



**DEPARTMENT OF JUSTICE**

**Drug Enforcement Administration**

**21 CFR Part 1308**

**[Docket No. DEA-436]**

**Schedules of Controlled Substances: Placement of 10 Synthetic Cathinones into Schedule I**

**AGENCY:** Drug Enforcement Administration, Department of Justice.

**ACTION:** Notice of proposed rulemaking.

**SUMMARY:** The Drug Enforcement Administration proposes placing 10 synthetic cathinones: 4-methyl-*N*-ethylcathinone (4-MEC); 4-methyl-*alpha*-pyrrolidinopropiophenone (4-MePPP); *alpha*-pyrrolidinopentiophenone ( $\alpha$ -PVP); 1-(1,3-benzodioxol-5-yl)-2-(methylamino)butan-1-one (butylone); 2-(methylamino)-1-phenylpentan-1-one (pentedrone); 1-(1,3-benzodioxol-5-yl)-2-(methylamino)pentan-1-one (pentylone); 4-fluoro-*N*-methylcathinone (4-FMC); 3-fluoro-*N*-methylcathinone (3-FMC); 1-(naphthalen-2-yl)-2-(pyrrolidin-1-yl)pentan-1-one (naphyrone); *alpha*-pyrrolidinobutiophenone ( $\alpha$ -PBP) and their optical, positional, and geometric isomers, salts and salts of isomers into schedule I of the Controlled Substances Act. This proposed scheduling action is pursuant to the Controlled Substances Act which requires that such actions be made on the record after opportunity for a hearing through formal rulemaking. If finalized, this action would impose the regulatory controls and administrative, civil, and criminal sanctions applicable to schedule I controlled substances on persons who

handle (manufacture, distribute, import, export, engage in research, conduct instructional activities or chemical analysis, or possess), or propose to handle 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP.

**DATES:** Interested persons may file written comments on this proposal in accordance with 21 CFR 1308.43(g). Comments must be submitted electronically or postmarked on or before [INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]. Commenters should be aware that the electronic Federal Docket Management System will not accept comments after 11:59 p.m. Eastern Time on the last day of the comment period.

Interested persons, defined at 21 CFR 1300.01 as those “adversely affected or aggrieved by any rule or proposed rule issuable pursuant to section 201 of the Act (21 U.S.C. 811),” may file a request for hearing or waiver of hearing pursuant to 21 CFR 1308.44 and in accordance with 21 CFR 1316.45 and/or 1316.47, as applicable. Requests for hearing and waivers of an opportunity for a hearing or to participate in a hearing must be received on or before [INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** To ensure proper handling of comments, please reference “Docket No. DEA-436” on all correspondence, including any attachments.

- *Electronic comments:* The Drug Enforcement Administration encourages that all comments be submitted electronically through the Federal eRulemaking Portal which provides the ability to type short comments directly into the comment field on the Web page or to attach a file for lengthier comments. Please go to <http://www.regulations.gov> and follow the online instructions at that site for submitting comments. Upon completion

of your submission you will receive a Comment Tracking Number for your comment. Please be aware that submitted comments are not instantaneously available for public view on Regulations.gov. If you have received a Comment Tracking Number, your comment has been successfully submitted and there is no need to resubmit the same comment.

- *Paper comments:* Paper comments that duplicate the electronic submission are not necessary. Should you wish to mail a paper comment *in lieu of* an electronic comment, it should be sent via regular or express mail to: Drug Enforcement Administration, Attn: DEA Federal Register Representative/ODW, 8701 Morrisette Drive, Springfield, Virginia 22152.

- *Hearing requests:* All requests for hearing and waivers of participation must be sent to: Drug Enforcement Administration, Attn: Administrator, 8701 Morrisette Drive, Springfield, Virginia 22152. All requests for hearing and waivers of participation should also be sent to: Drug Enforcement Administration, Attn: Hearing Clerk/LJ, 8701 Morrisette Drive, Springfield, Virginia 22152; and (2) Drug Enforcement Administration, Attn: DEA Federal Register Representative/ODW, 8701 Morrisette Drive, Springfield, Virginia 22152.

**FOR FURTHER INFORMATION CONTACT:** Barbara J. Boockholdt, Office of Diversion Control, Drug Enforcement Administration; Mailing Address: 8701 Morrisette Drive, Springfield, Virginia 22152; Telephone: (202) 598-6812.

