the state of California on Mexican drug trafficking organizations, researchers concluded that legal changes in one state (in this case, California) would not be enough to greatly diminish the market for Mexican cannabis, but if prices dropped significantly nationwide as a result of the spillover to other states, cartel revenue could be affected substantially in the long term. The authors could not unequivocally predict a decline in drug-related violence in Mexico as a result of cannabis legalization, as there was no basis for comparison. <sup>195</sup>

#### Economic costs and benefits

Tax revenues from retail cannabis sales may provide significant revenue, although there is uncertainty concerning how much can be raised. In the ballot initiative of Colorado, it was stipulated that tax revenues from the sale of cannabis were to be used to provide \$40 million for school construction. Based on assumptions about the size of the market, it was estimated that the ballot measure would bring in as much as \$130.1 million in revenue over the period 2014-2015. 196 Legalization may also increase income and social security tax revenues by shifting labour from criminal to legal and taxed activities.

However, in Uruguay and the states of Washington and Colorado, significant costs will also be incurred through the establishment of programmes to deter cannabis abuse and regulate the new industry. Based on assumptions regarding the size of the consumer market, it is unclear how legalization will affect public budgets in the short or long term, but expected revenue will need to be cautiously balanced against the costs of prevention and health care.

In addition to the impact on health, criminal justice and the economy, a series of other effects such as consequences related to security, health care, family problems, low performance, absenteeism, car and workplace accidents and insurance could create significant costs for the state. It is also important to note that legalization does not eliminate trafficking in that drug. Although decriminalized, its use and personal possession will be restricted by age. Therefore, the gaps that traffickers can exploit, although reduced, will remain.

The collection of reliable data both before and after these policy changes will support the evaluation of the health, criminal justice and economic consequences of the new regulatory frameworks. Further, careful study of the effects on local and transnational organized crime networks will allow evidence-based decisions to inform policy in this area at the national and regional levels. The impact of this legislation can be evaluated only if it is appropriately measured through reliable data-gathering and regular monitoring efforts.

- 195 Beau Kilmer and others, Reducing Drug Trafficking Revenues and Violence in Mexico, Would Legalizing Marijuana in California Help? (Rand Corporation, 2010), e-book.
- 196 See "The fiscal impact of Amendment 64 on state revenues" (Colorado, Colorado State University, 24 April 2013).

# G. AMPHETAMINE-TYPE STIMULANTS: OVERVIEW

## Production, trafficking and consumption

While it is difficult to quantify the global production of ATS, the number of ATS-manufacturing laboratories that were dismantled increased from 12,571 (12,567 ATS labs in addition to four labs producing ATS in conjunction with non-ATS substances) in 2011 to 14,322 in 2012 — nearly all of these (96 per cent) were manufacturing methamphetamine. In North America, methamphetamine manufacturing has expanded again. In 2012, a large increase in methamphetamine laboratories seized was reported by the United States (12,857 in 2012 from 11,116) and Mexico (259 from 159). A significant increase in the number of amphetamine laboratories dismantled in 2012 was reported by the United States (from 57 to 84) and the Russian Federation (from 27 to 38).

For the second year, ATS seizures reached an all-time high of 144 tons, up 15 per cent from 2011, due in large part to increases in methamphetamine seizures. Over the past five years, methamphetamine seizures have almost quadrupled, from 24 tons in 2008 to 114 tons in 2012. Of the total of 144 tons of ATS seized globally in 2012, approximately half were seized in North America alone and approximately a quarter in East and South-East Asia. Large quantities of amphetamine seizures continue to be reported in the Middle East, in particular by Jordan, Saudi Arabia and the Syrian Arab Republic.

Seizures of "ecstasy" have resurged after the drop in 2011. Major quantities of "ecstasy" were seized in East and South-East Asia, followed by Europe (South-Eastern Europe and Western and Central Europe). All three regions account for nearly three quarters of global "ecstasy" seizures.

