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The Concept, Characteristics, and Classification of New Synthetic Drugs

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Abstract: This article investigates the growing phenomenon of new synthetic drugs (NSDs), commonly known as new psychoactive substances (NPS), by examining their conceptual foundations, distinguishing characteristics, and comprehensive classification. Emphasis is placed on their legal implications, chemical evolution, social impact, and challenges faced by law enforcement and public health systems. The research also explores international responses and Uzbekistan's legislative stance on synthetic narcotics. Drawing upon a comparative legal and scientific methodology, this article provides an interdisciplinary perspective that combines pharmacology, criminology, and international law to offer policy recommendations and preventive frameworks.

Keywords: Synthetic drugs; new psychoactive substances (NPS); drug classification; public health law; drug control; Uzbekistan; legal regulation; drug policy; pharmacology; criminology.

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Introduction. The global drug landscape has undergone a dramatic transformation in the last two decades with the emergence of new synthetic drugs (NSDs). Unlike traditional narcotics such as heroin or cocaine, NSDs are often developed in laboratories to mimic the effects of known illicit substances while evading legal control. These substances, referred to by the United Nations Office on Drugs and Crime (UNODC) as New Psychoactive Substances (NPS), are designed to circumvent national and international regulations through slight molecular modifications.

The proliferation of NSDs presents a dual challenge: their chemical and structural fluidity makes regulation difficult, and their unpredictable effects pose severe threats to public health and safety. This article seeks to unpack the conceptual underpinnings of NSDs, describe their identifying features, and propose a scientific and legal taxonomy. Special attention is given to the context of Uzbekistan, where synthetic drug use is increasingly recognized as a national concern, necessitating a robust legal and public health response.

Defining New Synthetic Drugs. New synthetic drugs, or NPS, are substances of abuse, either in a pure form or a preparation, that are not controlled by the 1961 Single Convention on Narcotic Drugs or the 1971 Convention on Psychotropic Substances but which may pose a public health threat (UNODC, 2023). Their novelty lies in their ability to mimic existing controlled substances while remaining technically legal at the time of their introduction to the market.

The term “synthetic” refers to their laboratory-based origin, often using chemical synthesis rather than extraction from natural sources. They are developed through chemical modifications of existing psychoactive substances to create new compounds with similar or enhanced effects.

Evolution and Etymology. The rise of synthetic drugs parallels developments in chemistry and pharmacology, where open-source journals and underground labs have enabled rapid experimentation. Initially emerging in the early 2000s, NSDs gained notoriety in Europe and the United States, rapidly spreading due to online marketplaces, where substances were often misleadingly sold as "bath salts," "incense," or "research chemicals."

Distinction from Traditional Drugs. Unlike traditional narcotics, which have relatively stable chemical profiles and long-standing regulatory controls, NSDs constantly evolve. A minor chemical alteration can produce a new substance not yet classified under existing laws, thus creating a "legal high."

NSDs are distinguished by their immense chemical diversity. A single molecule may give rise to hundreds of derivatives, each differing slightly in structure but potentially producing similar psychoactive effects. This plasticity allows clandestine chemists to stay one step ahead of regulatory agencies.

Chemically, NSDs fall into categories such as synthetic cannabinoids, synthetic cathinones, phenethylamines, tryptamines, and piperazines. These classes are characterized by differing effects on neurotransmitter systems, especially those involving dopamine, serotonin, and norepinephrine (EMCDDA, 2023).

High Potency and Unpredictable Effects. Another defining feature is their potency. Even minor doses can result in powerful physiological and psychological reactions. For example, synthetic cannabinoids can be 100 times more potent than tetrahydrocannabinol (THC), the active component in cannabis. This extreme potency leads to heightened risks of overdose, psychosis, seizures, and cardiovascular failure.

Due to their novel chemical nature, many NSDs lack preclinical safety testing. Consequently, users become unknowing test subjects, and emergency medical personnel often encounter unfamiliar symptoms with no antidote or treatment protocol.

The continual evolution of NSDs fosters a legal grey area. Most legal systems use a “scheduling” approach, classifying drugs based on their chemical structure and abuse potential. However, new synthetic drugs can avoid regulation simply by altering molecular configurations, thus escaping existing laws.

To combat this, countries have begun adopting “generic” or “analogue” legislation, which criminalizes entire classes of substances or any compound with a structure substantially similar to a known controlled drug.