## **SUPPLEMENTARY INFORMATION:**

### **Posting of Public Comments**

Please note that all comments received in response to this docket are considered part of the public record. They will, unless reasonable cause is given, be made available by the Drug Enforcement Administration (DEA) for public inspection online at <http://www.regulations.gov>. Such information includes personal identifying information (such as your name, address, etc.) voluntarily submitted by the commenter. The Freedom of Information Act (FOIA) applies to all comments received. If you want to submit personal identifying information (such as your name, address, etc.) as part of your comment, but do not want it to be made publicly available, you must include the phrase “PERSONAL IDENTIFYING INFORMATION” in the first paragraph of your comment. You must also place all of the personal identifying information you do not want made publicly available in the first paragraph of your comment and identify what information you want redacted.

If you want to submit confidential business information as part of your comment, but do not want it to be made publicly available, you must include the phrase “CONFIDENTIAL BUSINESS INFORMATION” in the first paragraph of your comment. You must also prominently identify confidential business information to be redacted within the comment.

Comments containing personal identifying information and confidential business information identified as directed above will generally be made publicly available in redacted form. If a comment has so much confidential business information or personal identifying information that it cannot be effectively redacted, all or part of that comment

may not be made publicly available. Comments posted to <http://www.regulations.gov> may include any personal identifying information (such as name, address, and phone number) included in the text of your electronic submission that is not identified as directed above as confidential.

An electronic copy of this document and supplemental information to this proposed rule are available at <http://www.regulations.gov> for easy reference.

### **Request for Hearing or Waiver of Participation in a Hearing**

Pursuant to 21 U.S.C. 811(a), this action is a formal rulemaking “on the record after opportunity for a hearing.” Such proceedings are conducted pursuant to the provisions of the Administrative Procedure Act (APA), 5 U.S.C. 551–559. 21 CFR 1308.41–1308.45; 21 CFR part 1316, subpart D. In accordance with 21 CFR 1308.44 (a)–(c), requests for hearing, notices of appearance, and waivers of an opportunity for a hearing or to participate in a hearing may be submitted only by interested persons, defined as those “adversely affected or aggrieved by any rule or proposed rule issuable pursuant to section 201 of the Act (21 U.S.C. 811).” 21 CFR 1300.01. Such requests or notices must conform to the requirements of 21 CFR 1308.44 (a) or (b), and 1316.47 or 1316.48, as applicable, and include a statement of interest of the person in the proceeding and the objections or issues, if any, concerning which the person desires to be heard. Any waiver must conform to the requirements of 21 CFR 1308.44(c) and may include a written statement regarding the interested person’s position on the matters of fact and law involved in any hearing.

Please note that pursuant to 21 U.S.C. 811(a), the purpose and subject matter of a hearing held in relation to this rulemaking are restricted to: “(A) find[ing] that such drug

or other substance has a potential for abuse, and (B) mak[ing] with respect to such drug or other substance the findings prescribed by subsection (b) of section 812 of this title for the schedule in which such drug is to be placed \* \* \*.” All requests for hearing and waivers of participation must be sent to the DEA using the address information provided above.

### **Legal Authority**

The DEA implements and enforces Titles II and III of the Comprehensive Drug Abuse Prevention and Control Act of 1970, as amended. Titles II and III are referred to as the “Controlled Substances Act” and the “Controlled Substances Import and Export Act,” respectively, and are collectively referred to as the “Controlled Substances Act” or the “CSA” for the purposes of this action. 21 U.S.C. 801–971. The DEA publishes the implementing regulations for these statutes in title 21 of the Code of Federal Regulations (CFR), chapter II. The CSA and its implementing regulations are designed to prevent, detect, and eliminate the diversion of controlled substances and listed chemicals into the illicit market while providing for the legitimate medical, scientific, research, and industrial needs of the United States. Controlled substances have the potential for abuse and dependence and are controlled to protect the public health and safety.

Under the CSA, controlled substances are classified into one of five schedules based upon their potential for abuse, their currently accepted medical use in treatment in the United States, and the degree of dependence the substance may cause. 21 U.S.C. 812. The initial schedules of controlled substances established by Congress are found at 21 U.S.C. 812(c), and the current list of scheduled substances is published at 21 CFR part 1308.

Pursuant to 21 U.S.C. 811(a)(1), the Attorney General may, by rule, “add to such a schedule or transfer between such schedules any drug or other substance if he (A) finds that such drug or other substance has a potential for abuse, and (B) makes with respect to such drug or other substance the findings prescribed by subsection (b) of section 812 of this title for the schedule in which such drug is to be placed \* \* \*.” The Attorney General has delegated scheduling authority under 21 U.S.C. 811 to the Administrator of the DEA. 28 CFR 0.100.

The CSA provides that proceedings for the issuance, amendment, or repeal of the scheduling of any drug or other substance may be initiated by the Attorney General (1) on her own motion; (2) at the request of the Secretary of the Department of Health and Human Services (HHS);<sup>1</sup> or (3) on the petition of any interested party. 21 U.S.C. 811(a). This proposed action is supported by a recommendation from the Assistant Secretary of the HHS and an evaluation of all other relevant data by the DEA. If finalized, this action would impose the regulatory controls and administrative, civil, and criminal sanctions of schedule I controlled substances on any person who handles or proposes to handle 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP.

