SERVIÇO PÚBLICO FEDERAL
MJSP - POLÍCIA FEDERAL
DITEC - INSTITUTO NACIONAL DE CRIMINALÍSTICA

SYNTHETIC DRUGS

2018 Report

1 - GOAL

Data collection and systematic analysis are useful tools to understand the illegal drug scenario in Brazil and its impact on public health and public safety.

This report aims to describe and analyze information contained in the Forensic Reports issued by the Federal Police in 2018, specifically those in which synthetic drugs were analyzed.

Ultimately, the document seeks to be a resource tool supporting the development of informed policies and actions in the battle against the important problem of synthetic drugs.

2 - SIGLAS

ANVISA – National Health Surveillance Agency (Agência Nacional de Vigilância Sanitária);
DEA – Drug Enforcement Administration (USA);
SD – Synthetic Drugs;
DITEC – Technical-Scientific Board (Diretoria Técnico-Científica);
DPER – Forensic Expertise Division (Divisão de Perícias);
EMCDDA – European Monitoring Centre for Drugs and Drug Addiction;
INC – National Institute of Criminalistics (Instituto Nacional de Criminalística);
NPS – New Psychoactive Substances;
PF – Brazilian Federal Police (Polícia Federal);
SISCRIM – Federal Police Criminalistics Information System (Sistema de Informações de Criminalística da Polícia Federal);
SEPLAB – Laboratory Expertise Service (Serviço de Perícias de Laboratório);
UNODC – *United Nations Office on Drugs and Crime*;
UFs – Federation Units (Unidades da Federação).

3 - DEFINITIONS

Synthetic Drugs (SD): Traditionally the term "synthetic drug" was used to refer to synthetic substances used for abusive purposes such as amphetamines, substituted amphetamines (MDMA and its analogs) and LSD. With the appearance of so-called *designer drugs* (one of the first terms used to name what is currently understood by NPS) that concept had to be expanded. In this report, the term synthetic drugs covers those considered “classic” or “traditional” (MDMA, MDA, methamphetamine, amphetamine, LSD, DOB and fentanyl), some pharmaceuticals and substances that are found in the context of parties (clobenzorex, GHB, GBL and 1, 4-butanediol) as well as all new psychoactive substances - NPS.

New Psychoactive Substances (NPS): The United Nations [1] and the European Union [2] define new psychoactive substances as of abuse potential, either in pure form or a preparation (mixtures), that are not controlled by the 1961 Single Convention on Narcotic Drugs [3] or the

1971 Convention on Psychotropic Substances [4], but which may pose a public health threat. In this context, the term *new* does not necessarily refer to substances created or synthesized in recent years, but rather to substances that have recently become available on the market.

Both the 1961 Single Convention on Narcotic Drugs and the 1971 Convention on Psychotropic Substances have been updated more frequently due to the emergence of NPS [5]. In the latest updates, substances U-47700, 25C-NBOMe, 25I-NBOMe, 2C-B and ethylone were included. Strictly speaking, they should no longer be called NPS, but their classification as such will be maintained for purposes of comparison with the data obtained in 2016 and 2017 [6,7].

To facilitate the understanding of this report and follow the current UNODC classification, the NPS will be grouped into 10 groups, among them the 9 groups in the Global SMART Program (aminoindanes, synthetic cannabinoids, synthetic cathinones, phenethylamines, piperazines, plant-based substances, phencyclidine-type substances, tryptamines and other substances). Since the 2017 Report [7], it has been decided to separate *synthetic opioids* from the *other substances* group, where they are originally included in the Global SMART Program monitoring. This split intended to enable a more accurate monitoring of the data, in order to observe if there is a possible influence in the country of the *opioid epidemic* that has been occurring in the United States of America.

Mixtures: In some of the examed materials, more than one synthetic drug was identified. In order to keep monitoring these cases, it was decided to create groups referring to mixtures for the collection of data in this report. *Mixtures* are considered to be only those cases where there was more than one synthetic drug in the same material.

The Global SMART Programme: As an answer to the problem of synthetic drugs, the United Nations Office on Drugs and Crime (UNODC) launched in 2008 *The Global SMART Program: Analyzes, Reporting and Trends*. The program aims to improve the capacity of targeted Member States to generate, manage, analyze, report and use information on illicit synthetic drugs.

National Forensic Laboratory Information System – NFLIS: The NFLIS is a program of the Drug Enforcement Administration (DEA) - Diversion Control Division, which systematically collects drug identification results and associated information from drug cases submitted and analyzed by federal, state and local forensic laboratories in the United States of America.

4 - INTRODUCTION

New psychoactive substances continue to thrive at an unprecedented rate in Brazil [6, 7]. Although the NPS market is still relatively small, these substances pose a significant risk to public health and new challenges for illicit drug combat policies.

In this context, the Federal Police is able to play a relevant role, being able to provide a national prospect as a result of making seizures in all UFs, in addition to having highly trained laboratories and forensic experts for the identification of NPS.

Since the 2017 Report, it has been decided to include synthetic drugs in general. This occurred due to the finding of a sudden increase in certain substances considered as *traditional* or *classic* drugs in the forensic reports issued by the Federal Police. In the current year it will be possible to assess this increase in a quantitative manner.

5 - FORENSIC REPORTS ISSUED IN 2018 ON SYNTHETIC DRUGS

5.I - Data collection methodology

Data collected for the present work were based on the forensic reports issued by the Criminalistics units of the Federal Police across the country in 2018.

After identifying all the reports in which synthetic drugs were analyzed, both the examined substance and its seized amount was verified. In some cases the total amount of seized material was obtained either from preliminary forensic reports or police case documentation.

The following categories were extracted from the Reports for the preparation of this report: Document (Report, Instrumental Analysis Report, etc.); Substance (MDMA, 25I-NBOH, etc.); Quantity (tablets, stamps, mass or volume) and Group (phenethylamines, synthetic cathinones, *traditional* drugs, drugs, etc.). This search turned out a number of entries higher than the number of reports, because, in cases where, in the same Report, more than one synthetic drug was identified in different materials, they have been correspondingly accounted for. As an example, suppose that in a same Report, the substances 25I-NBOH (blotters), alpha-PVP (tablets and powder) and 25I-NBOMe (blotters) were identified. In this case, one Report accounts for four different entries.

