REGULATORS IN WACKYLAND: CAPTURING THE LAST OF THE DESIGNER DRUGS

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Since 2008, synthetic marijuana has been openly sold as "herbal incense" in head shops, gas stations, and online. A short time after the emergence of synthetic marijuana, cathinone derivatives appeared as "bath salts." Since then, poison control centers and emergency rooms throughout the U.S. have seen numerous incidents of people experiencing severe negative effects from these drugs. Several people have died from cathinone derivatives. Yet, four years later, synthetic marijuana, cathinone derivatives, and other "legal" drugs remain widely available. Lawmakers' response to these drugs has been inept. This Note examines the actions taken to control "legal highs" and explains why they have all failed, and will continue to fail, unless new methods of control are employed.

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INTRODUCTION

In April 2011, Cody Weddle ordered one gram of 2,5-dimethoxy-4-ethylphenethylamine ("2C-E") from Chemicology.net, a research chemical supplier based in China.[1] But Weddle was no researcher; he was a 20-year-old East Central University student from Ada, Oklahoma.[2] He sold the 2C-E to friends for a party, representing its effects to be similar to Ecstasy.[3] All eight individuals who attended the party and consumed the drug ended up in the hospital.[4] Two of the individuals, Anastasia Jewell and Andrew Akerman, died.[5] Weddle pleaded no

1. Affidavit at 1, State v. Weddle, No. CF-2011-217 (Okla. Dist. filed May 9, 2011), *available at* http://s3.amazonaws.com/content.newsok.com/documents/2ce0001.pdf.

2. Julie Delcour, *Designer Drugs' Unintended Consequences*, TULSA WORLD, (May 22, 2011, 5:05 AM), http://www.tulsaworld.com/opinion/article.aspx?subjectid=214&articleid=20110522_214_G1_CUTLIN209374; *1 Dead, 7 Injured in Mass Drug Overdose in Konawa*, NEWSON6.COM (May 7, 2011, 3:25 PM), http://www.newson6.com/story/14593137/1-dead-7-injured-in-mass-drug-overdose-in-konawa.

3. Affidavit, *supra* note 1, at 1.

4. Delcour, *supra* note 2.

5. *Id.*

contest to two counts of second-degree murder and will serve a ten-year sentence.[6] No one had a good time.[7]

2C-E subsequently became a popular topic in the local media, with reporters often citing concern over the drug's legality and wide availability on the Internet.[8] In New York[9] and Pennsylvania,[10] legislation to ban 2C-E was introduced based on recent media reports. Minnesota, where another man died of a 2C-E overdose,[11] also passed legislation banning it and the closely related 2,5-dimethoxy-4-iodophenethylamine ("2C-I").[12] Conspicuously absent from Oklahoma in the summer of 2011 was new legislation banning 2C-E. There was no need, however. 2C-E had been controlled in Oklahoma since 2008, even if very few people were aware of it.[13]

Quietly released amidst the flurry of 2C-E legislation and media reports, were test results of the substance Weddle sold that revealed it was not 2C-E after all.[14] It was Bromo-benzodifuranyl-isopropylamine ("Bromo-DragonFLY"), an extremely potent and toxic hallucinogen.[15] The effects of Bromo-DragonFLY last up to three days and causes severe negative side effects; the line between the threshold dose and overdose is thin, making the risk of overdose very high.[16]

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6. *Okla. Man Receives 10 Years for Overdose Deaths*, S.F. CHRON. (Aug. 23, 2012, 3:36 PM), http://www.sfgate.com/news/article/Okla-man-receives-10-years-for-overdose-deaths-3784245.php.

7. Vallery Brown, *911 Calls Reveal Terrifying 2C-E Overdose Details*, NEWSOK (May 12, 2011), http://newsok.com/911-calls-reveal-terrifying-2c-e-overdose-details/article/3566991.

8. *See, e.g.*, *Experts: Designer Drug Problems May Only Be Starting*, KOCO.COM (May 10, 2011, 7:15 AM), http://www.koco.com/health/27846360/detail.html#ixzz1ahQ3lytU.

9. S.B. 5181, 234th Leg., Reg. Sess. (N.Y. 2011). No further action was taken on this bill.

10. S.B. 1006, 195th Gen. Assemb., Reg. Sess. (Pa. 2011).

11. David Chanen, *Blaine Man Arrested After Overdose at House Party*, STAR TRIB. (March 18, 2011, 8:39 PM), http://www.startribune.com/local/north/118182584.html.

12. H.F. 57, 87th Leg., 1st Reg. Sess. (Minn. 2011).

13. *See* H.B. 3148, 51st Leg., 2d Sess. (Okla. 2008). The bill also added 30 other related psychedelic phenylalanines and tryptamines to Schedule I, listing them as opiates. *Id.* This error was corrected in 2011 when they were moved to the hallucinogens list in a bill that banned synthetic cannabinoids and synthetic cathinones. S.B. 919, 53rd Leg., 1st Reg. Sess. (Okla. 2011).

14. *Second Victim Dies After Taking Designer Drug in Konawa*, NEWSON6.COM, (May 13, 2011, 10:10 AM), http://www.newson6.com/story/14641463/second-victim-dies-after-taking-designer-drug-in-konawa.

15. *Id.*

16. PSYCHONAUT WEB MAPPING PROJECT, FINAL REPORT 9 (2010), *available at* http://www.psychonautproject.eu/documents/reports/Psychonaut_Project_Executive_Summary.pdf. The negative effects include:

> nausea and vomiting, headache, hypertension, tachycardia, elevated blood pressure, lung collapse, gastrointestinal disturbances, muscle tension, tremor, body temperature fluctuations, anxiety, panic attacks, arrhythmia, heart murmurs, slight pupil dilatation, convulsion, stomach

Despite the Weddle incident's publicity, Bromo-DragonFLY was not tacked on to the legislation banning 2C-E.[17] It remains available on the Internet from "research chemical" suppliers.[18]

Bromo-DragonFLY and 2C-E are just two of the designer drugs[19] available for purchase on the Internet today. Designer drugs first gained notoriety in the 1980s when a bad batch of the meperidine analog[20] 1-Methyl-4-phenyl-4-propionoxypiperidine ("MPPP") caused several otherwise healthy individuals to develop irreversible symptoms of advanced Parkinson's disease.[21] While analogs of meperidine were subsequently banned, new analogs took their place.[22] It was easy to see that individually listing drugs one by one was no longer an effective means of control.[23] Congress responded with the Controlled Substance Analogue Enforcement Act of 1986 ("Federal Analog Act").[24] The Act was meant to control analogs of controlled substances—compounds with structures similar enough to the controlled substance that it produces a similar effect, yet different enough to be a different compound.[25]

Today, controlled-substance analogs—particularly synthetic cannabinoids[26] and cathinone derivatives[27]—are openly sold on the Internet and in

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> tightness, paranoid ideation, hallucinations, flashbacks, memory disturbances, confusion and even acute anxiety reactions with depersonification, derealization, paranoid ideation and panic attacks.

Id.

17. *See* S.B. 5181, 234th Leg., Reg. Sess. (N.Y. 2011); S.B. 1006, 195th Gen. Assemb., Reg. Sess. (Pa. 2011).

18. *See, e.g.*, *Bromo-Benzodifuranyl-Isopropylamine*, CHEMSPECIAL, http://www.chemspecial.com/product/55951.html (last visited Sept. 21, 2012).

19. Designer drugs are synthetic compounds designed to mimic the effects of controlled substances, but are altered enough so that they are a different compound than the controlled substance. *See* United States v. Roberts, 363 F.3d 118, 122 (2d Cir. 2004).

20. An analog is a "structural derivative of a parent chemical compound that often differs from it by a single element." *Analog Definition*, MED. DICTIONARY, http://medical-dictionary.thefreedictionary.com/analog (last visited Oct. 25, 2012).

21. 1 GERALD F. UELMEN & VICTOR G. HADDOX, DRUG ABUSE AND THE LAW SOURCEBOOK § 3:7 (2d ed. 1983).

22. *Id.*

23. *Id.*

24. Gregory Kau, Note, *Flashback to the Federal Analog Act of 1986: Mixing Rules and Standards in the Cauldron*, 156 U. PA. L. REV. 1077, 1079 (2008).

25. *Id.*

26. Synthetic cannabinoids are compounds that mimic the effect of delta-9-tetrahydrocannabinol ("THC"), the active ingredient in marijuana. *See infra* notes 74–77 and accompanying text. They are also known as cannabimimetics and are typically sprayed on plant material and sold as "incense," with names like "K2" and "Spice." *Legislative Hearing to Address Bioterrorism, Controlled Substances and Public Health Issues: Before the Subcomm. on Health of the H. Comm. on Energy & Commerce*, 112th Cong. 4–5 (2011) [hereinafter *Hearing*] (statement of Joseph T. Rannazzisi, Deputy Assistant Administrator, Drug Enforcement Administration Office of Diversion Control). While the plant material the drugs are sprayed on may be useful for incense, the synthetic cannabinoids are not, as

head shops, liquor stores, and gas stations.[28] Yet these substances fall under the definition of a controlled-substance analog.[29] Effective March 1, 2011, the Drug Enforcement Administration ("DEA") placed five synthetic cannabinoid compounds into Schedule I,[30] and through June 26, 2012, 48 states have banned at least one synthetic cannabinoid compound.[31]

Despite these efforts, the rate at which synthetic cannabinoids and cathinone derivatives are used continues to rise. In 2010, there were 304 reports from poison control centers relating to cathinone derivatives.[32] In 2011, there were 6138.[33] Through the first quarter of 2012, there have been more than 1000 incidents.[34] The same is true of synthetic cannabinoids, despite the DEA's emergency scheduling of five compounds and the broad efforts of the states to control them. In 2010, there were 2906 poison-control-center reports relating to synthetic cannabinoids.[35] In 2011, there were 6959 reports, an increase of more

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they tend to be odorless. Brett C. Ginsburg et al., *Purity of Synthetic Cannabinoids Sold Online for Recreational Use*, 36 J. ANALYTICAL TOXICOLOGY 66, 67 (2012).

27. Cathinone derivatives are analogs of cathinone, the active ingredient in Khat. They are similar to amphetamine in structure and effect. *See infra* notes 62–73 and accompanying text. They are typically sold as "bath salts," with names like "Ivory Wave" and "Bliss." *Hearing*, *supra* note 26, at 1. They are not, however, meant for soaking, but are in fact skin irritants. *Mephedrone*, ACON, http://www.acon.org.au/alcohol-and-other-drugs/types-of-drugs/mephedrone (last visited Sept. 21, 2012).

28. *Hearing*, *supra* note 26, at 2; *see also, e.g.*, K2INCENSE, http://www.k2incense.com/ (last visited Oct. 20, 2012).

29. *See Hearing*, *supra* note 26, at 1–2, 10–11.

30. DEA, *Scheduling Update*, 44 MICROGRAM BULL. 21, 21–22 (2011), *available at* http://www.justice.gov/dea/pr/micrograms/2011/mg0311.pdf. Substances in Schedule I "have a high potential for abuse, have no currently accepted medical use in treatment in the United States, and there is a lack of accepted safety for use of the drug or other substance under medical supervision." *Controlled Substance Schedules*, DEA OFF. DIVERSION CONTROL, http://www.deadiversion.usdoj.gov/schedules/ (last visited Sept. 21, 2012). Drugs in this schedule include marijuana, LSD, and heroin. *Id.* By contrast, Schedule II drugs also require a high potential abuse, but they do have accepted medical use. *Id.* Drugs in schedule II include morphine, oxycodone, cocaine, and methamphetamine. *Id.*

31. NAT'L ALLIANCE FOR MODEL STATE DRUG LAWS, SYNTHETIC CANNABINOIDS BANNED BY STATUTE OR REGULATION THROUGH JUNE 26, 2012 (2012), *available at* www.namsdl.org/documents/ListofAllSyntheticCannabinoidsBannedThroughJune262012.pdf.

