Regional diversity and the impact of scheduling on NPS trends
Abstract

The last decade has been characterised by a growing diversity of new psychoactive substances (NPS) offered on illicit drug markets and a high level of innovation with dozens of new substances being detected year after year. In recent years, however, the number of NPS reported globally each year has stagnated, albeit at high levels. Is the innovative power of traffickers finally dwindling? Based on evidence from the UNODC Early Warning Advisory (EWA) on NPS, this issue of the Global SMART Update argues that global trends overshadow a great diversity in trends at the regional level and within effect groups.

With regard to innovation, using the identification of new substances for the first time as a proxy indicator, differences between regions are apparent. NPS in North America (Canada and the United States of America) for example, show increasing innovation dynamics in comparison with Asia, with growing diversity in the former and diminishing diversity in the latter. Comparisons with the situation in Europe and Latin America and the Caribbean (including Mexico) further confirm the existence of high interregional variations.

Early warning at the national, regional and international levels has enabled the international community to identify NPS soon after their emergence on illicit drug markets as well as to monitor their persistence and regional spread. This allows the analysis of trends in diversity and innovation across effect groups and regions, an understanding of which is relevant to informing future drug policy measures. The potential impact of international scheduling decisions on these trends will be discussed with a focus on the first set of NPS placed under international control in 2015.
REGIONAL DIVERSITY AND THE IMPACT OF SCHEDULING ON NPS TRENDS

EARLY WARNING, DIVERSITY AND CHANGE

Regional diversity broadens

Until December 2020, 1,047 individual NPS were reported to the UNODC EWA by 126 countries and territories. The number of NPS reported each year increased from 131 in 62 countries and territories in 2009 to 542 individual NPS in 71 countries and territories in 2019, an increase of 314 per cent in terms of the number of individual substances reported. The increase in diversity of substances has far exceeded the increase in geographic spread. Overall, the distribution of countries reporting substances has remained relatively similar since 2009, with approximately half being European countries located mainly in Western and Central Europe. In Asia, the number of subregions represented has increased over time with the addition of countries from Central Asia and Transcaucasia reporting NPS. In the Americas, the number of reporting countries has increased significantly, particularly in South America and the Caribbean.

Is the NPS situation stabilizing?

The number of NPS reported each year increased between 2009 and 2015 and started to stabilize at a high level in the following years. Despite the stabilization visible at the global level, an expansion can be seen in most effect groups with the exception of synthetic cannabinoid receptor agonists (hereafter referred to as synthetic cannabinoids), indicating differences in the development of NPS diversity across these groups.

Overall observed stability of NPS hides expansion of newer effect groups

The seemingly stable annual number of NPS reported in recent years may obscure underlying dynamic developments. Globally, a clear change can be seen around 2015 when

Source: UNODC, Early Warning Advisory on NPS, 2021.
some effect groups appear to become steadier in terms of the annual number of individual NPS reported. In some cases, e.g., synthetic cannabinoids, a decrease in the number of substances reported from 2015 onwards has even been visible. However, the main difference in effect group trends after 2015 is that the number of synthetic opioid receptor agonists (referred to as synthetic opioids) and sedatives/hypnotics, including benzodiazepine-type NPS, reported annually continues to rise significantly.

Analysis at the regional level reveals even more variation among effect groups. Among the four regions selected for the purpose of this report, Europe most closely resembles the global trend. A common trend seen among all selected regions is a decreasing number of synthetic cannabinoids reported annually since 2015. In Asia, Europe and North America, sedatives/hypnotics are on the rise. The number of synthetic opioids reported each year is increasing in Europe and North America, but this trend is not (yet?) visible in the other two regions. Considerable disparity can be observed between Asia and North America regarding the number of stimulants, hallucinogens and dissociatives reported each year.

"...innovation persists but at different rates in different effect groups."

