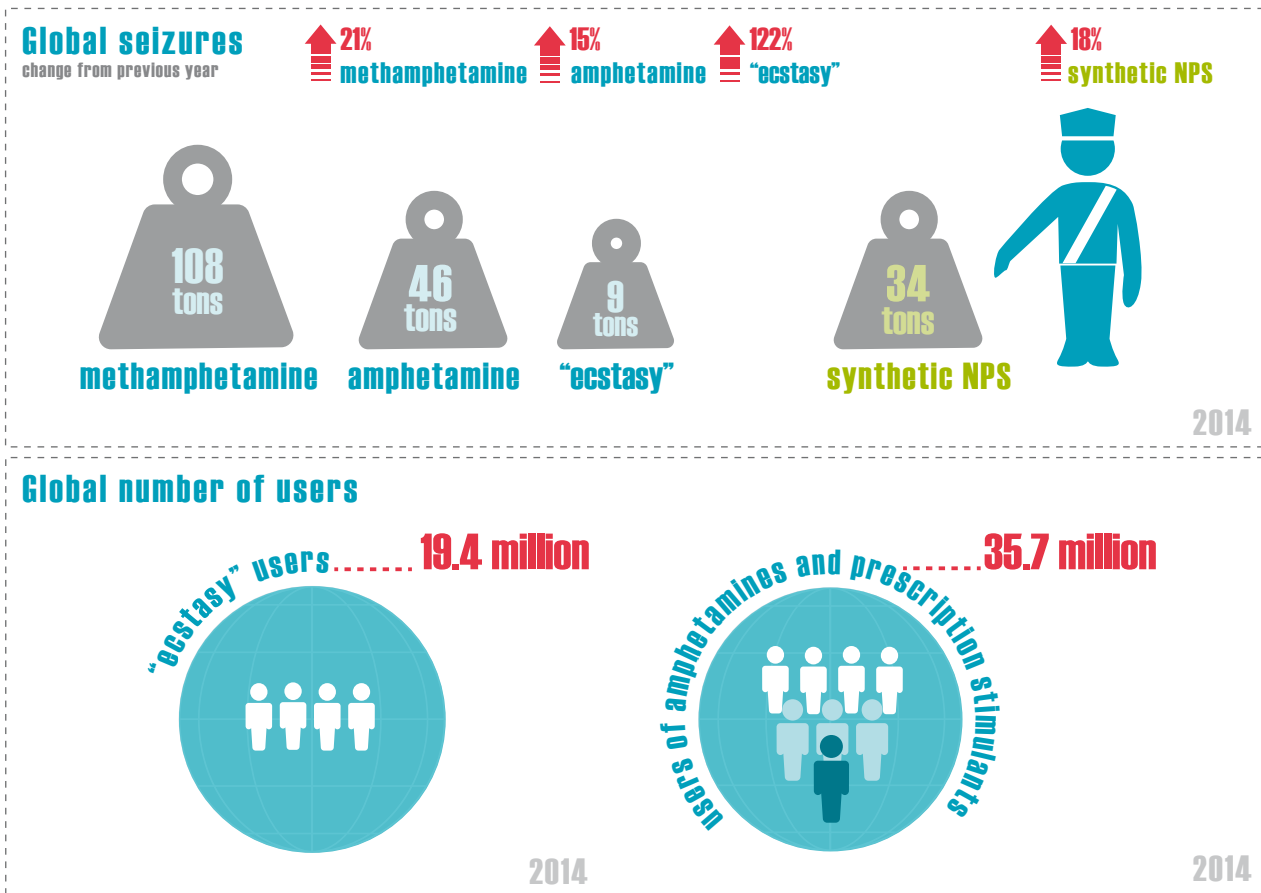


SYNTHETIC DRUGS: AMPHETAMINE-TYPE STIMULANTS AND NEW PSYCHOACTIVE SUBSTANCES

Key figures



Note: Amphetamines include both amphetamine and methamphetamine. Seizures of synthetic NPS refer to synthetic NPS only and do not include seizures of plant-based substances and ketamine.

Amphetamine-type stimulants: market developments

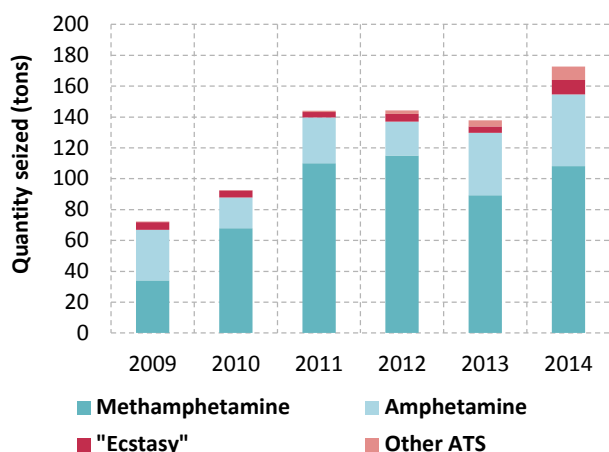
Amphetamine-type stimulants (ATS) are synthetic drugs that, in principle, can be manufactured anywhere. Unlike heroin and cocaine, they do not depend on the extraction of active constituents from plants that have to be cultivated and require certain conditions to grow. Small-scale ATS manufacture using simple “recipes” in so-called “kitchen labs”, to be sold and consumed locally, exists, but large-scale ATS manufacture in clandestine laboratories with sophisticated manufacturing equipment that makes use of a range of precursor chemicals and synthesis routes also plays an important role. Any analysis of the ATS market is complicated by the fact that information on ATS manufacture is limited and this does not allow for estimates of the volume of global ATS manufacture. Data on ATS use in some of the main markets, such as East and South-East Asia, are also very limited, and the situation is further complicated by the appearance of NPS, which are sometimes sold under the names of traditional ATS.

Global seizures of amphetamine-type stimulants reach a new peak

Global ATS seizures almost doubled from 72 tons in 2009 to 144 tons in 2011. After three years of relative stability, ATS seizures reached a new peak of 173 tons in 2014. For the past few years, methamphetamine seizures have accounted for the largest share of global ATS seizures. Since 2009, global amphetamine seizures have fluctuated annually between about 20 and 46 tons. “Ecstasy” seizures more than doubled in 2014, reaching 9 tons, compared with 4-5 tons per year in the period 2009-2013.

Methamphetamine continues to dominate the markets for amphetamine-type stimulants in North America, East and South-East Asia and Oceania

Although methamphetamine is a feature of ATS markets worldwide, methamphetamine is particularly dominant in East and South-East Asia and North America. Since 2009, North America and East and South-East Asia together have accounted for most of the methamphetamine seized worldwide. North America has consistently

FIG. 65 Quantities of amphetamine-type stimulants seized worldwide, 2009-2014

Source: Responses to the annual report questionnaire.