32. AM. ASS'N OF POISON CONTROL CTRS., BATH SALTS DATA 1 (2012), *available at* http://www.aapcc.org/dnn/Portals/0/Bath%20Salts%20Data%20for%20Website%205.23.2012.pdf.

33. *Id.*

34. *Id.*

35. AM. ASS'N OF POISON CONTROL CTRS., SYNTHETIC MARIJUANA DATA 1 (2012), *available at* http://www.aapcc.org/dnn/Portals/0/Synthetic%20Marijuana%20Data%20for%20Website%205.23.2012.pdf.

than 4000 from the previous year.[36] The American Association of Poison Control Centers ("AAPCC") is on pace to record even more in 2012.[37]

Designer drugs present a unique regulatory problem. Twenty-five years after the first major effort to control them,[38] designer drugs are more prevalent than ever.[39] Drugs like 2C-E are killing teenagers in Blaine, Minnesota,[40] while Bromo-DragonFLY has found its way into Ada, Oklahoma with deadly consequences.[41] Yet drugs like these are merely an afterthought in designer-drug legislation; they are largely overshadowed by the more prevalent synthetic cannabinoids and cathinone derivatives.[42]

Efforts to control synthetic cannabinoids and cathinone derivatives have failed. The traditional approach of individually listing drugs as they become a problem is too slow, and there are too many new compounds to replace them as soon as they are banned. Analog acts, which require an easily exploited intent requirement to be valid, suffer from vagueness and overbreadth.[43]

This Note examines the efforts to control synthetic cannabinoids and cathinone derivatives, and the reasons these efforts have failed. Part I provides a brief overview of the history and current state of designer drugs against the backdrop of federal efforts to control them. Part II looks to the states, which largely follow the methods employed by the federal government. But a few states have approached the problem differently and copied legislation proposed by the United Kingdom's Advisory Council on Misuse of Drugs ("ACMD"),[44] which

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36. *Id.*

37. *Id.*

38. Controlled Substance Analogue Enforcement Act of 1986, Pub. L. No. 99-570, sec. 1203, 100 Stat. 3207 (codified as amended at 21 U.S.C. 802(32) (2012).

39. *See* Veronika Oleksyn, *Designer Drug Use out of Control, Group Says*, HUFFINGTON POST (Mar. 2, 2011, 6:08 AM), http://www.huffingtonpost.com/2011/03/02/designer-drugs-crackdown_n_830225.html.

40. Elizabeth Dunbar, *Blaine Overdose Case Is Uncharted Territory for Prosecutors*, MINN. PUB. RADIO NEWS (Mar. 22, 2011), http://minnesota.publicradio.org/display/web/2011/03/22/prosecutors-follow-rare-path/.

41. Delcour, *supra* note 2.

42. *See Hearing*, *supra* note 26 (addressing only "incense" and "bath salts" with no mention of other designer drugs).

43. *See* United States v. Klecker, 348 F.3d 69, 71 (4th Cir. 2003) ("The intent requirement alone tends to defeat any vagueness challenge based on the potential for arbitrary enforcement."); United States v. Hofstatter, 8 F.3d 316, 322 (6th Cir. 1993) ("This intent requirement sufficiently constrains law enforcement officials and discourages arbitrary or discriminatory application of the law.").

44. The ACMD is an "independent expert body that advises government on drug-related issues in the United Kingdom." ADVISORY COUNCIL ON MISUSE DRUGS, http://www.homeoffice.gov.uk/agencies-public-bodies/acmd/ (last visited Sept. 21, 2012).

> [The ACMD] considers any substance which is being or appears to be misused and of which is having or appears to be capable of having harmful effects sufficient to cause a social problem. It also carries out in-depth inquiries into aspects of drug use that are causing particular

combines aspects of individual listing and analog acts.[45] However, even this alternative approach has failed; cathinone derivatives, synthetic cannabinoids, and other controlled-substance analogs remain widely available and legal across the country. Part III suggests new methods of control. By utilizing new technology in drug design, such as computer-aided drug design, it may be possible to draft legislation that solves the shortcomings of analog acts by providing sufficient specificity to provide notice of what drugs are illegal, while still remaining broad enough to avoid the need to individually list new compounds. Legislation should thus be drafted that targets illicit uses of the drugs through intelligent exemptions and exceptions, while allowing research and other bona fide uses of the compounds to continue without any added legal difficulty. Otherwise, regulators may find their time in Wackyland ends much the same as Porky the Pig's, who saw his great effort in finally capturing the last of the Dodo birds mocked by the emergence of hundreds of new Dodo birds.[46]

I. FEDERAL EFFORTS TO REGULATE DESIGNER DRUGS

The Harrison Narcotics Tax Act of 1914[47] was the first comprehensive effort to control "narcotics."[48] This law controlled the sale of opium and coca products through a system of taxes and registration requirements, though permitted use of the drugs if prescribed by a doctor.[49] This law remained in effect until it was replaced by the Controlled Substances Act of 1970[50] ("CSA"). The CSA individually lists dangerous drugs and prohibits their sale, use, and possession.[51] Although the CSA remains in effect today, its shortcomings required the passage of the Federal Analog Act[52]—an attempt to control designer drugs specifically designed to avoid regulation under the CSA.[53]

Both the CSA and the Federal Analog Act have failed to regulate designer drugs. The CSA has failed because individually listing drugs is too slow to keep up with the "dizzying pace of innovations in drug technology."[54] By the time a dangerous compound is identified and regulated, the damage has been done, and a

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> concern in the UK, with the aim of producing considered reports that will be helpful to policy makers and practitioners.

Id.

45. Sherry Green, CEO, National Alliance for Model State Drug Laws, Presentation at the NDAA 2011 Summer Conference: Synthetic Drugs (July 20, 2011), *available at* http://www.namsdl.org/documents/SyntheticSubstancesLongVersion09022011.pdf.

46. PORKY IN WACKYLAND (Warner Bros. 1938).

47. Ch. 1, 38 Stat. 785 (1914).

48. Margarita Mercado Echegaray, *Drug Prohibition in America: Federal Drug Policy and Its Consequences*, 75 REV. JUR. U.P.R. 1215, 1220–21 (2006).

49. *Id.* at 1221–23.

50. Pub. L. No. 91-513, 84 Stat. 1236 (1970) (codified as amended at 21 U.S.C. §§ 801–904 (2012)).

51. *Id.*

52. 21 U.S.C. § 813 (2012).

53. *See infra* Part I.A.

54. United States v. Turcotte, 405 F.3d 515, 518 (7th Cir. 2005).

replacement has been found. The Federal Analog Act has failed because of the loopholes its vagueness and breadth require. This Part gives a brief history of designer drugs against the backdrop of federal efforts to control them, and explains why these efforts have failed.

A. Designer Drugs: Then and Now

Designer drugs are synthetic compounds that mimic the effects of controlled substances. They possess slight variations in their chemical structures that make them sufficiently unique to avoid falling under the CSA, yet still produce similar effects to drugs banned under the law.[55] Outbreaks of designer drugs have come in waves over the years. The first wave concerned opioid analogs.[56] These were generally manufactured in the local market by amateur clandestine chemists[57] and sold through shady dealings in back alleys and nightclubs.[58]

In the late 1990s, the Internet changed the designer-drug market. Tryptamine and phenethylamines analogs, such as 5-methoxy-diisopropyltryptamine ("5-MeO-DiPT" or "Foxy Methoxy"), and 4-bromo-2,5-dimethoxyphenethylamine ("2C-B" or "Nexus") began appearing for sale from research chemical suppliers. The bulk of these drugs and the other compounds were first synthesized and tested by Dr. Alexander Shulgin.[59] His work was published in scientific journals and later, when journals became leery about his methods, in the self-published books *PiHKAL: A Chemical Love Story* and *TiHKAL: The Continuation*.[60]

Shulgin's books made life easy for manufacturers of "research chemicals." All they needed to do was skim the pages of *PiHKAL* and *TiHKAL* to find easily synthesized drugs with favorable psychotropic effects. Then they put the drugs up for sale on the Internet as "research chemicals," employed a dubious marketing scheme, and enjoyed inordinate profits.[61]

Today, synthetic cannabinoids and cathinone derivatives are the primary designer drugs of concern. Cathinone derivatives are analogs of cathinone, the active ingredient in Khat.[62] Cathinone itself is an analog of amphetamine, differing at just one position on the molecule.[63] They are simple and cheap to synthesize

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55. *Id.* at 523.
56. See *infra* notes 78–80 and accompanying text.
57. *See* UELMEN & HADDOX, *supra* note 21.
58. *Hearing*, *supra* note 26, at 1–2.
59. Drake Bennet, *Dr. Ecstasy*, N.Y. TIMES MAG., Jan. 30, 2005, at 32. *PiHKAL* is short for *Phenethylamines I Have Known and Loved* and *TiHKAL* is short for *Tryptamines I Have Known and Loved*. *Id.*
60. *Id.*
61. See *infra* notes 94–101 and accompanying text.
62. *Synthetic Cathinones*, EMCDDA, http://www.emcdda.europa.eu/publications/drug-profiles/synthetic-cathinones (last visited Sept. 21, 2012).
63. *Id.*

from easily obtained precursors such as pseudoephedrine.[64] The possible psychoactive variations are numerous; at least 24 have been identified.[65] The effects of these drugs are similar to amphetamines or 3,4-methylenedioxymethamphetamine ("MDMA," the primary drug found in Ecstasy).[66]

Despite their new emergence as a drug of concern, synthetic cathinones were first synthesized more than 120 years ago.[67] Alpha-methylamino-propiophenone ("Methcathinone"), originally an anti-depressant in the 1930s, was the first synthetic cathinone to be abused recreationally in the United States when it gained popularity in the 1990s.[68] 4-Methylmethcathinone ("Mephedrone," also known as "4-MMC," "Meph," "Drone," and "Mcat") was the first of the currently abused compounds identified as a drug of abuse.[69] It first appeared in the mid-2000s in Israel[70] but beyond that not much is known about its origin.[71] 3,4-Methylenedioxypyrovalerone ("MDPV") and 3,4-methylenedioxy-N-methylcathinone ("Methylone") emerged soon after mephedrone.[72] They remained the most prevalent ingredient in "bath salts" until they were federally banned in October 2011.[73]

Like the cathinones, the synthetic cannabinoids were discovered well before they became drugs of abuse. They have been developed over the past 40 years by the pharmaceutical industry and academic laboratories.[74] Nearly 200 unique compounds have been identified.[75] Unlike the cathinone derivatives,

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64. *Id.*

65. *Id.*

66. *Id.*

67. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, CONSIDERATION OF THE CATHINONES 7 (2010), *available at* http://www.homeoffice.gov.uk/acmd1/acmd-cathinodes-report-2010?view=Binary.

68. *Id.*

69. *Hearing*, *supra* note 26, at 9.

70. *Mephedrone*, DRUGS F., http://www.drugs-forum.com/forum/showwiki.php?title=Mephedrone (last visited Sept. 21, 2012).

