synthetic heroin users suffered tragic consequences from unknowingly injecting MPTP.[65] Some users were essentially frozen into "living statutes" after just a couple days' worth of injections.[66] Sporadic MPTP outbreaks brought national attention to the synthetic drug abuse in the wake of the CSA's enactment.[67] The federal government did not have any authority to prosecute individuals for the manufacture, distribution, sale, or possession of MPTP because it did not fall within the rigid bans of the CSA.[68]

1. Scheduling Authority

Law enforcement's inability to regulate synthetic drugs prompted Congress to create a temporary scheduling process whereby the Attorney General could temporarily schedule a drug for up to one year when it was "necessary to avoid an imminent hazard to the public safety."[69] The temporary scheduling order could be extended by a maximum of six months before the drug had to be permanently scheduled or removed from the CSA altogether.[70] To determine whether an imminent hazard exists, the Attorney General, through the DEA, has to evaluate the drug's: (1) history and pattern of abuse; (2) scope, duration, and significance of abuse; and (3) risk to public health.[71] The DEA has to provide a thirty-day notice in the Federal Register and inform the Secretary of Health and Human Services (HHS) before issuing the scheduling order.[72]

After the DEA temporarily schedules an analogue, the permanent scheduling process begins. HHS must provide a scientific and medical evaluation of the substance, along with a recommendation as to whether

64. Press Release, Center for Disease Control, Street-Drug Contaminant Causing Parkinsonism (June 22, 1984), https://www.cdc.gov/mmwr/preview/mmwrhtml/00000360.htm.

65. Larry Thompson, *'Designer Drug' Linked to Parkinson's*, WASH. POST (June 12, 1985), https://www.washingtonpost.com/archive/lifestyle/wellness/1985/06/12/designer-drug-linked-to-parkinsons/904b1ff5-fc91-484b-9e79-37f4588e6057/?utm_term=.2452624d5f34.

66. *See id.* (explaining how MPTP can cause Parkinson's-like side effects in users, including slow movement).

67. Kau, *supra* note 61, at 1079.

68. *Id.* at 1078–79.

69. 21 U.S.C. § 811(h)(1) (2018); *see also* Touby v. United States, 500 U.S. 160, 163 (1991) (citing 21 U.S.C. § 811(h)(1)).

70. Rannazzisi, *supra* note 30, at 9.

71. 21 U.S.C. §§ 811(c)(4–6), (h)(3).

72. 21 U.S.C. §§ 811(h)(1)(A), (i)(3).

it should be regulated.[73] The Attorney General must then evaluate eight enumerated factors, including, inter alia, the substance's potential for abuse, potential for dependence, and pharmacological effects.[74] Finally, there must be a notice and comment period in accordance with the Administrative Procedure Act (APA).[75]

Even with the ability to temporarily and permanently schedule new substances, law enforcement still lagged behind the designer drug developments because they did not have the proper legislative tools within which to regulate controlled substance analogues.

C. Controlled Substance Analogue Enforcement Act

The CSA does a great job of regulating drugs that are scheduled by the CSA, but the makers of the CSA did not contemplate the emergence of newly synthesized drugs designed to evade the law. "[T]he creation of the CSA was the impetus for the resurgence of designer drugs—once the CSA was enacted, large swaths of recreational drugs were criminalized and made harder to obtain, and new designer drugs were developed to fill the void."[76] Clandestine chemists combed through scientific literature and discovered detailed articles specifying the preparation methods and pharmacological properties of thousands of drugs of abuse, such as narcotics, cannabinoids, and hallucinogens.[77] Chemists used this research to synthesize drugs that were not controlled by the DEA and "in some cases, sophisticated basic medicinal chemistry principles were used to synthesize new, not previously reported analogs of drugs with abuse properties similar to those of known drugs on the market or reported in scientific literature."[78]

In response to the proliferation of designer drugs, Congress passed the CSAEA in 1986.[79] The CSAEA provides that "[a] controlled substance analogue shall, to the extent intended for human consumption, be treated, for the purposes of any Federal law as a controlled substance in schedule I."[80] The CSAEA amended the CSA to include the following definition of a controlled substance analogue:

73. 21 U.S.C. § 811(b).
74. 21 U.S.C. § 811(c).
75. 21 U.S.C. § 811(d)(4)(A).
76. Nishioka, *supra* note 10, at 277.
77. Carroll, *supra* note 41, at 33.
78. *Id.* at 33–34.
79. Rannazzisi, *supra* note 30, at 2.
80. 21 U.S.C. § 813(a) (2018).