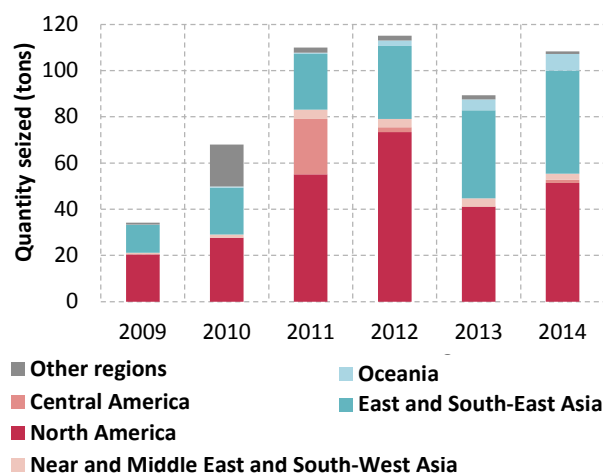
Note: The data presented in the figure do not include seizures of prescription stimulants and substances placed under international control after 2014.

reported the largest amount of methamphetamine seized each year. Between 2009 and 2014, quantities of methamphetamine seized in East and South-East Asia almost quadrupled.

In ATS markets in East and South-East Asia, methamphetamine is available in the form of both crystalline methamphetamine and methamphetamine tablets. Methamphetamine tablets, commonly known in the subregion as “yaba”, are small tablets, typically of low purity and available in various shapes and colours. Methamphetamine tablets are mainly manufactured in the Mekong area in East and South-East Asia, and seizure reports indicate that such tablets are mostly intended for markets in that subregion. Crystalline methamphetamine continues to be manufactured on a large scale in East and South-East Asia and is also trafficked from other subregions.²¹⁵

In East and South-East Asia, there is a large and growing market for both methamphetamine tablets and crystalline methamphetamine. In 2014, crystalline methamphetamine was the primary drug of concern in Brunei Darussalam, Cambodia, Indonesia, Japan, the Philippines and the Republic of Korea, while methamphetamine tablets were the main drug of concern in the Lao People’s Democratic Republic and Thailand. Moreover, in that same year, experts perceived an increase in the use of crystalline methamphetamine in Cambodia, China, Japan, Malaysia, the Philippines and Viet Nam and increased use of methamphetamine tablets in Cambodia, China, Malaysia, Myanmar and Viet Nam. Data on treatment for drug use in East and South-East Asia show that methamphetamine use has become a growing concern. In 2014, people receiving treatment for methamphetamine use accounted for

215 UNODC, *The Challenge of Synthetic Drugs in East and South-East Asia: Trends and Patterns of Amphetamine-type Stimulants and New Psychoactive Substances* (Vienna, 2015).

FIG. 66 Quantities of methamphetamine seized worldwide, 2009-2014

Source: Responses to the annual report questionnaire.

the largest share of people treated for drug use in Brunei Darussalam, Cambodia, the Lao People’s Democratic Republic, the Philippines, Singapore and Thailand.²¹⁶ Although these data indicate the importance of both forms of methamphetamine, treatment data are not representative of the overall prevalence of methamphetamine use and demand for treatment for methamphetamine use in East and South-East Asia.

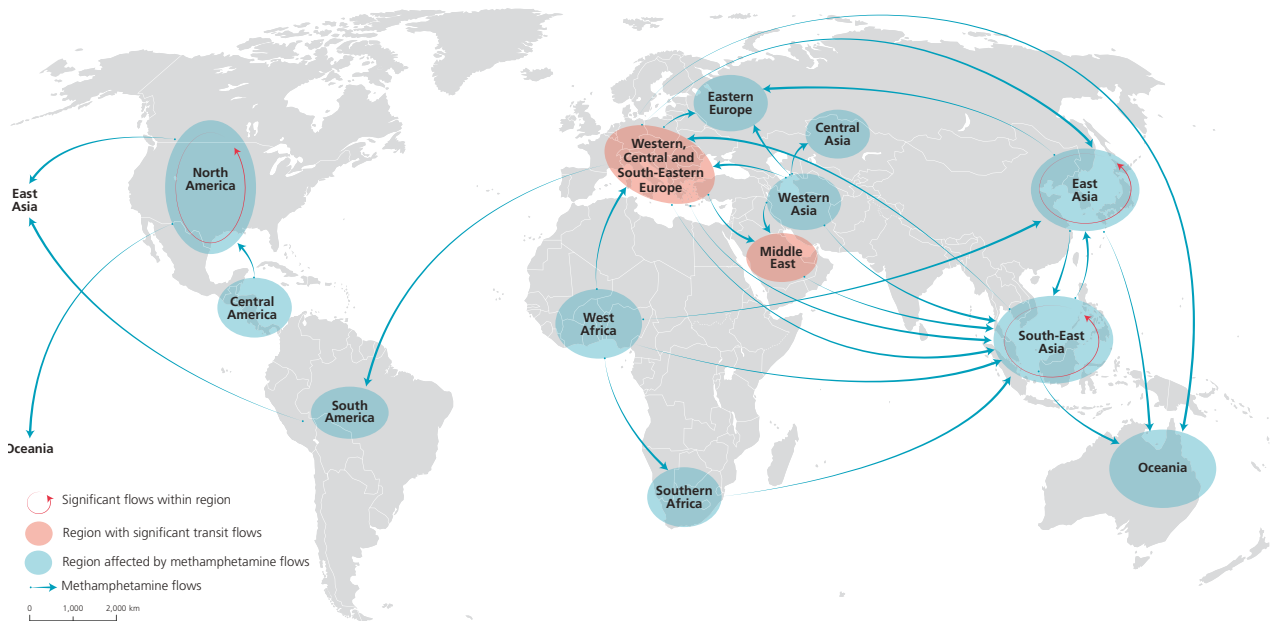
In Oceania, both Australia and New Zealand have recorded sharp increases in methamphetamine seizures since 2012. In Australia, methamphetamine is illicitly manufactured. In addition, Australia saw the arrival of large-scale shipments of crystalline methamphetamine in sea cargo. A government report has highlighted the growing number of methamphetamine users in Australia, increased frequency of use of the drug among certain user groups, an increase in methamphetamine purity and a decline in purity-adjusted prices, all of which could aggravate the negative impact of methamphetamine use on the health of individuals and on society.²¹⁷

While demand for ATS has for many years been mostly met by manufacture in the same subregion, there have been recent reports of new trafficking flows connecting previously independent subregions, particularly with regard to methamphetamine.²¹⁸ Between 2011 and 2014, methamphetamine was mostly reported to have been smuggled from West Africa, North America, West Asia and East and South-East Asia. Whereas South-East Asia and Oceania are predominantly recipients of the meth-

216 According to responses to the annual report questionnaire sent by the Philippines for 2014 and expert perceptions of the use of main drugs of concern reflected in the Drug Abuse Information Network for Asia and the Pacific.

