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# GLOBAL SMART UPDATE



## Special Segment

Synthetic cannabinoids: Key facts about the largest and most dynamic group of NPS

**2015**

# About the SMART Update

The threat of synthetic drugs is one of the most significant drug problems worldwide. After cannabis, amphetamine-type stimulants (ATS) are the second most widely used drugs across the globe, outstripping the use of cocaine and heroin. Along with ATS, the continued growth of the *new psychoactive substances* (NPS) market over the last years has become a policy challenge and a major international concern. A growing interplay between the new drugs and illicit drug markets is being observed. By December 2014, the emergence of NPS had been reported in more than 90 countries and territories. Trends on the synthetic drug market evolve quickly each year.

The UNODC Global Synthetics Monitoring: Analyses, Reporting and Trends (SMART) Programme enhances the capacity of Member States in priority regions to generate, manage, analyse, report and use synthetic drug information to design effective policy and programme interventions. Launched in September 2008, Global SMART provides capacity building in East and South-East Asia, the Pacific, the Near and Middle East, Latin America and Africa and regularly reviews the global ATS situation. Features of UNODC Global SMART are online data collection, situation reports and regional assessments. The first global situation assessment on NPS “The challenge of new psychoactive substances” was published in March 2013, pursuant to Commission on Narcotic Drugs resolution 55/1 (2012). The SMART Early Warning Advisory web-portal offers regularly updated information on NPS and related legislation (<https://www.unodc.org/NPS>).

The Global SMART Update is designed to provide regular brief reporting on emerging patterns and trends of the global synthetic drug situation. Given the speed at which changes in the ATS and NPS markets occur, it is especially important to have a simple sustainable mechanism for frequent information sharing from different parts of the world. The Global SMART Update is published twice a year and is available in English and Spanish. Electronic copies of the SMART Updates and other publications are available at (<https://www.unodc.org/unodc/en/scientists/publications-smart.html>).

The Update reports various synthetic drug information, such as significant or unusual drug or precursor seizures, new locations, methods and chemicals used for clandestine manufacture, new trafficking groups or routes, changes in legislation to address the problem of synthetic drugs, emerging drugs or user groups, and health implications related to their use.\*

## In this issue

Each issue of the Update contains a special coverage and thematic segments. Previous issues highlighted the increasing dimension of ATS trafficking from Africa to East and South-East Asia; the ATS situation in South Asia; *new psychoactive substances* and the changing faces of illicit ATS manufacture; the spread of NPS across the globe and, the legal situation and responses to the challenge of new psychoactive substances and the road ahead; the changing nature of “ecstasy”; and global patterns and regional differences in methamphetamine manufacture and precursors trends.

The special segment of the current issue provides an overview of the largest group of NPS in the market: synthetic cannabinoids, including their history; current availability on the market; challenges related to legal control; use prevalence and the public health risks associated to their use.

While data on ATS seizures is often easy to obtain, information on the demand for ATS and NPS remains scarce and anecdotal in nature. Nevertheless, the Update continues to make a determined effort to highlight information on ATS and NPS use. Various drug demand-related subjects are covered in this issue, including facts that have come to light on the use of synthetic cannabinoids by detainees in New Zealand and the growing concern about fatal and non-fatal intoxications related to the use of synthetic cannabinoids in selected countries. The Update also covers the latest developments in the synthetic cannabinoid market, including the emergence of new generations of synthetic cannabinoids and the legislative responses that different countries are adopting to address this problem.

\*The information and data contained within this report are from official Government reports, press releases, scientific journals or incidents confirmed by UNODC Field Offices. Additional or updated information from previously reported incidents may also be included where appropriate. An asterisk (\*) indicates that information is preliminary as it stems from ‘open sources’ where UNODC is waiting for official confirmation. This report has not been formally edited. The contents of this publication do not necessarily reflect the views or policies of UNODC or contributory organizations and neither do they imply any endorsement. Suggested citation: UNODC, Global SMART Update Volume 13, March 2015.

# Synthetic cannabinoids: Key facts about the largest and most dynamic group of NPS

## Background

Synthetic cannabinoid receptor agonists, commonly referred to as synthetic cannabinoids, constitute the largest, most diversified and fastest growing group of NPS on the market. By February 2015, over 30 countries and territories had adopted regulations/legislation at the national level to reduce the availability of these substances. Recommendations for international control of some synthetic cannabinoids have also been put forward. The special segment of this current issue provides an overview of the synthetic cannabinoids group, including their availability on the market; use prevalence; public health risks associated with their use; and the challenges related to legal control.

Since 2004, several synthetic cannabinoids have been detected in herbal smoking blends which are sold on the Internet and in specialized shops under a variety of brand names such as 'Spice Gold', 'K2', 'Kronic' and 'Yucatan Fire'. These products generally do not contain cannabis but rather synthetic cannabinoids which produce cannabis-like effects. Labelled 'not for human consumption', these products typically contain dried shredded plant material – which by itself, has no psychoactive properties – that is soaked in or sprayed with one or several synthetic cannabinoids, varying in dosage and combination. In some cases, their solid form (powder) is added to plant material. The use of synthetic cannabinoids as recreational drugs seem to have been initially restricted to a small number of experimental users. However since 2008, products containing these substances achieved increasing popularity in Germany and other European countries, where they started to be marketed as 'herbal products' that produce experiences similar to cannabis, through the internet and appeared more often in the communication media. This seems to have increased their popularity as "legal cannabis substitutes", targeting the illicit drug market with the largest number of users worldwide, the cannabis market. Since then, the emergence of hundreds of products containing different synthetic cannabinoids have been reported to the UNODC Early Warning Advisory (EWA) from over 55 countries. The attention of the international community has been drawn to their clandestine manufacture, the serious risks they pose to public health and society and the challenges for drug control.