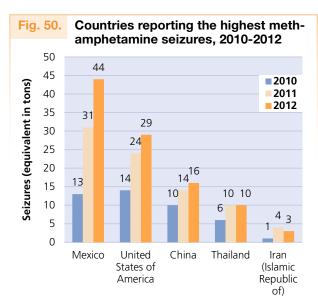
## Amphetamine-type-stimulants: market analysis

### Diversification and expansion of the global methamphetamine trade

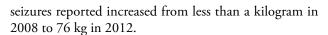
In 2012, methamphetamine accounted for the majority of ATS seizures (80 per cent), approximately 114 tons of the total 144 tons of ATS seized worldwide. Nearly two thirds (64 per cent) of global methamphetamine seizures occurred in North America, and one third in East and South-East Asia. Although Mexico, the United States, China, Thailand and Iran (Islamic Republic of), in that order, continue to report the highest amounts of methamphetamine seized worldwide, there is evidence that methamphetamine trafficking is becoming more global in nature, with noteable increases from 2011 to 2012 observed in West and Central Africa (from 45 kg to 598 kg) and Oceania (from 457 kg to 2,283 kg). Growing methamphetamine markets have also been observed in Central Asia and Transcaucasia, as

Source: UNODC annual report questionnaire and other official sources.

Note: Total ATS includes amphetamine, "ecstasy"-type substances, methamphetamine, non-specified ATS, other stimulants and prescription stimulants.



Source: UNODC annual report questionnaire and other official sources.

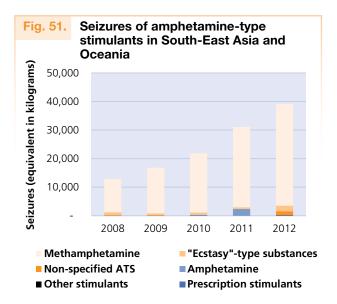


In addition, methamphetamine markets grew in South-West Asia, with recent detection of methamphetamine use in Pakistan.  $^{197}$ 

In North America, methamphetamine manufacturing has expanded again in recent years as evidenced by significant increases in drug and precursor seizures, <sup>198</sup> with large-scale production in Mexico. Over the past five years, the amount of methamphetamine seized in Mexico increased from 341 kg in 2008 to the equivalent of 44 tons in 2012 (aggregat-



<sup>198</sup> Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2012 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 (E/INCB/2012/3).



Source: UNODC annual report questionnaire.

ing seizures reported by weight and by volume). The United States continues to seize large quantities, 29 tons in 2012, up from 9.5 tons in 2008. According to the United States Drug Enforcement Agency, approximately half of the seizures in the United States occur at the United States-Mexico border. 199 After several disruptions to the availability of precursors and the manufacturing processes in Mexico in 2005 and 2007, methamphetamine purity in the United States continued to increase, reaching 93 per cent in the second quarter of 2012. Although the purity of methamphetamine is high, the potency likely decreased following restrictions on precursor access in Mexico (see the box "Does supply control work? Methamphetamine purity and potency following precursor regulations in North America").

<sup>199</sup> United States, Drug Enforcement Administration, "National Drug Threat Assessment Summary" (November 2013).

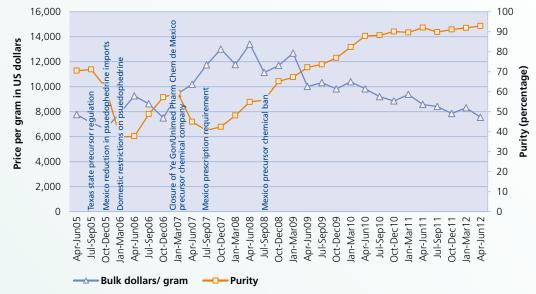
#### Does supply control work?