217 Australia, Department of the Prime Minister and Cabinet, *Final Report of the National Ice Taskforce 2015* (Canberra, 2015).

218 UNODC, *Global SMART Update 2014*, vol. 12 (September 2014).

MAP 2 | Interregional trafficking flows of methamphetamine, 2011-2014

Source: UNODC elaboration based on responses to annual report questionnaire, 2011-2013.

Note: The arrows do not imply the involvement of any specific country in the regions mentioned nor do they represent the level of importance of any methamphetamine trafficking flow. The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined.

amphetamine trafficked worldwide, the Middle East and large parts of Europe primarily function as transit areas for methamphetamine trafficking. All regions with illicit methamphetamine markets also have illicit methamphetamine manufacture.

Amphetamine: an intraregional mechanism of supply

Seizure reports worldwide indicate that amphetamine, unlike methamphetamine, is largely trafficked and supplied on an intraregional basis and that there are only rare linkages between regional amphetamine markets. This is especially evidenced in Europe and the Middle East, where countries continue to report large amounts of seized amphetamine.

Amphetamine seizures reported in the Middle East in recent years point to trafficking dynamics that are mainly contained within the region. In 2013 and 2014, most of the amphetamine seized in the Middle East was considered to have originated in Lebanon and the Syrian Arab Republic. Over the same period, authorities of some countries in the Middle East reporting the seizure of amphetamine consignments found that the consignments had been destined for other countries within the region, such as Jordan and Saudi Arabia. Moreover, Israel, Jordan, Lebanon and the Syrian Arab Republic were perceived to be the main transit countries for amphetamine consignments seized in the Middle East in 2013 and 2014.

In particular, large amounts of amphetamine tablets labelled with the brand name “Captagon”²¹⁹ were reported to have been seized in the Middle East between March 2014 and November 2015. While mostly intraregional trafficking in “Captagon” tablets has been reported in the Middle East, large amounts have also been reportedly trafficked from Lebanon and the Syrian Arab Republic to countries outside the region, such as the Sudan and Turkey.

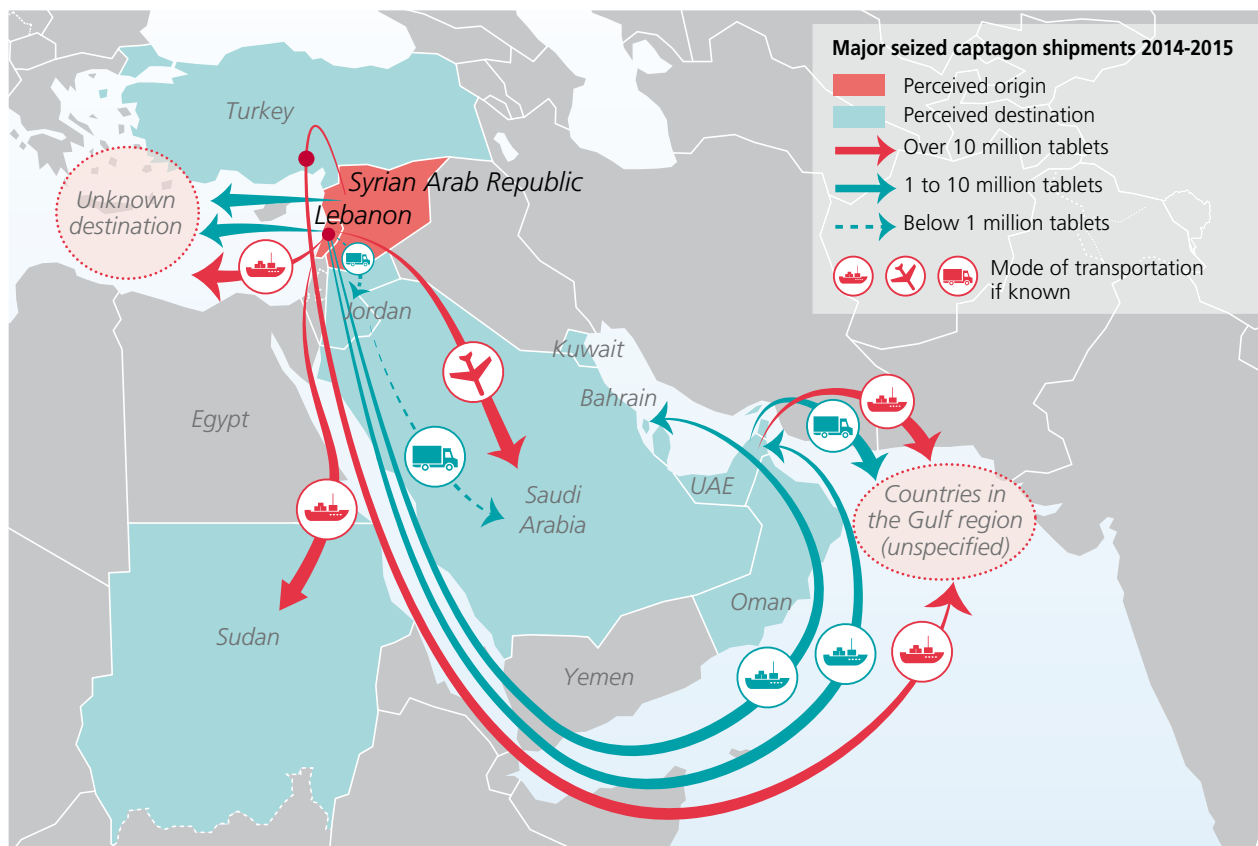
Although Lebanon was the only country in the Middle East that reported the discovery of clandestine amphetamine laboratories between 2009 and 2014, the availability of precursor chemicals and the existence of certain areas of limited government control in some countries in the subregion are risk factors for potential amphetamine manufacture.

Variations in “ecstasy” purity and composition

In recent years, there have been indications of an increasingly diversified “ecstasy” market featuring three different product types: “ecstasy” tablets containing little or no 3,4-methylenedioxymethamphetamine (MDMA); “ecstasy” tablets with an unusually high dose of MDMA; and “ecstasy” sold in powder form containing MDMA of high purity. These compositions of “ecstasy” tablets have

²¹⁹ Captagon was originally the trade name for a pharmaceutical preparation containing fenetylline, a synthetic stimulant. In the past few years, most tablets seized as “Captagon” essentially contained amphetamine, typically in combination with caffeine and sometimes with other adulterants (*World Drug Report 2010*, p. 114).