When more than one synthetic drug was identified in the same material (e.g. MDMA and N-ethylpentylone in a same tablet), category *Substance* inclued all detected substances (in this case N-ethylpentylone + MDMA) whereas category *Group* read *Mixture*. Monitoring of NPS mixtures started in the 2016 report [6]. This monitoring is important both in the assessment of public health risks and in the understanding of the traffickers' *modus operandi*. Table 01 shows the proposed groups used in the elaboration of this report including drug mixtures.

Table 01 – Proposed groups and mixtures.

Group	Substances
Synthetic cannabinoids	AMB-FUBINACA, ADB-FUBINACA e 5F-MDMB-PICA
Synthetic cathinones	N-Ethylpentylone; 4-Chloro-Dimethylcathinone; 4-Chloroethcathinone; 4'-chloro-PPP; 4Cl-PVP; 4F-PHP; 4-MEAPP; 4-Methylpentedrone; BMDP; Caccure 907; Dibutylone; Dimethylone; Ethylone; Eutylone; MDPHP; MDPPP; MDPT; Methylone; N-acetyl-3,4-MDMC; N-Ethylhexedrone; Pentylone and TH-PVP
Traditional drugs	MDMA; MDA; LSD; Methamphetamine; Fentanyl; DMT; Amphetamine; DOB; DOET and GHB
Pharmaceuticals	Clobenzorex and Fluoxetine
Phenethylamines	25B-NBOH; 25C-NBOH; 25C-NBOMe; 25E-NBOH; 25H-NBOH; 25I-NBOH; 2C-B; 2C-C; 2C-E; 2C-I; DOC; 25I-NBOMe; N-Acetyl 25I-NBOMe
Other synthetic drugs	GBL
Other substances	4F-EPH
Other substances (Opioid)	U-47700
Plant-based substances	-
Phencyclidine-type substances	3-MeO-PCP and Ketamine
Triptamines	5-MeO-MiPT

Group	Substances
Mixture: Synthetic cannabinoids	-
Mixture: Synthetic cathinone and Phenethylamines	25I-NBOMe + **N-Ethylpentylone**
Mixture: Synthetic cathinone and Phencyclidine-type substances	**N-Ethylpentylone** + 3-MeO-PCP ; **N-Ethylpentylone** + Ketamine
Mixture: Synthetic cathinones	**N-Ethylpentylone** + Chloro Ethcathinone; **N-Ethylpentylone** + Eutylone; 4-MEAPP + TH-PVP; 4-Methylpentedrone + 4-MEAPP; Methylone + Dimethylone
Mixture: Synthetic cathinone and Other substances (Opioid)	-
Mixture: Pharmaceuticals	Clobenzorex + Sildenafil; Clobenzorex + Sildenafil + Sibutramine
Mixture: Feniletilaminas	25I-NBOH + 25C-NBOH + 25H-NBOH; 25I-NBOH + 25B-NBOH
Mixture: *Traditional* drug and Synthetic cathinone	**N-Ethylpentylone** + MDMA; Ethylone + MDMA; Penthylone + MDMA; **N-Ethylpentylone** + MDPPP + MDMA
Mixture: MDMA and Phenethylamines	25I-NBOH +25B-NBOH + 25C-NBOH + MDMA
Mixture: *Traditional* drugs	MDMA + MDA

It is worth mentioning that this report focused on the Forensic Reports issued in 2018 and not on the police seizures of the year 2018. Some Reports issued in 2018 refer to materials seized in 2016 or 2017.

Regarding ketamine, it is important to note that only seizures in which the substance was found as a solid or in an unidentified solution with a drug label were included in this

document. The cases in which ketamine is found as a medicine have been the subject of a specific pharmaceutical report [8].

Another important consideration is the inclusion of the substance dimethyltryptamine (DMT). The substance is found in several plant genera and is not, in principle, a synthetic drug. However, there were seizures of DMT-containing solids by the Federal Police, which led to their inclusion in this report. The remaining cases, such as seizures in which the substance is found in plant extracts, were not included.

All reports in which the substance clobenzorex was identified were computed. When the substance fluoxetine was found in the same seizure as clobenzorex, it was also included in the database. In all other cases, fluoxetine was included in a specific Pharmaceuticals Report [8].

5.2 - Results

In 2018, 929 reports on synthetic drugs were produced, equivalent to 1,013 entries, according to the definition adopted. 43 new psychoactive substances were identified (42 in the previous year), 16 of which were identified for the first time: 25C-NBOH, 25E-NBOH, 25H-NBOH, N-Acetyl 25I-NBOMe, 4-methyl-pentedrone, 4-Chlorine -dimethylcathinone (4-chloro-DMC), 4-Chloroethcathinone, DOET, 4-Chloro-α-pyrrolidinopropiophenone (4'-chloro-PPP), 4-Chloro-α-pyrrolidinovalerophenone (4-chloro-PVP), N-acetyl -3,4-MDMC, 3,4-methylenedioxy-N-benzylcathinone (BMDP), N-ethylhexedrone, 3,4-Methylenedioxy-α-pyrrolidinohexanophenone (MDPHP), 3 ', 4'-methylenedioxy-N-terc -butylcathinone (MDPT), 5F-MDMB-PICA and 4-fluoroethylphenidate (4F-EPH). In 2017, the number of drugs identified for the first time was 10, almost half of 2018.

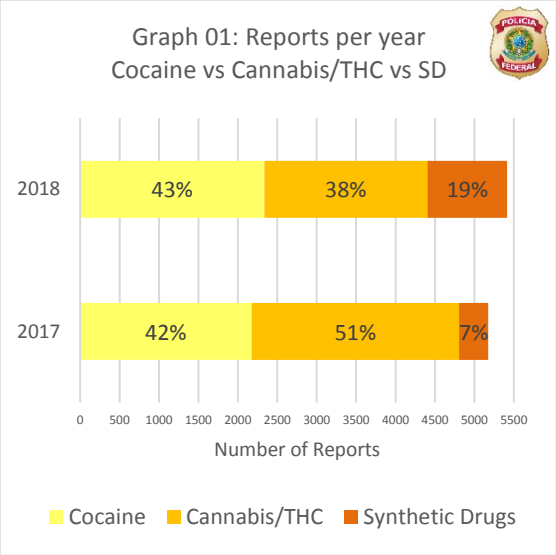
Table 02 shows, in red, the new psychoactive substances examined by the Federal Police for the first time starting from 2014 and all those identified from 2016 to 2018.