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<sup>1</sup> As discussed in a memorandum of understanding entered into by the Food and Drug Administration (FDA) and the National Institute on Drug Abuse (NIDA), the FDA acts as the lead agency within the HHS in carrying out the Secretary’s scheduling responsibilities under the CSA, with the concurrence of NIDA. 50 FR 9518, Mar. 8, 1985. The Secretary of the HHS has delegated to the Assistant Secretary for Health of the HHS the authority to make domestic drug scheduling recommendations. 58 FR 35460, July 1, 1993.

## Background

On March 7, 2014, the DEA published a final order in the *Federal Register* amending 21 CFR 1308.11(h) to temporarily place 4-methyl-*N*-ethylcathinone (4-MEC); 4-methyl-*alpha*-pyrrolidinopropiophenone (4-MePPP); *alpha*-pyrrolidinopentiophenone ( $\alpha$ -PVP); 1-(1,3-benzodioxol-5-yl)-2-(methylamino)butan-1-one (butylone); 2-(methylamino)-1-phenylpentan-1-one (pentedrone); 1-(1,3-benzodioxol-5-yl)-2-(methylamino)pentan-1-one (pentylone); 4-fluoro-*N*-methylcathinone (4-FMC); 3-fluoro-*N*-methylcathinone (3-FMC); 1-(naphthalen-2-yl)-2-(pyrrolidin-1-yl)pentan-1-one (naphyrone); and *alpha*-pyrrolidinobutiophenone ( $\alpha$ -PBP) into schedule I of the CSA pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). 79 FR 12938. That final order, which became effective on the date of publication, was based on findings by the Deputy Administrator of the DEA that the temporary scheduling of these 10 synthetic cathinones was necessary to avoid an imminent hazard to public safety pursuant to 21 U.S.C. 811(h)(1). At the time the final order took effect, section 201(h)(2) of the CSA (21 U.S.C. 811(h)(2)), required that the temporary scheduling of a substance expire at the end of two years from the date of issuance of the scheduling order, and it provided that, during the pendency of proceedings under 21 U.S.C. 811(a)(1) with respect to the substance, temporary scheduling of that substance could be extended for up to 1 year. Pursuant to 21 U.S.C. 811(h)(2), the temporary scheduling of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP expires on March 6, 2016, unless extended. An extension of the temporary order is being ordered by the DEA Administrator in a separate action.



As described in the final order published on March 7, 2014, 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP are structurally and pharmacologically similar to amphetamine, 3,4-methylenedioxymethamphetamine (MDMA), cathinone, and other related substances. While 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have been used as research chemicals and/or studied due to their misuse and abuse, based on the review of the scientific literature, there are no known currently accepted medical uses for these substances. The Assistant Secretary of Health for the U.S. Department of Health and Human Services (HHS) has advised that there are no exemptions or approvals in effect for 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP under section 505 (21 U.S.C. 355) of the Federal Food, Drug and Cosmetic Act. As stated by the HHS, 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have no known accepted medical use. They are not the subject of any approved new drug applications (NDAs) or investigational new drug applications (INDs), and are not currently marketed as approved drug products. The HHS recommends that 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP and their salts be placed into schedule I of the Controlled Substances Act (CSA).

**Proposed Determination to Schedule 4-MEC, 4-MePPP,  $\alpha$ -PVP, Butylone, Pentedrone, Pentylone, 4-FMC, 3-FMC, Naphyrone, and  $\alpha$ -PBP**

Pursuant to 21 U.S.C. 811(a)(1), proceedings to add a drug or substance to those controlled under the CSA may be initiated by the Attorney General, or her delegate, the DEA Administrator. On December 30, 2014, the DEA requested scientific and medical evaluations and scheduling recommendations from the Assistant Secretary of Health for the HHS for 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP pursuant to 21 U.S.C. 811(b). Upon receipt of the scientific and medical evaluation and scheduling recommendations from the HHS on March 2, 2016, the DEA reviewed the documents and all other relevant data, and conducted its own eight-factor analysis of the abuse potential of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP pursuant to 21 U.S.C. 811(c). Included below is a brief summary of each of the eight factors as analyzed by the HHS and the DEA, and as considered by the DEA in its proposed scheduling action. Please note that both the DEA 8-Factor and the HHS 8-Factor analyses are available in their entirety under the tab “Supporting Documents” of the public docket for this action at <http://www.regulations.gov> under Docket Number “DEA-436.”