#### Methamphetamine purity and potency following precursor regulations in North America

Methamphetamine production is dynamic, with multiple processes capable of producing the same end product. The two most common methods are (a) phenylacetic acid > 1-phenyl-2-propanone (P-2-P) > methamphetamine or (b) pseudoephedrine/ephedrine > methamphetamine. P-2-P production methods result in a less potent form of methamphetamine because of the contamination of the potent *d*-isomer with the less potent *l*-isomer, known as a racemic mixture.

In the United States, in the early 1990s, methamphetamine was produced using ephedrine, which was restricted by the United States ephedrine single ingredient product regulation in 1995, resulting in a drop from nearly 80 per cent purity to approximately 20 per cent. In the following years, the purity increased during the subsequent two years and dropped in 1998, after the adoption of further pseudoephedrine/ephedrine product regulations. After early 1999, despite several precursor regulations in the United States and Canada, the purity continued to increase until 2005, when Mexico initiated precursor control programmes. Subsequently, purity again dropped, climbing briefly and then dropping again after the arrest of a large supplier to Mexico. Since 2007, the purity has increased, now reaching 93 per cent. However, according to researchers, this high-purity methamphetamine is less potent because it is a racemic mixture. Because the lower potency is associated with less dependence, authors conclude the supply of harmful methamphetamine has in fact, decreased.

#### Price and purity of methamphetamine in the United States, 2005-2012



Source: Data from the System to Retrieve Information from Drug Evidence (STRIDE) database of the United States Drug Enforcement Agency.

- 1 J. K. Cunningham, L. M. Liu and R. Callaghan, "Impact of US and Canadian precursor regulation on methamphetamine purity in the United States", *Addiction*, vol. 104, No. 3 (March 2009), pp. 441-453.
- 2 J. K. Cunningham and others, "Mexico's precursor chemical controls: emergence of a less potent types of methamphetamine in the United States". *Drug and Alcohol Dependence*, vol. 129, Nos. 1 and 2, (April 2013), pp. 125-136.

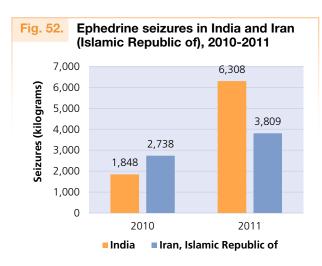
Seizures of methamphetamine have been surging in East and South-East Asia and Oceania. Between 2011 and 2012, approximately 70 per cent (12 of 17 countries) of the reporting countries in the region noted an increase in seizures of methamphetamine. Although China and Thailand regularly seize the largest amounts, those numbers increased only marginally in relative terms from 2011 to 2012, while the quantity of methamphetamine seized in Australia increased over 400 per cent, from 426 kg to 2,268 kg. Major increases were observed in countries that regularly report smaller numbers of seizures, such as Brunei

Darussalam, Cambodia, Singapore and Viet Nam. After a drop in seizures in 2010, Myanmar reported seizures of 2 tons compared with 33 kg in 2011.<sup>200</sup>

### Emergence of methamphetamine in South-West and Central Asia

Central Asia is emerging as an ATS market, reporting 253 kg of ATS seizures, 183 kg of which were reported by Kazakhstan. For the first time, in 2012, Tajikistan reported

200 UNODC annual report questionnaire and other official sources.



Source: International Narcotics Control Board annual report 2013

seizures of 63 kg of methamphetamine and 21,740 tablets of "ecstasy". The methamphetamine seized in Tajikistan was from one incident in which customs officials intercepted a large amount shipped from the Islamic Republic of Iran destined for South-East Asia (Malaysia).<sup>201</sup>

In Pakistan, methamphetamine use was detected for the first time in a national survey, which estimated that approximately 19,000 people (0.02 percent of the population aged 15-64) had used the drug in the past year.<sup>202</sup> That marks an emergence of the substance in the area, which had been undetected in prior drug use surveys. According to reports made to INCB<sup>203</sup>, in the region there have also been increases in seizures of ephedrine, a precursor of methamphetamine. In 2011, India reported over 6 tons of ephedrine seizures, and Iran (Islamic Republic of) reported 3.8 tons.