Table 02 – All new psychoactive substances identified by the Federal Police in the years 2016 to 2018 and those identified for the first time (in red) in the years 2014, 2015, 2016, 2017 and 2018.

2014 [1]	2015 [1]	2016 [2]	2017 [3]	2018 [4]
25H-NBOMe	2C-P	25I-NBF	25B-NBOH	25C-NBOH
2C-D	5-MAPB	25I-NBOH	Fluoromethamphetamine	25E-NBOH
2C-E	6-APB	2C-B-Fly	MDPPP [4]	25H-NBOH
2C-H	6-EAPB	30C-NBOMe	MMMP (Caccure 907) [4]	N-Acetyl 25I-NBOMe
5-EAPB	MDE	5-APDB [4]	Eutylone	4F-EPH
5-MAPB	Alpha-PHPP	4F-PHP	Pentylone	4-methyl-pentedrone
DMPEA	Alfa-PVP	4-MEAPP	TH-PVP [4]	4-chloro-DMC
MDDMA	Bromomethcathinone	Dibutylone[4]	ADB-FUBINACA	4-cloroethcathinone
Ethylamphetamine	Chloromethcathinone	N-ethylpentylone	AMB-FUBINACA	4'-chloro-PPP
Ethylone	Fluoromethcathinone	Flubromazepam[3]	U-47700	4-chloro-PVP
Dimethylone[4]	AB-FUBINACA [2]	Furanylfentanyl [3]	25I-NBOH	BMDP
N-ethylcathinone	4-HO-MET	25B-NBOMe	25B-NBOMe	MDPHP
5F-APINACA [4]	4-HO-MiPT	25C-NBOMe	25C-NBOMe	MDPT
AB-001		25I-NBOMe	25I-NBOMe	N-acetyl-3,4-MDMC
APINACA		2C-B	2C-I	N-ethyl-hexedrone
4-AcO-DMT		2C-D	4-FA	5F-MDMB-PICA
4-OH-DMT		2C-I	4F-PHP	MMMP (Caccure 907)
5-MeO-MiPT		2-FA	5-APB	25C-NBOMe
Etaqualone		4-FA	5-APDB [4]	25I-NBOMe
Methiopropamine		5-MeO-MiPT	5-MeO-DALT	2C-B
		6-EAPB	5-MeO-MiPT	2C-C
		AB-FUBINACA	AB-FUBINACA	2C-E
		APINACA	Alpha-PVP	2C-I
		DOC	Ketamine	3-MeO-PCP
		Ethylone	Chloromethcathinone	4-MEAPP
		JWH-073	Dibutylone	5-MeO-MiPT
		JWH-081	DOC	ADB-FUBINACA
		JWH-122	Ethcathinone	AMB-FUBINACA
		JWH-210	Ethylone	Ketamine
		MAM-2201	Furanylfentanyl	Dibutylone
		Methylone	JWH-073	Dimethylone
		MXE	JWH-081	DOC
		N-ethylcathinone	JWH-122	Ethylone
		Salvinorin A	JWH-210	Eutylone
		UR-144	JWH-250	25B-NBOH
			MAM2201	MDPPP
			MeO-PCP	Methylone
			Methylethylcathinone (MEC)	N-ethylpentylone
			MMC	Penthylone
			N-ethylpentylone	TH-PVP
			Pentedrone	U-47700
			Salvinorin A	4F-PHP
				25I-NBOH

[1] Based on Information n ° 066/2016 – SEPLAB/DPER/INC/DITEC/PF
[2] Data included in the 2016 Report - New Psycoactive Report - NPS.
[3] Data included in the 2017 Report - Synthetic Drugs.
[4] Data included in this report.

Graph 01 shows a comparison between the number of reports involving synthetic drugs, cocaine and Cannabis/THC. It can be seen that the amount of Federal Police seizures related to synthetic drugs is smaller than cocaine and Cannabis/THC. However, the number of Reports produced on synthetic drugs has almost tripled, from 372 entries in 2017 to 1,013 entries in 2018.



The most seized synthetic drug by the Federal Police was 3,4-methylenedioxymethamphetamine (MDMA), traditionally found in *ecstasy* type tablets. Tables 03 and 04 exhibit the synthetic drug ranking identified in Reports produced by Federal Criminal Experts in the years 2017 and 2018, respectively.

Table 03 – Ranking of synthetic drugs identified in Reports produced by Federal Criminal Experts in 2017.

	Substance	Nº of Reports	Group
1	MDMA	142	*Traditional* Drug
2	N-ethylpentylone	70	Synthetic Cathinone
3	25I-NBOH	26	Phenethylamine
4	LSD	17	*Traditional* Drug
5	25I-NBOMe	14	Phenethylamine

Table 04 – Ranking of synthetic drugs identified in Reports produced by Federal Criminal Experts in 2018.

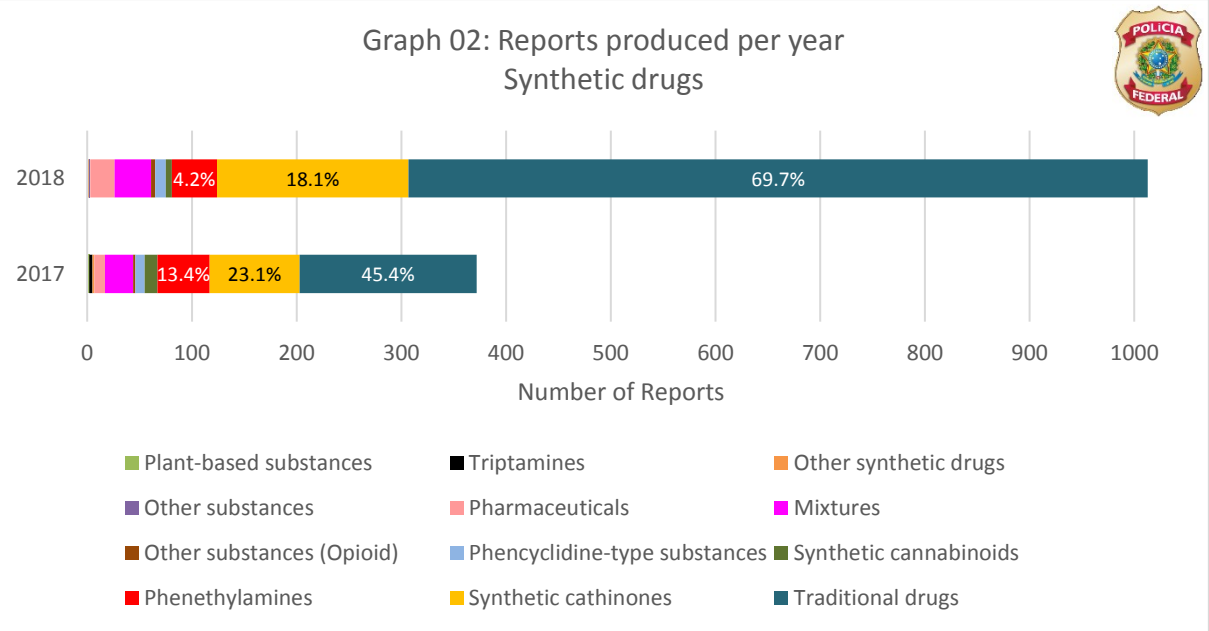
	Substance	Nº of Reports	Group
1	MDMA	587	*Traditional* Drug
2	N-ethylpentylone	158	Synthetic Cathinone
3	MDA	81	*Traditional* Drug
4	LSD	33	*Traditional* Drug
5	25I-NBOH	25	Phenethylamine