1. *The Drug’s Actual or Relative Potential for Abuse:* The term “abuse” is not defined in the CSA. However, the legislative history of the CSA suggests that the DEA consider the following criteria when determining whether a particular drug or substance has a potential for abuse:<sup>2</sup>

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<sup>2</sup> COMPREHENSIVE DRUG ABUSE PREVENTION AND CONTROL ACT OF 1970, H.R. REP. NO. 91-1444, 91st Cong., Sess. 1 (1970); *reprinted in* 1970 U.S.C.C.A.N. 4566, 4603.

- (a) There is evidence that individuals are taking the drug or drugs containing such a substance in amounts sufficient to create a hazard to their health or to the safety of other individuals or of the community; or*
- (b) There is significant diversion of the drug or drugs containing such a substance from legitimate drug channels; or*
- (c) Individuals are taking the drug or drugs containing such a substance on their own initiative rather than on the basis of medical advice from a practitioner licensed by law to administer such drugs in the course of his professional practice; or*
- (d) The drug or drugs containing such a substance are new drugs so related in their action to a drug or drugs already listed as having a potential for abuse to make it likely that the drug will have the same potentiality for abuse as such drugs, thus making it reasonable to assume that there may be significant diversions from legitimate channels, significant use contrary to or without medical advice, or that it has a substantial capability of creating hazards to the health of the user or to the safety of the community.*

As described by the HHS, the abuse potentials of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP are associated with their abilities to produce psychoactive effects that are similar to those produced by mephedrone, methylone, MDPV, and other schedule I and II substances such as amphetamine, methamphetamine, cocaine, methcathinone, and MDMA that have a high potential for abuse.

The substances 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have no approved medical uses in the United States and they have been encountered on the illicit market with adverse outcomes on the public health and safety. Because these substances are not approved drug products, a practitioner may not legally prescribe them, and they cannot be dispensed to an individual. Therefore, the use of these substances is without medical advice, leading to

the conclusion that the 10 synthetic cathinones are being abused for their psychoactive properties. There are no legitimate drug channels for these synthetic cathinones as marketed drugs but the DEA notes that the 10 synthetic cathinones have use in scientific research. However, despite the limited legitimate use of these substances, reports from public health and law enforcement communicate that these substances are being abused and taken in amounts sufficient to create a hazard to an individual's health. This misuse is evidenced by emergency department admissions and deaths, representing a significant safety issue for those in the community. Papers published in the medical literature (e.g., case reports) related to 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP describe the effects of these substances to be similar to those of the schedule I cathinone substances MDPV, mephedrone, and methyldone and other stimulant and hallucinogenic substances to include methamphetamine, cocaine and MDMA. In particular, the responses in humans to the 10 synthetic cathinones are stimulant-like and include paranoia, agitation, palpitations, tachycardia, hypertension, hyperthermia, and seizures. Data from forensic databases are used as indicators of illicit activity with drugs and abuse<sup>3</sup> within the United States and include data from the System to Retrieve Information from Drug Evidence (STRIDE),<sup>4</sup> STARLiMS, and the National Forensic Laboratory Information System (NFLIS)<sup>5</sup>. From January 2010 through

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<sup>3</sup> While law enforcement data is not direct evidence of abuse, it can lead to an inference that a drug has been diverted and abused. *See* 76 FR 77330, 77332, Dec. 12, 2011.

<sup>4</sup> STRIDE was a database that collected analyses of results from drug evidence sent to DEA laboratories. Evidence was submitted by the DEA, other Federal agencies, and select local law enforcement agencies. On October 1, 2014, STARLiMS replaced STRIDE as the DEA system of record for forensic laboratory drug evidence data.

<sup>5</sup> NFLIS is a DEA program and a national forensic laboratory reporting system that systematically collects results from drug chemistry analyses conducted by state and local forensic laboratories in the United States. The NFLIS database also contains Federal data from U.S. Customs and Border Protection (CBP). NFLIS only includes drug chemistry results from completed analyses.

December 2015 (query dates: February 10 & 11, 2016), STRIDE, STARLiMS and NFLIS databases registered a total of 20,090 reports pertaining to the 10 synthetic cathinones (4-MEC–2,820 reports; 4-MePPP–438 reports;  $\alpha$ -PVP–13,295 reports; butylone–789 reports; pentedrone–1,645 reports; pentylone–411 reports; FMC–375 reports; naphyrone–84 reports;  $\alpha$ -PBP–233 reports). These drug reports represent all of the 10 synthetic cathinones reported to these databases by participating DEA, State, local, and other forensic laboratories. Consequently, the data indicate that these substances are being abused, and they present safety hazards to the health of individuals who consume them due to their stimulant properties, making them a hazard to the safety of the community.