71. *See* Kevin Gray, *Mephedrone: The New Nightlife Drug*, DETAILS (Aug. 2010), http://www.details.com/culture-trends/critical-eye/201008/plant-food-drug-mephedrone-mcat-meow-meow.

72. *Hearing*, *supra* note 26, at 2.

73. *See* Press Release, DEA, Chemicals Used in "Bath Salts" Now Under Federal Control and Regulation (Oct. 21, 2011), *available at* http://www.prweb.com/releases/2011/10/prweb8899362.htm.

74. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, CONSIDERATION OF THE MAJOR CANNABINOID AGONISTS 5 (2009), *available at* http://www.homeoffice.gov.uk/publications/alcohol-drugs/drugs/acmd1/acmd-report-agonists?view=Binary.

75. *Id.* at 15–25.

synthetic cannabinoids are not all analogs of cannabinoids.[76] In fact, many are not even cannabinoids but are classified as such because they act in a similar manner.[77]

The new method of marketing these drugs—selling them openly and legally—has exposed the inadequacies of current drug-control legislation. On the federal level, the two basic methods employed are to individually list compounds when they become a problem and a broad analog act. Neither has been effective.

B. Federal Controls

1. Controlled Substances Act and Emergency Scheduling

The first major appearance of designer drugs hit in the mid-1980s with opiate analogs, specifically the fentanyl analog sold as "China White."[78] In 1981, several fentanyl derivatives were added to Schedule I, and even more were added in 1985 under the DEA's emergency scheduling authority.[79] These bans had no effect. Clandestine chemists quickly modified the structure to produce new molecules with the same or similar potency and continued to sell them, facing only minor penalties for violating the Food and Drug Administration's licensing rules.[80]

The traditional approach to drug control could not keep up with the "dizzying pace of innovation[]."[81] Individually listing drugs one by one through legislation was far too slow to keep up with the clandestine chemist.[82] Congress attempted to speed up the process with the Comprehensive Crime Control Act of 1984.[83] This Act gives the Attorney General and the DEA the authority to temporarily schedule a substance for one year with an option to extend the listing for an additional six months, if it is found that adding a substance to Schedule I is "necessary to avoid an imminent hazard to the public safety."[84] But even this process is slow. It requires a finding of three of the eight factors set out in 21 U.S.C. § 811(c): "(4) [i]ts history and current pattern of abuse"; "(5) [t]he scope, duration, and significance of abuse"; and "(6) [w]hat, if any, risk there is to the

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76. *Drug Profile: Synthetic Cannabinoids and 'Spice,'* EMCDDA, http://www.emcdda.europa.eu/publications/drug-profiles/synthetic-cannabinoids (last visited Sept. 21, 2012).

77. Synthetic cannabinoids are "CB1 receptor agonists. The CB1 receptor in the brain mediates the psychoactive effects of tetrahydrocannabinol ("THC"), the active principle in cannabis. The synthetic cannabinoids thus mimic the effects of THC." ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 74, at 5.

78. Paul Anacker & Edward Imwinkelried, *Controlled Substance Analogue Enforcement Act Criminal Defense*, 37 SW. U. L. REV. 267, 268 (2008).

79. UELMEN & HADDOX, *supra* note 21.

80. *Id.*

81. United States v. Turcotte, 405 F.3d 515, 518 (7th Cir. 2005).

82. DEA, DRUGS OF ABUSE 8–10 (2011 ed.), *available at* http://www.justice.gov/dea/docs/drugs_of_abuse_2011.pdf (describing the necessary steps in scheduling a new drug).

83. 21 U.S.C. § 811(h) (2012).

84. *Id.* § 811(h)(1)–(2).

public health."[85] Failure to accurately comply with these requirements can result in an invalid scheduling, forcing the DEA to start the lengthy process over, as was the case with MDMA in 1987.[86] Even when a scheduling is valid, it is still a slow process, which can only be initiated after a drug becomes a problem. Clandestine chemists therefore had no trouble staying ahead.

2. The Federal Analog Act

In 1986, Congress took a different approach with the Federal Analog Act.[87] The Act's express purpose was to "prohibit persons who specifically set out to manufacture or to distribute drugs which are substantially similar to the most dangerous controlled substances from engaging in this activity."[88] To accomplish this, the Act defines a controlled-substance analog as a chemical with a structure that is "substantially similar to the chemical structure of a controlled substance in schedule I or II" and has an effect on the central nervous system that is substantially similar to or greater than the controlled substance.[89] However, it does not apply if the substance is "not intended for human consumption."[90]

The term "substantially similar" has spurred numerous challenges for being unconstitutionally vague, though has consistently survived such challenges both facially and as applied to various controlled-substance analogs.[91] The *ex post* challenges have similarly failed.[92] The intent requirement defeats these challenges;[93] any person with the chemistry skills necessary to design a drug for human consumption can certainly determine if it is substantially similar to a controlled substance.

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85. *Id.* § 811(h)(3).

86. Grinspoon v. DEA, 828 F.2d 881 (1st Cir. 1987) (vacating the rule banning MDMA).

87. 21 U.S.C. § 813.

88. United States v. Forbes, 806 F. Supp. 232, 235 (D. Colo. 1992).

89. 21 U.S.C § 802(32)(A).

90. *Id.* § 802(32)(C)(iv).

91. United States v. Klecker, 348 F.3d 69, 72–73 (4th Cir. 2003) (holding that the Federal Analog Act is not void on its face nor as applied to 5–methoxy–N, N-diisopropyltryptamine ("5-MeO-DiPT" or "Foxy") or alpha-methyltryptamine ("AMT")); United States v. Fisher, 289 F.3d 1329, 1339 (11th Cir. 2002) (holding that the Federal Analog Act is not void as applied to GBL); United States v. Granberry, 916 F.2d 1008, 1010 (5th Cir. 1990) (holding that the Federal Analog Act is not void on its face). *But see Forbes*, 806 F. Supp. at 238 (holding the Act void as applied to AET when there was no scientific consensus on whether AET was substantially similar to a controlled substance, and "criminal culpability will turn solely on a 'battle of the experts' at trial").

92. *See, e.g.*, United States v. Raymer, 941 F.2d 1031, 1046 (10th Cir. 1991).

93. *See, e.g.*, *Klecker*, 348 F.3d at 71 ("The intent requirement alone tends to defeat any vagueness challenge based on the potential for arbitrary enforcement."); United States v. Hofstatter, 8 F.3d 316, 322 (6th Cir. 1993) ("This intent requirement sufficiently constrains law enforcement officials and discourages arbitrary or discriminatory application of the law.").

Designer-drug distributors have exploited the intent requirement to avoid prosecution.[94] The first wave of designer drugs to do so appeared in the late-1990s, when several phenethylamines (mescaline analogs) and tryptamines (LSD analogs) became widely available on the Internet from "research chemical" suppliers.[95] As "research chemicals," these drugs were explicitly labeled as "not for human consumption." Perhaps because of this moniker, these drugs initially found a limited niche market of "psychonauts,"[96] and remained under the law enforcement's radar for a number of years.[97] However, thanks in part to an aggressive advertising campaign by "research chemical" website operators,[98] these research chemicals found a broader audience.[99] This was followed by two overdose deaths in the United States.[100] It also meant huge profits for the distributors.[101] Yet it took over five years from the initial launch of these websites for law enforcement to become aware of these drugs.[102]

The Federal Analog Act and the emergency scheduling provisions of the Comprehensive Crime Control Act of 1984 did find some success in prosecuting the "research chemical" suppliers, despite the "not for human consumption" label.[103] In 2004, the DEA launched "Operation Web Tryp," resulting in the arrest and successful prosecution of ten individuals and the seizure of five websites.[104] The marketing of the drugs by the website operators made the application of the Federal Analog Act easier because it revealed that the drugs were intended for human consumption. While the "research chemicals" were said to be not for human consumption, the retailers advertised heavily on Google and the websites of

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94. *Hearing*, *supra* note 26, at 9.

95. David McCandless, *Goodbye Ecstasy, Hello 5-Meo-DMT: New Designer Drugs Are Just a Click Away*, GUARDIAN (Feb. 15, 2004, 09:11 PM), http://www.guardian.co.uk/society/2004/feb/16/drugsandalcohol.drugs.

96. Psychonauts are individuals who practice psychonautic bioassay: "self-experiments with psychotropic drugs." Jonathan Ott, *Pharmanopo-Psychonautics: Human Intranasal, Sublingual, Intrarectal, Pulmonary and Oral Pharmacology of Bufotenine*, 33 J. PSYCHOACTIVE DRUGS 273, 275 (2001).

97. David McCandless, *Bad Trip for Online Drug Peddlers*, WIRED (July 6, 2005), http://www.wired.com/medtech/health/news/2005/07/68049.

98. Searching for "DXM" on the Chicago Tribune's website, looking for stories about teenagers abusing the drug, returned advertisements for research chemical suppliers selling various psychedelic compounds, and another selling bulk DXM powder. Fire Erowid, *Constant Commerce: Who's in Control of the Ads?*, 6 EROWID EXTRACTS 1, 2 (June 2004), *available at* http://www.erowid.org/general/newsletter/erowid_newsletter6.pdf.

99. *Id.*

100. Erowid, *DEA Announces Arrests and Investigation into Sale of Psychoactive Research Chemicals to the Public*, VAULTS EROWID (July 22, 2004), http://www.erowid.org/psychoactives/research_chems/research_chems_info1.shtml.

101. McCandless, *supra* note 97. Pondman.nu, purportedly a fish and aquatic supply company, was reported to earn $20,000 per week at one point, while the New York based RacResearch.com made $500,000 over a 14-month period. *Id.*

102. *Id.*

103. In 2003, the DEA used its emergency power to add AMT and 5-MeO-DIPT to Schedule I. Schedule I, 21 C.F.R. § 1308.11 (2012).

104. Erowid, *supra* note 100.

major newspapers in articles related to drug use.[105] They also joined tryptamine discussion groups on sites like Yahoo! to promote their websites.[106] E-mail exchanges with customers discussed consuming the drugs,[107] and while purporting to sell to legitimate researchers, the e-mail addresses themselves revealed the customers' intent, with names like "psychedelic_stoner@" and "moontripperdipt@."[108]

After Operation Web Tryp there was little, if any, news about "research chemicals." It appeared that the Federal Analog Act was successful in regulating designer drugs and keeping the still unscheduled drugs from being sold on the Internet. Though "research chemicals" did not go away; retailers just became more cautious, and the customer base was once again limited to psychonauts.[109] But then, as early as 2006 in Europe, somebody had the idea to lace otherwise benign plant material with synthetic cannabinoids and market it as "herbal incense" or "spice."[110]

3. Federal Response to "Incense" and "Bath Salts"

Beginning in 2008, synthetic cannabinoid "herbal incense" appeared in the United States. These substances were explicitly labeled as "not for human consumption."[111] A short time later, cathinone derivatives appeared as "bath salts," also explicitly labeled "not for human consumption."[112] It did not take long for people to figure out the intended purpose of these drugs. By 2009, forensic laboratories began seeing both synthetic cannabinoids and cathinone derivatives.[113]

The DEA's response to synthetic cannabinoids was not much faster than with the "research chemicals" of the early 2000s. The DEA did not schedule any synthetic cannabinoids until three years after they first appeared in the United

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105. Erowid, *supra* note 98, at 2.

106. Press Release, U.S. Attorney S.D.N.Y., U.S. Arrests Internet Merchants of Designer Drugs, USAO (July 23, 2004), *available at* http://www.justice.gov/usao/nys/pressreleases/July04/curtisdesignerdrugpr.pdf.