Among synthetic drugs, the most prominent group was the one containing "classic drugs" or "traditional drugs". In 2017, it was already the group with the highest number of Reports issued by Forensic Experts (49% of the Reports referring to synthetic drugs). In 2018,

the production of reports for the group increased four times (169 entries in 2017 e 706 entries in 2018) and represented 69.7% of all synthetic drugs (Graph 02).

There was also a significant increase in the production of reports referring to synthetic cathinones. Although in 2018 synthetic cathinones account for 18.1% of the reports referring to synthetic drugs (in 2017 they represented 23.1%), there was an increase of 112% in the production of reports containing this group of substances (86 entries in 2017 and 183 entries in 2018).

With the exception of the *mixtures* and *pharmaceuticals* groups, as well as the aforementioned *traditional drugs* and *synthetic cathinones*, a decrease in the production of reports was observed for the other groups. In the following, each group of substances will be discussed separately.

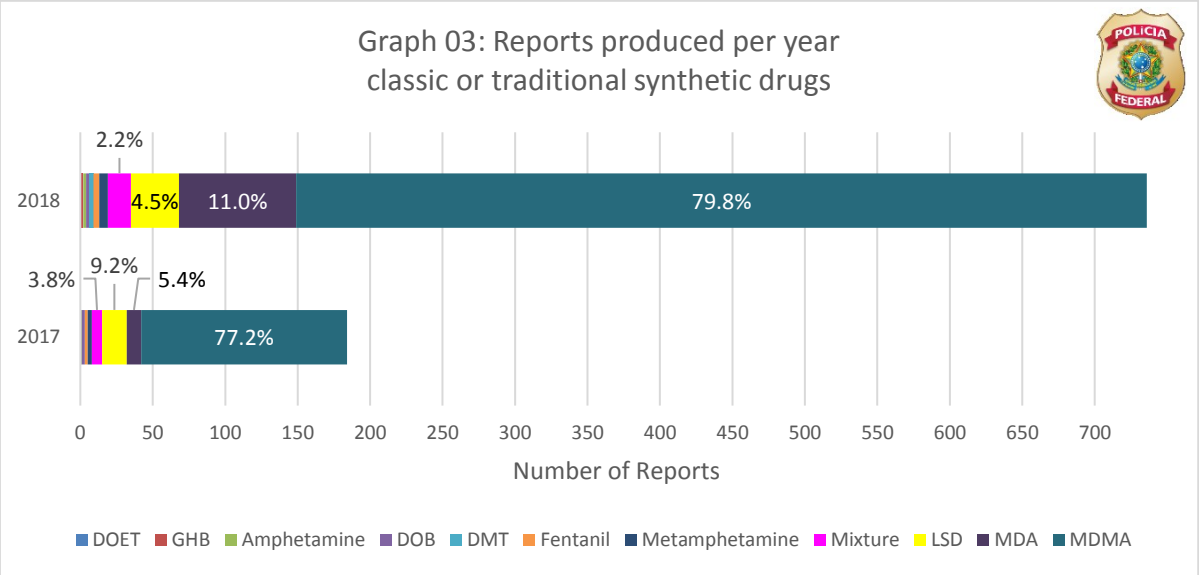


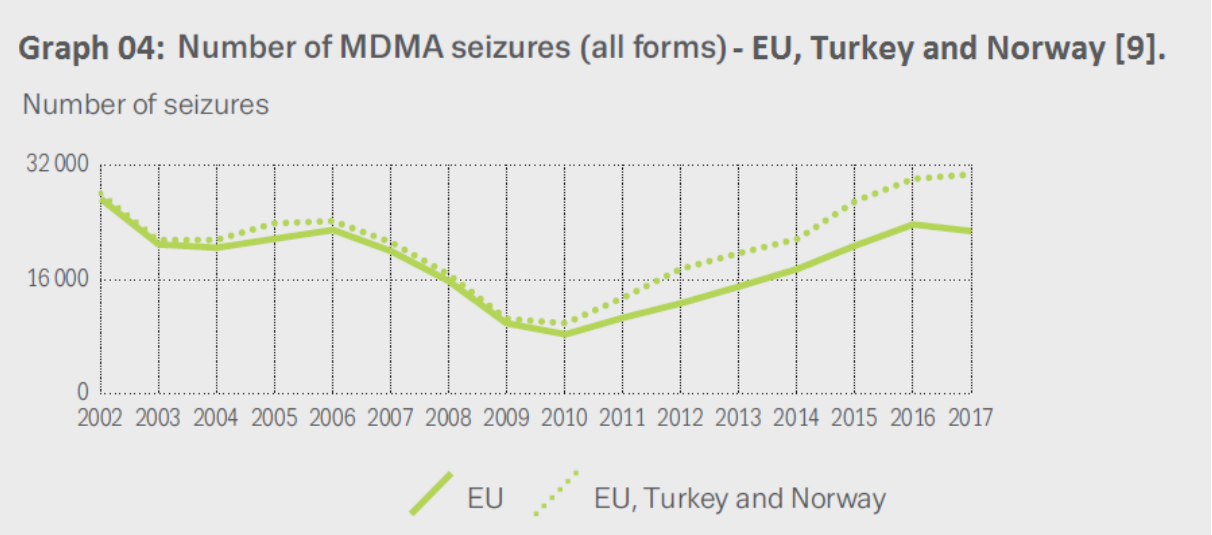
5.2.1 – *Traditional* Drugs

In general, there is an increase higher than the other groups in the number of *traditional* or *classic* drug seizures. This is reflected both in the number of reports produced and in the masses / units of seized material.