> (i) the chemical structure of which is substantially similar to the chemical structure of a controlled substance in schedule I or II;
>
> (ii) which has a stimulant, depressant, or hallucinogenic effect on the central nervous system that is substantially similar to or greater than the stimulant, depressant, or hallucinogenic effect on the central nervous system of a controlled substance in schedule I or II; or
>
> (iii) with respect to a particular person, which such person represents or intends to have a stimulant, depressant, or hallucinogenic effect on the central nervous system that is substantially similar to or greater than the stimulant, depressant, or hallucinogenic effect on the central nervous system of a controlled substance in schedule I or II.[81]

Congress intended the CSAEA to stop clandestine chemists from making slightly altered drugs that are technically legal, but have similar pharmacological or psychoactive effects as scheduled controlled substances.[82] Unlike the CSA, the CSAEA does not list individual substances.[83] Instead, it outlines a standard by which to judge new substances to determine if it is a controlled substance analogue.[84] The CSAEA requires some flexibility and elasticity because its purpose is to prevent the development of "legal" analogues, so creating a list of banned analogues would be impractical and nearly impossible.[85]

At the time of the CSAEA's enactment, domestic underground chemists produced the majority of synthetic drugs in the country out of makeshift laboratories, and the CSAEA was effective in allowing law enforcement to investigate and prosecute these individuals.[86] Today, however, the CSAEA is not nearly as useful in regulating synthetic drugs. Analogue manufacturing has moved almost exclusively to laboratories in Asia and the drugs are then smuggled into the United States in bulk as finished products.[87] The shift to overseas production limits law enforcement's ability to target sources of analogues because they are outside of the jurisdiction of the United States, which keeps law enforcement a step behind analogue threats.[88]

81. 21 U.S.C. § 802(32)(A) (2018).
82. United States v. Hodge, 321 F.3d 429, 432 (3d Cir. 2003).
83. *See* 21 U.S.C. § 802(32)(A).
84. *See id.*
85. United States v. Klecker, 228 F. Supp. 2d 720, 726 (E.D. Va. 2002).
86. Rannazzisi, *supra* note 30, at 3.
87. *Id.* at 6.
88. *Id.* at 4.

D. Synthetic Drug Abuse Prevention Act

In 2012, President Obama signed the Synthetic Drug Abuse Prevention Act (SDAPA) into law, which placed cannabimimetic agents and twenty-six of the most prevalent synthetic drugs (two cathinones, nine phenethylamines, and fifteen cannabinoids) into schedule I.[89] SDAPA also increased the maximum time that the DEA can temporarily control a substance from one to two years and doubled the extension time from six to twelve months pending permanent scheduling proceedings.[90] SDAPA was passed in the hopes of making it easier for prosecutors to bring charges against individuals trafficking, manufacturing, and distributing popular analogues.[91] This goal, though, has not been realized because "designer drugs continue to proliferate throughout the country" since its enactment.[92]

III. DIFFICULTIES IN CONTROLLED SUBSTANCE ANALOGUE ENFORCEMENT

Analogue manufacturers and distributors have discovered and exploited the inadequacies of the CSAEA to stay ahead of federal analogue prohibitions and skirt criminal liability. Anytime an analogue is scheduled on the CSA, chemists only have to make small changes in a substance's chemical structure to make a different analogue that evades the new scheduling order.[93] Prosecuting a case involving an alleged controlled substance analogue is expensive, time-consuming, and complicated because prosecutors must prove that the alleged analogue is "substantially similar" in structure and effect to its controlled substance counterpart, which is a subjective standard with no accepted scientific definition.[94] These problems have not rendered the CSAEA obsolete, but they have made it a statute that is not used nearly as much as it could be.

A. Adaptability

Clandestine chemists easily manipulate the chemical structure of a scheduled drug to create a new drug that is not scheduled by the CSA but

89. Synthetic Drug Abuse Prevention Act of 2012, Pub. L. No. 112–144, 126 Stat. 993, 1130 (2012); *see also id.* at 9.

90. Rannazzisi, *supra* note 30, at 9; *see also* SACCO & FINKLEA, *supra* note 35, at 3 (noting that under the Comprehensive Crime Control Act of 1984, temporarily scheduled substances could only be scheduled for a maximum of one year and the Attorney General, through the DEA, could only extend this period for a maximum of six months).

91. SACCO & FINKLEA, *supra* note 35, at 3.

92. Rannazzisi, *supra* note 30, at 9.

93. *Id.* at 25.

94. *Id.* at 22–23.

still retains similar pharmacological effects as the original drug.[95] The ease with which chemists alter drugs is part of the reason why the DEA has identified hundreds of different designer drugs from at least eight different drug classes over the last several years.[96] Structural modifications happen continuously, making it even harder for law enforcement to stay on top of the myriad of substances marketed as synthetic drugs.[97] Although hundreds of analogues have been identified, only a small percentage of them are scheduled by the CSA, making it relatively easy for those in the analogue market to exploit the gaping holes in analogue regulations.[98]