## What are synthetic cannabinoids?

Synthetic cannabinoids are referred to as substances with structural features which allow binding to one of the known cannabinoid receptors, i.e. CB1 or CB2.<sup>1</sup> The CB1 receptor is responsible for the typical physiologi-

cal and particularly the psychotropic effects of cannabis, whereas the CB2 receptor may mediate immunomodulatory effects. Naturally occurring cannabinoids are limited to chemical constituents of cannabis such as delta-9-tetrahydrocannabinol (THC) and cannabidiol. In contrast, synthetic cannabinoids, as defined above, encompass a great variety of structurally dissimilar compounds with the possibility for further structural changes, i.e. analogues and derivatives, which could potentially show affinity for either one of the cannabinoid receptors.

## Synthetic cannabinoids are not novel compounds, some of them are failed pharmaceuticals

Not all synthetic cannabinoids used as NPS are novel compounds. Some of them such as CP-55,940 or WIN-55,212-2 were commercially available as research chemicals before being used as NPS. Others were pharmaceuticals later withdrawn from the market due to serious adverse effects (e.g. Rimonabant<sup>®2</sup>). Some others were investigated as potential medicines but never made it to the market.

In 1965, the synthesis of delta-9-tetrahydrocannabinol (THC) was described and soon thereafter the first cannabinoid analogues were synthesized. The two cannabinoid receptors CB1 and CB2 were discovered and characterized in the 1980s, and since then research on the mechanism of action of the cannabinoids has been ongoing. Other classical cannabinoids such as 'HU-210', a synthetic analogue of THC considered to have a potency of at least 100 times that of THC, was synthesized in Israel in 1988, and emerged in the NPS market in 2009. Non-classical cannabinoids, such as the 'CP' compounds, were developed as potential analgesics by a pharmaceutical company in the 1980s, and some of them (e.g. CP-47,497) have been found on the NPS market along with other structurally dissimilar varieties of synthetic cannabinoids unrelated to THC, such as aminoalkylindoles which can be further divided into the following groups: a) Naphthoylindoles (e.g. JWH-018, JWH-073 and AM-2201), b) Phenylacetylindoles (e.g. JWH-250), c) Benzoylindoles (e.g. AM-2233 and RCS-4) d) Naphthylmethylindoles (e.g. JWH-184) (e) Cyclopropylindoles (e.g. UR-144, XLR-11), (f) Adamantoylindoles (e.g. AB-001, AM-1248), (g) Indole/Indazole carboxamides (e.g. APICA, APINACA) and (h) Indole/Indazole carboxylates (e.g. PB-22).<sup>3</sup>

<sup>1</sup> The binding of synthetic cannabinoids to cannabinoid receptors may result in (partial) agonistic, inverse agonistic or antagonistic effects (UNODC, Recommended methods for the Identification and Analysis of Synthetic Cannabinoid Receptor Agonists in Seized Materials, New York, 2013). Agonist refers to a substance which initiates a physiological response when combined with a receptor; antagonist a substance which interferes with or inhibits the physiological action of another.

<sup>2</sup> Rimonabant<sup>®</sup> was developed as an appetite suppressant, anti-obesity drug by Sanofi-Aventis, and received marketing approval from the European Medical Agency (EMA) in 2006, but in 2008 the EMA recommended doctors not to prescribe the drug. Its use as a weight control medication is not approved by the United States Food and Drug Administration and it had also been withdrawn from the market in Australia.

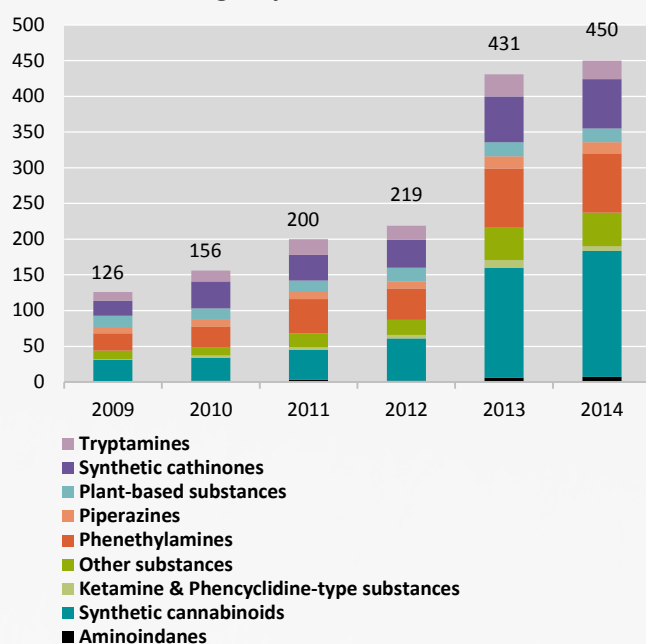
<sup>3</sup> Other groups of synthetic cannabinoids include Eicosanoids: Endocannabinoids such as anandamide (AEA), and their synthetic analogues, e.g. methanandamide (AM-356) and Others: Encompassing other structural types such as diarylpyrazoles (e.g. Rimonabant<sup>®</sup>), naphthylpyrroles (e.g. JWH-307) and naphthylmethylindenes (e.g. JWH-176).



Aminoalkylindoles are by far the most prevalent compounds found in herbal products laced with synthetic cannabinoids and JWH-018 is the best known synthetic cannabinoid belonging to this group. The JWH-compounds were developed in the 1990s as test compounds in the research of receptor-drug interactions by Professor John William Huffman and his team in the United States.