720 Reports were issued referring to *classic* drugs (amphetamine, DMT, DOB, DOET, fentanyl, GHB, LSD, MDA, MDMA and methamphetamine). Graph 03 shows the number of reports produced for each *traditional* drug in 2017 and 2018. Among them, 587 reports identified the substance 3,4-methylenedioxymethamphetamine - MDMA, equivalent to the seizure of 146,489 pills and 75,440 kg of solid (powder or crystals). This represented a significant increase both in the number of Reports produced (see tables 03 and 04) and in the amount of material seized, either in the form of tablets or as a solid (in 2017, 20,091 tablets and 12,587 kg of solid were seized). This data is compatible with the data reported by the

European Union [9], where the overall number of reported MDMA seizures has continued to increase since 2010. Graph 04 shows MDMA seizures in the European Union, Turkey and Norway.





For the second consecutive year, MDMA seizures in the form of crystals, in addition to the well known tablets, stands out, which, associated with data from police investigation, reinforces that there is an increasing use of this form of MDMA.

Figure 01 shows examples of MDMA crystals / powder examined in 2018.

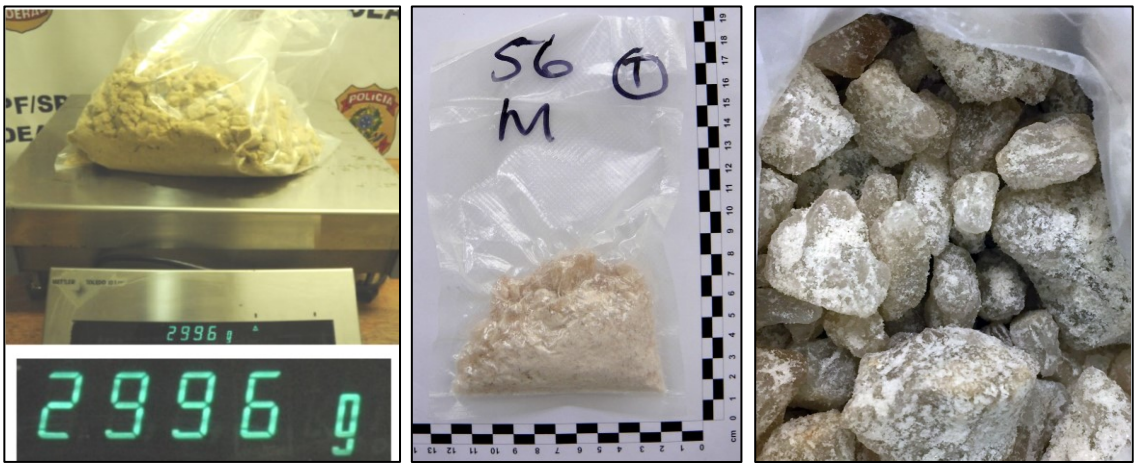


Figure 01 - Examples of MDMA seized in the form of crystals / powder by the Brazilian Federal Police in 2018 (Guarulhos Airport/ SP, Curitiba / PR and Rio Branco / AC, respectively).

Among the Reports produced on synthetic drugs in 2018, MDMA was the most detected compound, while MDA and LSD were the third and fourth, respectively (table 04).

In 2017, **MDA** appeared as 6th in the number of reports referring to SD. Large MDA seizures by the Brazilian Federal Police may be related to the presence in the country of clandestine laboratories synthesizing the substance, as corroborated by recent Police Operations [10].

Regarding the other "traditional" synthetic drugs, permanent monitoring of data related to the substances fentanyl and methamphetamine is relevant due to the current international scenario.

In recent years, there has been a marked increase in the number of opioid-related overdose deaths in North America. There is strong evidence that fentanyl and its derivatives play an important role in this crisis. Fentanyl is a powerful and well-established analgesic opioid. However, there has always been concern about its potential for abuse and dependence, and for that reason it has been brought under international control since 1964. Reports pertaining to **fentanyl** in pharmaceutical products are not new in Brazilian Federal Police cases. However, the detection of this substance and its derivatives in LSD-type blotters, since 2016, has shown a new type of use of this substance in the country. In 2018, 2,001 blotters containing fentanyl (figure 02), 38.26 g of solid and 2.79 liters of solution were seized. Although it still does not represent a large number of cases in Brazil, the Brazilian Federal Police has made efforts to fight illicit fentanyl trafficking at both national and international levels [11].

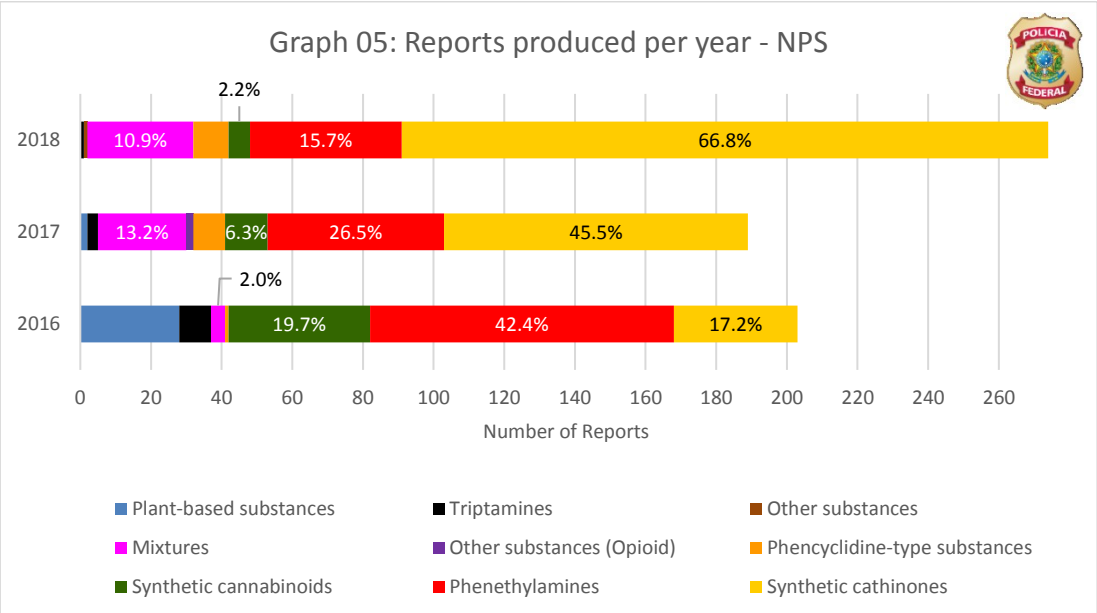
Figure 02 - Examples of blotters containing fentanyl analyzed by the Brazilian Federal Police in 2018 (Natal/RN).