Chemists pay close attention to what synthetic substances the DEA temporarily or permanently schedules, and adjust their products accordingly.[99] "In fact, when DEA takes an action to temporarily schedule a substance, retailers begin selling new versions of their products with new, unregulated compounds in them."[100] This means that law enforcement and prosecutors are a step behind the manufacturers of synthetic drugs because of how easy it is for chemists to change the chemical structure of a drug just enough so that it does not match the specific chemical structure bans of the CSA.[101] Additionally, the amount of time it takes for the DEA to use its emergency scheduling authority gives manufacturers more than enough warning to adjust the chemical structure of the substances they work with before the ban becomes effective.[102] The government's obligation to provide notice before criminalizing conduct allows distributors to sell their remaining soon-to-be-banned product and find the next best analogue alternative to sell in its place.[103] For example, in *Lane v. United States*, the court explained that when the DEA issued a final order temporarily scheduling the analogue mephedrone, the defendants

95. Norwood, *supra* note 10, at 331; Rannazzisi, *supra* note 30, at 18.

96. Ashley, *supra* note 32, at 4.

97. SACCO & FINKLEA, *supra* note 35, at 18.

98. *Synthetic Drugs: Hearing Before the H. Judiciary Subcomm. on Crime, Terrorism, Homeland Sec., and Investigations*, 114th Cong. 4 (2016) (statement of Louis J. Milione, Deputy Assistant Adm'r, Office of Diversion Control, Drug Enf't Admin.).

99. *Id.*; *see also* Brown, *supra* note 10, at 458 ("Stratford told the court that Lane watched the DEA closely to determine which drugs the DEA scheduled under its emergency powers. Stratford indicated that Lane would have Stratford select chemicals that had not yet been banned . . . ."); *see also* United States v. Bays, 680 F. App'x 303, 305 (5th Cir. 2017) ("Much of this case centers on the [CSAEA] because, as the Government points out, spice producers often 'tried to stay one step ahead of authorities' efforts to outlaw synthetic cannabinoid chemicals as they were discovered.'").

100. Milione, *supra* note 98, at 4.

101. Norwood, *supra* note 10, at 331.

102. Stackhouse, *supra* note 10, at 1118.

103. *Id.*

immediately began using replacement analogues that were not scheduled in the CSA.[104]

The adaptability of controlled substance analogues makes it very difficult for enforcement efforts, such as scheduling analogues on the CSA, to succeed.[105] Once the chemical structure of the drug changes, prosecutors must use the CSAEA if they want to bring controlled substance charges against an individual, which is much more difficult than bringing charges against someone for an offense involving a scheduled controlled substance.[106]

B. Individualistic Nature of Analogue Cases

In every case that involves an alleged controlled substance analogue, the government must establish that the substance is in fact an analogue, even if the government proved that fact in a previous case involving the same substance.[107] One of the main obstacles to effective synthetic drug enforcement as opposed to that of a traditional controlled substance "is that the latter is specifically identified (by statute or regulation) as a controlled substance to which clear statutory controls automatically attach, while the former is not specifically identified (by statute or regulation) and is treated as a Schedule I controlled substance" only when the government proves that the substance meets the statutory definition of a controlled substance analogue.[108] Unlike CSA prosecutions, the trier of fact must decide whether the substance is an analogue, which requires factual determinations of whether the substance is "substantially similar" in structure and effects to a scheduled drug and whether it is intended for human consumption.[109] This process is resource intensive for prosecutors, defense attorneys, and the courts because it necessitates extensive reliance on competing expert testimony to help the jury determine whether an alleged analogue is substantially similar to a scheduled drug.[110]

104. No. 16-CV-04231, 2017 U.S. Dist. LEXIS 206641, at *4 (D. Ariz. Dec. 14, 2017).

105. *See* Rannazzisi, *supra* note 30, at 25.

106. Brown, *supra* note 10, at 450.

107. *Challenges and Solutions in the Opioid Abuse Crisis: Hearing Before the H. Judiciary Comm.*, 116th Cong. 10 (2018) (statement of Robert W. Patterson, Acting Adm'r, Drug Enf't Admin.).

108. *Id.*

109. United States v. Way, No. 14-CR-00101, 2018 U.S. Dist. LEXIS 183517, at *19–20 (E.D. Cal. Oct. 24, 2018).

110. Nishioka, *supra* note 10, at 267; *see also* United States v. Klecker, 348 F. 3d 69, 72 ("Indeed, the testimony presented below illustrates that even experts can disagree about whether two molecules have chemical structures that are substantially similar.").

