

6. Unpacking New Psychoactive Substances in China

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I. An Overview of New Psychoactive Substances (NPS)

1. The Concept of NPS

The term ‘new psychoactive substances’ (NPS) refers to psychoactive substances that are not controlled by the United Nations’ 1961 Single Convention on Narcotic Drugs or the United Nations’ 1971 Convention on Psychotropic Substances but possess abuse potential and pose a public health threat. These psychoactive substances typically share the following characteristics: (1) Their chemical structures can be designed and synthesised artificially to produce psychoactive and pharmacological effects similar to or resembling controlled drugs, hence they are also known as ‘designer drugs’; (2) They are not currently included in controlled substance schedules in relevant laws, regulations, and international conventions, hence they are referred to as ‘legal highs’; (3) Some NPS have chemical structures similar to known controlled drugs or are derivatives thereof, hence they are also known as ‘drug analogues’; (4) The majority of NPS are synthesised and studied in laboratories, hence they are also called ‘research chemicals’.

The term ‘new’ does not solely imply NPS’ recent synthesis; in fact, many NPS were synthesised as early as the 1970s or even earlier. Rather, ‘new’ denotes NPS’ recent emergence and abuse within populations. ‘New psychoactive substances’ represents a collective term for new substances posing drug-related risks that have yet to be controlled by international agreements. Upon regulation under domestic law, they acquire legal status as drugs but may still be termed ‘new psychoactive substances’ from a sociological perspective (Ma et al. 2019, p. 1; UNODC 2024).

The classification of NPS is typically based on either their chemical structure or their pharmacological effects. The United Nations Office on Drugs and Crime (UNODC) delineates NPS into nine main classes based on their chemical composition, encompassing synthetic cannabinoids, synthetic cathinones, phenethylamines, tryptamines, aminoindanes, piperazines, phencyclidine-type substances, plant-based substances, and

other substances (UNODC 2024). Additionally, NPS can be categorised into six major groups based on their pharmacological effects, namely synthetic opioids, synthetic cannabinoid receptor agonists, stimulants, dissociatives, classic hallucinogens, and sedatives/hypnotics (UNODC 2024).

2. The Relationship Between NPS and Drugs

According to the Criminal Law of China, drugs are defined as opium, heroin, methamphetamine, morphine, cannabis, cocaine, and other narcotics and psychotropic drugs regulated by the country that have the potential to cause addiction. In order for a substance to be classified as a drug within the context of criminal law, two criteria must be satisfied: firstly, it must be a narcotic or psychotropic drug capable of causing addiction; if it fails to induce addiction, it cannot be categorised as a drug. Secondly, such narcotics and psychotropic drugs must be subject to regulation by the state; if they are not regulated, they also cannot be deemed as drugs. The regulation process involves the relevant national departments issuing documents that specify the types and names of controlled narcotics and psychotropic drugs. For instance, the 'Catalogue of Narcotic Drugs (2013 Edition)' and the 'Catalogue of Psychotropic Drugs (2013 Edition)' announced by the Chinese Drug and Food Administration, the Ministry of Public Security, and the National Health Commission in November 2013 (effective from 1st January 2014) serve as fundamental documents for drug regulation in China. In September 2015, the Ministry of Public Security, the Chinese Drug and Food Administration, the National Health Commission, and the National Narcotics Control Commission (NNCC) issued the 'Administrative Measures on Narcotic and Psychotropic Substances without Medical Use', which expanded the list to include 116 non-medicinal narcotic drugs and psychotropic drugs. On 1st March 2017, an amendment came into effect, adding four additional fentanyl analogues to the list (Ma et al. 2019, p. 3; UNODC 2024).

NPS undergo molecular modifications or reconstructions from existing drugs, resulting in similar or even heightened stimulant or hallucinogenic effects on the human body, thereby fulfilling the first condition outlined (i.e. substances must be narcotics or psychotropic drugs capable of inducing addictive effects). Moreover, whether NPS can be categorised as drugs depends on whether they are regulated by the state. This means that if a substance is not subject to state regulation, then it cannot be deemed a

drug. Statistics indicate that China has regulated over 170 types of NPS and has incorporated fentanyl analogues into the ‘Supplementary List of Controlled Narcotic Drugs and Psychotropic Substances with Non-medical Use’ since 2019. Given that most of these substances lack legitimate medical utility, smuggling, trafficking, transportation, and production of these new psychoactive substances are typically viewed as drug offences (Ma et al. 2019, pp. 3–4).

3. The Global Prevalence of NPS and Public Health Concerns

Given the rapid emergence, intricate classification, and varied legal status of NPS globally, there exists a substantial challenge in terms of public awareness, law enforcement efforts, interception, and regulatory control of NPS worldwide.

NPS can be screened and identified by making subtle chemical modifications or designing entirely new compounds based on controlled substances. Compared to controlled drugs, these NPS exhibit stronger psychoactive effects and higher abuse potential and addictive properties, and they are more likely to induce violent tendencies and aggressive behaviours in users, triggering acute mental disorders such as seizures, agitation, and delusions. Several cases have been reported worldwide where hospitalisation was required due to acute poisoning from the consumption of NPS. Currently, the abuse of NPS is posing a serious threat to public safety and social order. In recent years, there have been profound and intricate changes in the international drug scenarios. Globally, there has been a continuous increase in drug production, variety, and the number of users, perpetuating the widespread issue of drug abuse internationally. In particular, the rapid proliferation of NPS worldwide, with constantly evolving varieties and a multitude of forms, poses a formidable challenge to drug control efforts in countries around the world. Currently, according to a report from the UNODC, as of August 2023, a total of 1,228 individual NPS from 141 countries have been discovered, surpassing the combined count of internationally regulated narcotic drugs and psychotropic substances (UNODC 2023). Compared to traditional and synthetic drugs, NPS often exhibit heightened psychoactive effects and addictive properties, leading to severe detriments to users’ physical health. Prolonged consumption of NPS can induce mental instability and loss of behavioural control, triggering extreme actions such as suicide, self-harm, and violent behaviour, thereby posing significant

real-life hazards and potential threats to societal and public safety (Ma et al. 2019).

Effective control of NPS remains a major challenge for law enforcement agencies around the world. On one hand, the rapid pace of innovation and replacement of these substances is evident, with 72 new psychoactive substances discovered worldwide in 2016 alone. At the same time, 68 NPS have disappeared from the market since 2013. Once a new psychoactive substance is under control, new alternatives emerge quickly through slight chemical modifications. Since most countries' drug control laws tend to list substances individually, with legislative processes taking a long time, many NPS escape international drug control conventions and national drug laws. On the other hand, the forensic scientific research on NPS is still in its early stages. There are numerous gaps in the standards and detection methods required for examination and identification. Additionally, there is a lack of standardised and quantified assessments of their dependence and harmfulness. These factors impede the formulation of control measures and sentencing standards for new psychoactive substances by governments worldwide (Ma et al. 2019, pp. 1–3).