107. *Id.*

108. Erowid, *supra* note 100.

109. *See generally* Ellis D. Tripp, *Finding a Reliable Research Chemical Supplier*, HIP FORUMS (July 20, 2004, 4:52 PM), http://www.hipforums.com/newforums/showthread.php?t=17681 (advising users to avoid websites with psychedelic themes, sites traced back to Virginia or Washington, DC, and to look for suppliers that offer a wide range of chemicals, not just substances known to be used recreationally).

110. EUROPEAN MONITORING CENTRE FOR DRUGS AND DRUG ADDICTION, UNDERSTANDING THE 'SPICE' PHENOMENON 3 (2009), *available at* http://www.emcdda.europa.eu/attachements.cfm/att_80086_EN_Spice%20Thematic%20paper%20%E2%80%94%20final%20version.pdf.

111. *Hearing*, *supra* note 26, at 5.

112. *Id.* at 1.

113. NAT'L FORENSIC LAB. INFO. SYS., SPECIAL REPORT: SYNTHETIC CANNABINOIDS AND SYNTHETIC CATHINONES REPORTED IN NFLIS, 2009–2010 at 1 (2011), *available at* https://www.nflis.deadiversion.usdoj.gov/DesktopModules/ReportDownloads/Reports/SynCannabSynCath.pdf.

States.[114] Further, this ban had no effect: In the first month after the ban became active, the AAPCC reported an increase of 98 incidents from the previous month related to synthetic cannabinoids, and has continued to see an increase in incidents each month through October 2011.[115]

There are a number of reasons why the ban has been ineffective. Primarily, the sheer number of synthetic cannabinoids available renders the control of five unique compounds moot.[116] In 2009, the ACMD identified 171 different synthetic cannabinoids.[117] Five months passed between the notice of intent to schedule five synthetic cannabinoids and the issuance of the final order banning them.[118] This was more than enough time for "incense" manufacturers to find another suitable cannabinoid for their products.

The reaction to cathinone derivatives was no better. The DEA did not publish its notice of intent to add three cathinone derivatives to Schedule I until September 8, 2011.[119] The final order was published quicker, though, on October 21, 2011.[120] Yet, it was no more effective than the synthetic cannabinoids scheduling in stopping the sale of "bath salts."[121] The European Monitoring Centre for Drugs and Drug Addiction ("EMCDDA") has identified 24 different cathinone derivatives in samples purchased from the Internet or seized by law enforcement.[122] While awaiting the final order, cathinone derivative manufacturers sold off their existing stock of the banned compounds[123] and replaced them with the best alternatives or simply designed new packages to sell the same drugs under a new name.[124]

The DEA has not been a total failure when it comes to controlling "bath salts" and "incense," however. In February 2011, the DEA initiated the Bath Salts Task Force to investigate sellers of cathinone derivative "bath salts" in New York

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114. DEA, *supra* note 30, at 21. The compounds scheduled are 1-pentyl-3-(1-naphthoyl)indole ("JWH-018"), 1-butyl-3-(1-naphthoyl)indole ("JWH-073"), 1- [2-(4-orpholinyl)ethyl]-3-(1-naphthoyl)indole ("JWH-200"), 5-(1,1-dimethylheptyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol ("CP-47,497"), and 5-(1,1-dimethyloctyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol ("Cannabicyclohexanol"; CP-47,497 C8 homologue).

115. AM. ASS'N OF POISON CONTROL CTRS., *supra* note 35, at 1.

116. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 74, at 15–25.

117. *Id.*

118. DEA, *supra* note 30, at 22.

119. DEA, *Notice of Intent*, 44 Microgram Bull. 57, 57 (2011), *available at* http://www.justice.gov/dea/pr/micrograms/2011/mg0911.pdf.

120. Press Release, *supra* note 73.

121. *See, e.g.*, BATH SALTS USA, http://bath-salts-direct.com (last visited Oct. 20, 2012).

122. *Synthetic Cathinones*, *supra* note 62, tbl.1.

123. *See* Ken Alltucker, *As Ban Nears, Designer-Drug Selloff Stirs Fear*, ARIZ. REPUB., Sept. 20, 2011, at A1.

124. *See* Simon D. Brandt et al., *Analyses of Second-Generation 'Legal Highs' in the UK: Initial Findings*, 2 DRUG TESTING & ANALYSIS 377, 377, 381 (2010). The analyses of 24 samples purchased from websites after the ban of mephedrone and other cathinone derivatives revealed that 70% of the samples contained one or more of the recently banned cathinones. *Id.*

City head shops.[125] The operation ended in June 2011, with the seizure of 40 kilograms of "bath salts" and ten arrests, nine of which were of head-shop employees who advised undercover agents on the proper means of consuming the bath salts.[126]

The Bath Salts Task Force was followed by Operation Log Jam in July 2012.[127] This nationwide operation resulted in 90 arrests, the seizure of five million packages of "bath salts" and "incense," and $36 million in cash.[128] Despite these efforts, synthetic cannabinoids and cathinone derivatives still remain widely available.[129]

4. Food and Drug Administration Safety and Innovation Act

In June 2012, Congress finally passed a bill to address the growing problem of designer drugs: The Food and Drug Administration Safety and Innovation Act added 26 synthetic drugs to Schedule I, including mephedrone, MDPV, 15 different synthetic cannabinoids, and several drugs from the 2C family such as 2C-E.[130] In addition to individually listing these drugs, the bill adopts generic language from the ACMD to control synthetic cannabinoids.[131] This generic language is discussed below in Part II.C.

Regardless of the success of this bill, it has come too late. The failure to regulate synthetic cannabinoids and cathinone derivatives on the federal level has left states in the novel position of needing to regulate them independently. A majority of states have banned a substance before it has been regulated at the federal level.[132] The states have employed various legislative measures to do this and have reacted at different speeds. The next Part examines the means through which the states have banned synthetic cannabinoids and cathinone derivatives.

II. STATE EFFORTS TO REGULATE DESIGNER DRUGS

The states have, for the most part, employed the same means to control designer drugs as the federal government: individual listing and analog acts. Recently, several states have borrowed the approach developed by the United Kingdom's ACMD, which drafted generic language to control cathinone

125. Press Release, DEA, Ten Arrested in New York "Bath Salts" Round-Up (June 28, 2011), *available at* http://www.drugs-forum.com/forum/showthread.php?t=163237 .

126. *Id.*

127. Press Release, DEA, DEA News: Nationwide Synthetic Drug Takedown (July 26, 2012), *available at* http://www.justice.gov/usao/id/news/images/dearelease0726 2012.pdf.

128. *Id*.

129. *See, e.g.*, *Ivory Wave 6 Legal in Europe*, AM-HI-CO, http://am-hi-co.com/acatalog/ivory-wave-6-europe.html (last visited Sept. 21, 2012); KINGKUSH, http://www.kingkushherbals.com/ (last visited Sept. 21, 2012).

130. Pub. L. No. 112-144, sec. 1152, § 202(c), 126 Stat. 993, 1130–32 (2012) (to be codified at 21 U.S.C. § 812(c)).

131. *Id.*

132. *See* NAT'L ALLIANCE FOR MODEL STATE DRUG LAWS, *supra* note 31.

derivatives and synthetic cannabinoids.[133] This generic language has benefits of both individual listing and analog acts. In theory, states that have adopted it have banned all synthetic cannabinoids and cathinone derivatives. Yet the generic language also has many of the drawbacks of both individual listing and analog acts, that is, "bath salts" and "incense" remain available.

The failure of the federal government to regulate designer drugs has created problems of federalism as well. As discussed below, no state has solved the problem. The states that have successfully banned designer drugs have benefitted at the expense of neighboring states. Furthermore, their success is short-lived because once a significant number of states have banned a drug a new one is introduced. This Part examines the means that states have used to control designer drugs and explains why they have failed.

A. General Analog Acts

Twenty-seven states have a controlled-substance-analog statute similar to the Federal Analog Act.[134] Some copy it exactly, while others simply change the definition from conjunctive to disjunctive, so that a drug only needs to be shown to produce an effect similar to that of a controlled substance and does not also need to have a "substantially similar" structure.[135]

Other states have gone further. Oklahoma, for example, bans synthetic controlled substances rather than analogs.[136] There is no requirement that a substance has a substantially similar structure. The Oklahoma statute only requires a drug to produce a similar physiological or psychological effect on the human central nervous system, with a potential for abuse and without a medical use.[137] Additionally, the law advises courts to consider certain representations made about the drug, such as "statements made to the recipient that the substance may be resold for an inordinate profit."[138]

South Dakota's analog law is even broader, making it illegal to possess or sell any substance knowing that it will be used for intoxication.[139] The definition of

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133. *See infra* Part II.C.

134. NAT'L ALLIANCE FOR MODEL STATE DRUG LAWS, CONTROLLED SUBSTANCE ANALOG STATUTES (2011), *available at* http://www.namsdl.org/documents/ControlledSubstanceAnalogStatutes2011_007.pdf.

135. *See, e.g.*, CAL. HEALTH & SAFETY CODE § 11401 (2012). This statute has faced similar challenges to the Federal Analog Act and has thus far been upheld. *See, e.g.*, Boultinghouse v. Hall, 583 F. Supp. 2d 1145, 1159–60 (C.D. Cal. 2008) (holding that defendant did not lack notice that possession for sale of GBL was unlawful as an analog of GHB). The Federal Analog Act was also read disjunctively in some districts prior to United States v. Hodge, 321 F.3d 429, 434–36 (3d Cir. 2003) (holding that legislative history implies the definitions of an analog were meant to be conjunctive).

136. OKLA. STAT. tit. 63, § 2-101(37) (2012).

137. *Id.*

138. *Id.*

139. S.D. CODIFIED LAWS §§ 22-42-15 to -15.1 (2012). The statute defines intoxication as "a disturbance of mental or physical capacities resulting from the introduction of substances into the body." *Id.* § 22-1-2(21).

controlled substance includes "an altered state of a drug or substance listed in Schedules I through IV absorbed into the human body."[140]

Overly broad analog statutes like Oklahoma's and South Dakota's may be open to legal challenges. For example, the Oklahoma statute does not have an exception for substances "not intended for human consumption." South Dakota's law presents a vast number of other reasons, such as being overbroad and vague, which causes the law to be arbitrarily enforced because it only includes an exception for alcohol[141] and equates use with possession.[142]

Minnesota, in the same bill that banned synthetic cannabinoids and cathinone derivatives, attempted to address the enforcement issues caused by the "not for human consumption" exception.[143] It bans a controlled-substance analog "to the extent that it is *implicitly* or explicitly intended for human consumption."[144] Presumably, this would make it easier to prosecute possession and distribution of controlled-substance analogs. At the very least, it should prevent products with suggestive names, like "Eight Ballz Bath Salts," and "Kush" herbal incense, from being sold alongside bongs and other paraphernalia.

In reality, however, Minnesota's analog law has been unsuccessful. Jim Carlson continued to sell synthetic cannabinoid and cathinone derivatives in his head shop, The Last Place on Earth, even after the ban on many of these compounds and the new analog language took effect.[145] While his competition removed incense and bath salts from their shelves for fear of prosecution, Mr. Carlson brazenly continued to sell them. With no competitors, The Last Place on Earth recorded an average revenue of $16,000 per day (approximately $6 million per year).[146] Mr. Carlson initially avoided the city of Duluth's effort to ban synthetic cannabinoids by threatening a lawsuit for his lost revenue if forced to close his business.[147] Like Mr. Carlson's suppliers, he avoided the state-level ban

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140. *Id.* § 22-42-1(1).