The Supreme Court has acknowledged the problems associated with analogue tests in the context of cell phone data and the Fourth Amendment.[111] The Court explained that if it were to adopt a rule that allowed police to search cell phones if they could have acquired the same information from a non-digital source, such "an analogue test would launch courts on a difficult line-drawing expedition to determine which digital files are comparable to physical records."[112] In fact, the problem that Chief Justice Roberts identified in *Riley* is the same problem courts face when applying the CSAEA.[113] Courts are tasked with "line drawing expedition[s]" in every CSAEA prosecution to determine which unscheduled substances are substantially similar to scheduled drugs.[114] These types of analogue tests "keep defendants and judges guessing" as to the applicability of the test to their case because there is no uniformity within the federal system for which substances meet the definition of an analogue.[115]

1. Battle of the Experts

Because of the dependence on expert testimony in analogue cases, trials often devolve into a costly "battle of the experts" between the expert witnesses presented by the prosecution and defense.[116] Courts allow experts to use different tests to determine similarity because the term "substantially similar" has no inherent scientific meaning and the CSAEA provides no guidance on how to interpret the term.[117] Indeed, the CSAEA "does not require the government to produce any particular evidence to demonstrate that a given substance qualifies as a controlled substance analogue."[118] The subjectivity of the "substantially similar" standard has given rise to two main tests experts use to determine whether two substances are similar within the meaning of the CSAEA: the core arrangement test and the structure and effect test.[119]

111. Riley v. California, 573 U.S. 373, 401 (2014).

112. *Id.*

113. *See generally id.* (noting the impact on the ability of law enforcement to combat crime when using an analogue test).

114. *Id*. at 376.

115. *Id*. at 401 (quoting Sykes v. United States, 564 U.S. 1, 34 (2011) (Scalia, J., dissenting)).

116. Mandell, *supra* note 56, at 1314.

117. *Way*, 2018 U.S. Dist. LEXIS 183517, at *18; *see also* Mandell, *supra* note 56, at 1314–15.

118. United States v. Lawton, 759 Fed. App'x 66, 68 (2d Cir. 2019) (citing United States v. Demott, 906 F.3d 231, 238 (2d Cir. 2018)).

119. Mandell, *supra* note 56 at 1315. Mandell also discusses a third test, the visual inspection test, used by some circuit courts. *Id.* This test, however, is not as widely used as either

In the core arrangement test, experts compare the core arrangement of atoms between the suspected analogue and a controlled substance by considering only the substances' chemical makeups.[120] This test focuses on the first element of the CSA's analogue definition, which requires that a substance have a "chemical structure of which is substantially similar to the chemical structure of a controlled substance in schedule I or II."[121] The court in *Klecker* noted that "the first prong of the Analogue Act refers to the *structure*, not the properties, of the substances being compared," and a substance's pharmacological properties are separate from its chemical structure.[122] This test only requires the trier of fact to compare the chemical makeup of the alleged analogue and its corresponding controlled substance with two-dimensional diagrams created by experts or chemical manufacturers.[123]

Next, the structure and effect test looks at both the chemical composition of an alleged analogue *and* its psychological effects on users, which incorporates elements (i) and (ii) of the CSAEA's analogue definition.[124] "By requiring both parts, the method is designed to 'construe criminal statutes narrowly in favor of lenity to the accused.'"[125] This test is more comprehensive than the core arrangement test because it requires the government to establish substantial similarity in two respects before a substance is properly determined to be an analogue.[126] Although courts have affirmed the structure and effect test, some courts apply the test more stringently than others, which can lead to even more unpredictability in analogue cases.[127]

The lack of uniformity among the circuits in the applicable method to determine if an alleged analogue is "substantially similar" to a controlled substance puts both the prosecution and the defense in in a difficult litigation spot because they do not have an identified, clear standard they have to meet to win the case.[128] As evidenced by the varying standards used to determine substantial similarity, the individualistic nature of

the core arrangement or the structure and effect tests. *Id.* Therefore, the visual inspection test will not be discussed in this Note.

120. *Id.*; Brown, *supra* note 10, at 460–61.

121. 21 U.S.C. § 802(32)(A) (Supp. V 2017); *see also Klecker*, 228 F. Supp. 2d at 723.

122. *Klecker*, 228 F. Supp. 2d at 728.

123. Nishioka, *supra* note 10, at 281.

124. Mandell, *supra* note 56, at 1315; United States v. Forbes, 806 F. Supp. 232, 236 (D. Colo. 1992); *see* 21 U.S.C. § 802(32)(A).

125. Mandell, *supra* note 56, at 1315–16.

126. Nishioka, *supra* note 10, at 281–82.

127. Brown, *supra* note 10, at 462.

128. *Id.* at 463–64.

analogue cases creates unnecessary obstacles that burdens everyone involved in an analogue case.

C. Scienter Requirement: McFadden v. United States

In 2015, the Supreme Court resolved the question of what knowledge is necessary for a conviction under 21 U.S.C. § 841(a)(1) when the substance at issue is a controlled substance analogue.[129] The Court unanimously ruled that the government must establish that "a defendant knew that the substance with which he was dealing was a 'controlled substance,' even in prosecutions involving an analogue."[130] This knowledge can be established in one of two ways: (1) the defendant knew the substance was controlled under the CSA or CSAEA even if he did not know the substance's particular identity; or (2) the defendant knew the "specific features of the substance" that make it a controlled substance analogue as defined by 21 U.S.C. § 802 (32)(A).[131] The government must also establish that the alleged analogue was intended for human consumption to meet its burden of proof.[132]

The *McFadden* decision may seem forgiving to the government because it allows for the fulfillment of the CSAEA's scienter requirement through knowledge that the substance was controlled or through knowledge of the features of the substance that make it an analogue.[133] However, the *McFadden* decision has caused considerable confusion in cases that would appear to be more straightforward than most analogue cases.