According to the 2018 NFLIS report [12], methamphetamine was the drug most frequently identified in 2018 (386,272 reports), followed by Cannabis / THC (344,489 reports) and cocaine (228,924 reports). Due to the large number of notifications in North America, attention is needed to the number of seizures of the substance in the country. **Methamphetamine** was identified in only 6 reports, which was equivalent to the seizure of 36 tablets and 168.54 g of solid (powder or crystals). Thus, the number of occurrences is still small in Brazilian Federal Police seizures.

It is worth mentioning that in 2018, DOET, a substance included in the 1971 Convention on Psychotropic Substances since the 1980s, was first detected by the Brazilian Federal Police.

5.2.2 - New Psychoactive Substances

Graph 05 provides information referring only to the Reports in which NPS were identified, comparing the data contained in the 2016 - NPS and 2017 - SD Reports. For this purpose, the data referring to *traditional drugs*, pharmaceuticals, *other synthetic drugs*, *mixtures: Pharmaceuticals* and *mixtures: traditional drugs* have been removed.



5.2.2.1 – NPS: Synthetic Cathinones

Among the Reports produced in 2018 on NPS, 66.8% were related to synthetic cathinones, being the largest group for the second consecutive year. In addition, it was the category to present the largest number of substances never before analyzed by the Brazilian Federal Police, 10 in all: 4-methyl-pentedrone, 4-chloroethcathinone, 4-Chloro-α-pyrrolidinopropiophenone (4'-chloro-PPP), 4-Chloro-α-pyrrolidinovalerophenone (4-chloro-PVP), 4-Chloro-dimethylcathinone (4-chloro-DMC), 3,4-methylenedioxy-N-benzylcathinone (BMDP), 3,4-methylenedioxyphentermine (MDPH), 3,4-methylenedioxy-α-pyrrolidinohexanophenone (MDPHP), N-acetyl-3,4-MDMC and N -ethyl-hexedrone. With the exception of the substances 4-chloro-PVP, N-ethylhexedrone and N-acetyl-3,4-MDMC, which are already listed nominally in the last update of Portaria SVS / MS nº 344, of May 12, 1998, all the other cathinones identified in 2018 by the Federal Police were classified in the structural chemical class of synthetic cathinones (List F2 item c).

As in 2017, in 2018 the most prominent synthetic cathinone was **N-ethylpentylone**, the second most detected substance among all synthetic drugs, whose identification by the Brazilian Federal Police occurred for the first time in 2016. In both Europe and the USA, its presence in the illicit drug market was first reported in 2016 [13,14]. The NFLIS-Drug 2018 Annual Report states that the number of Forensic Reports issued in the USA regarding N-ethylpentylone was larger than MDMA (10,380 and 6,616 Reports, respectively) [12]. Other important alerts about the detection of the substance, probably being sold as MDMA, were released by *Drugsdata.org* (USA) [15] and *The loop* (United Kingdom) [16].

In Brazil, the substance represented 69% of the Brazilian Federal Police Reports on the group of synthetic cathinones (graph 06), equivalent to the seizure of 5,776 tablets (816

comprimidos em 2017) and 74.777 kg of crystals / powder (29.524 kg in 2017). Figure 03 shows examples of N-ethylpentylone seized in the form of crystals / powder, similar to those found for MDMA. The increase in the quantity of seized materials containing N-ethylpentylone (2.5 times greater when it comes to crystals / powder and 7 times greater when it comes to tablets) is troublesome, especially after the alert from the Brazilian Toxicological Information and Assistance Centers (CIATox) on the detection of N-ethylpentylone in the toxicological exams of some patients [17,18]. The observed amount of seized materials and number of Forensic Reports confirms the hypothesis of substitution of ethylone by N-ethylpentylone in illicit drug trade (ethylone represented 49% of the Reports referring to synthetic cathinones in 2016, 8% in 2017 and 0.4% in 2018). N-ethylpentylone was also the most found substance in mixtures with other synthetic drugs (22 Reports, with the substances described in table 01).