II. NPS in China

1. The Evolution of NPS in China

The current issue of NPS in China has evolved over the last 20 years. It transitioned from the prevalence of ketamine and methcathinone in the early 21st century to the prevalence of synthetic NPS today. In addition, China functions both as a supplier (exporter) and a recipient of these substances.

In 2001, China's National Medical Products Administration classified ketamine as a Class II psychotropic substance. Then, in January 2005, ketamine (including its possible salts and preparations) was reclassified as a Class I psychotropic substance, restricting its production, sale, and purchase to pharmaceutical companies designated by the administration. Despite China's efforts to regulate ketamine and related NPS incidents, ketamine abuse in mainland China has increased steadily since 2000. According to a 2009 report by China's National Centre for Drug Abuse Monitoring, ketamine abuse comprised 0.3% of the total drug abuse and 8.6% of newly added drug users. However, most new drug users tended

to abuse multiple substances, with ketamine rarely used alone but rather in combination with ecstasy and methamphetamine. By the end of 2018, ketamine had become the second most commonly abused synthetic drug in China, trailing only behind methamphetamine (ice) and accounting for approximately 2.6% of all drug users, totalling about 63,000 individuals. The illicit production of ketamine in mainland China began around 2004 and gradually expanded, peaking in 2011 and 2015. Figure 1 illustrates the number of ketamine factories dismantled in China from 2013 to October 2018. It shows that the average number of ketamine factories dismantled was nearly 120 per year from 2013 to 2016, with a decline observed from 2017 onwards (Yang 2020, p. 2).

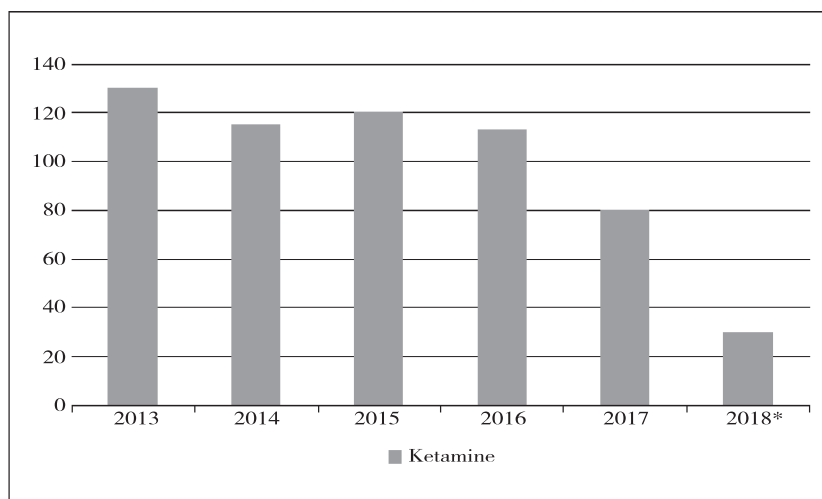


Figure 1: The number of ketamine factories dismantled in China from 2013 to September 2018 (Yang 2020, p. 2).

Figure 2 illustrates the changes in ketamine seizures in China from 2005 to September 2018. There was a steady increase in seizures from 2006 to 2011, peaking at 14.2 tons in 2011. Subsequently, there was a decline to 4.7 tons in 2012, followed by a continuous rebound from 2013 to 2015, reaching a historic high of 19.6 tons in 2015, which accounted for approximately 93% of the total global seizures for that year. Since 2015, there has been a gradual decrease each year. Despite China's intensified efforts since 2008 to combat ketamine production and trafficking, including the regulation of precursor

chemicals such as hydroxylamine and gamma-butyrolactone (GBL) in July 2008 and August 2012, respectively, the situation did not improve until 2016 (Yang 2020, pp. 2–3).

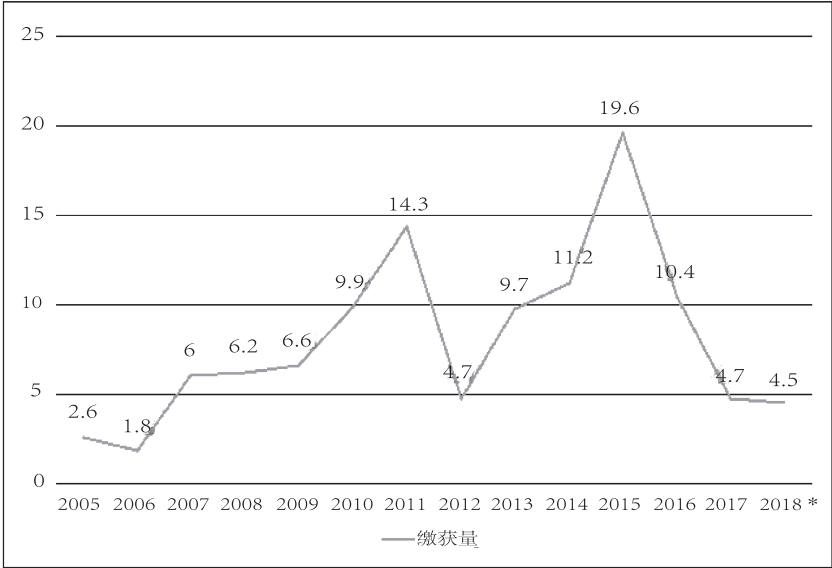


Figure 2: The changes in ketamine seizures in China from January 2005 to September 2018 (Yang 2020, p. 3).

In China, methcathinone abuse was primarily concentrated in Shanxi province since 2010. In one city within this province, coal miners and truck drivers engaged in physically demanding work had been consuming mianer (a substance primarily containing caffeine) since the 1980s to stay awake. This practice later spread to the wider population and became a cultural tradition. Some individuals illicitly added ephedrine to mianer to enhance its effects. In 1999, China introduced regulations governing the management of ephedrine. As China gradually tightened control over ephedrine, obtaining it unlawfully became increasingly challenging. In 2010, Li, a long-time pharmaceutical wholesaler from Anyang, Henan province, operating in a city in Shanxi province, believed due to his pharmacological knowledge that methcathinone could serve as a substitute for ephedrine. Consequently, he illegally procured a batch of methcathinone from a pharmaceutical factory in Tianjin (methcathinone has been classified as a controlled substance

in China since 2005), mixed it with mianer, and sold it under the guise of the latter. This led to an unexpected surge in demand in the market, with consumers responding positively to the taste and potency of mianer laced with methcathinone. In early 2010, the price of methcathinone in the city ranged from seven to eight yuan per gram, increasing to 18 to 20 yuan per gram in late 2010 and eventually reaching approximately 100 yuan per gram at its peak in 2011. Methcathinone inundated the market, and the number of users continued to rise. According to the '2016 National Drug Abuse Monitoring Annual Report', methcathinone abuse cases and the number of methcathinone abuse cases in China surged, with 707 cases in 2016 compared to 246 cases in 2015—a 2.9-fold increase. Of the 707 individuals in 2016, 693 were from Shanxi, constituting 98.0%. In 2017, the aforementioned city in Shanxi province recorded around 3,500 methcathinone abusers, with the abuse spreading to surrounding areas (Yang 2020, pp. 3–4).