In *United States v. Makkar*, the District Court determined that there was enough evidence to support a finding beyond a reasonable doubt that the defendants had actual knowledge of the CSAEA, attempted to avoid criminal liability, and that they knew the substance they were selling was

129. *McFadden*, 135 S. Ct. at 2302; 21 U.S.C. § 841(a)(1) (Supp. V 2017). Section 841(a)(1) makes it unlawful for an individual to "knowingly or intentionally . . . manufacture, distribute, or dispense, or possess with intent to manufacture, distribute, or dispense, a controlled substance." 21 U.S.C. § 841(a)(1).

130. *McFadden*, 135 S. Ct. at 2305. *McFadden* resolved a circuit split on the scienter issue of CSAEA in favor of the majority approach, endorsed by the Second, Seventh, and Eighth Circuits, requiring the government to "prove the defendant knew the substance in question to be a controlled substance analogue, and thus, by definition, a controlled substance." Nishioka, *supra* note 10, at 287.

131. *McFadden*, 135 S. Ct. at 2302; 21 U.S.C. § 802(32)(A) (defines the term "controlled substance" as one which has stimulant, depressant, or hallucinogenic effect on the nervous system).

132. *Id.* at 2302 (citing 21 U.S.C. § 802(32)(A)).

133. *Id.*

a controlled substance analogue. [134] The defendants directed their employees not to discuss that the "incense" (synthetic cannabinoids) could be ingested, encouraged employees to smoke the product and report its effects back to defendants, and had "questionable" laboratory reports in defendants' residences.[135] Even with all of this evidence, the Tenth Circuit remanded the case to the district court to determine whether there was evidence to support that the defendants knew the chemical structure of the substance they sold, while at the same time ruling there was "no evidence" at trial that established the defendants knew the substance's chemical composition.[136] Therefore, the district court had to acquit the defendants on remand because of the conclusive determination on the issue by the Tenth Circuit.[137]

The District Court in *Makkar* found this result problematic because "it is unlikely that the government will ever be able to prove that a person distributing, or even manufacturing, a controlled substance analogue actually knows the chemical structure of the substance and had compared that chemical structure to a listed controlled substance."[138] This is a troubling outcome because, as the district court noted, there was overwhelming evidence that the defendants in *Makkar* knew almost everything about the substance they sold that made it a controlled substance analogue *except* for the substance's chemical structure.[139] If the government has to prove that a defendant knows the chemical structure of a substance to satisfy the second *McFadden* method of establishing knowledge under CSAEA, the only person the government will likely be able to prosecute is the chemist him or herself. This would make *McFadden*'s second knowledge option unworkable because most chemists who synthesize analogues operate outside the jurisdiction of the United States.[140] Even though *McFadden* did clear up some uncertainty within the statutory interpretation of the CSAEA, it did not fix the problems with the statute or completely resolve the uncertainty embedded within it.

IV. PROPOSED CHANGES AND RECOMMENDATIONS

The problems associated with the CSAEA are not new, nor will they resolve themselves. The CSAEA is a "cumbersome and resource-

134. 187 F. Supp. 3d 1303, 1315 (N.D. Okla. 2016).
135. *Id.*
136. *Id.* at 1315–16.
137. *Id.* at 1316.
138. *Id.* at 1316 n.11.
139. *Makkar*, 187 F. Supp.3d at 1316.
140. NATIONAL DRUG THREAT ASSESSMENT, *supra* note 35, at 94–95.

intensive tool" for prosecutors to use and it must be replaced to achieve meaningful analogue regulation and enforcement.[141] When these problems are put within the greater context of the sheer overwhelming amount of synthetic substances that currently exist and that will exist in the future, it becomes evident that the CSAEA is "ineffective by itself as a tool to prevent diversion and abuse of synthetic drugs."[142] The CSAEA should be replaced with well-defined structural class bans that outlaw entire functional groups that make up the chemical structure of synthetic substances.

Banning classes of synthetic substances, as opposed to banning substances one-by-one, will make analogue prosecutions more efficient, analogue enforcement more effective, and will remedy many loopholes that currently exist in the CSAEA. In addition to enacting class bans, United States Attorney's Offices should encourage more prosecutors to pursue analogue cases so the myth of legality is stripped from these substances. Finally, the DEA should establish a national database to continuously collect data on synthetic drugs so it can track analogue trends and identify which analogues need the most attention from enforcement efforts.