Continuous innovation remains a challenge for control and identification

New substances continue to emerge on the illicit drug market, which is an indication of ongoing innovation. The highest number of substances reported for the first time in a single year since monitoring began was in 2013 at 163 substances, at that time consisting predominantly of synthetic cannabinoids and stimulants. However, increasing awareness of the challenge of NPS at the international level in the drug policy context, reflected for example in resolutions of the Commission on Narcotic Drugs, the G7/G8 Roma-Lyon initiative, UNODC reports and the launch of the UNODC EWA platform in 2013, as well as improved identification capacity of laboratories, might have contributed to a peak that year in

Source: UNODC, Early Warning Advisory on NPS, 2021.
Note: As the number of substances reported annually in each group differs, different scales were used to better illustrate trends.
the number of NPS reported for the first time. After 2013, NPS became a regular topic for discussion at the Commission on Narcotic Drugs and from 2015 onwards, the annual number of individual substances reported for the first time at the global level stabilised or even declined.

Although the annual number of new substances identified for the first time has not again reached the peaks observed in 2013 (n=163) and 2015 (n=129), innovation continued with on average 68 substances reported annually for the first time from 2016 to 2019. Of these reports, stimulants comprised the majority of substances, ranging from 25 to 49 per cent of the total number reported. This suggests that innovation persists but at different rates in different effect groups.

“The annual number of substances reported for the first time declined in Asia as of 2015 while remaining high in Europe and North America.”

Regional NPS innovation trends diverge strongly

Notwithstanding the global stagnation or decline in the annual number of NPS reported for the first time as a marker of innovation, regional trends vary. The annual number of substances reported for the first time declined in Asia as of 2015 while remaining high in Europe and North America. The comparatively high number of new substances emerging annually in North America in recent years has contributed to a growing overall number of substances present on the market each year, thus increasing NPS diversity in that region. Europe, on the other hand, most closely resembles global developments with an almost identical trend witnessed over the same period. Similarly to the global scenario, in both Asia and Europe, the annual number of synthetic cannabinoids reported for the first time decreased from 2015 onwards. While data from Latin America and the Caribbean is less extensive than that from the other regions, a greater proportion of stimulants and hallucinogens among the annual number of substances reported for the first time stands out as a regional characteristic. In Asia, a clear decline in the annual number of substances reported for the first time after 2015 suggests that innovation has been slowing down. Conversely, in North America the annual number of substances reported for the first time fluctuated across effect groups. Here, the three effect groups, sedatives/hypnotics, stimulants and synthetic opioids, have all played an important role in recent
years as far as innovation is concerned, with synthetic opioids also being a driver of the ongoing opioid crisis. In absolute terms, North America reported more substances for the first time than any other region in 2017 (67), 2018 (50) and 2019 (54). While in Europe a similar but slightly lower number of substances were reported for the first time in these years, the proportion of new substances among all NPS reported in a year is considerably higher in North America, pointing to a highly innovative and dynamic NPS market situation with little indication of consolidation.

Regional differences in innovation dynamics have an impact on NPS market diversity, that is the number of different NPS on the market in a given year. While the total number of substances continues to remain high both at the global level and in Europe, a decline can be seen in Asia after 2016. The decrease in the diversity of NPS present on the market each year in Asia is most notable for synthetic cannabinoids and stimulants. In Europe, with a relatively stable rate of innovation (annual number of substances reported for the first time), the total number of NPS present on the market remains high. Regional differences in innovation dynamics have an impact on NPS market diversity....”

North America is the only region which shows an increasing trend in the number of substances reported each year, with stimulants and synthetic opioids contributing to the increasingly high rate of diversity observed from 2017 onwards, the latter contributing significantly to the opioid crisis. Synthetic cannabinoids show a decrease in these years, indicating that other effect groups, namely stimulants, synthetic opioids and sedatives/hypnotics, are beginning to play a greater role. In Europe, similar to global developments, diversity among substances in part decreased and innovation was not as high in earlier years, but diversity grew...
as of 2014. At this stage, data from Latin America and the Caribbean does not yet indicate clear trends because of insufficient data. However, an early warning system for countries in the region has been established by the Organization of American States, contributing to improvements in data collection capacities and the sharing of information.8