## Synthetic cannabinoids are the main group of NPS present in the market

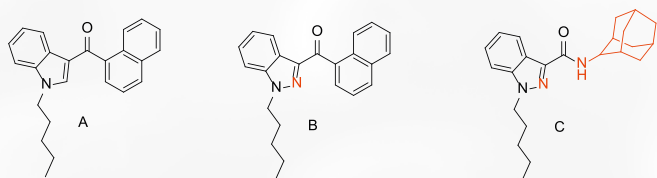
**Fig. 1: Annual number of NPS reported by substance group, 2009-2014**



In 2009, synthetic cannabinoids were the most NPS reported (31 substances) to UNODC, followed by phenethylamines (24) and synthetic cathinones (21). Over the last two years, the number of synthetic cannabinoids reported to UNODC has increased disproportionately compared to the other NPS groups: in 2013, 154 synthetic cannabinoids were reported, almost double the number of phenethylamines, the second highest group (82), followed by synthetic cathinones with 64 substances.<sup>4</sup>

## Evolving series of synthetic cannabinoids found in the NPS market

**Fig. 2: Examples of chemical modifications leading to new synthetic cannabinoids**



(A) JWH-018, (1-Pentyl-1H-indol-3-yl)-1-naphthalenyl-methanone, (B) THJ-018, 1-Naphthalenyl(1-pentyl-1H-indazol-3-yl)-methanone, (C) AKB-48, N-(1-adamantyl)-1-pentyl-1H-indazole-3-carboxamide

Since the discovery of the cannabinoid receptors CB1 and CB2 in the 1980s, the NPS market has experienced continued growth and evolution of a series of chemical families of synthetic cannabinoids, with successive structural modifications being introduced to keep them in an ambiguous legal status. This can be illustrated with first, the emergence of naphthoylindoles (e.g., JWH-018), to the more recently emerging naphthoylindazoles such as THJ-018 and indazole carboxamides such as AKB-48 (see figure 2).

Halogenation, i.e. introducing one or more halogen atoms into a compound or molecule, of a specific side chain of established cannabinoid agonists, is a common approach to synthesizing new substances and attempting to increase their potency. Halogenated compounds are often found in the NPS market along with their non-halogenated analogues. An example of this was the emergence of JWH-018 in the NPS market in 2009, which was followed by the appearance of some of its halogenated analogues such as AM-2201 (5-Fluoropentyl-JWH-018).<sup>5</sup> A similar case occurred with UR-144 and its halogenated derivative XLR-11.

## Approaches to Scheduling Synthetic Cannabinoids

### National Level

At the time of writing, over 30 countries in the world have adopted a regulatory/legislative response to control one or more synthetic cannabinoids. However, structural diversity and the rapid development of new derivatives pose challenges to legislative control at the national and international level. Regulatory approaches based on medicine legislation were initially used to control the circulation of products containing synthetic cannabinoids in some European countries. However, the European Court of Justice recently ruled that synthetic cannabinoids do not fall under the description of medicinal products under the Common EU law.<sup>6</sup>

Other approaches to control synthetic cannabinoids at the national level include scheduling specific compounds in the list of controlled substances; controls by reference to chemical analogue Acts; scheduling by chemical class or family (generic approach); and more recently, scheduling through reference to the effects of the compound on the brain (neurochemical approach).

### Analogue legislation

Analogue systems control substances that are not specifically mentioned in the legislation by invoking the concept of "chemical similarity" to a drug already controlled. In addition to the requirement of chemical similarity, criteria such as pharmacological similarity and/or evidence that the substance is sold for human con-

<sup>4</sup> Data from the UNODC Early Warning Advisory on New Psychoactive Substances (January 2015).

<sup>5</sup> In 2010, AM-2201 was reported by three countries (Hungary, Latvia and the United States), but in 2011, 14 new countries reported its emergence (Australia, Bulgaria, Canada, Croatia, Finland, Italy, Latvia, New Zealand, Norway, Republic of Korea, Romania, Russian Federation, Slovakia, Turkey, United Kingdom, United States).

<sup>6</sup> European Court of Justice, Judgment of the Court (Fourth Chamber), 10 July 2014. <http://curia.europa.eu/juris/document/document.jsf?text=&docid=154827&pageIndex=0&doclang=EN>

sumption are also considered in some countries. The legislation of the United States provides an example of the use of analogue legislation to control synthetic cannabinoids. Under the Controlled Substance Analogue Enforcement Act of 1986, if a person traffics in a substance that meets the definition of a ‘controlled substance analogue’, they could face prosecution under US Federal Law, if it is proved: (1) that the chemical structure is substantially similar to the chemical structure of a controlled substance in schedule I or II, and either (2) that the stimulant, depressant, or hallucinogenic effect on the central nervous system (CNS) is substantially similar to or greater than that of a controlled substance in schedule I or II, or (3) the government may prove that in a particular case, the defendant intended or represented that the substance has a similar or greater effect on the CNS as a schedule I or II controlled substance. Since January 2011, there have been over 130 indictments, charging over 430 defendants in the US, involving analogues.<sup>7</sup>

### Generic Legislation

Given the rapid growth of the synthetic cannabinoids market and to supplement the control of individual substances, a number of countries (including Ireland,<sup>8</sup> Japan, Russian Federation,<sup>9</sup> Singapore and the United Kingdom<sup>10</sup>) have adopted generic legislation to control at once the large number of synthetic cannabinoids that have been encountered, and to anticipate controls on new substances that may occur. In practice, this means that starting from a core molecular structure, which does not itself have to be psychoactive, the legislation specifies particular variations of the structure (particularly substituent groups in specified positions in the molecule) which lead to a substance being controlled.

The generic language refers for instance, to specific sub-groups of NPS such as naphthoylindoles and benzoylindoles indicating the replacements and substitutions that fall under control. For instance, a variety of naphthoylindoles that could be produced by replacement of the pentyl substituent on the indole ring of JWH-018 are covered by many of the generic legislation adopted so far in several countries.