#### **Amphetamine**

Amphetamine continues to dominate the market in the Near and Middle East/South-West Asia, with over 12 tons seized in 2012, representing more than half of global seizures (56 per cent). In the region, the largest seizure totals are those of Saudi Arabia, Jordan and the Syrian Arab Republic, in that order.

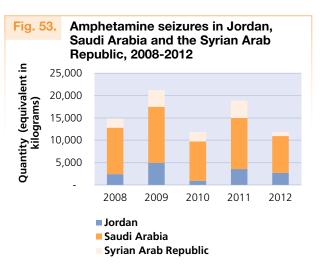
In neighbouring Turkey, a shift towards "ecstasy" and methamphetamine trafficking has taken place in recent years, with amphetamine trafficking moving to other markets.

#### Extent of amphetamine-type stimulant and "ecstasy" use

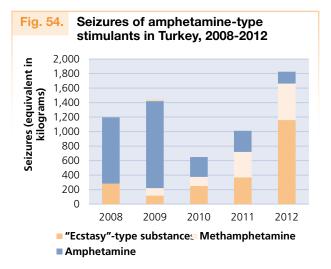
ATS, excluding "ecstasy", constitute the second most commonly used group of illicit substances worldwide, with 13.9 million to 54.8 million estimated users. ATS use



<sup>202</sup> UNODC and Pakistan, Drug use in Pakistan, 2013.



Source: UNODC annual report questionnaire.

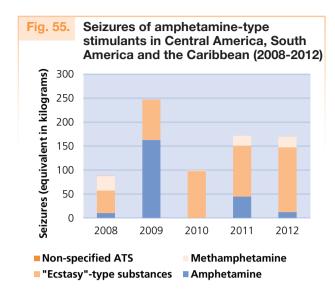


Source: UNODC annual report questionnaire

remained stable in 2010 and 2011, but increased in 2012. Within the different regions, while there is a reported decrease in ATS use in Western and Central Europe, the estimates for North America indicate an increase in ATS use. In the United States, treatment admissions for methamphetamine use were down, and the past-year prevalence has remained stable for the past three years. However, the prevalence of other types of stimulants (amphetamines) has increased (see figure 56), leading to an increase in overall ATS prevalence from 1.8 per cent in 2011 to 2.1 per cent in 2012. The positive rates of urinanalysis for amphetamine and methamphetamine among the United States workforce, however, nearly tripled in 2012, reaching the highest levels since 1997.<sup>204</sup> An increase in prevalence was reported in Mexico, from 0.02 per cent in 2008 to 0.12 per cent in 2011. While new estimates of ATS use in Asia and Africa are not available, experts from most of the countries in these regions consider ATS use on the rise. Oceania

<sup>203</sup> International Narcotics Control Board annual report 2012 and previous reports.

<sup>204</sup> United States, Quest Diagnostics, "Drug Testing Index", (Madison, New Jersey, November 2013).



Source: UNODC annual report questionnaire.

(2.1 per cent) Central America and North America (1.3 per cent and 1.4 per cent respectively) are the regions with prevalence rates higher than the global average, while the rates in West and Central Africa and Asia remain comparable to the global rates of ATS use.

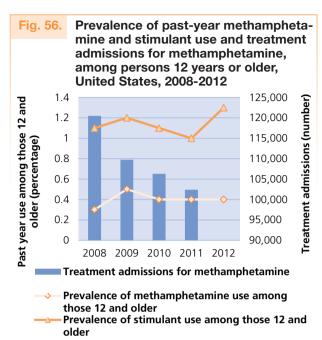
#### "Ecstasy"

With between 9.4 million and 28.2 million estimated pastyear users in 2012, its use declined globally in the period 2010-2012, mainly in Western and Central Europe. Nevertheless, Oceania (2.9 per cent), North America (0.9 per cent) and Europe (0.5 per cent) remain regions with prevalence rates higher than the global average of 0.4 per cent.