A. Ban Classes of Synthetic Substances

1. Initial Considerations

As discussed at the outset, any new analogue legislation must comply with constitutional protections afforded in the criminal justice system, such as proper notice and the vagueness doctrine.[143] Any replacement for the CSAEA must be careful not to include substances such as nicotine and caffeine, which can be addictive and have psychoactive effects, but are perfectly legal substances that legislators do not intend to ban.[144] The banned functional groups must be clearly defined so that they do not allow police and prosecutors to define what falls within the class ban when they see it, which would violate of the vagueness doctrine.

Criminalizing an array of functional groups will also have an impact on the criminal justice system as a whole. As of 2020, almost forty-six percent of inmates in the Federal Bureau of Prisons were incarcerated for

141. Patterson, *supra* note 107, at 12.

142. Rannazzisi, *supra* note 30, at 23.

143. Kolender v. Lawson, 461 U.S. 352, 357–58 (1983) (citing Hoffman Estates v. Flipside, Hoffman Estates, 455 U.S. 489, 494 (1982)).

144. *See generally* 21 USC § 801 (2018) ("Many of the drugs included within this subchapter have a useful and legitimate purpose and are necessary for maintain the health and general welfare of the American people.").

drug offenses.[145] Adding more substances to the CSA inevitably increases the amount of people that could be prosecuted using that law and subsequently sentenced to prison.[146] "Given that nearly half of the federal prison population is incarcerated for drug-related offenses, Congress may question the potential effect on the prison population and crowding" by scheduling new substances.[147]

Finally, any statute criminalizing drugs and other substances must consider the potential chilling effect it will have on medical and pharmaceutical research. Scheduling chemical classes will make it more difficult for doctors and scientists to explore potential medicinal properties associated with a particular functional group.[148] Structural class bans should regulate research that uses analogues because clandestine chemists search scientific and medical journal articles that discuss substances that could be abused as synthetic drugs.[149] Published research "can be, and is, used by clandestine chemists who duplicate the technical sophistication used by the research community to manufacture and market seemingly endless variety of analogs of so-called designer drugs."[150] This fact, however, is not a legitimate reason to completely freeze medical, scientific, pharmaceutical, and academic research that uses synthetic substances. Computer-aided drug design methods can be used to identify specific chemical structures that have the potential for pharmaceutical or medicinal utility, and class bans can allow for specific exceptions to the ban and for bona fide use exceptions allowing research on such substances to continue.[151]

2. Structural Class Bans for Analogues

Banning entire structural classes of synthetic chemicals is an effective way to capture a wide variety of analogues without having to go through the individual scheduling process for each and every drug.[152] It would allow federal prosecutors to treat substances that fall within the class bans as traditional controlled substances, meaning they will not have to go through the lengthy and expensive process of establishing "substantial similarity" between the alleged analogue and its controlled

145. *Inmate Statistics: Offenses*, FED. BUREAU OF PRISONS (Mar. 15, 2020), https://www.bop.gov/about/statistics/statistics_inmate_offenses.jsp.

146. SACCO & FINKLEA, *supra* note 35, at 16.

147. *Id.*

148. *Id.* at 17.

149. Carroll, *supra* note 41, at 18.

150. *Id.*

151. Stackhouse, *supra* note 10, at 1133.

152. *Id.* at 1132.

substance counterpart. Enacting class bans will remedy the major roadblocks in the way of effective analogue enforcement.

A class ban would list the core structural positions of a substance that can receive molecular-level substitutions, which would prohibit any substance that contains those structural positions.[153] Each type of analogue (cathinones, cannabinoids, opioids, and others) would require its own class ban because the chemical similarities among analogues only exist within the same drug type.[154] The bans would be included on Schedule I of the CSA, allowing federal prosecutors to treat analogues like any other Schedule I controlled substance, such as heroin. A simple laboratory test could determine whether a synthetic drug falls within the class ban and if it does fall within the ban, a criminal case can proceed against the defendant without the need for experts to argue over the meaning of "substantially similar" and without proving that a substance was intended for human consumption.[155] This would make analogue enforcement an easier and much more streamlined process, like that of scheduled controlled substances.

There are general similarities among classes of synthetic substances, which makes functional group bans particularly effective.[156] Synthetic cathinones have the same parent molecule and different cathinones have unique substitutions along the carbon chain, ring substitutions that add a functional group or nitrogen, or additions of ketone oxygen at the beta-carbon.[157] Synthetic cannabinoids are comprised of one of seven major structural classes with the inclusion of a carbon side chain that is between four and nine carbon molecules long.[158] These similarities are predictable and expected among synthetic drugs, so legislators should use them to their advantage to craft new legislation that encompasses the majority of analogue variations based on their functional groups.

This method would close the loophole in the CSAEA that allows chemists, manufacturers, and distributors to skirt criminal liability through molecular-level tweaks in a substance's chemical structure. With this type of ban, chemists could no longer look at the individually banned substances listed in the CSA and manufacture a new drug that is not on that list.[159] Instead, entire functional groups and structural classes would

153. Hari K. Sathappan, *Slaying the Synthetic Hydra: Drafting A Controlled Substances Act that Effectively Captures Synthetic Drugs*, 11 OHIO ST. J. CRIM. L. 827, 843 (2014).