**IMPACT OF INTERNATIONAL SCHEDULING**

**Scheduling decisions by the Commission on Narcotic Drugs from 2015 to 2020**

Between 2015 and 2020, 60 NPS were placed under international control by the Commission on Narcotic Drugs. In total, 17 substances were included in the Single Convention on Narcotic Drugs of 1961, as amended by the 1972 Protocol, and 43 substances were added to the Convention on Psychotropic Substances of 1971.9 Of these 60 NPS, 30 per cent (n=18) comprised synthetic cannabinoids. Synthetic opioids, the majority of these being fentanyl analogues (n=13), and stimulants, both made up 28 per cent (n=17) respectively of all scheduled substances. In comparison, hallucinogens, sedatives/hypnotics and dissociatives effect groups made up only seven per cent (n=4), five per cent (n=2) and two per cent (n=1) respectively of all scheduled substances. In 2021, an additional eight NPS will be considered for international control.

Several substances were reviewed and recommended for control by the World Health Organization (WHO) Expert Committee on Drug Dependence (ECDD) but have not been placed under international control. Several of these were placed on the WHO Substances under Surveillance List.10 For example, four synthetic cannabinoids and five stimulants have been kept under surveillance since as early as 2014 due to insufficient data.

**What happened to the NPS placed under international control in 2015?**

Five years have passed since the first group of NPS were placed under international control in 2015 and it is possible to examine the first trends among these substances before and after scheduling. An indicator in the UNODC EWA is the number of countries reporting a specific substance annually as a proxy for the geographic spread of the substance. However, this indicator should not be taken as a measure of the prevalence of use or the amount trafficked or consumed which is not known in most cases. The

---

**FIG. 10: Number of NPS and precursors placed under international control, 2014-2020, and considered for international scheduling in 2021**

<table>
<thead>
<tr>
<th>Precursors</th>
<th>Synthetic cannabinoid receptor agonists</th>
<th>Stimulants</th>
<th>Classic hallucinogens</th>
<th>Sedatives/hypnotics</th>
<th>Synthetic opioids</th>
<th>Dissociatives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: UNODC, Early Warning Advisory on NPS, 2021.

*Recommended for international control by WHO and considered by the Commission on Narcotic Drugs in April 2021.

**FIG. 11: Timeline of synthetic cannabinoids, AM-2201 and JWH-018, placed under international control in 2015, by number of countries reporting, 2009-2019**

Source: UNODC, Early Warning Advisory on NPS, 2021.

Note: The label “(71/II)” refers to Schedule II of the Convention on Psychotropic Substances of 1971. The red vertical line indicates the year in which the substances were scheduled.

“For the two synthetic cannabinoids placed under international control in 2015, AM-2201 and JWH-018, a decreasing trend in the number of countries reporting these two substances was already seen shortly before 2015.”

---

“Between 2015 and 2020, 60 NPS were placed under international control by the Commission on Narcotic Drugs.”

“Five years have passed since the first group of NPS were placed under international control in 2015 and it is possible to examine the first trends among these substances before and after scheduling.”
Synthetic Opioid (AH-7921), three hallucinogens (25B-NBOMe, 25C-NBOMe and 25I-NBOMe) and four stimulants (N-benzylpiperazine [BZP], 3,4-methylene-dioxypyrovalerone [MDPV], mephedrone and methylone).

For the two synthetic cannabinoids placed under international control in 2015, AM-2201 and JWH-018, a decreasing trend in the number of countries reporting these two substances was already seen shortly before 2015. A similar trend is seen with regards to the synthetic opioid AH-7921, where a decreasing number of countries reported this substance from 2013 onwards. The number of countries reporting this synthetic opioid remained at comparatively low levels following its scheduling in 2015.

The trend for the three hallucinogens, 25B-NBOMe, 25C-NBOMe and 25I-NBOMe, shows a more marked change in terms of the number of reports made directly after their scheduling in 2015. While the number of countries reporting these hallucinogens steadily increased prior to 2015, reports rapidly declined following that period.

For the stimulants, namely N-benzylpiperazine (BZP), 3,4-methylene-dioxypyrovalerone (MDPV), mephedrone and methylone, a decline in the number of substances reported had already commenced before the year of international scheduling. Mephedrone is a notable exception. In contrast to the main downward trend, the number of countries reporting mephedrone increased from 2018 onwards.