#### Misuse of prescription stimulants

The misuse of prescription stimulants or medications for attention deficit hyperactivity disorder is not uncommon, although only a few countries report prevalence of misuse among the general and youth population. With the exception of Indonesia, all countries reporting misuse of prescription stimulants are from South and North America. This, however, does not preclude that misuse of prescription stimulants is not common in the other countries or regions. Rather, the detection of such misuse in some countries may be related to better monitoring. The prevalence of misuse of prescription stimulants varies considerably among the few countries reporting, ranging from 3.28 per cent among the general population in El Salvador to 0.1 per cent in Argentina. With the exception of El Salvador, Indonesia and Costa Rica, the misuse of prescription stimulants is higher among men. In El Salvador, the prevalence is 3.7 per cent among women compared with 2.78 per cent among men.

Compared with rates for the general population, countries report a higher level of misuse of prescription stimulants among the youth population (mostly those 15-16 years old). In Costa Rica, compared with the annual prevalence



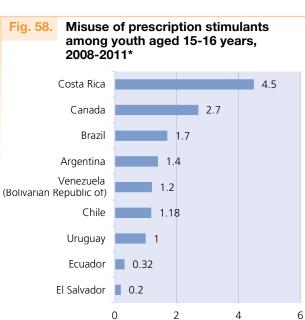
Source: Survey results of the United States Substance Abuse and Mental Health Services Administration Treatment Episode Data Set, 2000-2011, national admissions to substance abuse treatment services.

of misuse of prescription stimulants of 1.3 per cent, the rate is nearly 4 times higher among the youth population. A similar pattern of higher rates of misuse of prescription stimulants is seen in the other countries, with the exception of El Salvador, where the prevalence is quite low among youth, 0.2 per cent, compared with 3.28 per cent among the adult population.

### Increase in ketamine and mephedrone treatment admissions in the United Kingdom

In the United Kingdom, there has been a decrease in prevalence of ketamine and mephedrone use in England and Wales among both the adult population (aged 16-59) and young adults (aged 16-24).<sup>205</sup>,<sup>206</sup> However, there has been an increase in the number of people seeking treatment for ketamine and mephedrone over the past six years. Although users of ketamine and mephedrone account for only 10 per cent of young people in specialist services and 2 per cent of adults in treatment, there are clear signs of an increase in treatment demand for drug use disorders related to club drugs such as ketamine and mephedrone in the United Kingdom. While "ecstasy" remains the most common club drug reported in treatment demand, the number of ketamine and mephedrone users seeking treatment has risen between 2005/06 and 2010/11.<sup>207</sup>

- 205 The annual prevalence of mephedrone declined from 1.1 per cent in 2011/12 to 0.5 per cent in 2012/13 in the adult population and from 3.3 per cent to 1.6 per cent among young adults, while ketamine annual prevalence has declined from 0.6 per cent to 0.4 per cent in the adult population and from 1.8 per cent to 0.8 per cent among young adults over the same period.
- 206 United Kingdom, Home Office, "Drug misuse: findings from the 2012/13 Crime Survey for England and Wales" (London, July 2013).
- 207 United Kingdom, National Treatment Agency for Substance Misuse,

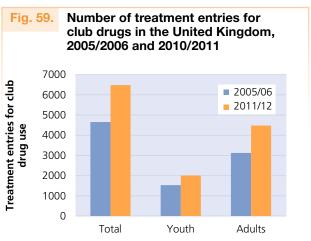


Annual prevalence (percentage)
Source: UNODC annual report questionnaire.
Note: survey period varies by country.