To combat methcathinone abuse, in the first half of 2011, under the unified command of the Ministry of Public Security, Shanxi province launched a special rectification campaign, vigorously cracking down on illegal activities involving methcathinone, resulting in a reduction in methcathinone-related crimes in the city from 2011 to 2013. However, from 2014, the number of methcathinone cases and seizures rebounded and increased. After years of severe crackdowns, strict controls, and extensive publicity, the problem of methcathinone abuse in the city has been effectively curbed since 2018 and the rampant spread of methcathinone has been effectively alleviated (Yang 2020, p. 4).

At present, a wide array of NPS has surfaced domestically, with a considerable number of drug incidents involving NPS or nationally controlled substances. Based on their pharmacological effects, prevalent NPS in China encompass stimulants, synthetic cannabinoids, and classic hallucinogens. In China, stimulant NPS are mainly represented by cathinones and phenethylamines. Synthetic cannabinoids primarily consist of synthetic cannabinoid receptor agonists. Hallucinogens are mainly composed of tryptamines. Instances of these substances available on the market include 'KAWA' drinks (containing the controlled psychotropic drug gamma-hydroxybutyric acid), 'stamps' (stamp-like paper saturated with a blend of hallucinogenic drugs MDPBP and 25B-NBOMe), 'Arabian tea' (similar to heroin, inducing stimulation or hallucination), 'hemp cigarettes' (derived from opium produced in India), 'red beans' (containing nitrazepam), 'rainbow cigarettes' (a mix of second- and third-tier drugs), 'milk tea' (primarily

comprising methamphetamine and ketamine), ‘cookie biscuits’ (or small twigs, containing synthetic cannabinoids), ‘jelly’ (mainly composed of phenazepam), and others, each representing various forms of NPS. Additionally, substances like ‘Number Zero Capsules’, ‘G-Spot Liquid’, and ‘Rhino Liquid’ fall under the category of tryptamines (Chen/Fu 2020, pp. 94–95).

2. The Current Situation of NPS in China

1) The Detection Status of NPS in China in Recent Years

China has placed over 170 NPS under regulatory control. These include 53 types of synthetic cannabinoids, 50 types of synthetic cathinones, 26 types of phenethylamines, five types of tryptamines, two types of aminoindanes, five types of piperazines, four types of phencyclidine-type substances, one type of plant-based substance, and twelve types of other substances. Additionally, a blanket control measure was implemented for fentanyl analogues in 2019. Furthermore, in 2021, the National Narcotics Control Office in China (NNCO) revealed its decision to regulate synthetic cannabinoids nationally through a generic definition, along with 18 other substances listed individually (UNODC 2024).

In 2017, the National Drug Testing Laboratory of China analysed 1,193 suspicious samples gathered by public security organs and customs. The findings revealed that a total of 780 samples contained NPS, constituting 65.4% of the total, with 35 substances detected for the first time in China. Among these, there were 87 varieties of NPS, including synthetic cathinones (64.7%), synthetic cannabinoids (18.5%), fentanyl analogues (5%), and other substances (7.9%). 14.9% of the 780 samples contained NPS that are already regulated in China, while the remaining 85.1% comprised unregulated types of NPS. In 2018, the National Drug Testing Laboratory examined 912 suspicious samples gathered by public security organs and customs. The findings revealed that 582 samples contained NPS, comprising 63.8% of the total, with 32 substances being detected for the first time in China. Among these, there were 103 varieties of NPS, including synthetic cannabinoids (52.7%), synthetic cathinones (30.0%), fentanyl analogues (2.9%), and other substances (6.6%). 18.3% of the 582 samples contained NPS that are already regulated in China, while the remaining 81.7% comprised unregulated types of NPS. At the end of August 2019, the National

Drug Testing Laboratory tested 514 suspicious samples gathered by public security organs and customs. The findings revealed that 206 samples contained NPS, constituting 40.1% of the total, with five substances being detected for the first time in China. Among these, there were 41 varieties of NPS, with synthetic cannabinoids making up 72.0%, synthetic cathinones 17.8%, and tryptamines 0.4%. 12.5% of the 206 samples contained NPS that are already regulated in China, while the remaining 87.5% comprised unregulated types of NPS (Ma et al. 2019, p. 4).

Despite the continual rise in the regulation of NPS in China, the average detection rate of unregulated NPS remained consistently high at 84.8% from 2017 to 2019. This indicates that, notwithstanding efforts to enhance control and enforcement, varieties of NPS persist in evolving and spreading (Yang 2020, p. 5).

The UNODC report entitled *Synthetic Drugs in East and Southeast Asia—Latest Developments and Challenges* (2021, p. 43) reveals that the annual identification of synthetic cathinones in China has exhibited a declining trend since 2016 (Figure 3 and Figure 4). In 2020, only six different synthetic cathinones were identified. Synthetic cannabinoids consistently constituted the largest proportion of identified NPS from 2018 to 2020 (Figure 3). Following China's national scheduling in May 2019, no fentanyl analogues were detected in the country (Figure 3). Moreover, seizures of ketamine have continued to decrease, with the quantity seized in 2020 amounting to less than a tenth of the record quantity reported in 2015.

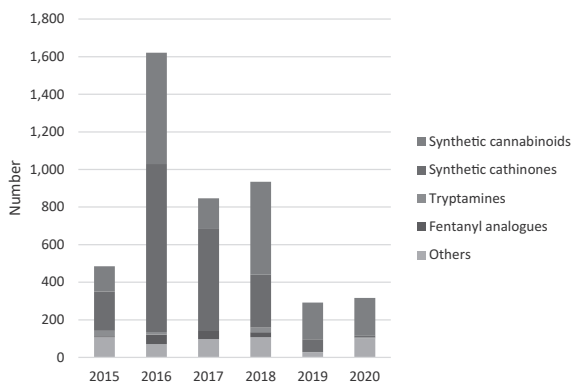


Figure 3: Frequency of NPS identified by the NPS Monitoring Programme of China, by substance group, 2015–2020 (UNODC 2021, p. 45).