The analysis of data on synthetic cannabinoids reported to the UNODC EWA from 2009-2013, shows that most new substances reported in 2010 and 2011 would be covered by the varied language used in the generic legislation of many countries. However, in 2012 there was a marked increase in the number of novel synthetic cannabinoids reported (e.g. AKB-48;

STS-135; XLR-11; and UR-144), which contain certain chemical groups, not necessarily covered by existing generic legislation at that time (e.g. see figure 2 for comparison of AKB-48 with JWH-018). In 2013 and 2014, the complexity and diversity of the synthetic cannabinoid market continued, with over 40 new compounds reported for the first time in 2013 and the emergence of a number of substances containing a 2-phenylpropan-2-yl group (e.g. CUMYL-PINACA) reported in 2014.

Responding to these new developments, in 2013 and 2014 some countries strengthened their generic legislation, by adding new specific groups and/or new synthetic cannabinoids derivatives to cover substances such as APINACA, as illustrated in the updated list of “designated substances” included in the Pharmaceutical Affairs Law in Japan. Other countries, such as the United Kingdom, have considered a revised generic description for ‘third generation’ synthetic cannabinoids which are currently on the market but not controlled by the Misuse of Drugs Act 1971. The proposed definition is based on defined modifications of a ‘model’ compound, JWH-018, which should be used in addition to the existing generic cannabinoid definition.<sup>11</sup>

### Neurochemical approach

In contrast to generic controls, which control drugs based on their chemical structure, a new approach to control synthetic cannabinoids based on their effect on the brain has recently been used in some countries, including the United States and Luxembourg. The United States introduced the neurochemical approach to control synthetic cannabinoids or “cannabinomimetic agents”, under the “Synthetic Drug Abuse Prevention Act 2012” and defined them as “any substance that is a cannabinoid receptor type 1 (CB1 receptor) agonist as demonstrated by binding studies and functional assays” within defined structural classes (5 groups of synthetic cannabinoids have been described so far).<sup>12</sup> The definition includes a group of substances with possible chemical variations but which have a specific effect through binding to the CB1 receptor. Under the Act, any preparation “which contains any quantity of cannabinomimetic agents, or which contains their salts, isomers and salts of isomers” is placed under Schedule I, i.e. the schedule with the strictest controls. In addition to the groups of synthetic cannabinoids described, 15 examples of substances explicitly controlled are listed in the Act.

### International Level

At the time of writing, none of the synthetic cannabinoids found in the NPS market are under international control either by the 1961 Single Convention on Narcotic Drugs or the 1971 Convention on Psychotropic Substances. However, since 2010, the international community has been concerned about the increasing number of reports on the production of substances containing synthetic cannabinoid receptor agonists that have psychoactive effects similar to those pro-

7 New psychoactive Substances Review Report of the Expert Panel, September 2014, United Kingdom.

8 <http://www.irishstatutebook.ie/2010/en/si/0200.html>

9 <http://pravo.gov.ru/proxy/ips/?docbody=&prevDoc=102053634&backlink=1&&nd=102344867>

10 [http://www.legislation.gov.uk/ukxi/2009/3209/pdfs/ukxi\\_20093209\\_en.pdf](http://www.legislation.gov.uk/ukxi/2009/3209/pdfs/ukxi_20093209_en.pdf). A large group of synthetic cannabinoids was first controlled in 2009. Due to new variations of synthetic cannabinoids appearing in the market, the generic definition was further revised in 2012. Yet, there are now six “third generation” synthetic cannabinoids in the UK market that do not fall under the control of the Misuse of Drugs Act 1971. (see New Psychoactive Substances Review Report of the Expert Panel, September 2014).

11 <https://www.gov.uk/government/publications/third-generation-synthetic-cannabinoids>

12 “Synthetic Drug Abuse Prevention Act of 2012”, SEC. 1152.

duced by cannabis.<sup>13</sup> In 2014, seven synthetic cannabinoids<sup>14</sup> were reviewed for the first time by the WHO Expert Committee on Drug Dependence (ECDD). The ECDD concluded that the abuse liability of both JWH-018 and AM-2201 was substantial, while there were no therapeutic uses. In the case of AM-2201, the Committee also noted analytically confirmed cases of non-fatal and fatal intoxications involving the substance. As a result of the review, JWH-018 and AM-2201 were recommended for international control, namely to be added to Schedule II of the 1971 Convention on Psychotropic Substances.<sup>15</sup> The final decision on the control of these substances will be taken by the Commission on Narcotic Drugs at its 58th Session in March 2015.

## The prevalence of synthetic cannabinoids use remains largely unknown

The prevalence of synthetic cannabinoids use is difficult to estimate at a global level as data from drug use surveys are only available for some European countries and the United States. Different patterns of use can be observed in the different countries. Earlier in 2010, “Spice” (a brand name for products containing synthetic cannabinoids) was found to have the lowest annual prevalence among people aged 15 to 64 in Slovakia at 0.1 per cent.<sup>16</sup> However, in 2011, “Spice” was found to be the fourth most used substance among people aged 15 to 64 in Latvia, at a lifetime prevalence of 2.5 per cent.<sup>17</sup> In 2012, “Spice” was found to be among the least used substances among people aged 18 to 64 in Germany, at an annual prevalence of 0.2 per cent.<sup>18</sup>

Overall, it is too early to assess the impact of synthetic cannabinoids on the cannabis market and beyond. Despite the large number of substances that have emerged in many countries, a clear replacement of natural cannabis by products containing synthetic cannabinoids has not been observed in countries where data on the use prevalence of both drugs are available. For instance, in the United States annual prevalence of cannabis use among twelfth-grade students remained stable at 36.4 per cent between 2011 and 2013 and declined only slightly in 2014 to 35.1 per cent, while synthetic cannabinoid (“Spice”) use almost halved from 11.4 per cent in 2011 to 5.8 per cent in 2014.