2. *Scientific Evidence of the Drug's Pharmacological Effects, if Known:* Studies show that 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP produce pharmacological effects that are similar to those produced by schedule I and II substances such as methamphetamine, cocaine, MDMA, mephedrone, MDPV, and methylone. Similar to schedule I and II stimulants, the 10 synthetic cathinone substances affect monoamine transmission. The 10 synthetic cathinones, similar to methamphetamine, cocaine, MDMA, mephedrone, MDPV, methylone, and other related schedule I and II substances, bind to transporters for the dopamine, serotonin, and/or norepinephrine neurotransmitters and are uptake inhibitors of these neurotransmitters. Additionally, behavioral studies in animals demonstrate that the 10 synthetic cathinones produce locomotor behavior and discriminative stimulus effects that are similar to those of the schedule I and II substances methamphetamine and cocaine. Furthermore, the 10 synthetic cathinone produce rewarding properties as

demonstrated in self-administration and conditioned place preference (CPP) studies. Drugs that have rewarding effects in animals are likely to produce rewarding effects in humans, which is indicative of abuse potential. Overall, these data indicate that the 10 synthetic cathinones produce pharmacological effects and stimulant-like behaviors that are similar to those of the schedule I substances (MDMA, mephedrone, MDPV, methylone), as well as the schedule II stimulants (methamphetamine and cocaine).

3. *The State of Current Scientific Knowledge Regarding the Drug or Other Substance:* 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP are synthetic cathinones ( $\beta$ -keto-phenethylamines) of the larger phenethylamine structural class (amphetamines, cathinones, 2C compounds, aminoindanes, etc.). These substances share the core phenethylamine structure with a keto functional group [carbonyl (C=O)] at the  $\beta$ -position and substitutions at the  $\alpha$ -position and on the phenyl ring and nitrogen atom. Available data demonstrate that 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP are  $\beta$ -ketophenethylamines (i.e., synthetic cathinones) and are structurally and pharmacologically similar to amphetamine, MDMA, cathinone, mephedrone, methylone, MDPV, and other related substances. Metabolism studies demonstrate that humans metabolize synthetic cathinones to their corresponding amphetamines followed by reduction of the beta-keto group to the corresponding alcohol. According to the HHS, 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have no known accepted medical use. They are not the subject of any approved new drug applications (NDAs) or investigational new drug applications (INDs), and are not currently marketed as approved drug products in the U.S or in any other

country. The HHS also states that there are no reported clinical trials with the 10 synthetic cathinones. Accordingly, the DEA is not aware of any accepted medical use for 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP in the United States. In addition, although the chemistry of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP is known and has been reproduced, no studies have been undertaken to evaluate the efficacy, toxicology, and safety of these substances in humans.

4. *Its History and Current Pattern of Abuse:* 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP are synthetic cathinones that emerged on the U.S. illicit drug market around the time of the scheduling of mephedrone, methylone, and MDPV on October 21, 2011. These synthetic cathinone substances, like the schedule I synthetic cathinones (mephedrone, methylone, and MDPV), are promoted as being ‘legal’ alternatives to cocaine, methamphetamine, and MDMA. As reported in the medical literature, synthetic cathinones can induce stimulant effects, especially under high dose conditions, including tachycardia, palpitations, hypertension, tremor, seizures, hallucinations, paranoia, delusions, hyperthermia, sweating, headache, hyponatremia, and rhabdomyolysis. Products that contain 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP are falsely marketed as “research chemicals,” “jewelry cleaner,” “stain remover,” “plant food or fertilizer,” “insect repellants,” or “bath salts” and are sold at smoke shops, head shops, convenience stores, adult book stores, and gas stations. They can also be purchased on the Internet under a variety of product names (e.g., “White Dove,” “Explosion,” “Tranquility”). They are commonly encountered in the form of powders,

crystals, resins, tablets, and capsules. The packages of these commercial products usually contain the warning “not for human consumption.” Information from published scientific studies indicate that the most common routes of administration for synthetic cathinone substances is ingestion by swallowing capsules or tablets, or nasal insufflation by snorting the powder tablets. Evidence from poison centers and published reports suggest that the main users of methylone are young adults. There is evidence that these synthetic cathinone substances are ingested with other substances including other synthetic cathinones, common cutting agents, or other recreational substances.