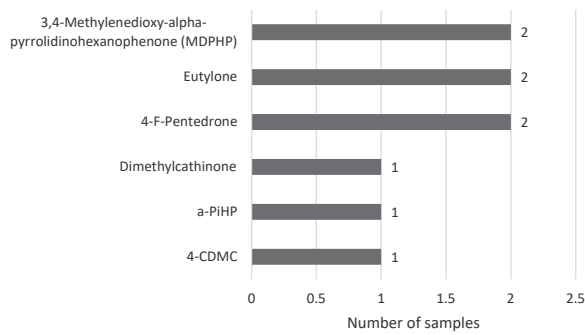


Figure 4: Top six synthetic cathinones identified by the NPS Monitoring Programme of CHINA, 2020 (UNODC 2021, p. 45).

2) The Criminal Situation Related to NPS in China

During recent years, China has uncovered several criminal cases involving NPS. The NPS implicated in these cases mainly comprise synthetic cannabinoids, synthetic cathinones, and fentanyl analogues, as well as other substances. A total of seven substances were primarily detected in synthetic cathinones: 5-Fur144, ADB-CHIMINACA, ABC, 5F-AMB, FUB-PB-22, PX-2, and MDMB-CHMICA. Synthetic cathinones, including Ethylone, α -PVP, 3-MMC, 4-CMC, N-Ethylpentylone, and MBDB, have also been identified. Among fentanyl analogues, the primary substances detected are fentanyl, furanylfentanyl, and carfentanil, totalling three substances. In the category of other substances, U-47700 was the primary substance detected (Ma et al. 2019, p. 5).

From the perspective of the NPS crime cases uncovered in China, the main types of crimes are the manufacturing, smuggling, and trafficking of NPS. The Yangtze River Delta region (the region in eastern China where the Yangtze River empties into the East China Sea, primarily encompassing Jiangsu province, Zhejiang province, Anhui province, and Shanghai municipality; it is one of the most developed and economically significant regions in China) is the source area for such cases, and the problem of manufacturing and smuggling NPS in China is gradually spreading from the Yangtze River Delta region to other areas.

According to Yang (2020, pp. 6–7), an examination of cases tied to the creation and distribution of NPS reveals several key characteristics:

i. The typical criminal procedure involves reaching out to international buyers, locating local research and development entities to tailor-make the desired NPS, and dispatching the resulting substances overseas.

ii. The individuals implicated in these activities are predominantly professionals. In recent times, those involved in the production and trafficking of NPS often boast backgrounds in chemistry, pharmaceuticals, import/export, and related domains. They exhibit advanced levels of legal and foreign language proficiency, suggesting sophisticated criminal operations carried out by individuals with higher educational and vocational qualifications. Depending on their specific roles in the NPS supply chain, offenders are typically categorised as organisers (in charge of securing overseas buyers and local production facilities), researchers and manufacturers (involved in domestic research and the production of new psychoactive substances), or couriers (responsible for smuggling the substances abroad).

iii. The types of crimes are usually divided into two categories. One involves an amalgamation of production and distribution, wherein the perpetrators assume multiple roles. Take, for instance, the case of Wang from Huanggang, Hubei, involved in the manufacturing and smuggling of NPS. In this scenario, Wang and their accomplices serve as both organisers, tasked with sourcing overseas buyers, and as researchers and manufacturers engaged in the domestic production of new psychoactive substances. The other category comprises separate production and sales activities, with primary offenders usually functioning solely as organisers. For example, in the case of Yang from Yixing, Jiangsu, manufacturing and trafficking NPS, Yang operates as the organiser. Initially, these organisers scout for overseas buyers on relevant online platforms, then identify suitable domestic pharmaceutical and chemical research and production entities. Subsequently, upon discerning the specifications outlined by overseas buyers, organisers arrange for the customisation of the required NPS through the selected domestic enterprises or companies. Finally, they dispatch the produced NPS to the consumer country abroad via international courier or freight services.

iv. Smuggling tactics predominantly involve international freight forwarding agents and global express delivery services. Pre 2017, a portion of NPS manufactured in China were dispatched overseas through international express delivery services. However, since 2018, this has changed, for two potential reasons: firstly, international express delivery services strengthened their supervision of items being sent; secondly, items sent by express delivery are easily exposed and may be refused by courier. Con-

sequently, the smuggling of NPS has increasingly relied on international freight forwarding agents or the establishment of specialised trade routes between China and Russia and China and the United States, among others. These freight forwarding agents specialise in international parcel delivery and possess in-depth knowledge of inspection protocols and effective concealment methods, resulting in a heightened success rate for shipping NPS. The main concealment methods used include using 'documents stowage' (*wenjianjiadai*, refers to the practice of concealing documents or papers within a package or shipment to disguise or conceal the actual contents) or sending electronic products as covers.

v. Using online networking for production and distribution. The internet serves as a vital conduit in the creation, marketing, and illicit transportation of NPS. Those involved in orchestrating the domestic production and trafficking of these substances, whether in pursuit of foreign buyers or in collaboration with local entities capable of manufacturing NPS, typically promote their wares on relevant chemical industry websites or scout for domestic research and production facilities for pharmaceutical intermediates online. Notably, these alleged perpetrators often refrain from using the common or chemical names of NPS in their online communications, opting instead for specialised codes to enhance concealment.

vi. Promoting concealment of transaction funds. In order to facilitate large-scale transactions of new psychoactive substances conveniently, discreetly, securely, and without detection, professional criminal groups involved in NPS crimes often register companies overseas, specifically for offshore settlements for online trade. Only a few sporadic illegal transactions are settled through cross-border remittances. Depending on whether criminals treat the production and trafficking of NPS as a profession, they can be categorised as professional criminals or sporadic criminals.

In conclusion, the illicit production, distribution, and smuggling of NPS represent a complex and multifaceted criminal enterprise. From the meticulous networking facilitated by online platforms to the sophisticated concealment techniques employed in transactional activities, criminal organisations demonstrate a high degree of organisation and adaptability. The evolution of smuggling methods, shifting from reliance on international express delivery services to strategic engagement with international freight forwarding agents, underscores the dynamic nature of these illicit operations. Furthermore, the categorisation of offenders into professional criminals and sporadic criminals highlights the varying degrees of involvement and commitment within this criminal landscape. Efforts to combat

NPS-related crimes must therefore remain vigilant and adaptive, addressing the challenges posed by technological advancements and criminal sophistication.