## Synthetic cannabinoids are perceived to be more toxic than cannabis

In the United States, the perceived harmfulness of synthetic cannabinoids among twelve graders increased between 2012, the first year of measurement, and 2014. This may have contributed to the decline in use

of synthetic cannabinoids over the same period (figures are presented above), but data from a recent qualitative study suggests that use of both herbal cannabis and synthetic cannabinoids may not be uncommon.<sup>19</sup>

There are limited data available on the pharmacology of synthetic cannabinoids used in “Spice” products. The information on acute toxicity related to the use of these compounds is often based on user reports, questionnaire surveys, reports from poison centres, and case reports sometimes without analytical confirmation. However, many of these compounds have been reported to have a higher affinity for the CB1 receptor and a higher toxicity than cannabis. The pharmacokinetic<sup>20</sup> profiles of synthetic cannabinoids used in “Spice” products are largely unknown, making it difficult to determine the onset, duration, and intensity of their effect. Data from clinical cases, self-experiments and clinical studies provide an indication that some compounds, such as AM-694, show no noticeable effects when used orally but produce typical symptoms of intoxication when smoked. The dosage, side effects, and drug interactions of the different synthetic cannabinoids found in “Spice products” seem to differ between specific substances, but the acute toxicity and adverse effects associated to their use remains largely unknown.

Participating “Spice” users in an online survey have indicated that synthetic cannabinoids have a shorter duration of action, quicker time to “peak onset of effect” and more negative effects associated to their use than natural cannabis.<sup>21</sup> In terms of toxicity, users of synthetic cannabinoids who develop acute toxicity associated to their use have shown not only symptoms typically associated with cannabis intoxication but also effects that are considered untypical for cannabis such as agitations, seizures, hypertension, nausea and intractable vomiting. The presence of these further effects is possibly due to the result of the overstimulation of the receptors, as many synthetic cannabinoids can show a higher affinity for the receptors responsible for the psychoactive effects of cannabis. Deaths associated to the use of synthetic cannabinoids have been reported in the press<sup>22</sup> and on Internet discussion forums but there are no analytically confirmed reports published in the scientific literature.

13 Commission on Narcotic Drugs, Resolution 53/11 “Promoting the sharing of information on the potential abuse of and trafficking in synthetic cannabinoid receptor agonists”, 12 March 2010.

14 JWH-018; JWH-073; AM-2201; UR-144; (APINACA; AKB 48); RCS-4 and JWH-250.

15 WHO Expert Committee on Drug Dependence: Thirty-sixth report. WHO technical report series no. 991. World Health Organization, 2015.

16 UNODC, Annual Report Questionnaire for Slovakia 2012.

17 “2013 National Report (2012 data) to the EMCDDA by the Reitox National Focal Point: New Developments and Trends”, European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), Latvia, 2013.

18 UNODC, Annual Report Questionnaire for Germany 2012.

19 Perrone, D., et al. (2013). “United States drug prohibition and legal highs: How drug testing may lead cannabis users to Spice.” *Drugs: Education, Prevention, and Policy* 20(3): 216-224.

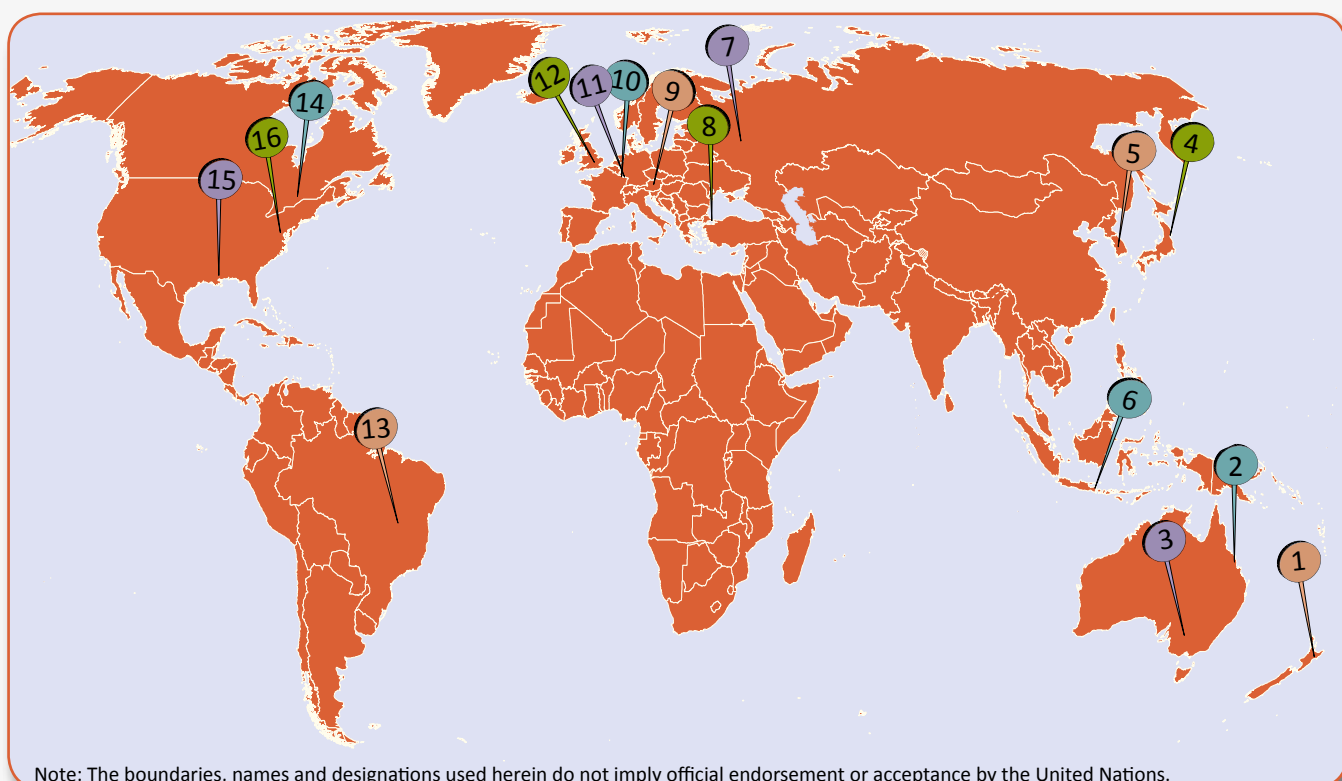
20 Pharmacokinetics are sometimes described as what the body does to a drug, refers to the movement of drug into, through, and out of the body—the time course of its absorption, bioavailability, distribution, metabolism, and excretion. Merck Manuals, The Merck Manual Professional Edition, overview of pharmacokinetics.