154. *See* Stackhouse, *supra* note 10, at 1127–28.

155. *Id.* at 1133.

156. *Id.* at 1128.

157. *Id.*

158. *Id.* at 1129.

159. *See* Stackhouse, *supra* note 10, at 1130.

be scheduled by the CSA, which would make it much more difficult for chemists to create an unscheduled drug with the same psychoactive effects as a scheduled drug. Synthesizing a new substance that does not contain one of the banned functional groups is possible, but it would be difficult for chemists to accomplish with the same speed and low-cost as they can currently synthesize uncontrolled substances under the CSAEA, making synthetic drug sales a less profitable enterprise.[160]

In 2013, Rhode Island enacted a structural class ban targeting synthetic cannabinoids and synthetic cathinones.[161] The synthetic cannabinoid provision of the Rhode Island Uniform Controlled Substance Act prohibits any chemical compound that "contains Benzylpiperazine (BZP); Trifluoromethylphenylpiperazine (TFMPP); 1,1-Dimethylheptyl-11-hydroxytetrahydrocannabinol (HU-210); 1-Butyl-3-(1-naphthoyl) indole; 1-Pentyl-3-(1-naphthoyl) indole; Dexanabinol (HU-211)" or any compound that falls within seven listed structural classes or the "catch-all" provision.[162] Rhode Island's ban reflects the similarities among synthetic cannabinoids because it outlaws all seven structural classes that comprise synthetic cannabinoids, and even included a "catch-all" provision so the law can adapt to any changes in the drug.[163]

Following Rhode Island's lead, the DEA enacted a structural class ban using its temporary scheduling authority to schedule fentanyl-related substances that are not currently listed in any schedule of the CSA in February 2018.[164] This was accomplished by listing prohibited modifications to fentanyl, such as the replacement or substitution of particular functional groups.[165] This class ban is not as far reaching as Rhode Island's because it only outlaws synthetic fentanyl analogues, but it is certainly a step in the right direction and a sign that structural class bans are a feasible option for analogue enforcement.[166] One DEA official commented that enacting this all-encompassing fentanyl class ban "gets us ahead of the chemists, ahead of the dealers, who would engage in this

160. Because analogues are such a profitable drug for manufacturers and distributors, cutting into the profit margins of those in the synthetic drug market would discourage some people from entering it in the first place. *See* Rannazzisi, *supra* note 30, at 25.

161. 21 R.I. GEN. LAWS § 21-28-2.08 (h), (i) (2018). As of the writing of this Note, there have been no constitutional vagueness or overbreadth challenges to the Rhode Island Uniform Controlled Substance Act.

162. *See e.g.* 21 R.I. GEN. LAWS § 21-28-2.08 (h)(1-8).

163. *Id.*; *see* Stackhouse, *supra* note 10, at 1129 (explaining that there are seven structural class substitutions common among all synthetic cannabinoids).

164. 21 C.F.R. § 1308.11(h)(30)(i) (2018).

165. *Id.*

166. *Id.*

mad chemistry to avoid controlled substances."[167] In the 2018 National Drug Threat Assessment Report, the DEA specifically mentioned that the class-ban on all fentanyl-related substances allows federal prosecutors to prosecute manufacturers and traffickers of fentanyl-related substances without having to use the CSAEA, which implies that the CSAEA is not as effective as the CSA.[168]

This action by the DEA shows that structural class bans are realistic aspirations for controlled substance analogue enforcement. Because of this step, there is now a blueprint at the federal level to create structural class bans for synthetic cannabinoids and cathinones, and other types of synthetic drugs, which would remedy the many problems with current analogue enforcement.[169] The DEA should pursue class bans for synthetic cannabinoids and cathinones. It will take years, however, for the DEA to take similar action on other types of controlled substance analogues because it will want to wait and see how the new fentanyl ban is enforced by law enforcement and prosecutors and how the courts treat the language in the fentanyl class ban. Once the DEA gathers sufficient information on its fentanyl class ban, it should enact class bans for synthetic cannabinoids and cathinones using a similar approach.

B. Recommendations in the Absence of Structural Class Bans

Given the ever-changing state of politics in the United States, it is difficult to imagine a controlled substance bill getting approved by both houses of Congress and being signed by the president. Additionally, it will likely take years before the DEA uses its scheduling authority to enact similar class bans for synthetic cannabinoids and cathinones. In the meantime, there are options for government agencies and federal prosecutors to make controlled substance analogue enforcement a more streamlined and effective process.