3. The Legal Framework of NPS in China

According to the UNODC, there are two types of legislation for NPS in China: 1) drug laws/individual listings and 2) generic legislation. In 2010, mephedrone was classified as a Class I psychotropic substance. On 11th November 2013, the Chinese Drug and Food Administration, the Ministry of Public Security, and the National Health and Family Planning Commission jointly issued a notice, releasing the ‘Catalogue of Narcotic Drugs (2013 Edition)’ and the ‘Catalogue of Psychotropic Drugs (2013 Edition)’. Building upon the existing regulation of the NPS ketamine, 13 NPS, such as 4-methylmethcathinone and JWH-018, were added to the psychotropic drugs catalogue for regulation. This decision took effect on 1st January 2014 (UNODC 2024; Ma et al. 2019, p. 6).

On 24th September 2015, the Ministry of Public Security, the Chinese Drug and Food Administration, the National Health and Family Planning Commission, and the National Narcotics Control Commission (NNCC) jointly announced the ‘Administrative Measures on Narcotics and Psychotropic Substances without Medical Use’, the appendix of which—the ‘Supplementary List of Controlled Narcotic Drugs and Psychotropic Substances with Non-medical Use’—included 116 NPS, comprising six fentanyl analogues, synthetic cannabinoids, several tryptamines, and other substances. This regulation came into effect on 1st October 2015. Subsequently, an amendment added four more fentanyl analogues (acrylfentanyl, carfentanil, furanylfentanyl, and valerylfentanyl) to the list based on the ‘Notice of the inclusion of 4 fentanyl analogues’, effective from 1st March 2017 (UNODC 2024; Ma et al. 2019, p. 6).

On 7th April 2016, the Supreme People’s Court (SPC) issued a revised judicial interpretation document outlining regulations for drug-related convictions and sentencing. The document introduced stricter guidelines, halving the threshold amount for ketamine-related convictions. Furthermore, it expanded the list of illegal drugs subject to criminal penalties by including twelve additional types and lowered the threshold for illegal use convictions for 33 precursor chemicals. These updated regulations have been in effect since 11th April 2016 (UNODC 2024).

On 22nd May 2017, the Ministry of Public Security, the Chinese Drug and Food Administration, and the National Health and Family Planning Commission jointly issued a notice, the 'Notice of Including Four Substances such as N-methyl-N-(2-methylamino cyclohexyl)-3,4-dichlorobenzamide (U-47700) into the supplementary list of narcotic drugs and psychotropic substances without medical use'. This notice included the regulation of four substances, U-47700, MT-45, PMMA, and 4,4'-DMAR, effective from 1st July 2017 (Ma et al. 2019, p. 6).

On 16th August 2018, the Ministry of Public Security, the National Health Commission, and the National Medical Products Administration jointly issued a notice, the 'Notice on the inclusion of 32 types of NPS including 4-CEC into the supplementary list of narcotic drugs and psychotropic substances without medical use'. This announcement included the regulation of 32 substances, including 4-Chloroethcathinone, effective from 1st September 2018 (UNODC 2024; Ma et al. 2019, p. 6).

Regarding generic legislation in China, on 1st May 2019, the decision of the Government of China to include fentanyl analogues in the 'Supplementary List of Controlled Narcotic Drugs and Psychotropic Substances with Non-medical Use' took effect.

As per the announcement, substances sharing structural similarities with fentanyl through one or more of the following alterations will be regulated from then on: 1) substituting the N-propionyl group with another acyl group; 2) replacing the N-phenyl group with any aromatic monocycle, whether or not further substituted in or on the monocycle; 3) substituting alkyl, alkenyl, alkoxyl, ester, ether, hydroxyl, halo, haloalkyl, amino, or nitro groups in or on the piperidine ring; and/or 4) replacing the phenethyl group with another group, except for the hydrogen atom. Additionally, on 11th May 2021, the National Narcotics Control Office in China (NNCO) declared the inclusion of synthetic cannabinoids under national control, employing a generic definition, along with an additional 18 substances regulated through individual listings. This control measure became effective as of 1st July 2021 (UNODC 2024).

Overall, NPS in China are divided into three groups: narcotic drugs, psychotropic substances, and substances without medical use. The first two groups require authorisation for production, transportation, sale, use, import, and export, while for the third group, any supply activity involving such substances is prohibited. As of September 2019, China had regulated a total of 170 new psychoactive substances and fentanyl analogues. Among them, 14 substances are governed by the 'Regulations on the Administration

of Narcotic Drugs and Psychotropic Drugs', listed in the Catalogue of Psychotropic Drugs (2013 Edition) and classified as Class I psychotropic substances. The remaining 156 substances and fentanyl analogues are managed under the 'Administrative Measures on Narcotics and Psychotropic Substances without Medical Use' (Ma et al. 2019, pp. 5–6).

4. Demographic Characteristics of NPS Abusers in China

A survey conducted by Jiang et al. (2024, pp. 50–54) at the Qingdong Compulsory Isolation Detoxification Center in Shanghai involved ten NPS abusers. The survey data was analysed to create concise and well-defined categories of results. The demographic data revealed that all ten individuals undergoing detoxification were male. Among them, three were aged 20 to 30, comprising 30% of the sample, while seven were aged 30 to 40, constituting 70% of the sample, with an average age of 32.9 years. Three individuals held household registration in Shanghai, representing 30% of the sample, while seven held household registration in other provinces or cities, accounting for 70% of the sample. One individual was married (10% of the sample), eight were unmarried (80% of the sample), and one was divorced (10% of the sample). Educational backgrounds varied, with two individuals having completed junior high school (20% of the sample), three completing vocational school (30% of the sample), and five having completed college or higher education (50% of the sample). None of the individuals had stable employment, with two being unemployed, three self-employed, three working in nightclubs or music-related industries, and two engaged in freelance work.

Based on the findings from these ten survey participants, some general observations about the characteristics of individuals undergoing detoxification from NPS abuse can be made:

- 1) Youthfulness, high education levels, and a strong interest in music and art: The sampled individuals, with an average age of 32.9 years, generally had at least a junior high school education level, with 50% having completed college or higher education. This group tended to be younger and more educated compared to traditional drug users, with many having hobbies related to music and art.
- 2) Limited awareness of the legal classification of NPS: Most individuals undergoing detoxification perceived the use of NPS as a form of social interaction or recreation, similar to smoking or drinking alcohol. They

were unaware of the legal classification of these substances and had limited knowledge of relevant laws regarding NPS.