5. *The Scope, Duration, and Significance of Abuse:* 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP, like mephedrone, methylone, and MDPV, are popular recreational drugs. Evidence that these synthetic cathinone substances are being abused and trafficked is confirmed by law enforcement encounters of these substances and reports from national databases. Forensic laboratories have analyzed drug exhibits received from state, local, or Federal law enforcement agencies that were found to contain 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP. NFLIS registered over 17,000 reports from State, local, and other forensic laboratories identifying these substances in drug-related reports for the period from January 2010 to December 2015 from 47 states. STRIDE & STARLiMS registered over 2,000 reports from DEA forensic laboratories from January 2010 to December 2015. Encounters of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP by law enforcement have occurred in several states. Additionally, large seizures of these substances have occurred by the U.S. Customs and Border Protection



(CBP). Concerns over the abuse of these synthetic cathinone substances have prompted many States to regulate them. These data demonstrate that 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have a scope, duration, and significance of abuse that supports scheduling under the CSA.

6. *What, if Any, Risk There is to the Public Health:* Available evidence on the overall public health risks associated with the use of synthetic cathinones indicates that 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP can cause acute health problems leading to emergency department (ED) admissions, violent behaviors causing harm to self or others, or death. Law enforcement, forensic laboratories, case reports, and public health officials have reported toxic exposure to some of the 10 synthetic cathinones that demonstrate the public health risks associated with these substances. Serious adverse effects have resulted in documented hospital ED admissions from the ingestion of butylone, 4-FMC, or naphyrone. Individuals under the influence of 4-MEC or  $\alpha$ -PVP have acted violently and unpredictably causing harm, or even death, to themselves or others. Butylone has been directly implicated in two fatalities reported in the medical literature. Other synthetic cathinones, such as  $\alpha$ -PVP, pentedrone, and pentylone, have also been implicated in the deaths of individuals. Acute effects of these substances are those typical of a sympathomimetic agent (e.g., cocaine, methamphetamine, amphetamine) and include among other effects tachycardia, headache, palpitations, agitation, anxiety, mydriasis, tremor, fever or sweating, and hypertension. Other effects, with possible public health risk implications, that have been reported from the use of synthetic cathinone substances include psychological effects such as psychosis, paranoia, hallucinations, and agitation. Finally, the possibility of

death for individuals abusing 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP also indicates that these substances pose a serious public health threat. In addition to the recognized harm from ingesting and abusing synthetic cathinones, abusers risk harm when they obtain these drugs through unknown sources. Products containing these synthetic cathinone substances often do not bear labeling information regarding their ingredients and if they do, they may not contain the expected active ingredients or identify the health risks and potential hazards associated with these products. Thus, the limited knowledge about product contents, its purity and lack of information about its effects may pose another level of risk to users.

*7. Its Psychic or Physiological Dependence Liability:* The DEA is unaware of any clinical studies that have evaluated the dependence potential of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP; however, according to the HHS, synthetic cathinones have rewarding properties in rodents similar to those of schedule II stimulants. Generally, there is a strong correlation between drugs that serve as reinforcers in animals, and drugs associated with problems of addiction, dependence, or abuse by humans. In a self-administration study,  $\alpha$ -PVP and pentedrone were self-administered by rodents. In the intracranial self-stimulation (ICSS) assay,  $\alpha$ -PVP and 4-MEC significantly reduced the ICSS threshold compared to vehicle control. In drug discrimination studies, all 10 synthetic cathinone substances fully generalize to the discriminative stimulus effects produced by the schedule II stimulants -- cocaine and methamphetamine. In conditioned place preference (CPP) studies,  $\alpha$ -PBP,  $\alpha$ -PVP, and pentedrone produce CPP in rodents. Thus, these data indicate that 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have

behavioral and rewarding properties in rodents similar to those of schedule II stimulants and, consequently, psychic dependence on these substances can develop and may contribute to the continued use among individuals who abuse them despite their adverse consequences.

*8. Whether the Substance is an Immediate Precursor of a Substance Already*

*Controlled Under the CSA:* 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP are not considered immediate precursors of any controlled substance of the CSA.

*Conclusion:* After considering the scientific and medical evaluation conducted by the HHS, the HHS's recommendation, and the DEA's own eight-factor analysis, the DEA finds that the facts and all relevant data constitute substantial evidence of the potential for abuse of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP. As such, the DEA hereby proposes to schedule 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP as controlled substances under the CSA.

**Proposed Determination of Appropriate Schedule**

The CSA establishes five schedules of controlled substances known as schedules I, II, III, IV, and V. The CSA also outlines the findings required to place a drug or other substance in any particular schedule. 21 U.S.C. 812(b). After consideration of the analysis and recommendation of the Assistant Secretary for the HHS and review of all other available data, the Administrator of the DEA, pursuant to 21 U.S.C. 811(a) and 21 U.S.C. 812(b)(1), finds that:

1. 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have a high potential for abuse that is comparable to other schedule I and schedule II substances such as mephedrone, methylone, MDPV, methcathinone, MDMA, amphetamine, methamphetamine, and cocaine;
2. 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP have no currently accepted medical use in treatment in the United States; and
3. There is a lack of accepted safety for use of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP under medical supervision.