Classification of New Synthetic Drugs. The most common method of classifying NSDs is based on their pharmacological effects:

- **Stimulants:** These substances increase central nervous system activity, including synthetic cathinones (e.g., mephedrone).
- **Depressants:** These reduce brain activity and include substances like synthetic benzodiazepines.
- **Hallucinogens:** These alter perception and consciousness; examples include synthetic LSD-like compounds.
- **Cannabinoids:** Synthetic versions of THC, sold as “Spice” or “K2.”
- **Opioids:** Ultra-potent synthetic analogues such as fentanyl and its derivatives.

Another approach is to classify NSDs by chemical structure:

- ✓ **Phenethylamines** (e.g., 2C-B, NBOMe)
- ✓ **Tryptamines** (e.g., 5-MeO-DMT)
- ✓ **Synthetic Cannabinoids** (e.g., JWH-018, AB-FUBINACA)
- ✓ **Synthetic Cathinones** (e.g., MDPV, α-PVP)
- ✓ **Piperazines** (e.g., BZP, TFMPP)

This form of classification helps forensic chemists identify and categorize new compounds based on known functional groups and molecular patterns.

Jurisdictions classify drugs under different legal regimes:

- ➢ **Schedule-based classification**: Widely used in the U.S., U.K., and Uzbekistan.
- ➢ **Catch-all laws**: Such as the Psychoactive Substances Act 2016 in the U.K., which bans all psychoactive substances not exempted by name (like alcohol or caffeine).
- ➢ **Temporary banning powers**: Allow regulators to issue short-term bans pending scientific evaluation.

United Nations and International Legal Instruments. The UNODC, through the International Narcotics Control Board (INCB), monitors trends and promotes scheduling of dangerous substances. However, its instruments (1961 and 1971 Conventions) cannot keep pace with the speed of NSD innovation.

In response, the World Health Organization (WHO) has fast-tracked the Expert Committee on Drug Dependence (ECDD) review process to evaluate NSDs for international scheduling.

European Union and EMCDDA. The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) coordinates a network of early warning systems across EU member states. Its three-step risk assessment model includes:

1. Notification and data collection
2. Scientific risk assessment
3. Legislative control

This system has proven relatively efficient in dealing with substances like 4-MMC (mephedrone) and synthetic opioids.

The U.S. employs the Controlled Substances Act (CSA) and the Federal Analogue Act. These laws allow prosecution of any substance that is “substantially similar” to a controlled substance. The DEA’s temporary scheduling power has enabled swift responses to emerging threats.

Legal Framework for Narcotic Control in Uzbekistan.

Uzbekistan’s primary legal instruments governing narcotic substances include:

- ✓ **The Law on Narcotic Drugs and Psychotropic Substances (1999);**
- ✓ **The Criminal Code of the Republic of Uzbekistan** (Articles 270–276);
- ✓ **The Resolution of the Cabinet of Ministers on the Approval of the List of Controlled Substances**.

However, these frameworks have been largely reactive and focused on traditional drugs. Until recently, no systematic provisions existed to control NSDs or their precursors unless explicitly listed.

Growing NSD Threat in Uzbekistan. Uzbekistan, like many Central Asian countries, has witnessed a surge in synthetic drug seizures in recent years. The National Information-Analytical Center on Drug Control reported an increase in substances such as synthetic cannabinoids and new amphetamine-type stimulants trafficked from Eastern Europe and China.

These substances often enter Uzbekistan through the "dark web" or via neighboring states with porous borders. The youth population, particularly urban users, has been targeted through social media platforms advertising "legal highs."

Legislative and Institutional Reforms. In response, Uzbekistan has adopted several measures:

- ✓ In 2023, amendments introduced a generic scheduling approach to capture entire classes of NSDs.
- ✓ A new interagency task force under the Ministry of Internal Affairs was established to monitor online drug trafficking.
- ✓ Legislative proposals are under review to criminalize the advertisement, promotion, and online sale of synthetic drugs.

Additionally, collaboration with UNODC and OSCE has led to capacity-building programs for customs officers, judges, and prosecutors to identify and respond to NSDs.

NSDs pose profound health risks:

- ➢ **Cardiovascular complications:** Irregular heartbeat, hypertension, and sudden death.
- ➢ **Neurological damage**: Seizures, psychosis, hallucinations, and brain swelling.
- ➢ **Addiction**: High dependence potential due to dopaminergic stimulation.