141. The Act does not include exceptions for commonly used intoxicants like nicotine and caffeine. Chad J. Reissig et al., *Caffeinated Energy Drinks—A Growing Problem*, 99 DRUG ALCOHOL DEPEND. 1, 4 (2009) (describing the effects of caffeine intoxication and noting that it is recognized in the Diagnostics and Statistical Manual of Mental Disorders ("DSM")). Nor does the Act include an exception for the religious use of mescaline by the Native American Church. While the act banning substances used for intoxication has an intent requirement, the controlled substance definition bans any "altered state" of a controlled substance. This portion could seemingly conflict with the ban on substances used for intoxication, because it does not have the intent requirement. Additionally, it is far more broad and vague than even the "substantially similar" requirement of the Federal Analog Act.

142. *See* John Thomas Richter, State v. Schroeder*: South Dakota Performs Legal Alchemy and Transmutes 'Use' into 'Possession,'* 50 S.D. L. REV. 404 (2005).

143. H.F. 57, 87th Leg., 1st. Reg. Sess. (Minn. 2011).

144. *Id.* (emphasis added).

145. Larry Oakes, *He Dares Duluth to Shut His Head Shop*, STAR TRIB. (Sept. 23, 2011, 3:56 PM), http://www.startribune.com/local/130001173.html.

146. *Id.*

147. *Id.*

by switching to a different compound not explicitly controlled.[148] Of course, these "new" products could simply be the old ones in new packaging.[149]

Mr. Carlson's brashness did eventually cost him. On September 23, 2011, 84 days (and approximately $1.3 million in revenue later) after the state ban on synthetic cannabinoids and cathinone derivatives took effect, police finally raided The Last Place on Earth and arrested Mr. Carlson.[150] Mr. Carlson was not charged[151] and is back in business.[152] In a creative effort to succeed where the legislature has failed, the city of Duluth has deemed Mr. Carlson's shop a public nuisance and thereby sued for an injunction to close The Last Place on Earth.[153] Mr. Carlson, meanwhile, went above the city of Duluth to find a solution: He ran for President of the United States in 2012.[154]

Mr. Carlson's case is not the first time Minnesota prosecutors have had difficulty with their analog act. Currently, they are pursuing charges against Timothy Lamere. Lamere, like Cody Weddle, sold 2C-E that resulted in a fatal overdose in March 2011.[155] Other states have fared no better in prosecuting under analog acts.[156] In other jurisdictions, attempts to prosecute under an analog act remain rare, and successes are found only in the most extreme cases where the intent of human consumption is obvious from the circumstances.[157] In the face of the explosion of synthetic drugs seen in the last few years, general analog acts have been utterly ineffective. States have thus turned to individually listing the drugs. The next Section examines those efforts.

B. State Controlled Substances Acts

The states' analog acts have failed for the same reasons as the Federal Analog Act. The vagueness makes an intent requirement necessary to prevent

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148. *Id.*

149. *See* Brandt, *supra* note 124, at 377.

150. Pam Louwagie, *Head Shop Raided by Duluth Police*, STAR TRIB. (Sept. 23, 2011, 3:53 PM), http://www.startribune.com/local/130298913.html.

151. Dan Kraker, *Ground Zero in Legal Fight Against Synthetic Pot Is the Last Place on Earth*, MINN. PUB. RADIO NEWS (Nov. 23, 2011), http://minnesota.publicradio.org/display/web/2011/11/23/last-place-on-earth/.

152. Mark Stodghill, *Duluth Deems Last Place on Earth a 'Nuisance'*, DULUTH NEWS TRIB. (Aug. 10, 2012, 12:00 AM), http://www.duluthnewstribune.com/event/article/id/239683/.

153. Peter Passi, *Duluth Says Last Place a Nuisance*, JAMESTOWN SUN (Oct. 12, 2012, 8:08 AM), http://www.jamestownsun.com/event/article/id/171239/.

154. Alan Hoglund, *Last Place Owner Nabs Signatures to Run for Pres.*, WDIO.COM (June 27, 2012, 10:48 PM), http://www.wdio.com/article/stories/S2671025.shtml?cat=10335.

155. Dunbar, *supra* note 40.

156. *Id.*

157. *See, e.g.*, United States v. Klecker, 348 F.3d 69, 70 (4th Cir. 2003) (defendant in this case manufactured and sold Foxy and AMT in tablet form, and attempted to conceal his activity); United States v. Hofstatter, 8 F.3d 316, 321–22 (6th Cir. 1993) (defendant kept detailed notebooks describing the effects of the drugs when consumed and synthesis of controlled substances).

arbitrary enforcement, or the lack of an intent requirement makes it vulnerable to constitutional challenges. Regardless, prosecutions under analog acts are extremely rare and designer drugs remain extremely common.

Some states have had success with individual listing because states have fewer procedural requirements to list a drug, which allows them to act faster. The emergency scheduling authority of the DEA is a lengthy, cumbersome process compared to what is required for the states.[158] Furthermore, the availability of 49 other state markets removes the incentive for manufacturers to introduce new products to avoid the ban in that individual state. As discussed below, this has resulted in some success, if only temporarily, in regulating cathinone derivatives. However, due to the vast number of compounds available, no state has made significant progress in controlling synthetic cannabinoids.

1. Cathinone Derivatives Regulation

Some states jumped on synthetic cathinones early through emergency regulation.[159] North Dakota became the first state to ban cathinone derivatives in February 2010,[160] ten months before the next state, Louisiana.[161] North Dakota also became the first state to have its ban successfully challenged.[162] In October 2011, the North Dakota Supreme Court upheld the dismissal of charges against William Nickel for possession and distribution of mephedrone and synthetic cannabinoids.[163] In its rush to ban the synthetic drugs, the North Dakota Board of Pharmacy failed to give proper notice of the new law, as required by statute.[164]

A cursory survey of state controlled substances acts and proposed legislation reveals numerous other issues. The errors include listing hallucinogens as opiates,[165] cathinones as synthetic cannabinoids,[166] misspelling the common

158. *See supra* notes 83–86 and accompanying text; *see also infra* note 173.

159. Generally, emergency regulations do not require the same notice and hearing, but are temporary. *See* ADMIN. CODES & REGISTERS, EMERGENCY RULES (2007), *available at* http://www.administrativerules.org/archive/listserve/Emergency_Rules_10-22-07.doc.

160. *See* N.D. ADMIN. CODE 61-13-01-03 (2010). The regulation added mephedrone and MDPV. *Id.*

161. NAT'L ALLIANCE FOR MODEL STATE DRUG LAWS, CATHINONE AND CATHINONE DERIVATIVES: BILLS, STATUTES & REGULATIONS 5–6, 8, 10–11 (Oct. 31, 2011), *available at* http://www.namsdl.org/documents/Cathinoneandcathinonederivatives10.31.2011.pdf. In addition to mephedrone and MDPV, the regulation also listed the other four most common ingredients in bath salts: methylone, methedrone, 3-Fluoromethcathinone (3-FMC), and 4-fluoromethcathinone (4-FMC or flephedrone). *Id.* Despite the fact that Louisiana's ban was ten months later than North Dakota's law, the regulation was commonly reported as being the first ban on "bath salts." *See, e.g.*, Christine S. Moyer, *Bans Help Curb Abuse of Bath Salts, Officials Say*, AM. MED. NEWS (Oct. 17, 2011), http://www.ama-assn.org/amednews/2011/10/17/prsa1017.htm.

162. State v. Nickel, 806 N.W.2d 155, 160 (N.D. 2011).

163. *Id.*

164. *Id.* at 159.

165. IOWA CODE § 124.204 (2012); H.B. 3148, 51st Leg., 2d Sess. (Okla. 2008). The initial Oklahoma bill banned more than 30 hallucinogenic tryptamines and

names of substances,[167] describing cathinone derivatives as "fake cocaine,"[168] and even mislabeling both the common name and chemical name of certain compounds.[169] It is likely that states do not have the same fact-finding capability as the federal government, nor are the same requirements imposed upon them.

However, the minimal burdens placed upon the states allow them to act faster, making specific listing a more effective means to control designer drugs for the states than it is for the federal government. For example, Louisiana had the highest incident of poison-control-center reports relating to "bath salts" in January 2011.[170] Nearly 57% of all reports nationwide, from September 2010 to the end of the year, occurred in Louisiana.[171] Louisiana reacted quickly to this problem, becoming the first state to ban the six primary ingredients in "bath salts."[172] Doing so merely required a one-page report by the Louisiana Department of Health & Hospitals finding that the ban was necessary to "avoid an imminent peril to the public health, safety, or welfare."[173] The ban proved effective. Cathinone

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phenethylamines, including the 2-C family, which was the compound Cody Weddle ordered. *See supra* note 13–14 and accompanying text. This error was corrected in 2011. S.B. 919, 53rd Leg., 1st Reg. Sess. (Okla. 2011).

166. S.B. 26, 127th Gen. Assemb., 2d Reg. Sess. (Ind. 2012).

167. H.F. 186, 84th Gen. Assemb., Reg. Sess. (Iowa 2011). Mephedrone was listed as "mephedrine." *Id.* This error was corrected before the statute was published. *See* IOWA CODE § 124.204(6)(i)(1). However, the cathinone derivatives are listed under hallucinogens, and in the same sub-paragraph as Salvinorin A, the active ingredient in *Salvia Divinorum*. *Id.* § 124.204(4). Michigan became the first state to ban any cathinone derivative by legislation but listed mephedrone as "mephradone." H.B. 6038, 95th Leg., Reg. Sess. (Mich. 2009). This error was corrected in 2011 when MDPV and other cathinone derivatives were added. H.B. 4565, 96th Leg., Reg. Sess. (Mich. 2011).

168. S.B. 224, 76th Leg., Reg. Sess. (Nev. 2011). Synthetic cocaine derivatives are currently available as research chemicals and at least two are thought to have potential for abuse. *Synthetic Cocaine Derivatives*, EMCDDA, http://www.emcdda.europa.eu/publications/drug-profiles/synthetic-cocaine-derivatives (last visited Sept. 21, 2012). This bill did not address these compounds.

169. H.B. 2049, 84th Leg., Reg. Sess. (Kan. 2011). The Kansas bill lists 2,5-dimethoxy-4-(n)-propylthio*pen*enthylamine, with the common name 2C7. *Id.* (emphasis added). This was ultimately corrected to 2,5-Dimethoxy-4-(n)-propylthio*phen*ethylamine, known as 2C-T-7. *See* KAN. STAT. ANN. § 65-4105(d)(34) (2012) (emphasis added).

170. *Governor Jindal Announces Emergency Rule to Crack Down on Distribution & Possession of Fake Bath Salts*, OFF. GOVERNOR BOBBY JINDAL (Jan. 6, 2011), http://gov.louisiana.gov/index.cfm?md=newsroom&tmp=detail&articleID=2633.