MAP 3 Major Captagon seizure cases in the Middle East reported in the media, March 2014–November 2015



Source: Based on seizures reported in media reports available in December 2015.

Note: Arrows may not represent actual routes. Destination countries reported may not be the intended final destination of the shipment. The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. Destination country may not be final destination of seized shipment. Arrows represent individual case, not routes or flows.

been observed in the illicit markets for synthetic drugs in Europe, in particular, and in East and South-East Asia and Oceania, where there is generally a large presence of “ecstasy”.

The presence of different “ecstasy” products in the market is the result of different circumstances. When controls over the main precursor chemical used in the manufacture of MDMA were heightened, other substances were often used as substitutes for MDMA. In 2013, seizures of “ecstasy” tablets containing little or no MDMA and consisting mainly of a blend of non-controlled substances that, in some cases, included NPS were reported in East and South-East Asia (in Brunei Darussalam; Hong Kong, China (including NPS); Indonesia (including NPS); Macao, China; Malaysia; Republic of Korea; Singapore (including NPS); and Thailand) and in Oceania (in New Zealand (including NPS)). In Europe, several countries issued health risk alert warnings in 2014 when reports of fatalities were linked to the use of tablets sold as “ecstasy” that contained *para*-methoxymethamphetamine (PMMA), sometimes in combination with MDMA.²²⁰

220 UNODC early warning advisory on new psychoactive substances.

In recent years, the availability of “ecstasy” tablets containing a high dose of MDMA appears to have increased, particularly in Europe. While fatalities caused by “ecstasy” are generally low, consumption of high doses can lead to death as a result of direct toxicity or following hyperthermia and dehydration.²²¹ According to EMCDDA, there are indications that illicit MDMA manufacture is concentrated in Belgium and the Netherlands, where clandestine laboratories used for the large-scale manufacture of MDMA have been dismantled.²²² “Ecstasy” tablets with a high MDMA content are being sold across Europe; they have distinctive shapes and logos to differentiate them from other “ecstasy” tablets.²²³

In addition to the growing availability of “ecstasy” tablets with a high MDMA content, a market niche appears to have emerged for powder or crystalline MDMA. In Aus-

“February 2015 – United Kingdom: high dose PMMA sold as “ecstasy” possibly still available” Available at www.unodc.org/.

221 *Terminology and Information on Drugs* (United Nations publication, Sales No. E.16.XI.8).

222 EMCDDA, *European Drug Report: Trends and Developments 2015* (Luxembourg, Publications Office of the European Union, 2015).

223 *Ibid.*

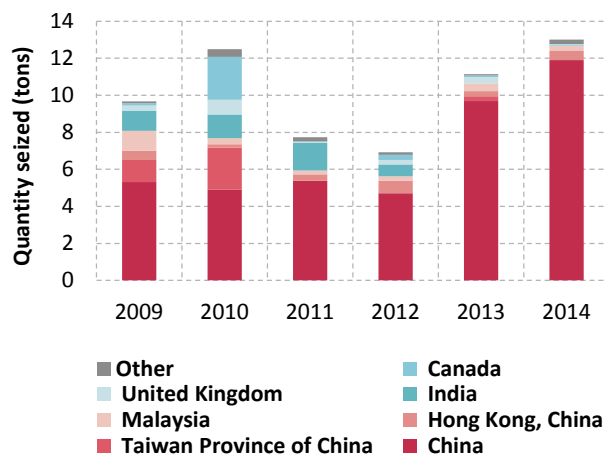
ustralia, the Ecstasy and Related Drugs Reporting System²²⁴ found that in 2014 around half of the “ecstasy” users in the country had used “ecstasy” in the form of capsules containing powder or crystalline MDMA (53 per cent of users) or in the form of MDMA “crystal/rock” (49 per cent, an increase of 10 per cent over the 2013 level), while tablets remained the form used by the vast majority of “ecstasy” users (92 per cent). It was found that among “ecstasy” users in Australia the main route used for administering MDMA “crystal/rock” was swallowing (87 per cent), followed by snorting (13 per cent). Overall “ecstasy” use in Australia decreased from 3 per cent (annual prevalence) in 2013 to 2.5 per cent in 2014.

East and South-East Asia driving the increase in global ketamine seizures

Over the years, global ketamine seizures have fluctuated greatly. The significant increase in global ketamine seizures reported since 2012 is largely attributable to East and South-East Asia, where ketamine seizures more than doubled, from 6 tons to more than 12 tons, in 2014. According to expert perceptions, there are also indications of increasing non-medical use of ketamine in East and South-East Asia. In recent years, dismantled ketamine laboratories have been reported in East and South-East Asia. In China, for example, the number of dismantled ketamine laboratories increased from 81 in 2012 to 122 in 2013; and in Hong Kong, China, a dismantled ketamine laboratory was reported in 2012.

According to WHO, among recreational users of ketamine, there is growing evidence of symptoms of ketamine dependence, as well as adverse physical effects, particularly urinary and biliary tract problems, after prolonged use or

FIG. 67 Quantities of ketamine seized worldwide, 2009–2014



Source: Responses to the annual report questionnaire.

²²⁴ Multiple responses were possible (Natasha Sindich and Lucy Burns, *An Overview of the 2014 Ecstasy and Related Drugs Reporting System* (Sydney, University of New South Wales, National Drug and Alcohol Research Centre, October 2015)).

high doses of ketamine.²²⁵ Increased rates of high-risk injecting behaviour in association with ketamine use have been reported by specific user groups.²²⁶

New psychoactive substances: market developments

The global market for new psychoactive substances (NPS) continues to expand. The emergence and persistence patterns of these substances show significant differences between countries and regions. Marketed in many different ways and forms, NPS can be observed among many different user groups. The effects of NPS use on the human body are not yet fully understood — safety data regarding toxicity are often not available and long-term side effects are not known. The range of drugs available on the market has probably never been wider. This situation poses additional challenges to prevention, treatment, control and identification efforts.