1. Encourage More Federal Prosecutors to Take on More Analogue Cases

Having legislation that criminalized the possession, use, manufacturing, distribution, and sale of controlled substance analogue is certainly a good place to start, but it is not enough to simply have a law on the

167. Sari Horwitz, *Justice Department to Prosecute Traffickers of Any Fentanyl-Related Substance*, WASH. POST (Nov. 9, 2017), https://www.washingtonpost.com/world/national-security/justice-department-to-prosecute-traffickers-of-any-fentanyl-related-substance/2017/11/09/fc140546-c57c-11e7-aae0-cb18a8c29c65_story.html?noredirect=on&utm_term=.736d014f6f35.

168. NATIONAL DRUG THREAT ASSESSMENT, *supra* note 35, at 25.

169. *Id.*

books. The law must be enforced to have any sort of deterrent effect.[170] The initial enactment of the CSAEA likely sent a message that the federal government takes drug abuse, specifically analogue abuse, seriously.[171] At the same time, however, "the absence of prosecution must indicate that the federal government is not really interested in the subject, which would seem to take away much of the expressive benefit of having the [CSAEA] in the first place."[172] The relatively few prosecutions that take place under the CSAEA each year may send the message that controlled substance analogue crimes are not important enough to be prosecuted, or at least that they are not as important as traditional controlled substance crimes that are routinely punished through the CSA.[173]

Given all of the problems with the CSAEA and analogue enforcement overall, United States Attorney's Offices across the nation are still successfully using it to prosecute analogue manufacturers and distributors. Some offices prosecute more analogue cases than others, but the important point is that it is not impossible to successfully use the CSAEA to prosecute a controlled substance analogue case. If changing federal legislation is not possible, US Attorney's Offices should prosecute more analogue cases to help shatter the myth that synthetic substances are legal. "Removing the notion of legality may deter many because the apparent legality of the drugs leads some to believe that they are safe."[174] More prosecutions would chip away at the belief that synthetic drugs are legal, thereby causing those in the analogue market to truly consider the potential criminal penalties associated with their conduct.[175]

2. Establish a National Controlled Substance Analogue Database

The DEA should establish a national database to collect research and data on synthetic drugs that all agencies involved in the regulation of abused drugs have access to. This national database should allow medical professionals, national, state, and local law enforcement agencies, researchers from multiple disciplines, poison control centers, and treatment professionals to provide data on synthetic drugs in one centralized location. The DEA already has an established relationship with many of the fields that would provide information for the database.[176] The DEA has

170. *See* Stuntz, *supra* note 25, at 521.

171. *Id.* (comparing the author's analysis of the Violence Against Women's Act to the situation involving the CSAEA).

172. *Id.*

173. *Id.*

174. Stackhouse, *supra* note 10, at 1132.

175. *Id.*

176. *See* Patterson, *supra* note 107, at 5.

1.7 million registrants in their Diversion Control Division, routinely works with national associations to address diversion problems, and hosts conferences all over the country to discuss emerging and continuing drug threats.[177] Therefore, a national database should not be very difficult to begin because all of the necessary relationships are already in place.

Currently, the DEA collects data from hospitals, poison control centers, law enforcement agencies, medical examiners, and treatment centers when deciding whether to permanently schedule a substance on the CSA.[178] Waiting to collect all of this data until the DEA temporarily schedules the drugs is reactionary and does not help to identify and track new synthetic drug trends. The lack of research that exists on synthetic cannabinoids and cathinones may influence whether the DEA schedules a particular substance, so instituting a database will assist the DEA with that research so it can make informed, timely scheduling decisions.[179] A national database that constantly accepts data on synthetic drug abuse, addiction, side effects, and other information will allow the DEA and HHS to permanently schedule substances with more efficiency than it does now. Additionally, a database can help the DEA and HHS track emerging trends in synthetic drugs and take proactive steps to alert the public of new, dangerous drugs on the market even before they initiate scheduling orders.

CONCLUSION

Controlled substance analogues are dangerous, unpredictable drugs that lead to horrible side effects, overdoses, and deaths. The current approach to analogue enforcement is outdated and has not been an effective way to hold manufacturers and distributors criminally responsible for their contributions to the illicit drug market in the United States.

There is not an easy, clear-cut solution to fix the problems with controlled substance analogue enforcement, but there are steps that can be taken to make analogue enforcement more effective. Clandestine chemists and others in the analogue market quickly identified loopholes in the CSA and CSAEA and have been exploiting them ever since. Federal prosecutors have a difficult time bringing analogue cases because of how expensive, time consuming, and uncertain they can be. In light of the CSAEA's problems, the CSAEA should be replaced with structural class bans that outlaw entire functional groups instead of relying on singular analogue prohibitions that are nearly obsolete by the time they are

177. *Id.*
178. *Id.* at 13.
179. SACCO & FINKLEA, *supra* note 35, at 1.

enacted. Class bans allow for the scheduling of dozens of analogues at once, which would free analogue prosecutions from the various obstacles that exist with current CSAEA cases. Enacting class bans, like the DEA recently did with fentanyl-related substances, will give law enforcement and prosecutors the legislative structure they need to accomplish meaningful and widespread analogue enforcement.