171. *Id.*

172. NAT'L ALLIANCE FOR MODEL STATE DRUG LAWS, *supra* note 161, at 5–6, 8, 10–11.

173. BRUCE D. GREENSTEIN, DEP'T OF HEALTH & HOSP., DECLARATION OF EMERGENCY: ADDED CONTROLLED DANGEROUS SUBSTANCES (2011), *available at* http://new.dhh.louisiana.gov/assets/docs/LegisReports/BathSaltsRule1.6.2011.pdf. A flier was released pursuant to this rule to give notice of the new law. *See* DEP'T OF HEALTH & HOSP., BATH SALTS FLIER (2011), *available at* http://new.dhh.louisiana.gov/assets/docs/BehavioralHealth/BathSaltsFlier.pdf. Compare this to the extensive findings in the DEA's final order banning cathinone derivatives. Schedules of Controlled Substances: Temporary

derivative retailers stopped shipping their products to Louisiana, and as a result emergency room and poison-control-center incidents related to "bath salts" have decreased significantly.[174]

Florida was the next state to ban cathinone derivatives through emergency regulation and saw a decrease in sales within the state,[175] while the number of poison-control-center reports remained minimal.[176] Of course, Florida and Louisiana have not solved the problem; they merely pushed it to other states. Nationwide, the number of incidents continued to increase.[177] Florida and Louisiana found success in regulating cathinone derivatives solely because they beat the other states to it. With 48 states still available, manufacturers had no reason to introduce new blends containing cathinone derivatives not yet banned. Nor was there any reason to risk criminal penalties by selling to individuals in Florida or Louisiana. The easy solution for manufacturers was to update their websites with notices stating that they will not ship certain products to states that have banned cathinone derivatives.[178] Yet the problem has returned to both Florida and Louisiana; after mephedrone, MDPV, and methylone were controlled at the federal level, the next generation of "bath salts" are now marketed as "50 State Legal," implying that the drugs they contain are not yet controlled in any state.[179] Whether or not the new products are actually new legal drugs, or just the same ones in new packaging, is unclear. [180]

However, the sum of all the state bans and the federal bans has not been a total failure in reducing the harm from cathinone derivatives. Exposure calls to the American Poison Control Center for "bath salts" peaked in June 2011.[181] In the following month, 14 states enacted legislation banning cathinone derivatives, with most states banning at least the six primary drugs (mephedrone, methylone, MDPV, 3-fluoromethcathinone, 4-FMC, and 4-methoxymethcathinone).[182] This

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Placement of Three Synthetic Cathinones Into Schedule I, 76 Fed. Reg. 65371-01 (Oct. 21, 2011) (codified at 21 C.F.R. pt. 1308).

174. Moyer, *supra* note 161.

175. *Id.*

176. *See* FPICN—ALL CENTERS: CRITICAL CASE CONSULTATIONS: 1-1-2011 TO 12-31-2011 (2011), *available at* http://data.fpicn.org/#Statewide%20Annual%20Reports (follow "Calendar Year (Jan–Dec) 2011 Consult Summary Report" hyperlink).

177. AM. ASS'N OF POISON CONTROL CTRS., *supra* note 32, at 1.

178. *See, e.g.*, *Check Your State Law*, SPIKE99, http://spike99.com/acatalog/legal-regions.html (last visited Sept. 21, 2012).

179. *See, e.g.*, *10 Packs of Dr. Feel Goods Bath Salts 500 mg Wholesale (Factory Direct)*, EXTREME HERBAL INCENSE SHOP, http://stores.extremeherbalincenseshop.com/-strse-24/10-packs-of-Dr/Detail.bok (last visited Sept. 21, 2012).

180. *See* Brandt *supra*, note 124.

181. AM. ASS'N OF POISON CONTROL CTRS., *supra* note 32, at 1.

182. NAT'L ALLIANCE FOR MODEL STATE DRUG LAWS, SUMMARY OF CATHINONE DERIVATIVES BILLS (Dec. 19, 2011), *available at* http://www.namsdl.org/documents/SummaryofCathinoneDerivativesBills12.19.2011.pdf.

also made at least two cathinone derivatives (MDPV and mephedrone) illegal in a majority of the states.[183]

Poison-control-center reports for "bath salts" continued to decline through the end of 2011, with the most significant drop occurring in November when exposure calls dropped by 42%.[184] The DEA's final order controlling mephedrone, MDPV, and methylone became effective on October 21, 2011.[185]

The primary reason for the decrease, however, may have more to do with the federal ban on MDPV than anything the states have done.[186] MDPV is an extremely dangerous drug.[187] The "50 State Legal" replacements, whatever they may be, do not appear to be quite as severe (for now).[188]

2. Synthetic Cannabinoids

Synthetic cannabinoid regulation has not achieved the same successes as cathinoine derivatives. With synthetic cannabinoids, the problem is even more pronounced. Five of the primary compounds found in "incense" brands were controlled at the federal level in March 2011.[189] The apparent effect of this ban was to cause manufacturers to add a label to their packages stating that the product does not contain any of the five federally controlled synthetic cannabinoids.[190]

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183. *Id.*

184. AM. ASS'N OF POISON CONTROL CTRS., *supra* note 32, at 1.

185. DEA, *supra* note 30, at 22.

186. MDPV was the most prevalent bath salt drug. BARRY K. LOGAN, NMS LABS TRENDS REPORT: CHANGES IN THE DESIGNER DRUG MARKET SPRING 2012, at 29 (2012), *available at* http://www.nmslabs.com/uploads/PDF/Designer%20Drug%20Spring%20Update_BKL%20Webinar_May%202012.pdf.

187. *See* Edward A. Ross et al., *Psychoactive "Bath Salts" Intoxication with Methylenedioxypyrovalerone*, 125 AM. J. MED. 854, 856–57 (2012). Self-reported effects from discussions forums provide a detailed picture of the effects. For example, at Drugs-Forum.com, one user says, "MDPV is like the bastard with a whip you've got to obey or you get hurt. Then you obey and get hurt even worse." *MDPV*, DRUGS F., http://www.drugs-forum.com/forum/showwiki.php?title=MDPV (last visited Sept. 21, 2012). Another report states: "1 gram. 6 days. 0 sleep. 0 food. 2 12oz bottles of water. Severe Dehydration (Cracked and blistered lips, sores in the mouth, sore throat). Stimulant Psychosis. He thought his limbs weren't getting enough oxygen and turning purple." *Id.*

188. *See, e.g.*, *IW2 and IWU2 Discussion*, AM-HI-CO, http://forum.am-hi-co.com/viewtopic.php?f=12&t=173 (last visited Nov. 3, 2012). Compare this to the trip reports for MDPV on Drugs-Forum.com. *Methylenedioxypyrovalerone (MDPV) Experience Reports*, DRUGS F., http://www.drugs-forum.com/forum/showthread.php?t=24638 (last visited Sept. 21, 2012). Many experienced drugs users, with an idea of what to expect, report having difficulty with MDPV's effects. *Id.* It appears that MDPV is a very nasty drug indeed.

189. DEA, *supra* note 30, at 21–22.

190. *See, e.g.*, *3 Gram Pack Diablo Botanical Incense*, BONANZA, http://www.bonanza.com/listings/3-gram-pack-diablo-botanical-incense-potpourri-free-shipping/82477385 (last visited Oct. 25, 2012).

"Incense" blends containing synthetic cannabinoids are as prevalent as ever, in spite of the federal ban and even broader bans by many of the states.[191]

The primary reason synthetic cannabinoid bans have been ineffective is because there is a high number of synthetic cannabinoid variants available and even more possible. Texas and Oklahoma both individually list more than 130 different synthetic cannabinoids.[192] The ACMD identified 171 different cannabinoids in 2009.[193] Clandestine chemists have had time and motivation since then to make slight alterations to the known compounds in order to avoid controlled-substances laws. In the two years since the ACMD's report, it is possible that some chemists have been successful in creating new and legal compounds.[194] Hence the prevalence of "50 State Legal" incense blends available on the Internet, despite extensive listing of individual compounds and broad analog acts.

The ineffectiveness of the bans is reflected in poison-control-center data. Unlike cathinone derivatives, which saw a drop in reports after MDPV was banned in at least half of the states, and again when the federal ban became effective,[195] synthetic cathinone incidents have remained steady, and even began to rise again in 2012.[196]

States have found only moderate, if any, success in controlling "bath salts" and "herbal incense" using analog acts and specific listing. Faced with the faster-than-ever spread and use of these designer drugs, new methods must be employed. The next Section examines the new language adopted by many states, which combines aspects of individual listing and broad analog language.

C. Designer Legislation

Designer drugs are designed to avoid legal control. With only two types of control to avoid, clandestine chemists have been quite successful in keeping their products legal. However, a third method of control, which combines aspects of both individual listing and analog language, has been developed by the ACMD, and several states have added it to their controlled substances acts. This legislation is designed to incorporate all potential analogs of a drug without individually listing each variation, while still employing a clear-and-hard rule.[197]

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191. The Author's Google search for "Herbal Incense" on March 29, 2011 returned nearly four full pages of results related to synthetic cannabinoid products or news stories about it. The first site related to actual incense did not appear until the bottom of page 4 of the results.

192. OKLA. STAT. tit. 63, § 2-204 (2012); TEX. HEALTH & SAFETY CODE ANN. § 481.1031 (2012).

193. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 74, at 15–25.

194. *See, e.g.*, Ursula Blaszko, *AM-694*, REDNET PROJECT (July 6, 2012, 3:19 AM), https://www.rednetproject.eu/groups/am694/.

195. See *supra* notes 181–85 and accompanying text.

196. AM. ASS'N OF POISON CONTROL CTRS., *supra* note 35, at 1.

197. *See* ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 67; ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 74.

Similarities exist within the cathinone derivatives.[198] The parent molecule, cathinone, is actually an amphetamine analog, differing only in the presence of a ketone oxygen at the beta-carbon.[199] The most common feature of the recreational derivatives is a ring substitution, typically the addition of a functional group or the inclusion of nitrogen.[200] Other derivatives feature substitutions along the carbon chain.[201] This makes it possible to predict the ways in which the basic cathinone backbone can be altered, such as through the inclusion of a functional group along the carbon chain.[202]

The ACMD used these patterns found in cathinone derivatives to construct generic legislation that incorporates not only the six most prevalent derivatives, but also compounds identified in samples and unseen compounds with the basic cathinone backbone causing them to potentially be abused.[203] Carved out from this language are the substances already controlled under the United Kingdom's Misuse of Drugs Act as well as any substances that are used in legitimate pharmaceutical products.[204]

The ACMD concluded that using generic language is the best way to control cathinone derivatives:

> Any compound (not being bupropion or a substance for the time being specified in paragraph 2.2) structurally derived from 2-amino-1-phenyl-1-propanone by modification in any of the following ways, that is to say,
>
> i. by substitution in the phenyl ring to any extent with alkyl, alkoxy, alkylenedioxy, haloalkyl or halide substituents, whether or not further substituted in the phenyl ring by one or more other univalent substituents;
>
> ii. by substitution at the 3-position with an alkyl substituent;

198. *Synthetic Cathinones*, *supra* note 62.

199. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 67, at 6. Alpha and beta carbons refer to the first and second carbon molecules that can be substituted in a carbon chain. *Ask Dr. Shulgin Online*, CTR. FOR COGNITIVE LIBERTY & ETHICS, http://www.cognitiveliberty.org/shulgin/adsarchive/nomenclature.htm (last visited Oct. 25, 2012). Ketone refers to a compound with a carbonyl group bonded to two other carbons. *Ketone Definition*, ILLUSTRATED GLOSSARY ORGANIC CHEMISTRY, http://www.chem.ucla.edu/harding/IGOC/K/ketone.html (last visited Oct. 25, 2012).

200. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 67, at 6.

201. *Id.*

202. *Id.*

203. *Id.* at 31. For a detailed description of the language's scope and the various substitutions considered, see *id.* at app. A.