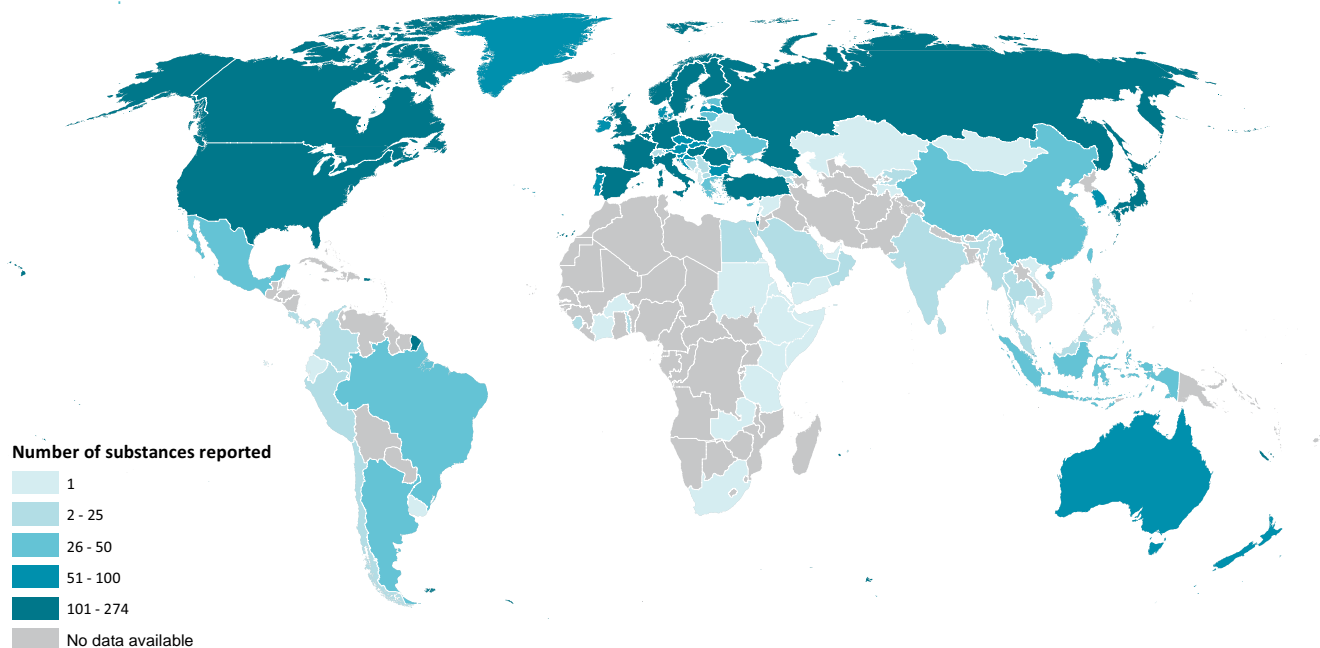
Wider range of new psychoactive substances reported

Between 2008 and 2015, a total of 644 NPS had been reported by 102 countries and territories to the UNODC early warning advisory on NPS. The emergence of NPS was reported for the first time in 2015 in Kyrgyzstan and Mauritius. In 2015, the early warning advisory also registered the emergence of NPS in previous years in Belarus, Serbia, South Africa and Tajikistan. The majority of countries and territories that reported the emergence of NPS up to December 2015 were from Europe (41), followed by Asia (30), Africa (16), the Americas (13) and Oceania (2).

The NPS market continues to be characterized by a large number of new substances being reported. Although data collection for 2015 is still in progress, 75 new substances have been reported to UNODC for the first time, compared with a total of only 66 in 2014. Between 2012 and 2014, most substances reported for the first time belonged to the group of synthetic cannabinoids. The data reported for 2015 so far show a different pattern: first, 20 synthetic cathinones (a group of substances with stimulant effects similar to cocaine or methamphetamine) were reported for the first time — almost as many as synthetic cannabinoids (21); and second, 21 “other substances” (substances not belonging to any of the major groups identified in previous years) were reported for the first time, including synthetic opioids (e.g. fentanyl derivatives) and sedatives (e.g. benzodiazepines).

²²⁵ “Ketamine (INN): update review report”, presented to the WHO Expert Committee on Drug Dependence at its thirty-seventh meeting, Geneva, 16–20 November 2015.

²²⁶ Stephen E. Lankenau and Michael C. Clatts, “Ketamine injection among high risk youth: preliminary findings from New York”, *Journal of Drug Issues*, vol. 32, No. 3 (2000), pp. 893–905; and Stephen E. Lankenau and others, “The first injection event: differences among heroin, methamphetamine, cocaine, and ketamine initiates”, *Journal of Drug Issues*, vol. 40, No. 2 (2010), pp. 241–261.

MAP 4 | Number of new psychoactive substances reported by country, 2008-2015

Source: UNODC early warning advisory on new psychoactive substances, 2008-2015.

Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

New psychoactive substances: stability and change

A growing number of NPS are reported every year by a large number of countries and territories throughout the world. NPS that have an established presence in the market include ketamine (reported by 62 countries and territories), khat (reported by 56), JWH-018 (reported by 50), mephedrone (reported by 49) and methylone (reported by 47).²²⁷ Other NPS are transient in nature and are only reported by a small number of countries and territories for a couple of years.

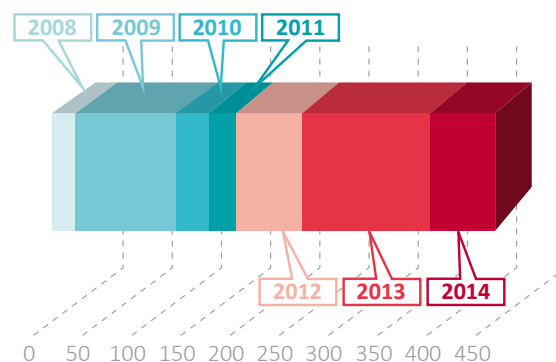
Approximately 19 per cent of the countries and territories reporting NPS have identified more than 100 different substances since 2008. At the same time, more than a quarter of all countries and territories reporting the emergence of NPS have reported only one substance, which may be attributable to limited technical capacity for identifying NPS.

Some NPS seem to have a stable presence in the drug market. A large proportion of the 451 substances registered in the UNODC early warning advisory on NPS in 2014 had already been reported in previous years. Twenty-three of those substances reported in 2014 had been reported for the first time in 2008 and had been reported every year since then; those substances include the phenethylamine

4-fluoroamphetamine, the synthetic cannabinoid JWH-018 and the synthetic cathinone mephedrone. Many other NPS that appeared in subsequent years were also reported each year until 2014. Thus, there is an element of stability in the NPS market. Nevertheless, 66 new substances were reported to the UNODC early warning advisory for the first time in 2014.

Several other NPS have been reported by a small number of countries for a period of just one or two years. Between 2008 and 2014, a total of 569 NPS were reported to be

FIG. 68 | Number of new psychoactive substances reported in 2014 and the year in which those substances were first reported to UNODC



Source: UNODC early warning advisory on new psychoactive substances.