21 Winstock AR, Barratt MJ. Synthetic cannabis: A comparison of patterns of use and effect profile with natural cannabis in a large global sample. *Drug Alcohol Depend* 2013, 131(1-2):106-11

22 Deaths associated to the use of synthetic cannabinoids were reported in the press in Australia and the Russian Federation (See in these document segments 2 and 7, respectively)



## Regions covered in this issue



The segments presented were selected to illustrate the thematic focus of this Global SMART Update issue. The sequence of the segments follows roughly an east-west direction from Oceania, which has among the highest prevalence rates for ATS use in the world, through East Asia with its large number of ATS users to other regions and continents. The numbered pins on the map above correspond with the index of segments below.

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## New Zealand: synthetic cannabinoids are the most used NPS in prisons

**AUCKLAND, New Zealand – May 2014.** In 2013 the New Zealand Arrestee Drug Use Monitoring (NZ-ADUM) asked detainees, for the first time, a range of questions about their use of NPS, (e.g. synthetic cannabinoids, “party pills” and salvia divinorum). The NZ-ADUM tracks trends in alcohol and other drug use, and related harm, among police detainees in New Zealand. In the 2013 NZ-ADUM, 848 detainees were interviewed at four police watch houses (i.e. Whangarei, Auckland Central, Wellington Central and Christchurch Central) from mid-April to the end of July 2013. According to the results, synthetic cannabinoids are the most widely used NPS (47 per cent of detainees had used them in the past year), followed by salvia divinorum (8 per cent) and “party pills” (6 per cent). They were also the most frequently used substances (66 days in the previous year, compared to 8 days for salvia and 4 days for party pills). Synthetic cannabinoids users (17 per cent) felt they were dependent on these products while user-perceived dependence was very low for salvia (3 per cent) and “party pills” (0 per cent).

## Australia: synthetic cannabinoids linked to the deaths of two men and multiple hospitalisations in Mackay, Queensland

**MACKAY, Australia – 14 January 2015.** Synthetic cannabinoids have been linked to the deaths of two men and to multiple hospitalisations in Mackay, Queensland. Two men, a 33-year-old and a 41-year-old, died after apparently smoking the substances in the product “Full Moon”, sold as herbal tea. Mackay authorities have warned that these products, advertised as not containing illegal substances, might actually contain harmful substances that are not herbal or natural alternatives to controlled drugs. Authorities also reported a spike in hospital admissions in the past six months, with an average of one case per day presented to the Mackay Base Hospital Emergency Department.\*



Source: ABC News



Source: The Advertiser

## Australia: first synthetic cannabinoid laboratory dismantled in South Australia

**PINNAROO, Australia – 30 October 2014.** Following a tip-off from Victorian authorities, South Australian Police have dismantled a laboratory in a residential area of Pinnaroo (a town in South Australia), which was used to allegedly manufacture synthetic cannabinoids. According to the Chief Inspector from the Serious and Organized Crime Branch, “Forensic chemists at the scene advised police that the chemicals, glassware and associated products were consistent with the manufacture of synthetic cannabinoids”. This was the first laboratory of its kind in South Australia. As a result of the operation, a national from Australia was arrested and charged with manufacturing a controlled drug, possessing controlled precursors and possessing prescribed equipment.

## Japan: authorities respond to car accidents related to the use of synthetic cannabinoids

**TOKYO, Japan – 08 July 2014.** The Prime Minister of Japan has called for a speedier process to identify and outlaw products containing new psychoactive substances (known as “Dappo” drugs in Japan). The call follows recent reports of a string of car accidents involving users apparently intoxicated with synthetic cannabinoids, some of which have resulted in the death of pedestrians. According to the National Police Agency, 40 drivers intoxicated with “Dappo” drugs were involved in traffic accidents in 2013, up from 19 in 2012. Following the announcement of the Prime Minister, the Tokyo Metropolitan Government announced the inspection of 70 stores selling NPS. The number of NPS outlawed under the Pharmaceutical Affairs Law in Japan is reported to have surged to over 1,300, up from 68 in April 2012.\*



## Republic of Korea: 86 NPS now under temporary control

**SEOUL, Republic of Korea – 10 December 2014.** The Ministry of Food and Drug Safety (MFDS) of the Republic of Korea announced the temporary control of 10 new psychoactive substances, including 6 synthetic cannabinoids, 2 phenethylamines and 2 other miscellaneous substances. The temporary control will last three years from the date of announcement. This brings to 86 the total number of NPS currently placed under temporary control. Under the Act on the Control of Narcotics of the Republic of Korea, possession, management, import and export, trade, assistance in the trade, or the giving or receiving of materials that contain a temporary scheduled substance are prohibited.