Hospitals report difficulty diagnosing NSD intoxications, as conventional toxicology screens may not detect novel compounds. This hampers emergency treatment and epidemiological data collection.

Mental health consequences include:

- ✓ Acute anxiety, panic attacks, and paranoia
- ✓ Long-term cognitive decline
- ✓ Violent or suicidal behavior

Synthetic cannabinoids, for instance, have been linked to aggressive outbursts and unpredictable behavior far more severe than natural cannabis.

The availability and affordability of NSDs increase the risk of abuse among teenagers and young adults. Many synthetic drugs are sold in attractive packaging with misleading names, making them accessible to first-time users.

The result is a wave of overdoses, school dropouts, and crime linked to substance dependence, creating significant burdens on families and public institutions.

Clandestine Production and Distribution Networks.

Unlike traditional narcotics that rely on natural cultivation (e.g., coca, opium), NSDs are synthesized in labs that may be relocated quickly and produce thousands of doses from minimal precursors. This makes detection more difficult.

Many synthetic drugs are imported as precursors or intermediates labeled as industrial chemicals. Law enforcement faces challenges in:

- ✓ Identifying new compounds

- ✓ Tracking supply chains across borders
- ✓ Prosecuting offenders without clear legal classification

Online Drug Markets and the Dark Web. Online marketplaces, particularly those operating on the dark web, facilitate global NSD trafficking. Payments via cryptocurrency, encrypted communication, and anonymous shipping make detection difficult.

Uzbekistan has increased cyber monitoring and partnered with Interpol to dismantle digital drug rings. Still, the scale and speed of online transactions outpace traditional policing methods.

United Kingdom: Psychoactive Substances Act 2016. The U.K. introduced a broad-spectrum ban on psychoactive substances in 2016. Rather than listing individual compounds, the law criminalizes any substance that can produce a psychoactive effect, with exemptions for food, alcohol, tobacco, and medicine.

Advantages:

- ✓ Closes loopholes exploited by constant chemical changes
- ✓ Enables rapid enforcement action without needing scientific evaluation first

Drawbacks:

- ✓ Challenges in defining "psychoactive effect" in court
- ✓ Misuse of law against harmless substances (e.g., herbal incense)

Poland: Blanket Ban with Penal Sanctions. Poland implemented a ban on entire classes of NSDs and established a list that is updated frequently. Heavy penalties, including prison terms, apply to possession and sale.

This model has effectively reduced the number of new substances on the market, though some argue it shifts demand to more dangerous underground versions.

Singapore: Strict Border Controls and Laboratory Forensics. Singapore's Misuse of Drugs Act includes an analogue provision and criminalizes possession of unregulated substances pending analysis. The government also maintains high-tech forensic labs to identify new substances in real-time.

Lessons for Uzbekistan include:

- ✓ Developing specialized forensic laboratories
- ✓ Enhancing international cooperation
- ✓ Enacting "catch-all" legislation to control classes of substances

Uzbekistan should establish a national early warning system (EWS) modeled after the EMCDDA framework, which would include:

- ✓ Real-time chemical surveillance
- ✓ Anonymous hospital reporting protocols
- ✓ Academic and forensic collaborations for testing unknown substances

To counter misinformation and reduce demand:

- ✓ Introduce school-based prevention programs
- ✓ Launch national media campaigns debunking myths about "legal highs"
- ✓ Train parents and teachers to identify signs of NSD use
- ✓ Adopt generic or analogue scheduling mechanisms

- ✓ Criminalize online sale and promotion of synthetic substances
- ✓ Provide law enforcement with rapid analytical tools and legal protocols for new compound identification

Treatment and Rehabilitation Approaches:

- ✓ Establish specialized detox and rehabilitation centers for NSD users
- ✓ Train psychiatrists and emergency physicians on synthetic drug-specific syndromes
- ✓ Support community-based recovery models

Conclusion. The emergence of new synthetic drugs represents one of the most dynamic and dangerous trends in modern narcotics policy. Their continual chemical innovation, legal ambiguity, and severe health effects make them uniquely difficult to manage within existing frameworks.

This article demonstrates that effective response requires a multi-sectoral approach: legislative agility, scientific capability, public education, and regional collaboration. For Uzbekistan, the path forward lies in harmonizing its narcotic control legislation with international best practices while investing in local capacity building.

Combating NSDs is not merely a legal issue—it is a moral imperative for protecting public health, national security, and future generations.

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