²²⁷ JWH-018, mephedrone and methylone have been under international control since 2015.

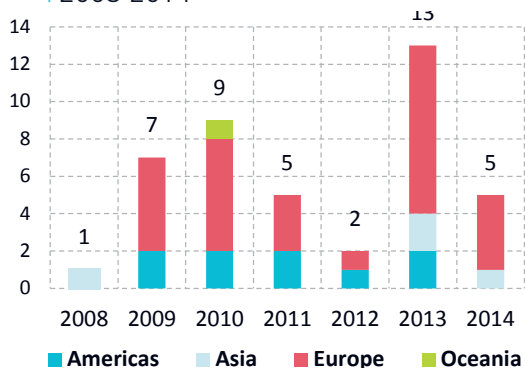
on the market; however, by 2012, 26 of those substances were no longer reported to be available on the market and by 2013, 69 substances were no longer reported to be available. For instance, *N*-benzyl-1-phenylethylamine was reported by six countries in Europe and Oceania between 2009 and 2012, but since then no further reports on that substance have been submitted to UNODC, suggesting that the substance is no longer available.

Many newly reported NPS are actually derivatives of previously reported substances whose molecular structure has been slightly modified. One such example is the series of 2,5-dimethoxy ring-substituted phenethylamines (2C series). Modelled on 4-bromo-2,5-dimethoxyphenethylamine (2C-B), a substance controlled under the Convention on Psychotropic Substances of 1971, 20 NPS belonging to the 2C series were reported worldwide until 2014. However, about half of them did not remain on the market and were only reported for a small number of years. These included 2C-T, which was reported only in 2011 by Canada, and 2C-G and 2C-N, which were reported in 2011 and 2012 by Canada and Poland. Other substances belonging to the 2C series seem to be more persistent, such as 2C-T-2 and 2C-T-7, which were reported from 2009 to 2014 by 14 countries in the Americas, Europe and Oceania.

Other substances, such as those belonging to the synthetic cannabinoid CP series, have shown large variations in market availability since 2008. For example, the CP-47,497-C8 homologue was first reported by one country in Asia (Japan) in 2008; after several fluctuations, the reporting of that synthetic cannabinoid reached its peak in 2013, with 13 countries in the Americas, Asia and Europe having reported its presence.

There are elements that influence the NPS market, such as user preference, legal responses and law enforcement efforts to seize substances before a significant user base becomes established. UNODC monitoring of NPS since

FIG. 69 Number of countries reporting the CP-47,497-C8 homologue, a synthetic cannabinoid, by year and region, 2008-2014



Source: UNODC early warning advisory on new psychoactive substances.

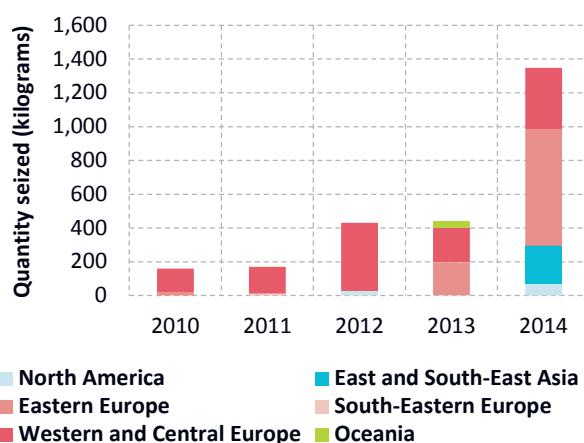
2008 has shown a rather dynamic supply situation, characterized by persistence (substances that emerge, spread and stay for several years) and change (substances that appear for a short time or only locally).

Significant seizures of new psychoactive substances

Significant quantities of synthetic NPS²²⁸ have been seized over the past few years, reaching 34 tons in 2014. The global market for NPS continues to be dominated by synthetic cannabinoids, with North America, in particular the United States, accounting for the largest quantities seized worldwide. Of the 32 tons of synthetic cannabinoids seized worldwide in 2014,²²⁹ 26.5 tons were seized in the United States alone. Europe also recorded significant seizures of synthetic cannabinoids: 5.4 tons of synthetic cannabinoids were seized in 2014 (mainly in Cyprus and Turkey), compared with 1.2 tons in 2013. Of all the drug groups, synthetic cannabinoids accounted for the largest seizures in Cyprus in 2012 (8.3 tons) and 2014 (4.4 tons); in most cases, the seized synthetic cannabinoid was AM-2201.²³⁰

Global seizures of synthetic cathinones have been steadily increasing since they were first reported in 2010. Those seizures tripled between 2013 and 2014, reaching 1.3 tons. Most synthetic cathinones were seized in Eastern Europe (692 kg were seized in the Russian Federation), in Western and Central Europe (312 kg were seized in England and Wales) and in East and South-East Asia (226 kg were seized in Hong Kong, China). In 2014, the Russian Federation also reported significant seizures of aminoindanes (438 kg).

FIG. 70 Quantities of synthetic cathinones seized, by region, 2010-2014



Source: Responses to the annual report questionnaire.

228 Seizures of synthetic NPS refer to synthetic NPS and do not include seizures of plant-based substances and ketamine.

229 Seizures are usually associated with control measures; therefore, an increase in seizures of NPS may reflect the fact that a larger number of substances were placed under national control.

230 AM-2201 has been placed under international control since 2015.

The risk of mixtures of new psychoactive substances sold in various compositions

Seizure reports indicate that NPS are frequently sold in various compositions in a combination of different compounds, including internationally controlled drugs, pharmaceutical products and adulterants. Over the past few years, various countries in Europe and South-East Asia have reported seizures of “ecstasy” tablets containing mainly a blend of non-controlled substances, including NPS, and little or no MDMA. However, recent seizure reports show that packaged NPS products contained mixtures of a variety of NPS compounds. Mixtures can arise intentionally (for example, if the producer believes that some blends will have greater effects for the user than any of the substances in isolation) or unintentionally (for example, if the producer lacks the skill or the facilities to produce a consistently pure product).

In 2013, European countries reported more than 110 NPS products containing a combination of up to seven different NPS compounds sold as one product. Synthetic cannabinoids were found to be present in more than 55 per cent of those NPS products, and synthetic cathinones were present in more than 25 per cent.²³¹

In addition to NPS mixtures containing substances belonging to the same NPS group, in 2013, four European countries reported 10 different NPS products that included

combinations of substances from different chemical NPS groups. The most frequently identified combination of NPS groups found in such products included phenethylamines combined with synthetic cathinones. Generally, synthetic cathinones were most frequently identified in NPS products combining different NPS groups and were usually observed in combination with ketamine and other phencyclidine-type substances, phenethylamines and tryptamines.²³²

It should be noted that polydrug use is not limited to NPS use. People who use drugs often choose to take multiple substances concurrently, including mixing street drugs with alcohol and/or prescription drugs. But the sheer number of potential combinations of NPS and, most importantly, the fact that NPS users are often unaware of what they are actually consuming can complicate the situation with NPS. The use of NPS products containing a variety of psychoactive substances that may or may not be known to the user potentially exposes the user to additional serious health risks, as little or no scientific information is available to determine the psychoactive effects that these combinations may have.