# H. NEW PSYCHOACTIVE SUBSTANCES

#### Update<sup>208</sup>

Of 103 countries for which information on new psychoactive substances was available as of December 2013, 94 countries reported the emergence of such substances on their markets, up from 70 out of a total of 80 countries as of July 2012. This increase was due to reports of the emergence of new psychoactive substances in countries in

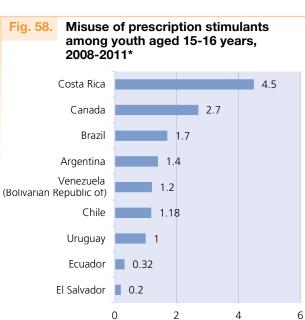


Source: Club Drugs: Emerging trends and risks (2012), National Treatment Agency for Substance Misuse, National Health Service, United Kingdom.

Europe (9 additional countries), Asia (7 additional countries) and Africa (8 additional countries).

New psychoactive substances are now found in most of Europe and North America, as well as Oceania, Asia and South America and in a number of African countries. The use of new psychoactive substances is thus emerging as a truly global phenomenon. The largest increases in the spread of those substances between July 2012 and December 2013 were reported in Europe (9 additional countries), Asia (7 additional countries) and Africa (6 additional countries).

The number of new psychoactive substances on the global market more than doubled over the period 2009-2013. By December 2013, the number of such substances reported to UNODC reached 348,<sup>209</sup> up from 251 such substances

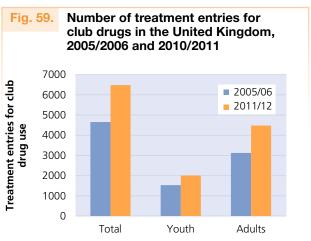


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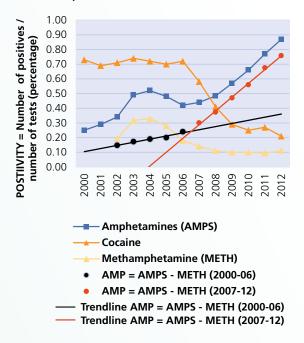
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## Are amphetamine-type stimulants substituting cocaine in the United States?

In the United States, cocaine use has declined but use of amphetamines group substances is on the rise. According to Quest Diagnostics, on the basis of urinanalysis, the number of positives for amphetamine as a metabolite (including, therefore, cases of methamphetamine use, in addition to prescription use and illicit use of amphetamine) among the general workforce in 2012 were the highest since 1997, and positive drug tests for prescription medications such as Adderall more than doubled between 1992 and 2012. Survey data reported over this period for the general population aged 12 or older also indicate a doubling in the past-month use of Adderall, stable use of methamphetamine, and declining use of cocaine since 2007. Taken together, these data indicate that the increase in positive amphetamine tests in the general workforce is likely attributable to prescription amphetamine as opposed to methamphetamine. Indeed, subtracting methamphetamine positives from the total for all positive tests classified as "amphetamines" shows a distinct transition in 2007, when the decline in cocaine began, with the growth rate over the period 2007-2012 being four times that rate over the period 2002-2006. It would appear that the positivity rate for amphetamine now exceeds the historic level reached by the rate for cocaine in the United States in the period 2000-2006. This evidence, although not conclusive, points to the possibility that amphetamines are being used as a substitute for cocaine.

Positive urinanalysis tests for amphetaminetype stimulants among the United States workforce, 2000-2012



Source: Quest Diagnostics and United States Office on National Drug Control Policy

1 United States, Quest Diagnostics, "Drug Testing Index", (Madison, New Jersey, November 2013). Available at www.questdiagnostics.com/home/physicians/health-trends/drug-testing.

as of July 2012,<sup>210</sup> and 166 substances in 2009 (see figure 60). Thus, by now, the number of new psychoactive substances clearly exceeds the number of psychoactive substances controlled at the international level (234 substances: 119 controlled under the 1961 Single Convention on Narcotic Drugs and 115 under the 1971 Convention on Psychotropic Substances).