204. *Id.* at 6. Bupropion is the only cathinone derivative with currently accepted medical use. *Id.* at 32. It is found in the anti-depressant Wellbutrin and the quit-smoking drug Zyban. *Id.* Other derivatives are found in patent applications in the United Kingdom but are not yet approved. *Id.*

> iii. by substitution at the nitrogen atom with alkyl or dialkyl groups, or by inclusion of the nitrogen atom in a cyclic structure.[205]

Generic language is the most effective means to regulate synthetic cannabinoids. The ACMD drafted legislation using generic language to control synthetic cannabinoids, even though they are not as closely related to one another as are the cathinone derivatives.[206] Unlike the cathinones, which are structurally related to amphetamine, they do not all contain the same basic structure as delta-9-tetrahydrocannabinol (THC).[207] Many of the compounds are not even cannabinoids but are termed as such because they act in a similar manner.[208] However, they are comprised of seven major structural groups, and all contain the common feature of a carbon-side chain (between four and nine carbon molecules long in the most psychoactive compounds).[209] These similarities can be used to construct generic analog language that encompasses all currently known compounds, plus those that can conceivably be synthesized.[210] This generic language is preferable to individually listing compounds because of the difficulty of constructing an exhaustive list of currently abused cannabinoids and the ability of clandestine chemists to introduce new analogs faster than substances can be controlled.[211]

For synthetic cannabinoids, the ACMD constructed generic definitions for the seven major groups of cannabinoids. Groups one and two (naphthoylindoles and naphthylmethylindoles) are defined as:

> Any compound structurally derived from 3-(1-naphthoyl)indole or 1H-indol-3-yl-(1-naphthyl)methane by substitution at the nitrogen atom of the indole ring by alkyl, alkenyl, cycloalkylmethyl, cycloalkylethyl or 2-(4-morpholinyl)ethyl whether or not further

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205. *Id.*

206. *Drug Profile: Synthetic Cannabinoids and 'Spice*,*' supra* note 76.

207. *Id.*

208. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 74, at 5.

209. *Id.* The seven groups are: Naphthoylindoles; (2) Naphthylmethylindoles; (3) Naphthoylpyrroles; (4) Naphthylmethylindenes; (5) Phenylacetylindoles ("Benzoylindoles"); (6) Cyclohexylphenols; and (7) classical cannabinoids ("Dibenzopyrans"). Groups 1–5 are the JWH compounds, named after John W. Huffman, the Clemson University Professor who first synthesized most of the compounds in the 1990s. *Id.* at 6. The cyclohexylphenols were first synthetized by Pfizer in the 1970s and 1980s, and the classical cannabinoids have been around since the 1960s. *Id*. at 6. These seven groups are not inclusive of all cannabinoid agonists, however. *Drug Profile: Synthetic Cannabinoids and 'Spice*,*' supra* note 76. Not included are oleamides, which are structurally similar to anandamide, the naturally occurring cannabinoid ligand (agonist). *Id.* Oleamides are used in plastics. *Id.* However, they may not be volatile, and thus would not act as a cannabinoid receptor agonist when smoked. *Id.* Other groups are either too weak, or act as both agonist and antagonist, and are thus unlikely to produce a significant psychoactive effect and be abused. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 74, at 6.

210. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 74, at 8.

211. *Id.*

> substituted in the indole ring to any extent, whether or not substituted in the naphthyl ring to any extent.[212]

This definition encompasses the 74 naphthoylindoles and nine naphthylmethylindoles known at the time of its construction.[213] The other four groups of synthetic cannabinoids are similarly defined, while the classical cannabinoids are individually listed or defined as "tetrahydro derivatives of cannabinol and 3-alkyl homologues of cannabinol or of its tetrahydro derivatives."[214]

These generic definitions are superior to the Federal Analog Act and the states' analog acts in several ways. Specifically, they replace the standards-based approach of the current analog act with a rule.[215] This removes the vagueness problem created by the term "substantially similar" in the Federal Analog Act. It clearly defines what substances are illegal, without having to individually list each compound. Any chemist capable of synthesizing a new compound would know what variations will be illegal, without having to guess whether or not it is substantially similar.

Several states have noticed and copied the generic language into their state's controlled substances act.[216] In theory, they have successfully banned all cathinone derivatives and synthetic cannabinoids. Yet "50 State Legal" products are still widely available, including in those states that use the generic language.[217] This is not the fault of the legislation, which clearly includes all cathinone derivatives and the synthetic cannabinoids belonging to the seven primary structural groups. The more likely reason for the failure is a lack of enforcement and knowledge of the law. Indeed, it is absurd to suggest that the average head-shop owner can distinguish between a compound "derived from 2-amino-1-phenyl-1-propanone . . . by substitution in the phenyl ring . . . with alkyl,"[218] from isopropanol alcohol, the main ingredient in glass cleaner.[219] Yet this may not be the case either. Several states that have adopted the generic language also

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212. *Id.*

213. *Id.*

214. *Id.* at 9.

215. For a detailed discussion on the rules versus standards approach to controlled-substance legislation, and the benefits of a rules/standards hybrid analog act, see Kau, *supra* note 24.

216. Thirteen states have adopted the generic language for synthetic cannabinoids, and eight use the cathinone derivative definition of the ACMD. *See* Green, *supra* note 45. Idaho, Kansas, Louisiana, Mississippi, North Carolina, and Texas use both the cathinone and cannabinoid generic language. *See id.*

217. *See, e.g.*, *10 Packs of Dr. Feel Goods Bath Salts 500 mg Wholesale (Factory Direct)*, *supra* note 179.

218. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 67, at 36.

219. Actual glass cleaners, such as Windex, and not cathinone derivatives sold under the faux description. *Windex Original Glass Cleaner*, WHAT'S INSIDE SC JOHNSON, http://www.whatsinsidescjohnson.com/en-us/products-by-brand/windex/windex-original-glass-cleaner.aspx (last visited Sept. 21, 2012).

individually list many of the compounds it includes.[220] Thus, if a retailer were to look up the law,[221] even a basic "control-f" computer search would reveal that the drugs sold as "bath salts" and "herbal incense" are in fact illegal, despite claims of "50 State Legal" status.

What the average head-shop owner does know is that "bath salts" and "herbal incense" are extremely profitable products.[222] Given the lack of prosecution under the generic language, many retailers find it well worth the risk to sell "bath salts" and "herbal incense."

III. SOLUTIONS

If there was a chance to stop the spread of "bath salts" and "incense" with the currently employed control methods, that opportunity has passed. Designer drugs are here to stay. The slow response to "bath salts" and "incense" allowed them to permeate popular culture. Users have been turned on to the fact that powerful drugs can be purchased legally on the Internet. Retailers have been turned on to the substantial profits to be gained from selling "legal highs," without the risks associated with traditional narcotic sales.[223] Users know that products like "incense," "bath salts," "glass cleaner," "plant food," and other such products sold by disreputable online "research chemical" suppliers, marketed as "not for human consumption," are in fact drugs for human consumption. Indeed, a conspicuous "not for human consumption" label has in many ways become code for "this product is a drug."[224] In short, the Mcat's[225] out of the bag. If it is going to be put back in the bag, new methods must be employed.

A. Rethinking the Federal Analog Act

Prosecution under the Federal Analog Act is not impossible. In December 2011, federal prosecutors successfully tried Steven Sullivan under the Federal Analog Act.[226] Mr. Sullivan was charged with possession and intent to distribute

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220. *See, e.g.*, TEX. HEALTH & SAFETY CODE ANN. § 481.1031 (2012).

221. Many retailers do in fact check the law and offer the relevant statutes on their website for shoppers to check. *See, e.g.*, *Check Your State Law*, *supra* note 178. The Federal Analog Act is discussed, but there is no mention of the generic definition or what it may cover. *Id.*

222. *See* Ben Paynter, *The Big Business of Synthetic Highs*, BUSINESSWEEK (June 16, 2011), http://www.businessweek.com/magazine/content/11_26/b4234058348635.htm; Oakes, *supra* note 145.

223. In the U.S. alone, "incense" sales generate close to $5 billion a year. Paynter, *supra* note 222.

224. *See AM-2201—Online Marketing Strategies*, REDNET PROJECT (June 13, 2012, 8:00 AM), https://www.rednetproject.eu/groups/am2201/wiki/8013a/AM2201__Online_marketing_strategies.html (noting that advice against human consumption "intrinsically encourage[s] such use").

225. Common name for mephedrone. ADVISORY COUNCIL ON THE MISUSE OF DRUGS, *supra* note 67.

226. Lori Pilger, *Nebraska Jury Finds Kansas Man Guilty in Bath Salts Case*, JOURNALSTAR.COM (Dec. 28, 2011, 6:30 AM), http://journalstar.com/news/local/crime-and-

methylone and mephedrone, despite a "not for human consumption" label.[227] When the jury convicted him, he became one of the few individuals to be prosecuted for distribution of bath salts under the Federal Analog Act.

United States v. Sullivan shows that the Federal Analog Act can be an effective tool. Even if it is only used in certain cases, such as where it is apparent that the defendant intends the product to be used for human consumption, the mere act of enforcing it can have a significant effect in many ways. It lets the public know that despite claims to the contrary, designer drugs are in fact illegal. Removing the notion of legality may deter many because the apparent legality of the drugs leads some to believe that they are safe. It also gives notice to retailers that their actions are illegal, and the threat of prosecution may be enough to make them take the products off their shelves.[228]

Enforcing the Federal Analog Act as it is now may be the best option currently available. While the generic definitions of cathinone derivatives and synthetic cannabinoids solves many of the Federal Analog Act's shortcomings, it also shares many of the shortcomings of a purely rules-based system. Drafting these definitions takes a considerable amount of time and resources. And they can only be completed after the drugs have become a problem and an extensive amount of the possible variations have been identified.

Yet the Federal Analog Act is far from perfect and enforcement is not easy. The Act is vague and thus needs the intent requirement. By combining aspects of the generic definitions with the Federal Analog Act, however, it may be possible to draft a law that is broad enough to include all analogs of controlled substances with precise language that does not require such broad exemptions and exceptions to avoid arbitrary enforcement.

B. Rewriting the Federal Analog Act

Cathinones and cannabinoids are not the only drugs suitable for creating new designer drugs. The sources for new designer drugs are as vast and varied as the receptors of the human brain.[229] Nonetheless, it is possible to predict which compounds have a potential for abuse.

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courts/nebraska-jury-finds-kansas-man-guilty-in-bath-salts-case/article_fdadaf60-a2ba-5aa5-adf8-4a9b7feabb8f.html.

227. United States v. Sullivan, No. 4:11CR3034, 2011 WL 3957425, at *1 (D. Neb. Aug. 17, 2011).

228. This will not always be the case, however. *See* Oakes, *supra* note 145.

229. Dr. Alexander Shulgin is the source of many of the "research chemical" designer drugs on the market today. Bennet, *supra* note 59. Shulgin notes:

> At the beginning of the 20th century, there were only two psychedelic compounds known to Western science: cannabis and mescaline. A little over 50 years later—with LSD, psilocybin, psilocin, TMA, several compounds based on DMT and various other isomers—the number was up to almost 20. By 2000, there were well over 200. So you see, the growth is exponential. . . . The way it's building up now, we may have well over that number.

The process for identifying new psychotropic compounds was enhanced with the development of high-throughput screening[230] in the early 1990s.[231] While capable of producing huge numbers of potential new psychotropic compounds, this screening produces very low hit rates and is costly.[232] The modern approach is to use computer-aided drug design ("CADD").[233] CADD has expedited this process, allowing for huge databases of potential psychotropic drugs to be compiled quickly and accurately.[234]

With CADD techniques, it is no longer necessary to rely on the "substantially similar" language of the Federal Analog Act. It is now possible to predict which analogs clandestine chemists will target. This is done by modeling analogs for each Schedule I and II drug, and their affinity with the appropriate receptor gauged, all in a virtual environment. From this data, generic language like that used to control cathinone derivatives can be constructed for each class of drug. The "substantially similar" language is no longer needed; in its place is a clear guideline as to which alterations to a compound are impermissible.