Source: UNODC

5



Source: UNODC

## Indonesia: National Anti-Narcotics Agency in Bali warns about the presence of more than 260 NPS in the country

**BALI, Indonesia – 11 August 2014.** The National Narcotics Agency (BNN) of Bali has warned the public and law enforcement authorities of the presence of more than 260 new psychoactive substances – in both powder and liquid form – in the country. Synthetic cannabinoids (known locally as “japa-japa”) and synthetic cathinones are reportedly common in Bali. However, seven groups of NPS have been identified in the country so far, namely synthetic cannabinoids, synthetic cathinones, phenethylamines, piperazines, plant-based substances, ketamine and other miscellaneous substances. Most of these substances are found in a powder form but liquid forms have also been reported for ketamine and other miscellaneous substances.\*

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## Russian Federation: alerts raised by increasing reports of poisonings related to synthetic cannabinoids

**MOSCOW, Russian Federation – 06 October 2014.** At the Russian State Anti-Drug Committee meeting on 6 October 2014, the head of the Russian Federal Drug Control Service, considered the measures to eliminate an emergency situation related to mass poisoning by new psychoactive substances. It was reported that in September 2014, a number of medical institutions in the Russian Federation recorded more than 700 cases of poisoning, including more than two dozen fatalities, related to the use of ‘smoking blends’, allegedly containing synthetic cannabinoids. Laboratory analysis revealed the presence of the non-controlled synthetic cannabinoid MDMB (N)-Bz-F in such products. According to the statement, over the past seven years there has been an increase of nearly 130 times in the volume of seizures of synthetic substances in the country from 165 kg to 22 tons. National regulatory authorities were urged to adopt a faster response to this problem by amending the legislation to introduce temporary bans on NPS.

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Source: Daily Sabah, Turkey

## Turkey: over 240 NPS have been placed under control by 2014

**ISTANBUL, Turkey – 15 September 2014.** By October 2014, over 240 NPS, including a large number of synthetic cannabinoids, have been placed under national control. The most recent amendment, in force since October 2014, added 66 NPS to the list, including synthetic cannabinoids such as AB-CHMINACA, FUB-144, 5F-AMBICA, AM-6527 and various JWH compounds. Since 2010 the emergence of synthetic cannabinoids has been reported in the country. Seizures of synthetic cannabinoids (often sold in the country under the name of the tree

“bonsai”) amounted to 221 Kg in 2013, exceeding by far the methamphetamine seizures (101 kg) for the same year, according to data from the Turkish national Police.

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Source: UNODC EWA

## Austria: synthetic cannabinoids account for the majority of NPS reported to the UNODC-EWA

**VIENNA, Austria – 01 February 2015.** Synthetic cannabinoids continued to be the largest group of NPS present in the NPS market, according to the data reported through the UNODC Early Warning Advisory on New Psychoactive Substances (EWA). In 2014, 39 per cent of the NPS reported corresponded to the group of synthetic cannabinoids, 18 per cent to the group of phenethylamines and 15 per cent to the group of synthetic cathinones. Up to December 2014, a total of 540 new psychoactive substances (NPS) have been reported to the UNODC EWA, with the most notable increase in 2014 alone, when 450 substances were reported.

## Luxembourg: large seizure of synthetic cannabinoids in Europe

**LUXEMBOURG, Luxembourg – 09 January 2015.** In December 2014, Luxembourg Customs seized 40 kg of synthetic cannabinoids, namely of MDMB-CHMICA. The drugs were seized while conducting regular controls at the air freight hub of the Findel airport from a cargo originating from Shanghai and destined for Madrid. According to the press release from Custom authorities, the drugs seized have an estimated value of USD 22.8 million. This seizure is reported to be one of the largest seizures of synthetic cannabinoids in Europe. The synthetic cannabinoid MDMB-CHMICA is not under international control and its emergence has only been reported to the UNODC-Early Warning Advisory by one European country in 2015.

## Luxembourg: synthetic cannabinoids cannot be considered as medicinal products

**LUXEMBOURG, Luxembourg – 10 July 2014.** The European Court of Justice (ECJ) has ruled that substances, such as synthetic cannabinoids, often marketed as “Spice”, do not fall under the concept of ‘medicinal product’ (Directive 2001/83/EC), as these substances, which are harmful to human health, are consumed purely for recreational purposes, and not for therapeutic use. The decision was preceded by a referral to the ECJ by the German Federal Court of Justice (BGH) which, in two sets of criminal proceedings, had to decide if the sale of mixtures containing synthetic cannabinoids may give rise to criminal law proceedings on the ground of the unlawful sale of unsafe medicinal products, under the German Pharmaceutical Act (AMG). Following this ruling of the ECJ, the BGH released two other vendors of synthetic cannabinoids who had been sentenced by the Regional Courts of Bayreuth and Limburg, for selling herb mixtures containing synthetic cannabinoids as they were considered to be unsafe medicinal products.

## United Kingdom: increased enquiries to the NPIS related to the use of synthetic cannabinoids

**LONDON, United Kingdom – October 2014.** The 2013/14 report of the UK National Poisons Information Service (NPIS) points to a large increase in enquiries related to synthetic cannabinoids compared to the previous year. The NPIS monitors activity related to 61 different drugs of misuse, including new psychoactive substances. According to the report, there were around 1,600 telephone enquiries and 58,500 TOXBASE accesses related to NPS, which represents an increase of 30 per cent and 10 per cent, respectively, compared with the figures for the previous year. The largest increases were for synthetic cannabinoids, with 13-fold more telephone enquiries and 2.5-fold more TOXBASE accesses compared to the previous year. The NPIS provides information about individual substances, through its online database TOXBASE, to health care workers in the UK.