Understanding the use of new psychoactive substances

In the past few years, a growing number of NPS have been sold on illicit drug markets. Available NPS may or may

FIG. 71 Examples of seized products of new psychoactive substances containing combinations of substances

PRODUCT 1	PRODUCT 2	PRODUCT 3	PRODUCT 4
<p>NPS group of the main substance: Synthetic cannabinoids</p> <p>AM-2201 XLR-11 Cannabis^a</p>	<p>NPS group of the main substance: Phenethylamines</p> <p>25B-NBoMe 25C-NBoMe 2C-C 2C-B^a</p>	<p>NPS group of the main substance: Phenethylamines</p> <p>4-MA Amphetamine^a</p>	<p>NPS group of the main substance: Synthetic cathinones</p> <p>Pentdrone Cocaine^a</p>
PRODUCT 5	PRODUCT 6	PRODUCT 7	PRODUCT 8
<p>NPS group of the main substance: Synthetic cannabinoids</p> <p>AKB48 JWH-122 JWH-210 JWH-250 MDPV^b</p>	<p>NPS group of the main substance: Synthetic cannabinoids</p> <p>AM-2201 5-MeO-DALT^b</p>	<p>NPS group of the main substance: Piperazines</p> <p>TFMPP pFPP Lidocaine^c</p>	<p>NPS group of the main substance: Synthetic cathinones</p> <p>3-MMC 3,4-DMMC alpha-PVP AMT^b MPA^b Caffeine^d</p>

Source: UNODC survey on new psychoactive substances, 2014.

Note: The main substance found in each product is listed first.

^a Substance under international control at the time the product was seized.

^b Different chemical NPS group.

^c Pharmaceutical product.

^d Adulterant.

231 UNODC survey on new psychoactive substances, 2014.

232 Ibid.

not have effects and profiles similar to those of the substances under international control that they are designed to mimic.²³³ A large number of NPS are designed to mimic the effects of controlled drugs such as cannabis, cocaine, heroin, LSD, MDMA (“ecstasy”) or methamphetamine. Analysis of the pharmacological effects of NPS reported up to December 2015²³⁴ revealed that the majority of those substances were synthetic cannabinoid receptor agonists, stimulants and classic hallucinogens.

Data on the prevalence of NPS use indicate diverse trends. Among the reasons for this are the limited data available for comparing the prevalence of NPS use over time, limited survey tools for capturing NPS use and limited knowledge of NPS users about the substances they use. In the United States, there are indications of an increase in NPS use among certain user groups between 2009 and 2013; the prevalence of lifetime use of a “novel psychoactive substance” among the population aged 12-34 was 1.2 per cent in 2013.²³⁵ There are signs of declining use of synthetic cannabinoids among secondary school students in the United States. The prevalence of past-year use of synthetic cannabinoids among twelfth-grade students decreased from 11.4 per cent in 2011 to 5.2 per cent in 2015.²³⁶ This is associated with an increase, over the same period, in the perceived risk of taking synthetic cannabinoids among the same group. The use of NPS with stimulant effects (reported as “bath salts”) among twelfth graders remained stable at 1 per cent in 2015. The prevalence of the use of synthetic cannabinoids among eighth, tenth and twelfth graders has declined to the lowest levels since the collection of such data began. However, the large amount of synthetic cannabinoids seized between 2012 and 2014 (more than 93 tons) and the large number of calls to poison centres for problems related to the use of synthetic cannabinoids (3,682 in 2014 and 7,779 in 2015)²³⁷ indicate the continued presence and use of this NPS group in the United States.

233 For more information, see UNODC, *The Challenge of New Psychoactive Substances* (Vienna, March 2013).

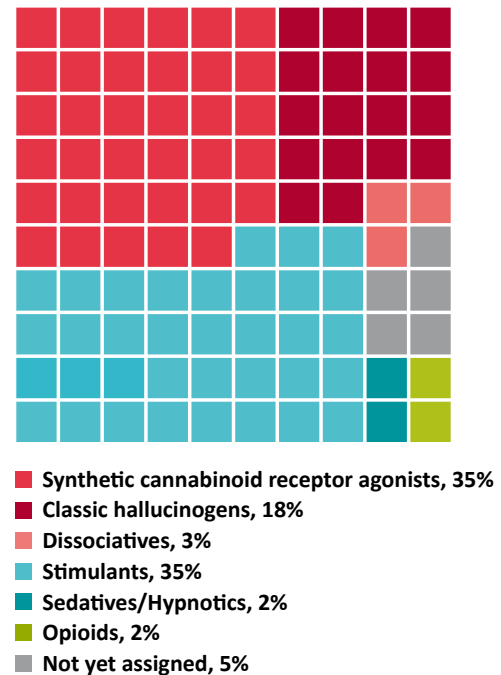
234 The analysis covered the pharmacological effects of 621 synthetic NPS registered in the early warning advisory up to December 2015. Plant-based substances were excluded from the analysis, as they usually contain a large number of different substances, some of which may not even be known or may have effects and interactions that are not fully understood. The pharmacological effects of the remaining substances could not be determined with certainty on the basis of the available scientific data.

235 Some authors have reported an increase in NPS use among persons aged 12-34 years in the United States between 2009 and 2013 but also highlighted the risk of underreporting NPS use (see, for example, Joseph J. Palamar and others, “Self-reported use of novel psychoactive substances in a US nationally representative survey: prevalence, correlates, and a call for new survey methods to prevent underreporting”, *Drug and Alcohol Dependence*, vol. 156, pp. 112-119).

236 Lloyd D. Johnston, and others, *Monitoring the Future National Survey Results on Drug Use: 1975-2015 – Overview, Key Findings on Adolescent Drug Use* (Ann Arbor, Institute for Social Research, University of Michigan, 2016).

237 American Association of Poison Control Centers, “Synthetic cannabinoid data”, updated 31 March 2016.

FIG. 72 Proportion of new psychoactive substances by pharmacological effect, December 2015



Source: UNODC early warning advisory on new psychoactive substances, 2008-2015.