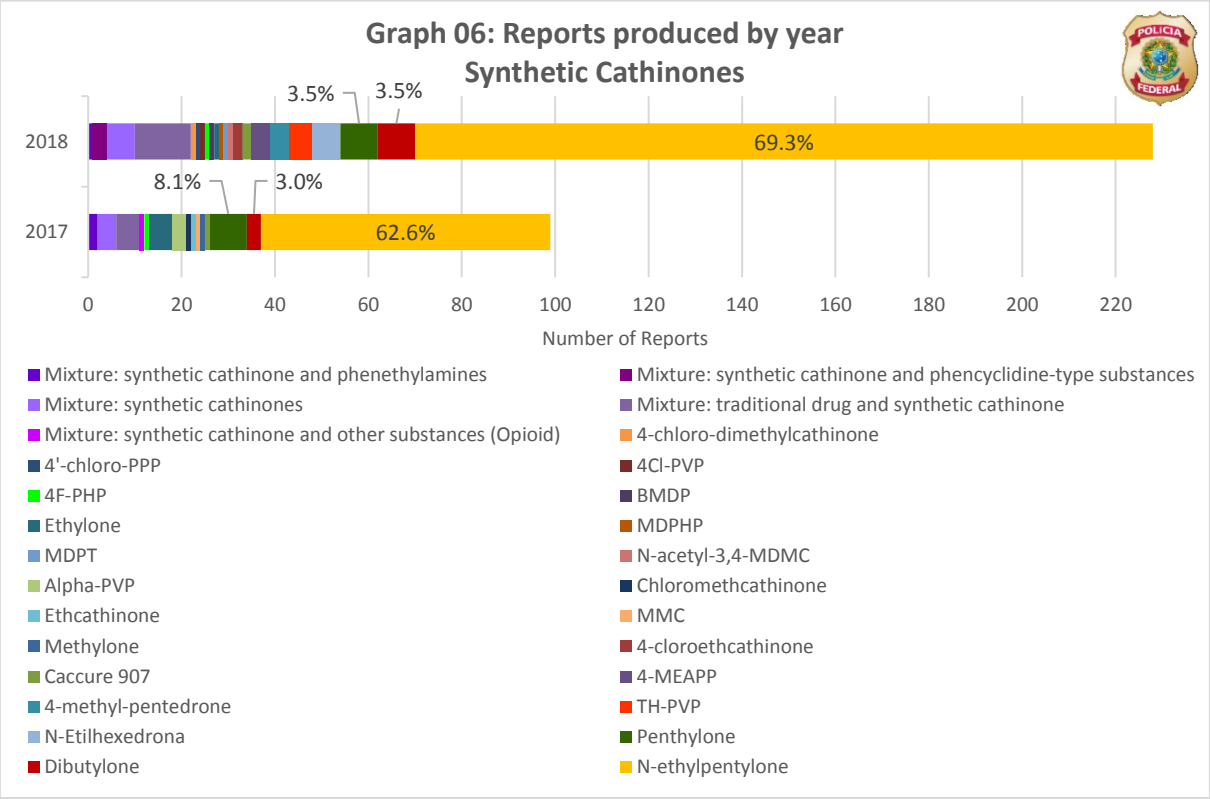


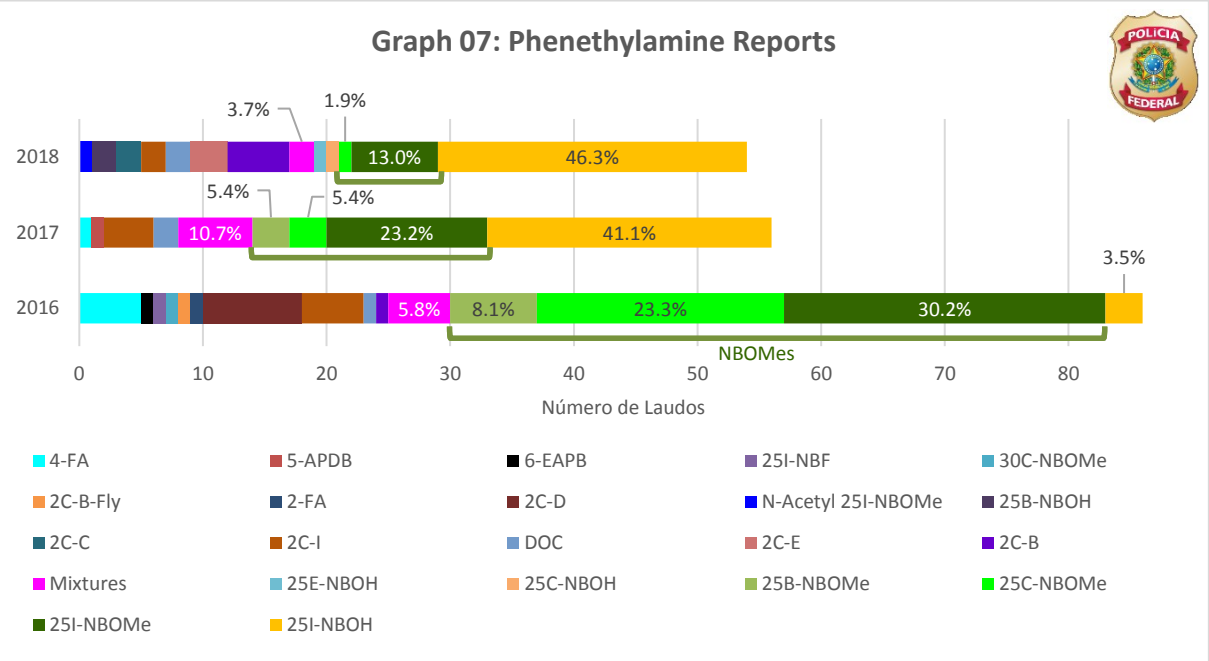
Figure 03 - Examples of N-ethylpentylone seized in the form of crystals / powder by the Brazilian Federal Police in 2018 (Itajaí / SC, Campinas / SP, and Curitiba / PR

5.2.2.2 – NPS: Phenethylamines

The group of phenethylamines represented 15.7% of NPS Reports in 2018. This value is lower than that found in 2016 and 2017 (26.5% and 42.4%) - Graph 05. The decrease in the number of phenethylamine seizures may be related to two factors: return of LSD as hallucinogenic on blotter papers and preferential use of synthetic cathinones or *traditional* drugs as stimulants. The first hypothesis is based on the increase in the number of LSD Reports (almost twice as high in the comparison 2017 and 2018), coupled with the decrease in the Reports of *NBOMe-like* substances.

Nevertheless, it remains a prominent group due to its significant number of seizures and for presenting substances never before analyzed by the PF: **25C-NBOH**, **25E-NBOH**, **25H-NBOH** and **N-Acetyl 25I-NBOMe** in 2018. It should be noted that although the substance N-Acetyl 25I-NBOMe is not nominally listed in the last update of Portaria SVS / MS No. 344, since 12/03/2019 it is scheduled under structure 12 of the phenethylamine chemical structural class (List F2 item d).

The most prominent phenethylamine was again **25I-NBOH**, the fifth most detected substance among all synthetic drugs, whose identification by the Brazilian Federal Police occurred for the first time in 2016. The substance represented 46.3% of the phenethylamine Reports (graph 07), equivalent to the seizure of **86,401 blotters** and 0.051 kg of solid (in the previous year there were 3,962 blotters and 0.106 kg of solid). The number of reports and amount of seized materials corroborates the hypothesis of substitution of 25B-NBOMe, 25C-NBOMe and 25I-NBOMe (61% of the Reports in 2016 and 34% in 2017) by 25I-NBOH in the illicit drug market.



Although most seizures are in the form of LSD-type blotters (116,888 blotters), it is important to highlight that a significant amount of powdered phenethylamines was examined (83.74 g). As an example, figure 04 displays two cases of 25I-NBOH seizures, one in Santarém - PA (blotters) and the other in Campinas - SP (powder).