Source: National Poisons Information Services

### Brazil: 14 synthetic cannabinoids placed under control

**BRASILIA, Brazil – 17 October 2014.** Fourteen synthetic cannabinoids have been added to the list of psychotropic substances under control, according to a statement by the National Health Surveillance Agency (ANVISA). The substances include AM-2201; EAM-2201; MAM-2201; JWH-071; JWH-072; JWH-073; JWH-081; JWH-098; JWH-210; JWH-250; JWH-251; JWH-252; JWH-253 and JWH-122. According to the Agency, none of these compounds has therapeutic use and they were brought to the attention of ANVISA by law enforcement authorities who have seized products containing these substances in the country. In 2014 ANVISA updated the list of controlled substances on four occasions, placing 36 substances under control.



Source: UNODC

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### Canada: Government proposes amendment to legislation with respect to synthetic cannabinoids

**OTTAWA, Canada – 31 January 2015.** An amendment of Schedule II to the Controlled Drugs and Substances Act (CDSA) and of Item 17 of the Schedule to the Narcotics Control Regulations (NCR) with respect to synthetic cannabinoids has been proposed. The amendment seeks to make more explicit their control status in order to facilitate efforts to protect public health and the administration and enforcement of the CDSA and its regulations. Currently, the CDSA and the NCR captures “cannabis, its preparations, derivatives and similar synthetic preparations” and synthetic cannabinoids are understood to be included under the latter term. However, given the growing importance of this NPS group, the amendment proposes to replace the terms “similar synthetic preparations” by a new entry that would specify that synthetic cannabinoids, as well as their salts, derivatives and isomers, should read as Cannabinoid Receptor Type-I agonists. Specific classes of known core chemical structures of synthetic cannabinoids would also be included.

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### United States: State of Louisiana places “MAB-CHMINACA”, a new synthetic cannabinoid, under control

**LOUISIANA, United States – 29 October 2014.** The new synthetic cannabinoid N-(1-amino-3,3-dimethyl-1-oxobutan-2-yl)-1-(cyclohexylmethyl)-1H-indazole-3-carboxamide, also known as “MAB-CHMINACA”, has been scheduled as a controlled substance in the State of Louisiana to avoid an imminent peril to public health, safety or welfare. The substance was added by an Emergency Rule to the most stringent Schedule of controlled substances after the Department of Health and Hospitals indicated that the substance has a high potential for abuse, no currently known medical use in the United States and a lack of accepted safety for use of the substance under medical supervision. This new synthetic cannabinoid is not under international control, nor is it controlled at the federal level in the United States. In addition, this is the first time the substance has come to the attention of the UNODC Early Warning Advisory on New Psychoactive Substances.

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### United States: significant increase in the number of drug-related emergency department visits involving synthetic cannabinoids

**WASHINGTON D.C., United States – 16 October 2014.** The number of emergency department (ED) visits involving synthetic cannabinoids increased significantly from 11,406 visits in 2010 to 28,531 visits in 2011, according to a recent report from the Substance Abuse and Mental Health Services Administration (SAMHSA). A four-fold increase in the number of visits involving synthetic cannabinoids for patients aged 18 to 20 was reported (from 1,881 visits in 2010 to 8,212 visits in 2011), while for patients aged 12 to 17, it doubled from 3,780 visits in 2010 to 7,584 visits in 2011. A significant increase in the number of ED visits involving synthetic cannabinoids from 2010 to 2011 was reported for both males and females: for male patients, ED visits increased from an estimated 8,830 visits in 2010 to an estimated 19,923 visits in 2011 and for females a threefold increase was estimated. In 2011, synthetic cannabinoids were the only substance involved in 65 per cent of the ED visits by those aged 20 or younger, showing the harmful effects of these substances, especially to youth.

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## Global SMART accomplishments for 2014

Since 2008, the Global SMART (Synthetics Monitoring: Analyses, Reporting and Trends) Programme has been working towards improving the capacity of targeted Member States to generate, manage, analyse, report and use information on illicit synthetic drugs. In 2014, the Global SMART Programme:

### Published and launched

- The Global Synthetic Drugs Assessment: Amphetamine-type stimulants and new psychoactive substances, 2014;
- The regional report Amphetamine-Type Stimulants in Latin America, 2014 (in English and Spanish);
- The Global SMART Update Volumes 11 and 12 (in English and Spanish);
- Updated version of the Global SMART Programme brochure (in English and Spanish);
- Updated version of the New Psychoactive Substance leaflet/poster (in English and Spanish);

### Organised

- The UNODC-WHO expert consultation on new psychoactive substances in Vienna;
- A side event on “methamphetamine on the rise” at the 57<sup>th</sup> session of the Commission on Narcotic Drugs;
- A briefing for its stakeholders during the SMART Advisory Group Meeting in Vienna;
- The sixth SMART annual regional workshop on synthetic drugs in East and South-East Asia;

### Contributed to

- The 2014 World Drug Report;
- The 36<sup>th</sup> meeting of the WHO Expert Committee on Drug Dependence (June 2014);
- The 55<sup>th</sup> regular session of the Inter-American Drug Abuse Control Commission (CICAD);
- A side event on “new psychoactive substances: a global challenge, a global response” at the 57<sup>th</sup> session of the Commission on Narcotic Drugs;
- The dissemination of information related to the synthetic drug situation at targeted conferences and events, such as the Third International Conference on Novel Psychoactive Substances (May 2014), the 14<sup>th</sup> Annual meeting of the EMCDDA Reitox Early Warning System Network (June 2014), the regional workshop of the Inter-American Observatories on Drugs (July 2014), the First Greater Mekong Subregion Drug Enforcement Conference in China (October 2014) and the G7 Meeting on NPS in Germany (November 2014).

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If you have comments on this report, or would like to contribute information that should be considered for future reports, please contact the Global SMART Programme at [globalsmart@unodc.org](mailto:globalsmart@unodc.org). Information on the Global SMART Programme can be found via the internet at [www.unodc.org](http://www.unodc.org) and [www.apaic.org](http://www.apaic.org) or by contacting UNODC at the Vienna International Centre, P.O. Box 500, A-1400, Vienna, Austria.