- 3) A combination of substance abuse driven by the pursuit of stimulation: Many individuals in the study lacked awareness of the harmful effects of NPS and engaged in concurrent abuse of multiple substances to seek pleasurable effects. They continuously experimented with different NPS without understanding the addictive and harmful nature of these substances.
- 4) Physical damage to some extent: Although short-term use of NPS may not exhibit obvious physical damage, prolonged and regular use can lead to adverse effects such as unstable blood pressure, palpitations, and chronic ailments affecting various bodily systems among these people.
- 5) High comorbidity rate of mental disorders: A significant proportion of the sampled individuals exhibited symptoms of mental disorders such as depression, anxiety, and personality disorders, which were exacerbated by long-term NPS use.
- 6) Significant exacerbation of cognitive dysfunction: Prolonged use of NPS resulted in noticeable cognitive dysfunction, including memory decline, reduced self-identity, and difficulties with concentration and learning.
- 7) Severe impairment in social functioning: Long-term abuse of NPS led to varying degrees of social dysfunction, with individuals lacking stable employment and experiencing withdrawal from family and social interactions, preferring solitude.

III. Public Health Responses to NPS in China

1. Monitoring and Evaluation System for NPS in China

In response to the rapid emergence and proliferation of NPS both domestically and internationally, the NNCO has implemented various measures aimed at monitoring and evaluating these substances to prevent their illegal production, distribution, transportation, use, and import/export. In 2011, China's National Drug Laboratory initiated the 'NPS Monitoring Project', collaborating primarily with local public security agencies and customs authorities. This initiative involves monitoring the manufacturing, distribution, smuggling, abuse patterns, and trends of NPS in China by collecting and analysing suspicious samples discovered within the country. If these

samples contain controlled substances according to Chinese regulations, relevant investigation procedures are activated. Conversely, if the samples contain substances not yet regulated in China, pertinent information is documented for future regulatory considerations (Ma et al. 2019, pp. 14–15).

Concurrently, local narcotics control offices within the country coordinate with public security agencies and relevant departments to enhance the monitoring of narcotic drugs and psychotropic substances without medical use. They promptly report their monitoring findings to the NNCO. Following data summarisation and analysis, the NNCO regularly disseminates monitoring information and early warning messages concerning NPS within the country. For non-medical narcotic drugs and psychotropic substances flagged by the NNCO but not yet regulated, local narcotics control offices then conduct focused monitoring activities (Ma et al. 2019, p. 15).

If the NNCO deems it necessary to regulate specific non-medical narcotic drugs and psychotropic substances, it proposes a tentative list of substances for regulation, submitted to the Expert Committee on Non-Medical Narcotic Drugs and Psychotropic Drugs (hereinafter referred to as the Expert Committee) for risk assessment. The Expert Committee assesses whether the substances on the proposed list should be regulated by reviewing scientific literature, conducting addiction and harm assessment animal experiments, investigating relevant case reports, and considering factors such as abuse potential, trafficking, and real harm. This assessment is usually completed within three months. Upon the Expert Committee's recommendation for regulation, the NNCO suggests that the Ministry of Public Security, in collaboration with the Chinese Drug and Food Administration, and the National Health and Family Planning Commission, proceed with the regulation of these substances. These departments are expected to complete the regulation of non-medical narcotic drugs and psychotropic substances within six months of receiving the recommendation from the NNCO. Currently, the NPS regulated in China primarily consist of domestically discovered varieties, with only a few reported from abroad (Ma et al. 2019, p. 15).

Furthermore, to acquire scientifically sound dependency conversion data and conduct a thorough assessment of the public health risks associated with regulated NPS, China's National Drug Laboratory has embarked on significant pioneering efforts in recent years. These endeavours primarily focus on evaluating the dependency conversion of drugs and NPS. The laboratory has established standardised technical procedures and systems for evaluating dependency conversion for common drugs and specific key

types of new psychoactive substances. These initiatives lay the groundwork for scientifically assessing the addiction and abuse potential of NPS for regulatory purposes and serve as benchmark standards for determining conviction and sentencing quantities in law enforcement and judicial practices (Ma et al. 2019, p. 15).

Essential elements of China's regulatory process for non-medical narcotic drugs and psychotropic substances include: 1) permanent regulation: regulations are enduring and without temporal limitations; 2) different overseeing departments: unlike its medicinal counterparts, the NNCO manages the regulation and catalogue adjustments of NPS, with the Ministry of Public Security assuming responsibility (Ma et al. 2019, p. 16).

2. Assessment of NPS Dependency in China

NPS come in various types, exhibit diverse structures, possess distinct pharmacological characteristics, and involve complex addiction mechanisms. Due to this complexity, evaluating their dependency and abuse characteristics accurately is challenging. Therefore, it is necessary to adopt multiple technical means and methodologies to comprehensively assess the addictive potential and abuse risks of NPS. Currently, the assessment of NPS dependency primarily focuses on four aspects: neuropsychopharmacological research, physical dependency research, psychological dependency research, and toxicity research (Ma et al. 2019, p. 17).

1) Neuropsychopharmacological Research

Neuropsychopharmacology studies the effects of drugs on nervous system function and mental activities, exploring their pharmacological characteristics and mechanisms. It's crucial to employ neuropharmacological research methods and tools to assess the abuse potential of NPS. These methods include radioligand-receptor binding assays, intracerebral microdialysis with high-performance liquid chromatography (HPLC) analysis, and physical and psychological dependency experiments. Assessing the chemical structure, drug classification, and abuse patterns of NPS is essential for determining research strategies and methods (Ma et al. 2019, pp. 17–18).

2) Physical Dependency Research

Physical dependence occurs when individuals require external substances to maintain normal physiological function. Among NPS, only opioid drugs evoke pronounced physical withdrawal symptoms. Thus, existing methods for assessing physical dependence focus on opioids. These methods include natural withdrawal experiments, precipitated withdrawal experiments, and substitution experiments (Ma et al. 2019, p. 19).

3) Psychological Dependency Research

Psychological dependence results in shifts in users' emotions and experiences, leading to cravings for pleasurable effects. Many NPS can induce psychological dependence. Animal experimental research methods to evaluate psychological dependence include conditioned place preference (CPP) experiments, drug self-administration (DSA) experiments, drug discrimination (DD) experiments, and behavioural sensitisation (BS) experiments. Each method assesses different aspects of drug addiction and abuse (Ma et al. 2019, pp. 20–23).