"Substantially similar" is the source of vagueness in the Federal Analog Act.[235] This vagueness makes the "intended for human consumption" requirement necessary to avoid arbitrary enforcement.[236] Using CADD techniques cures the vagueness issue by replacing "substantially similar" with a clear and precise list of controlled compounds. Yet a broad exception is still needed, as the Act would include yet-to-be-synthesized compounds and may have a chilling effect on legitimate research.

One possible such exception could be for bona fide uses: Replace "not intended for human consumption" with "unless it is demonstrated to have a bona fide use."[237] This would switch the burden from requiring the government to prove that products like "bath salts" are intended for human consumption to requiring the

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Id. His prediction is reflected in the recent trends in new designer drugs. In 2011, a new drug appeared at the rate of about one per week. *New Drugs Detected in the EU at the Rate of Around One Per Week, Say Agencies*¸ EMCDDA (April 26, 2012). In 2011, 49 new drugs were detected, in 2010 there were 41, and only 24 in 2009. *Id.*

230. High Throughput Screening ("HTS") is a method of identifying a lead compound for affinity with a therapeutic target, such as an enzyme, ion channel, or nuclear hormone receptor. Ricardo Macarron & Robert P. Hertzberg, *Design and Implementation of High Throughput Screening Assays*, *in* HIGH THROUGHPUT SCREENING METHODS AND PROTOCOLS 1–3 (William P. Janzen ed., 2002). Using robotics and computer databases, it allows for a large number of assays to be performed quickly. *Id.* at 1–2.

231. Chun Meng Song et al., *Recent Advances in Computer-Aided Drug Design*, 10 BRIEFINGS BIOINFORMATICS 579, 579 (2009).

232. *Id.*

233. *Id.* at 579–80.

234. *See id.*

235. United States v. Forbes, 806 F. Supp. 232, 236–39 (D. Colo. 1992)

236. *See, e.g.*, United States v. Klecker, 348 F.3d 69, 71 (4th Cir. 2003).

237. "Bona fide use" must be defined to allow for legitimate uses of the substance, not only for medical research, but even for more mundane common usage such as plant fertilizer.

distributor to show that it is actually intended for bathing and not for human consumption. With "bath salts," this is a heavy burden for the distributor to meet. Many of the drugs used in "bath salts" are in fact skin irritants.[238] "Incense" products may seem to fare better under this standard. But it is not the plant material—which makes it suitable to use as incense—that is controlled. It is the synthetic cannabinoids, which are odorless, and thus worthless as incense.[239]

A "bona fide use" exception is not without its own drawbacks, however. It may, in effect, reopen the proposed "Timothy Leary Loophole" of the Federal Analog Act, which allowed researchers to obtain an exemption from the DEA.[240] This exception was derided as being far too broad, allowing researchers to test controlled-substance analogs on themselves.[241] A "bona fide use" exception may widen the "Timothy Leary Loophole." There would be no requirement for a researcher to get an exemption. He would only need to be able to prove that he is conducting legitimate research and thus using the drug for a bona fide purpose. Many of the more sophisticated psychonauts could meet this burden and continue to legally synthesize and experiment with new drugs.[242]

This may not be such a bad thing. Psychonautics has led to significant discoveries, such as LSD by Dr. Albert Hoffman, and the rediscovery of MDMA by Dr. Alexander Shulgin.[243] The harm comes when a new drug with a high potential for abuse is discovered, such as mephedrone or MDPV, and it is introduced to the public at large as "bath salts," or as some other faux product. The specific analog language and necessity of a bona fide purpose would make marketing the drugs as a faux product more difficult; it would require distributors to not only find a suitable recreational drug, but also identify a legitimate purpose to disguise its use as a drug.

An effective analog act would also reduce the need to quickly add compounds into Schedule I. While it is still possible for researchers to obtain a license from the DEA to research Schedule I drugs, the regulatory controls may limit the manner in which studies on new drugs may be conducted.[244] Consider MDMA and psilocybin. Both compounds have long been federally controlled and disregarded by the medical industry. However, new research on these compounds

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238. *Mephedrone*, *supra* note 27.

239. Brett C. Ginsburg et al., *Purity of Synthetic Cannabinoids Sold Online for Recreational Use*, 36 J. ANALYTICAL TOXICOLOGY 66, 67 (2012).

240. Kau, *supra* note 24, at 1111.

241. Clayton L. Smith, Note, *The Controlled Substance Analogue Enforcement Act of 1986: The Compromising of Criminalization*, 16 AM. J. CRIM. L. 107, 121 (1988).

242. *See* Ott, *supra* note 96.

243. Kau, *supra* note 24, at 1098 n.85. Shulgin is also responsible for discovering hundreds of other tryptamine and phenethylamines with psychoactive effects, which he documented in his books PiHKAL and TiHKAL. *See* Bennet, *supra* note 59 and accompanying text.

244. *See* Press Release, NIH, Announcement of the Department of Health and Human Services' Guidance on Procedures for the Provision of Marijuana for Medical Research (May 29, 1999), *available at* http://grants.nih.gov/grants/guide/notice-files/not99-091.html.

is finding new medical uses.[245] But even successful research must overcome the taboo attached to Schedule I drugs. Even when substantial research supports the safe use of a drug for medical purposes, the DEA is often reluctant to release a drug it has "captured."[246]

C. Early Warning

Even psychonautics practiced by self-taught, less sophisticated users can be beneficial. By testing novel compounds on themselves and writing about their experience, psychonauts can provide an early warning. They are already an invaluable source for information on designer drugs,[247] though greatly underutilized in the United States. By simply monitoring psychonauts' online discussion forums, lawmakers could have had advanced notice of the threat posed by cathinone derivatives and synthetic cannabinoids years earlier.[248]

The European Union is aware of psychonauts' potential in this regard. In 2008, the Psychonaut Web Mapping Project was launched with the purpose of searching the Internet for psychonaut discussions on novel recreational compounds.[249] This project identified and compiled significant data on both herbal incense synthetic cannabinoids, mephedrone, and MDPV in 2009, well before any state banned these substances.[250] The Psychonaut Web Mapping Project has been continued in the Recreational Drugs European Network ("ReDNet") Project.[251]

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245. Psilocybin has recently been tested as a means to treat depression and anxiety in terminal cancer patients with promising results. Charles S. Grob et al., *Pilot Study of Psilocybin Treatment for Anxiety in Patients with Advanced-Stage Cancer*, 68 ARCH. GEN. PSYCHIATRY 71, 71 (2011). Likewise, MDMA has potential for treatment of post-traumatic stress disorder. Michael C. Mithoefer et al, *The Safety And Efficacy of ±3,4-Methylenedioxymethamphetamine-Assisted Psychotherapy in Subjects with Chronic, Treatment-Resistant Posttraumatic Stress Disorder: The First Randomized Controlled Pilot Study*, 25 J. PSYCHOPHARMACOLOGY 439 (2011).

246. Kau, *supra* note 24, at 1113. Consider also the issues surrounding medical marijuana and the DEA's continued enforcement of the federal ban. *See generally* Robert A. Mikos, *A Critical Appraisal of the Department of Justice's New Approach to Medical Marijuana*, 22 STAN. L. & POL'Y REV. 633 (2011).

247. *See, e.g.*, PSYCHONAUT WEB MAPPING PROJECT, http://www.psychonautproject.eu/ (last visited Sept. 21, 2012); REDNET PROJECT, https://www.rednetproject.eu/index.php (last visited Sept. 21, 2012).

248. *See, e.g.*, *Most Harmful Compounds*, DRUGS F., http://www.drugs-forum.com/forum/showthread.php?t=27429 (last visited Sept. 21, 2012). In a message board discussion from January 2007, users suggested MDPV and methylone are some of the most dangerous research chemicals available. *Id.* Other candidates include 5-methoxy-alpha-methyltryptamine ("5-meo-amt"), *id.*, which is only controlled in Florida. H.B. 1175, 114th Leg., 1st Reg. Sess. (Fla. 2012). Also discussed are several compounds included in the "Combating Designer Drugs Act of 2011." S. 839, 112th Cong. (1st Sess. 2011).

249. PSYCHONAUT WEB MAPPING PROJECT, *supra* note 247.

250. PAOLO DELUCA ET AL., MDPV REPORT: PSYCHONAUT WEB MAPPING RESEARCH PROJECT (2009), *available at* http://www.psychonautproject.eu/documents/reports/MDPV.pdf; PAOLO DELUCA ET AL., MEPHEDRONE REPORT: PSYCHONAUT WEB MAPPING RESEARCH PROJECT (2009), *available at* http://www.psychonautproject.eu/

The Psychonaut Web Mapping and ReDNet Projects are invaluable tools in the fight against designer drugs. They provide an early warning of potentially dangerous drugs before they become a public threat and help to disseminate information about new drugs to both potential users and law enforcement agencies. They can provide a trusted source of information for users about the health risk associated with a particular drug. Armed with such knowledge, users can approach new drugs with the caution they deserve, rather than overdoing it and killing the neighbor's goat while wearing women's underwear.[252]

CONCLUSION

There is no easy solution. Overly broad legislation can hinder legitimate medical research and restrict personal liberty. As such, broad standards like the current Federal Analog Act must have exemptions. Such exemptions will always be exploited.

Simply adding compounds to controlled substance acts as they become a problem is too slow; by the time a substance is controlled, the damage has been done. The effect of such legislation is merely to change the drug sold, and with the vast number of psychoactive compounds currently known, and many more yet to be discovered, designer-drug distributors will never be wanting for a new product to sell.

Generic definitions of drug groups are better than individually listing compounds, as they are far more expansive and cover the yet-to-be-discovered compounds. But like individually listing drugs, it is a slow process and requires a large quantity of the drug class to be known before such a definition can be constructed.

For now, the best solution may be to dust off the Federal Analog Act and apply it forcefully to retailers and manufacturers of designer drugs. This increases the risk involved in selling these products and will force some entrepreneurs to reconsider. But more importantly, it battles the misconceived notion that these drugs are legal and therefore safe.

Going forward, the Federal Analog Act must be rewritten to provide greater specificity. This will allow the "not for human consumption" exception to be replaced with an exception that shifts the burden from the government to the defendant to prove a bona fide use. CADD technology makes this feasible.

Of course, even effective legislation strongly enforced will not solve the problem. The best one can hope for is that designer drugs become just regular

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documents/reports/Mephedrone.pdf; PAOLO DELUCA ET AL., SPICE REPORT: PSYCHONAUT WEB MAPPING RESEARCH PROJECT (2009), *available at* http://www.psychonautproject.eu/documents/reports/Spice.pdf.

251. REDNET PROJECT, *supra* note 247.

252. *See* Rachel Quigley, *Teenager 'Steals Goat and Kills It While High on Bath Salts and Dressed in Women's Underwear,'* MAILONLINE (May 3, 2011, 2:51 PM), http://www.dailymail.co.uk/news/article-1383215/Teenager-steals-goat-kills-high-bath-salts-dressed-womens-underwear.html.

drugs: illegal, dangerous, but for many, worth the risk. After all, when the bounty is high enough, even Porky the Pig will endure a trip through Wackyland.[253]

253. *See* PORKY IN WACKYLAND, *supra* note 46.