Based on these findings, the Administrator of the DEA concludes that 4-methyl-*N*-ethylcathinone (4-MEC); 4-methyl-*alpha*-pyrrolidinopropiophenone (4-MePPP); alpha-pyrrolidinopentiophenone ( $\alpha$ -PVP); 1-(1,3-benzodioxol-5-yl)-2-(methylamino)butan-1-one (butylone); 2-(methylamino)-1-phenylpentan-1-one (pentedrone); 1-(1,3-benzodioxol-5-yl)-2-(methylamino)pentan-1-one (pentylone); 4-fluoro-*N*-methylcathinone (4-FMC); 3-fluoro-*N*-methylcathinone (3-FMC); 1-(naphthalen-2-yl)-2-(pyrrolidin-1-yl)pentan-1-one (naphyrone); alpha-pyrrolidinobutiophenone ( $\alpha$ -PBP) and their optical, positional, and geometric isomers, salts and salts of isomers, warrant control in schedule I of the CSA. 21 U.S.C. 812(b)(1).

**Requirements for Handling 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP**

If this rule is finalized as proposed, 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP would continue<sup>6</sup> to be subject to the regulatory controls and administrative, civil, and criminal sanctions applicable to the manufacture, distribution, possession, importing, research, conduct of instructional activities, and exporting of schedule I controlled substances, including the following:

1. *Registration.* Any person who handles (manufactures, distributes, dispenses, imports, exports, engages in research, conducts instructional activities or chemical analysis with, or possesses) 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP, or who desires to handle 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP would be required to be registered with the DEA to conduct such activities pursuant to 21 U.S.C. 822, 823, 957, and 958, and in accordance with 21 CFR parts 1301 and 1312.

2. *Security.* 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP would be subject to schedule I security requirements and would need to be handled and stored pursuant to 21 U.S.C. 821 and 823, and in accordance with 21 CFR 1301.71–1301.93.

3. *Labeling and Packaging.* All labels, labeling, and packaging for commercial containers of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP would need to be in compliance with 21 U.S.C. 825 and

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<sup>6</sup> 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP are currently subject to schedule I controls on a temporary basis, pursuant to 21 U.S.C. 811(h). 79 FR 12938, Mar. 7, 2014.

958(e), and be in accordance with 21 CFR part 1302.

4. *Quota.* Only registered manufacturers would be permitted to manufacture 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP in accordance with a quota assigned pursuant to 21 U.S.C. 826, and in accordance with 21 CFR part 1303.

5. *Inventory.* Any person who becomes registered with the DEA on or after the effective date of the final rule must take an initial inventory of all stocks of controlled substances (including 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP) on hand on the date the registrant first engages in the handling of controlled substances pursuant to 21 U.S.C. 827 and 958, and in accordance with 21 CFR 1304.03, 1304.04, and 1304.11.

After the initial inventory, every DEA registrant must take a new inventory of all stocks of controlled substances (including 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP) on hand every two years pursuant to 21 U.S.C. 827 and 958, and in accordance with 21 CFR 1304.03, 1304.04, and 1304.11.

6. *Records and Reports.* Every DEA registrant would be required to maintain records and submit reports with respect to 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and/or  $\alpha$ -PBP pursuant to 21 U.S.C. 827 and 958(e), and in accordance with 21 CFR parts 1304 and 1312.

7. *Order Forms.* Every DEA registrant who distributes 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP would be required to comply with the order form requirements, pursuant to 21 U.S.C. 828, and 21

CFR part 1305.

8. *Importation and Exportation.* All importation and exportation of 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP would need to be in compliance with 21 U.S.C. 952, 953, 957, and 958, and in accordance with 21 CFR part 1312.

9. *Liability.* Any activity involving 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP not authorized by, or in violation of, the CSA or its implementing regulations would be unlawful, and could subject the person to administrative, civil, and/or criminal sanctions.

## **Regulatory Analyses**

### *Executive Orders 12866 and 13563*

In accordance with 21 U.S.C. 811(a), this proposed scheduling action is subject to formal rulemaking procedures done “on the record after opportunity for a hearing,” which are conducted pursuant to the provisions of 5 U.S.C. 556 and 557. The CSA sets forth the criteria for scheduling a drug or other substance. Such actions are exempt from review by the Office of Management and Budget (OMB) pursuant to section 3(d)(1) of Executive Order 12866 and the principles reaffirmed in Executive Order 13563.

### *Executive Order 12988*

This proposed regulation meets the applicable standards set forth in sections 3(a) and 3(b)(2) of Executive Order 12988 to eliminate drafting errors and ambiguity, minimize litigation, provide a clear legal standard for affected conduct, and promote simplification and burden reduction.