4) Toxicity Research

Evaluating the harmfulness of NPS is complex and requires consideration of their societal impact and potential consequences post-regulation. According to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), a comprehensive risk assessment report includes a substance overview, health and social risks, regulatory options, potential consequences, and standardised weights. Toxicological experimental data is crucial in assessing the harmfulness of NPS, primarily derived from both in vivo and in vitro toxicity experiments (Ma et al. 2019, pp. 23–24).

i. In Vivo Toxicity Experiments

In vivo toxicity experiments include acute and long-term experiments. Acute experiments swiftly evaluate drug toxicity levels, offering insights into potential toxic reactions in humans. Long-term experiments observe prolonged toxic effects through repeated administrations, describing the nature and extent of toxic reactions (Ma et al. 2019, p. 24).

ii. In Vitro Toxicity Experiments

Some NPS demonstrate stronger neurostimulant and psychoactive effects than regulated drugs. Hence, assessing their harmfulness should include their addictive potential, neurotoxicity, and central inhibitory effects. Neurotoxicity can lead to irreversible damage to the central nervous system. Establishing efficient, sensitive, and standardised neurotoxicity testing methods is urgent for timely assessments (Ma et al. 2019, p. 25).

3. Conclusion

In conclusion, accurately evaluating the addictive potential and harm of NPS is essential in order to effectively combat their illicit use. To tackle this challenge, extensive research has been undertaken in China to deepen our understanding of the addictive properties of NPS. Collaborating with prominent domestic addiction research institutions, China's National Drug Laboratory has conducted comprehensive assessments of NPS dependency. Utilising various experimental techniques, such as conditioned place preference, self-administration, drug discrimination, behavioural sensitisation, acute toxicity, and in vitro neurotoxicity experiments, we have evaluated the addictive potential and harm associated with different types of NPS. The objective is to establish standardised procedures and assessment systems for evaluating the addictive potential and harm of various NPS categories, including synthetic cannabinoids, synthetic cathinones, phenethylamines, and fentanyl derivatives. Ultimately, this endeavour aims to provide a scientific foundation for national control measures against NPS and crackdowns on related criminal activities. Conducting global assessments of NPS dependency enables a scientific evaluation of their addictive and abusive potential, thereby informing law enforcement and judicial practices in setting sentencing standards for these emerging substances. These endeavours will significantly bolster authorities' capacity to combat illegal NPS activities, advancing drug control efforts in a more contemporary and evidence-based manner.

IV. *Current Challenges and Future Strategies Regarding NPS Abuse in China*

1. Current Challenges

1) Diverse Regulatory Approaches

Currently, international regulations governing NPS primarily rely on the United Nations' 1961 Single Convention on Narcotic Drugs and the 1971 Convention on Psychotropic Substances. However, differences in how countries define NPS boundaries, along with diverse national contexts and regulatory frameworks, have led to the emergence of various control models tailored to domestic circumstances. Consequently, these differences hinder the effectiveness of international regulatory conventions. This variation in control measures means that a synthetic substance may be classified as an NPS and regulated in some regions or countries while remaining legal in others. As previously mentioned, UNODC data indicates the discovery of 1,228 individual NPS, yet only 170 NPS are regulated in China. Such inconsistencies in regulatory enforcement enable illicit actors to exploit legal discrepancies and evade accountability, posing significant challenges to effectively combatting the rapid proliferation and abuse of NPS (Chen/Fu 2020, p. 97).

2) Discrepancies in Drug Control Systems and NPS Regulation

NPS pose distinct challenges compared to traditional drugs like cannabis, heroin, and methamphetamine. Firstly, their diverse range and intricate forms make them elusive and clandestine during distribution or transportation, requiring advanced monitoring techniques and skilled enforcement personnel. Secondly, NPS often result from modifications or innovations to already regulated substances, leading to structural variability and short manufacturing cycles. Many of these substances may not fit conventional legislative control or scheduling due to their brief presence on the market, making temporary scheduling a more effective approach. Additionally, most NPS are chemically synthesised, necessitating substantial quantities of chemical raw materials and precursors. Hence, intercepting their dissemination at the source is crucial to addressing the root cause of their proliferation. Essentially, prevention and control efforts against NPS should commence with robust supervision and management of precursor chemicals, manufacturing materials, and process equipment. Finally, as an integral

part of the national drug control system, efforts to prevent and control NPS should establish comprehensive monitoring, detection, assessment, early warning, and regulatory systems to dynamically evaluate these substances and make timely regulatory decisions (Chen/Fu 2020, p. 97).

While China has established a relatively comprehensive control framework for NPS in alignment with the international control regime, the current systems for preventing and controlling NPS, both internationally and in China, are not holistic enough due to NPS' chemical synthesis and structural variability. Research in various countries primarily focuses on identification methods. Existing drug control systems are primarily tailored to address traditional drugs like cannabis, heroin, and methamphetamine, with many control measures proving inapplicable or ineffective for NPS, a potential new generation of drugs characterised by their flexibility and variability. Consequently, the absence of a comprehensive prevention and control system for NPS results in delayed regulation, leaving subsequent monitoring and assessment susceptible to manipulation by illicit actors, leading to a passive defence dilemma. Crime cases in China, such as the 'Little Branch' new synthetic drug case adjudicated in Wuxi, Jiangsu province in November 2019, exemplify this issue. It was only after the verdict that 'Little Branch', containing AMB-FUBINACA, an NPS, partially entered the public eye. This case is not isolated but reflects the common challenges faced internationally or domestically in dealing with NPS. The discovery of NPS often occurs reactively, after these substances have already circulated to some extent in the market, rather than as a proactive response by national drug control agencies. This reactive monitoring approach, resembling a chase-style strategy, seems less effective in regulating and preventing NPS, potentially resulting in inefficient resource allocation and increased social governance costs (Chen/Fu 2020, p. 97).

3) Insufficient Awareness of NPS

While plant-based NPS have a historical record spanning centuries, the level of global attention paid to chemically synthesised NPS has increased significantly over the past decade. Disparities in research progress among countries have led to limited available data, with some nations not adequately prioritising the issue. Consequently, there is a scarcity of accessible information on new psychoactive substances both internationally and domestically, with some data only accessible to researchers, excluding the general public. While narcotic drug education is prioritised in most coun-

tries and integrated into national education systems, research on NPS lags behind due to their recent emergence. Moreover, as a significant portion of NPS comprises prescription drugs, the monitoring data on NPS is not included in the annual China Narcotics Report and Drug Situation Report. Consequently, apart from professionals and workers in relevant fields, the general public lacks adequate awareness of new psychoactive substances, with some demonstrating a lack of knowledge. According to a survey of 341 respondents, 56% had never heard of the concept of new psychoactive substances, 29.6% had only heard of the term but did not have any understanding of or familiarity with new psychoactive substances, and less than 15% had some understanding of or familiarity with new psychoactive substances - Figure 5 (Chen/Fu 2020, p. 97).