Figure 04 - Blotters containing 25I-NBOH (500 blotters - Santarém / PA) and 25I-NBOH powder (50.72g - Campinas / SP).

5.2.2.3 – NPS: Synthetic Cannabinoids

In 2016, synthetic cannabinoids represented the second group with the highest number of NPS reports (19.7% - graph 05). In the years 2017 and 2018, graph 05 shows that there has been a decrease in the number of reports issued for this group. The causes of this reduction are not clear, but may be related to the nominal inclusion of several synthetic cannabinoids in List F2 of Portaria No. 344/1998 (List of proscribed psychotropic substances) and the publication of RDC No. 79, on May 23, 2016, which included in the same list 10 generic synthetic cannabinoid chemical structural classes (generic scheduling).

In 2018, a synthetic cannabinoid never before analyzed by Brazilian Federal Police, 5F-MDMB-PICA, was identified. The substance is already controlled in the country, through Portaria SVS / MS nº 344, of May 12, 1998, being scheduled as Structure 9 of the synthetic cannabinoid structural class (List F2 item b).

It is worth recalling the warning made in the 2017 Report [7]. From that year on, a new series of synthetic cannabinoids emerged. Previously, these cannabionoids were found mainly in so-called herbal mixtures, probably added to plant material by three possible means: immersion, spraying, or direct powder addition (leading to a more heterogeneous mixture). In rare cases, they were also found in tablets. Since 2017, synthetic cannabinoids have also started to appear on LSD-type blotters and powder form [7]. Data on the use of

synthetic cannabinoids in blotters are rare both in the specialized literature and in international warning systems. There has been a report that the synthetic cannabinoids AMB-FUBINACA and ADB-FUBINACA were exclusively found in blotters in the State of Santa Catarina, in the year 2017 [19].

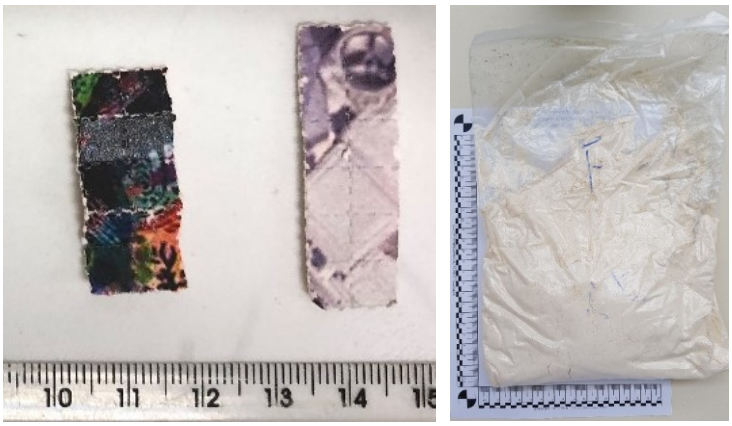


Figure 06 - Blotters containing AMB-FUBINACA (22 blotters - São Paulo / SP) and AMB-FUBINACA powder (503.6 g Curitiba / PR).

5.2.2.4 – NPS: Phencyclidine-type substances, tryptamines and other substances.

The groups pertaining to phencyclidine-type substances (3-MeO-PCP and ketamine), tryptamines (5-MeO-MiPT), other substances (4F-EPH) and other opioid substances (U-47700) represented the least frequent categories in the Forensic Reports for 2018. Only the substance 4F-EPH had never been previously identified.

It is worth mentioning the detection of phencyclidine-type substances (3-MeO-PCP or ketamine) in mixtures with a synthetic cathinone (N-ethylpentylone). Ketamine also has been found mixed with cocaine, a known stimulant. A series of tests available in the literature suggest that N-ethylpentylone acts as a psychomotor stimulant [20]. This mix pattern will be monitored in future reports.

5.2.2.5 – NPS: Plant-based substances, aminoindanes and piperazines

From 2016 to 2018, no substances classified in the groups aminoindanes and piperazines were identified by the Brazilian Federal Police. In 2018, no reports were found referring to plant-based substances.

6 – CONCLUSIONS

The illicit synthetic drug market remains complex and very dynamic, although it may undergo periods of innovation and stagnation. New substances continue to emerge; some NPS remain in the illicit market for years, and others disappear over time.

Among the highlights of this report, the detection of 16 new substances is informed, as well as the probable increase in the use of synthetic drugs in the form of crystals, mainly MDMA and N-ethylpentylone. The relevant growth in the general use of so-called *traditional* synthetic drugs also deserves attention.

In addition, it should be noted that different classes of substances are being found in LSD-type blotters, such as: *traditional* drugs (DOB, DOET, LSD, fentanyl, MDA and MDMA), phenethylamines (25B-NBOH, 25C-NBOH, 25E- NBOH, 25I-NBOH, 25H-NBOH, 25I-NBOMe, N-acetyl 25I-NBOMe and DOC), synthetic cannabinoids (AMB-FUBINACA and ADB-FUBINACA), and synthetic cathinones (4-MEAPP, N-ethylpentylone and TH- PVP).

It is suggested that the substances detected in this report that are not explicetely listed in Portaria SVS / MS nº 344, be nominally included in the document, even those controlled by chemical structural classes (generic scheduling). They are N-Acetyl 25I-NBOMe, 4-Fluoroethylphenidate (4F-EPH), 4-methyl-pentedrone, 4-chloroethcathinone, 4-Chloro-α-pyrrolidinopropiophenone (4'-chloro-PPP), 4-Chloro-dimethylcathinone (4-chloro-DMC), 3,4-methylenedioxy-N-benzylcathinone (BMDP), 3,4-Methylenedioxyphentermine (MDPH), 3,4-methylenedioxy-α-pyrrolidinohexanophenone (MDPHP), 5F-MDMB-PICA, MMMP (Caccure 907), Eutylone, 3,4-Methylenedioxy-α-Pyrrolidinopropiophenone (MDPPP) and 4'-fluoro-α-Pyrrolidinohexanophenone (4F-PHP).

Finally, attention must be paid to the mixtures of synthetic drugs (Table 01) found in the seized materials.

This is the report prepared by the Synthetic Drugs Group of SEPLAB / DPER / INC / DITEC / PF.

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