The overall increase over the period August 2012-December 2013 was mostly due to new synthetic cannabinoids (50 per cent of newly identified new psychoactive substances) followed by new phenethylamines (17 per cent), other substances (14 per cent) and new synthetic cathinones (8 per cent) (see figure 61).

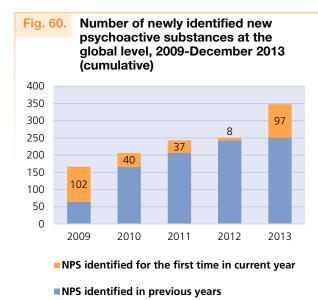
Progress has been made in some areas. In the United States, where national controls on some new psychoactive sub-

This information is based on information submitted by Member States through surveys and submissions to UNODC from laboratories participating in the international collaborative exercises programme.

210 UNODC, The Challenge of New Psychoactive Substances (Vienna, March 2013).

stances were introduced,<sup>211</sup> prevalence of the use of synthetic cannabinoids and of "bath salts" (synthetic cathinones) declined by some 30 percent among high school students. Annual prevalence of synthetic cannabinoid use fell from 11.4 per cent in 2011 to 7.9 per cent in 2013 and prevalence of use of "bath salts" declined from 1.3 per cent in 2012 to 0.9 per cent in 2013 among twelfth grade students.<sup>212</sup> In England and Wales, annual prevalence of mephedrone, a synthetic cathinone, fell by more than 60 per cent, from 4.4 per cent among those aged

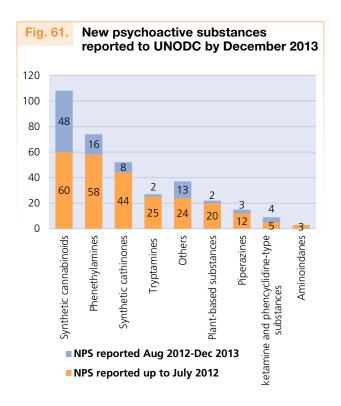
- 211 In 2011, mephedrone, methylenedioxypyrovalerone (MDPV) and five synthetic cannabinoids were placed under temporary control (United States, Drug Enforcement Administration, "Schedules of controlled substances: temporary placement of three synthetic cathinones into Schedule I", Final order, 21 CFR Part 1308, Docket No. DEA-357). In 2012, these substances, along with 26 synthetic cannabinoids were placed permanently under control within the Controlled Substance Act (as amended by the Synthetic Drug Abuse Prevention Act of 2012).
- 212 National Institute on Drug Abuse, United States, Monitoring the Future Survey (December 2013). Available at http://monitoringth-efuture.org/data/13data.html#2013data-drugs.



Source: UNODC, World Drug Report 2013 and UNODC early warning advisory on new psychoactive substances.

Note: The 2012 figures refer to information received by July 2012. For some substances reported in 2013, the reference period may have been August-December 2012.

16-24 years in 2010/11 to 1.6 per cent in 2012/13.<sup>213</sup> While no clear link has yet been established, Government activities aimed at raising awareness among drug users about the health risks associated with new psychoactive substances<sup>214</sup> and the introduction of national controls<sup>215</sup> took place in the same period. Prevalence of use of ketamine, which is also controlled, fell from 2.1 to 0.8 per cent over the same period.<sup>216</sup>



Source: UNODC early warning advisory on new psychoactive substances, based on information submitted by Member States and submissions to UNODC from laboratories participating in the international collaborative exercises for national drug test laboratories.

- 213 United Kingdom, Home Office, "Drug misuse: findings from the 2012/13 Crime Survey for England and Wales".
- 214 For example, through the Internet website "Talk to Frank" website (www.talktofrank.com) and the Welsh Emerging Drugs and Identification of Novel Substances project (www.wedinos.org).
- 215 In 2010, mephedrone was initially placed under control as a class B drug in the United Kingdom Misuse of Drugs Act (1971).
- 216 United Kingdom, Home Office, "Drug misuse: findings from the 2012/13 Crime Survey for England and Wales".