“The trend for the three hallucinogens, 25B-NBOMe, 25C-NBOMe and 25I-NBOMe, shows a more marked change in terms of the number of reports made directly after their scheduling in 2015.”

For mephedrone, available seizure statistics and prevalence of use information indicate a continued and sizable market presence in some countries. However, evidence from other countries also suggests that controls in combination with other measures have led to a reduced prevalence of use.

“In contrast to the main downward trend, the number of countries reporting mephedrone increased from 2018 onwards.”

International scheduling of a substance could theoretically lead to an increase in the number of countries reporting it in the short term as it might receive more attention from law enforcement and laboratories following its control. In the longer term, international scheduling and implementation at the national level might contribute to preventing the further spread of newly controlled substances which might then be reflected in a reduced number of reports. Clearly, many factors not reflected in the UNODC EWA influence these trends, such as the type and timing of national legislation which might precede an international scheduling decision or come into force with a certain delay.

As a first contribution to this discussion, trends in substances placed under international control in 2015 have been analysed. The 10 substances scheduled in 2015 comprised two synthetic cannabinoids (AM-2201 and JWH-018), one synthetic opioid (AH-7921), three hallucinogens (25B-NBOMe, 25C-NBOMe and 25I-NBOMe) and four stimulants (N-benzylpiperazine [BZP], 3,4-methylene-dioxypyrovalerone [MDPV], mephedrone and methylone).
In general, for most of the NPS placed under international control, the number of countries reporting a substance decreased after the year of the scheduling decision. In many cases, this trend began prior to the international scheduling decision. A number of factors may influence this development including more attention being paid to individual substances during the WHO review process, more information becoming available about the risks associated with their use, national legislation preceding international control or the emergence of new substances designed to substitute those which are soon to be controlled.

“...for most of the NPS placed under international control, the number of countries reporting a substance decreased after the year of the scheduling decision. In many cases, this trend began prior to the international scheduling decision.”

What happens to NPS not placed under international control?

There are 16 substances on the WHO Substances under Surveillance List, which includes NPS and medicines. In 2014, six substances, consisting of four synthetic cannabinoids (APINACA, JWH-073, JWH-250 and RCS-4), one stimulant (4-Fluoromethcathinone) and one hallucinogen (alpha-Methyltryptamine), were added to the surveillance list but not subsequently placed under international control. The number of countries reporting these substances started to decline after 2013, i.e. prior to their placement on the list, and had reached low levels by 2019. This trend resembles that of other substances reviewed around the same time and placed under international control in 2015.

**FIG. 14: Timeline of substances with stimulant effects placed under international control in 2015, by number of countries reporting, 2009-2019**

Source: UNODC, Early Warning Advisory on NPS, 2021.
Note: The label “(71/II)” refers to Schedule II of the Convention on Psychotropic Substances of 1971. The red vertical line indicates the year in which the substances were scheduled.

**FIG. 15: Mephedrone seizures reported to UNODC and number of countries reporting mephedrone to the UNODC EWA, 2009-2019**

Note: The red vertical line represents the year in which mephedrone was scheduled.

**FIG. 16: Timeline of substances put under surveillance in 2014, by number of countries reporting, 2009-2019**

Source: UNODC, Early Warning Advisory on NPS, 2021.
Note: The dotted black vertical line indicates the year in which the substances were placed onto the Substances under Surveillance List.
CONCLUSIONS

Early warning and prioritization of the most harmful, prevalent and persistent NPS for international review continue to be essential for the understanding of NPS dynamics and the production of evidence for policy responses. While the global NPS situation seems to be showing signs of consolidation, a regional analysis reveals continuing dynamics of increasing diversity and high levels of innovation in some regions. A more granular, regional analysis is essential to better understand NPS trends and provide evidence for drug policy responses, which may need to take regional dynamics into account more strategically.

The ongoing innovation dynamic and diversity present numerous challenges. If all newly emerging substances were placed individually under international control each year for instance, this would result in a considerable burden for Member States to implement such decisions in national law. Thus, prioritization of the most harmful, prevalent and persistent substances for international review, as well as so-called “catch-all” or “catch-many” legal approaches at the national level, are likely to remain important instruments of drug policy. At the same time, the detection and identification of emerging and new NPS remains a significant challenge for law enforcement, laboratories and health services.