### *Executive Order 13132*

This proposed rulemaking does not have federalism implications warranting the application of Executive Order 13132. The proposed rule does not have substantial direct effects on the States, on the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government.

### *Executive Order 13175*

This proposed rule does not have tribal implications warranting the application of Executive Order 13175. It does not have substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

### *Regulatory Flexibility Act*

The Administrator, in accordance with the Regulatory Flexibility Act (RFA), 5 U.S.C. 601–602, has reviewed this proposed rule and by approving it, certifies that it will not have a significant economic impact on a substantial number of small entities. On March 7, 2014, the DEA published a final order to temporarily place 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, and  $\alpha$ -PBP into schedule I of the CSA pursuant to the temporary scheduling provisions of 21 U.S.C. 811(h). The DEA estimates that all entities handling or planning to handle 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP are currently registered to handle these substances. There are currently 43 registrations authorized to handle 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP, as well as a number of registered analytical labs that



are authorized to handle schedule I controlled substances generally. These 43 registrations represent 31 entities, of which 11 are small entities. Therefore, the DEA estimates that 11 small entities are affected by this proposed rule.

A review of the 43 registrations indicates that all entities that currently handle 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP also handle other schedule I controlled substances, and have established and implemented (or currently maintain) the systems and processes required to handle 4-MEC, 4-MePPP,  $\alpha$ -PVP, butylone, pentedrone, pentylone, 4-FMC, 3-FMC, naphyrone, or  $\alpha$ -PBP. Therefore, the DEA anticipates that this proposed rule will impose minimal or no economic impact on any affected entities; and thus, will not have a significant economic impact on any of the 11 affected small entities. Therefore, the DEA has concluded that this proposed rule will not have a significant effect on the small entities.

#### *Unfunded Mandates Reform Act of 1995*

In accordance with the Unfunded Mandates Reform Act (UMRA) of 1995, 2 U.S.C. 1501 *et seq.*, the DEA has determined and certifies that this action would not result in any Federal mandate that may result “in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100,000,000 or more (adjusted for inflation) in any one year \* \* \*.” Therefore, neither a Small Government Agency Plan nor any other action is required under UMRA of 1995.

#### *Paperwork Reduction Act of 1995*

This action does not impose a new collection of information under the Paperwork Reduction Act of 1995. 44 U.S.C. 3501–3521. This action would not impose recordkeeping or reporting requirements on State or local governments, individuals,

businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

**List of Subjects in 21 CFR Part 1308**

Administrative practice and procedure, Drug traffic control, Reporting and recordkeeping requirements.

For the reasons set out above, 21 CFR part 1308 is proposed to be amended to read as follows:

**PART 1308—SCHEDULES OF CONTROLLED SUBSTANCES**

1. The authority citation for 21 CFR part 1308 continues to read as follows:

**Authority:** 21 U.S.C. 811, 812, 871(b), unless otherwise noted.

2. In § 1308.11:

- a. Add paragraphs (d)(58) through (d)(67);
- b. Remove paragraphs (h)(11) through (h)(20),
- c. Redesignate paragraphs (h)(21) through (h)(25) as (h)(11) through (h)(15);

The additions to read as follows:

**§ 1308.11 Schedule I.**

\* \* \* \* \*

(d) \* \* \*

- (58) 4-methyl-*N*-ethylcathinone (4MEC).....(1249)
- (59) 4-methyl-*alpha*-pyrrolidinopropiophenone (4-MePPP).....(7498)
- (60) *alpha*-pyrrolidinopentiophenone ( $\alpha$ -PVP).....(7545)
- (61) 1-(1,3-benzodioxol-5-yl)-2-(methylamino)butan-1-one (butylone, bk-MB..).....(7541)

(62) 2-(methylamino)-1-phenylpentan-1-one (pentedrone).....(1246)

(63) 1-(1,3-benzodioxol-5-yl)-2-(methylamino)pentan-1-one (pentylone, bk-MBDP)  
.....(7542)

(64) 4-fluoro-*N*-methylcathinone (4-FMC; flephedrone).....(1238)

(65) 3-fluoro-*N*-methylcathinone (3-FMC).....(1233)

(66) 1-(naphthalen-2-yl)-2-(pyrrolidin-1-yl)pentan-1-one (naphyrone).....(1258)

(67) *alpha*-pyrrolidinobutiophenone ( $\alpha$ -PBP).....(7546)

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Dated: March 2, 2016

Chuck Rosenberg,  
*Acting Administrator.*

[FR Doc. 2016-05002 Filed: 3/3/2016 8:45 am; Publication Date: 3/4/2016]