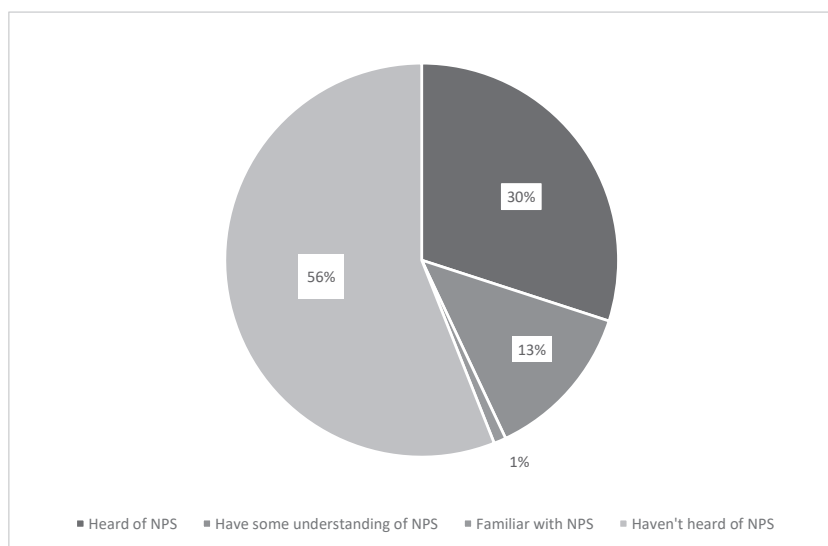


Figure 5: Awareness of NPS among 341 respondents (Chen/Fu 2020, p. 98).

The data indicates that NPS are still relatively unfamiliar to most people, with many not even recognising this basic term, let alone having a deeper understanding of it. Therefore, expecting individuals who are unaware of NPS to identify them, avoid them, and prevent their use is unrealistic. While the survey may have limitations, it's noteworthy that among the 341 respondents, nearly 85% had received higher education, including 33% who were graduate students. This to some extent reflects the current level of

public awareness of new psychoactive substances. Although research data on new psychoactive substances may still be limited, education on these substances is crucial and should be integrated into the national education system to enhance the population's ability to recognise such new substances effectively (Chen/Fu 2020, p. 98).

2. Possible Strategies to Better Combat NPS Abuse in China

1) Legislation, Regulation, and System Enhancements

Legislation plays a crucial role in governing NPS, ensuring adherence to legality principles in both criminal and administrative law. Clear legal provisions are necessary to prevent illicit actors from exploiting loopholes to produce unregulated NPS and evade supervision. However, existing regulations in China, such as the 2005 'Narcotic Drugs and Psychotropic Drugs Administration Regulations' and the 2015 'Administrative Measures on Narcotic and Psychotropic Substances without Medical Use', may not fully address the complexities of NPS abuse. Additionally, public awareness efforts regarding NPS in China appear to be limited, as indicated by the minimal official documentation that has been provided since 2014, beyond the annual China Narcotics Report and Drug Situation Report. To effectively combat NPS abuse both nationally and internationally, initiatives should prioritise enhancing public awareness, refining regulatory models, and exploring specialised legislation for NPS control (Chen/Fu 2020, pp. 100–101).

2) Regulatory Measures and Optimization

In the regulatory landscape of NPS, implementation often lags behind. Despite the country's requirement for expedited risk assessment and scheduling procedures for urgent NPS cases, many of these substances have short lifespans on the market. Delays in the scheduling process can result in ineffective control or missed regulatory opportunities. As per Articles 7 and 9 of China's 2015 'Administrative Measures on Narcotic and Psychotropic Substances without Medical Use', the Expert Committee is tasked with completing risk assessments and scheduling arguments for proposed substances within three months. Furthermore, relevant departments should finalise the scheduling within six months of receiving proposals. However, the

longest scheduling period for NPS in China can extend up to nine months, surpassing the market lifespan of some substances. Failing to regulate them promptly can pose societal risks. Hence, optimising control procedures by shortening scheduling recognition periods is imperative. In specific cases, direct regulation post-expert evaluation or granting decision-making powers to relevant departments can enhance efficiency. Simplifying the scheduling process can facilitate dynamic and flexible regulation (Chen/Fu 2020, p. 101).

3) Enhancing a System for NPS Detection, Early Alert, Assessment, and Scheduling

Illicit actors often exploit computer networks and big data for the production, distribution, and dissemination of NPS. However, these same tools can empower governments in preventing and controlling NPS abuse, forming a critical aspect of prevention strategies. Leveraging computer networks and big data, a framework for the detection, early alert, assessment, and scheduling of NPS can be established. Given the diverse and rapidly evolving nature of NPS, accurate tracking and detection pose significant challenges. Moreover, the lack of comprehensive understanding of and detection methods for some NPS hinders expert assessments and national scheduling procedures. China's regulatory approach to NPS primarily relies on listing specific substances, which proves impractical given the increasing number and turnover rate of NPS. Additionally, the lengthy scheduling process renders regulatory efforts ineffective for substances with brief market appearances. Furthermore, some NPS lack detection methods and clear toxicological profiles, hindering scheduling discussions. In addition, all derivatives and analogues of scheduled substances should be monitored in a comprehensive big data model. Products containing common precursor chemicals should undergo testing by the national drug laboratory. Substances with toxicological effects similar to or stronger than controlled substances should be flagged for early warning alerts (Chen/Fu 2020, pp. 101–102).

V. Conclusion

In conclusion, the emergence of NPS poses a multifaceted challenge, intersecting drug regulation, public health, and law enforcement. NPS, designed

to mimic traditional drugs while evading regulation, must be thoroughly understood in order to facilitate effective policy formulation and strategy implementation. China, like other nations, has encountered the rise of NPS within its borders, reflecting a dynamic landscape marked by diverse substances, rapid turnover rates, and structural variations, complicating detection and regulation efforts.

Despite China's efforts to control NPS through enumerative scheduling models, challenges persist due to the influx and pace of new substances entering the market. The diverse nature of NPS, coupled with limited standardised detection methods and understanding of their toxicological profiles, underscores the need for ongoing research and cross-sector collaboration. Additionally, evolving tactics by illicit actors exploit legal gaps, demanding continuous adaptation and regulatory innovation.

Looking ahead, it seems suitable for China to consider anticipating and addressing emerging NPS trends and challenges by enhancing international cooperation, bolstering domestic research capabilities, and strengthening regulatory frameworks. By considering the adoption of a multi-dimensional approach that integrates prevention, enforcement, treatment, and harm reduction strategies, China may be better positioned to mitigate NPS risks and safeguard public health and safety. In summary, addressing the NPS issue in China may necessitate comprehensive and collaborative efforts to navigate its complexities and potentially mitigate harms more effectively.

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