According to the Crime Survey for England and Wales,²³⁸ over the period 2014-2015, 279,000 adults (0.9 per cent of the population aged 16-59) reported the use of NPS. Among young adults (ages 16-24), the prevalence of NPS use was much higher (2.8 per cent), the majority of the users being young men. Herbal smoking mixtures were the most commonly used form of NPS, with 61 per cent of the population aged 16-59 reporting their use. According to Public Health England,²³⁹ the number of individuals “presenting to treatment” for a “club drug” or NPS more than doubled, from 2,727 to 5,532, between the financial years 2009-2010 and 2014-2015. The largest increase was recorded for mephedrone — from 953 in the period 2010-2011 to 2,024 in the period 2014-2015. Compared with the previous period, the prevalence of past-year use of mephedrone in England and Wales in the financial years 2014-2015 remained stable at 1.9 per cent for young adults and 0.5 per cent for adults, which is similar to the prevalence of past-year use of amphetamines (0.6 per cent) and higher than that of LSD (0.4 per cent) or heroin (0.1 per cent).²⁴⁰

238 Deborah Lader, ed., *Drug Misuse: Findings from the 2014/15 Crime Survey for England and Wales*, 2nd ed., (London, Home Office, July 2015).

239 Public Health England, *Adult Substance Misuse Statistics from the National Drug Treatment Monitoring System (NDTMS): 1 April 2014 to 31 March 2015* (London, 2015).

240 Deborah Lader, ed., *Drug Misuse: Findings from the 2014/15 Crime Survey for England and Wales*, 2nd ed., (London, Home Office, July 2015).

In 2014, Chile reported for the first time data on the prevalence of past-year use of synthetic cannabinoids: 0.56 per cent²⁴¹ among adults (ages 15-64), which is similar to the prevalence of the use of hallucinogens (0.55 per cent) and opioids (0.58 per cent).

In several countries, the surge in NPS use in prisons has been reported with a corresponding rise in violence and hospital admissions. There are indications that synthetic cannabinoids, in particular, have emerged as a major problem. The substances abused by prisoners in England and Wales²⁴² were reported to be primarily cannabis (13 per cent), synthetic cannabinoids (10 per cent), heroin (7 per cent) and other NPS (5 per cent). Although synthetic cannabinoids were identified as a concern in 37 per cent of the male prisons inspected in the financial year 2013-2014,²⁴³ this proportion increased to 64 per cent in the financial year 2014-2015.²⁴⁴ According to reports, many prison staff and prisoners reported high levels of synthetic cannabinoid use, which was associated with mental and physical health problems, as well as altered behaviour of prisoners.²⁴⁵ In New Zealand, about 47 per cent of detainees used synthetic cannabinoids in 2014.²⁴⁶ While the past-year prevalence of the use of synthetic cannabinoids in 2014 remained unchanged compared with 2013, the past-year frequency of the use of synthetic cannabinoids increased, from 67 days in 2013 to 110 days in 2014. Almost a third (30 per cent) of the detainees who had used synthetic cannabinoids in the past twelve months reported perceived dependence in 2014, up from 17 per cent in 2013. Other NPS reported by detainees to be used included MDPV²⁴⁷ and ketamine.

The injecting use of NPS, particularly synthetic cathinones, continues to be reported among specific high-risk user groups and was associated with an elevated or even increasing rate of HIV infection. These include young people, subgroups of MSM, people who have previously injected other drugs and people who have switched from

snorting to injecting. In a study conducted in Hungary,²⁴⁸ 92 of 167 PWID tested HIV-positive, the most common drug injected being pentadone (48 per cent). In Ireland, an unexpected increase in cases of acute HIV infection among PWID in 2015 was associated with the injecting use of the synthetic cathinone *alpha*-pyrrolidinopentiophenone (*alpha*-PVP) among so-called “chaotic” PWID.²⁴⁹ Injecting was reported to occur multiple times a day, with users often reusing syringes and sharing filters. According to Public Health England, within five years of the first appearance of mephedrone²⁵⁰ around 1 in 10 PWID reported the injection of mephedrone. Increased mephedrone use was also reported by subgroups of MSM who injected the substance for use in a sexual context (“chemsex”), often sharing injecting equipment and engaging in unprotected sex.²⁵¹ These findings indicate an increase in the number of people who inject synthetic cathinones in Europe, an increase in high-risk behaviour and a higher risk of acquiring blood-borne viruses such as HIV and hepatitis C.

241 Chile, Ministerio del Interior y Seguridad Pública, “Décimo Primer Estudio Nacional de Drogas en Población General: Resultados Principales” (Santiago de Chile, Observatorio Chileno de Drogas, July 2014).

242 United Kingdom, Her Majesty’s Inspectorate of Prisons, *Changing Patterns of Substance Misuse in Adult Prisons and Service Responses* (London, 2015).

243 United Kingdom, Her Majesty’s Chief Inspector of Prisons for England and Wales: *Annual Report 2013-14* (London, The Stationery Office, 2014).

244 United Kingdom, Her Majesty’s Chief Inspector of Prisons for England and Wales: *Annual Report 2014-15* (London, The Stationery Office, 2015).

245 United Kingdom, Prisons and Probation Ombudsman for England and Wales, “Learning lessons bulletin: fatal incidents investigations issue No. 9 – new psychoactive substances” (London, July 2015).

246 Chris Wilkins and others, *New Zealand Arrestee Drug Use Monitoring 2010-2014* (Auckland, SHORE and Whariki Research Centre, Massey University, 2015).

247 MDPV has been under international control since 2015.

248 József Rácz, V. Anna Gyarmathy and Róbert Csák, “New cases of HIV among people who injects drugs in Hungary: false alarm or early warning?”, *International Journal of Drug Policy*, vol. 27, pp. 13-16.

249 Coralie Giese and others, “Injection of new psychoactive substance snow blow associated with recently acquired HIV infections among homeless people who inject drugs in Dublin, Ireland, 2015”, *Euro Surveillance*, vol. 20, No. 40 (2015).

250 United Kingdom, Public Health England, *Shooting Up Infections among People who Inject Drugs in the UK*, 2014 (London, 2015).

251 Adam Bourne and others, *The Chemsex Study: Drug Use in Sexual Settings Among Gay and Bisexual Men in Lambeth, Southwark and Lewisham* (London, Sigma Research, London School of Hygiene and Tropical Medicine, 2014); Victoria L. Gilbert and others, “High-risk drug practices in men who have sex with men”, *The Lancet*, vol. 381, No. 9875 (2013), pp. 1358-1359; and David Stuart, “Sexualised drug use by MSM: background, current status and response”, *HIV Nursing*, vol. 13, No. 1 (2013), pp. 6-10.