It is not likely that all laboratories will develop the technical capacity to identify the complete range of known NPS, nor would this be an efficient use of limited resources. While by necessity the information on NPS emergence generated by individual laboratories will be incomplete, early warning systems which combine different information sources to understand NPS market dynamics can contribute significantly to identifying newly emerging substances so that the most harmful, prevalent and persistent NPS can be prioritised and scarce resources used more efficiently.
ENDNOTES

1 For more information on regional and subregional groupings, please see pp.109-110 in UNODC, *Global Synthetic Drugs Assessment 2020* (United Nations publication, Sales No. E.20.XI.9).

2 For Africa and Oceania, not enough data was available to allow an analysis at the regional level but data from these regions was included in analysis at the global level.

3 For example, United Nations Commission on Narcotic Drugs (CND), *Promoting international cooperation in responding to the challenges posed by new psychoactive substances*, Resolution 55/1 (March 2012).

4 Following the G8 Roma-Lyon expert group in London in April 2013, the representatives of Canada, France, Germany, Italy, Japan, New Zealand, Poland, Russia, Sweden, the United Kingdom and the United States, endorsed a statement of intent on the collection and sharing of data on NPS with one another and with the UNODC Early Warning Advisory on NPS.


12 BZP, MDPV, methedrone and methylone were all placed in Schedule II of the Convention on Psychotropic Substances of 1971 in 2015.


UNODC would like to acknowledge the partners Bundeskriminalamt Austria, US DEA, European Union Early Warning System on new psychoactive substances / European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), Health Canada, INCB and WCO for their contributions to the UNODC EWA.

UNODC would like to thank the following Governments for their financial contributions to the Global SMART Programme.

**Contact details**

**Global SMART Programme**
Vienna International Centre
P.O. Box 500
A-1400, Vienna
Austria
unodc-globalsmart@un.org

www.unodc.org/nps

UNODC Publications

UNODC Early Warning Advisory on NPS

Publications and Products on Synthetic Drugs

- Global SMART Update Volume 24 (English, Spanish and Russian)
- Global SMART Update Volume 23 (English, Spanish and Russian)
- Global Synthetic Drugs Assessment 2020 (English)
- United Nations Toolkit on Synthetic Drugs (English)
- Synthetic Drugs in East and Southeast Asia: Latest Developments and Challenges 2020 (English)
- The role of drug analysis laboratories in Early Warning Systems 2020 (English and Spanish)
- Current NPS Threats Vol. III, 2020 (English)
- Global SMART Newsletter for Latin America and the Caribbean, Vol. 7, 2020 (English and Spanish)
- Global SMART Update
- Global SMART Update
- Global Synthetic Drugs Assessment
- United Nations Toolkit on Synthetic Drugs
- Synthetic Drugs in East and Southeast Asia: Latest Developments and Challenges 2020
- The role of drug analysis laboratories in Early Warning Systems 2020
- Current NPS Threats Vol. III, 2020
- Global SMART Newsletter for Latin America and the Caribbean, Vol. 7, 2020
- Global SMART Publications
- UNODC Early Warning Advisory on NPS

**Donors**
United Nations Toolkit on Synthetic Drugs

Publications and Products on Synthetic Drugs

- Global SMART Update Volume 24 (English, Spanish and Russian)
- Global SMART Update Volume 23 (English, Spanish and Russian)
- Global Synthetic Drugs Assessment 2020 (English)
- United Nations Toolkit on Synthetic Drugs (English)
- Synthetic Drugs in East and Southeast Asia: Latest Developments and Challenges 2020 (English)
- The role of drug analysis laboratories in Early Warning Systems 2020 (English and Spanish)
- Current NPS Threats Vol. III, 2020 (English)
- Global SMART Newsletter for Latin America and the Caribbean, Vol. 7, 2020 (English and Spanish)
- Global SMART Publications
- UNODC Early Warning Advisory on NPS

**Contact details**

**Global SMART Programme**
Vienna International Centre
P.O. Box 500
A-1400, Vienna
Austria
unodc-globalsmart@un.org

www.unodc.org/nps