

# **Closing Evidence Gaps on the Prevalence and Harms of New Psychoactive Substances in Scotland**

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## Introduction

New psychoactive substances (NPS) have risen to prominence in recent years, and stakeholders across Scotland have raised concerns about the impact of these substances on individuals, services and local communities. Much, though, is still unknown about the scale and associated harms of NPS-use in Scotland. While there is increased awareness of the issue across sectors, work is needed to strengthen the evidence base on NPS. This is crucial to ensuring an effective and proportionate response to the problem.

The report considers the state of knowledge on NPS in Scotland, with a focus on prevalence and harm. As part of this, proposals are made which may inform future work, closing evidence gaps on NPS.

### Main Findings

*A diverse market:* Within the broad category of NPS, there is diversity in substance types. These are being utilised by different subgroups of the population, for different reasons and in different ways and settings.

*NPS present in Scotland:* Police Scotland's 'day of action on NPS' identified 37 different chemical compounds present across hundreds of NPS products. The majority of these were synthetic cannabinoids. However, due to the nature of the NPS market, other forms of NPS may quickly become available in Scotland.

*Access to NPS:* Although 'head-shops' and online stores are important points of access to NPS for users, similarly to established drugs, NPS are often obtained through peer groups. Street-level dealers have also moved into the NPS market. Primary points of access to NPS are likely to vary by user group.

*Motivations for NPS-use:* The main motives for NPS-use include greater availability and lower price than established drugs, legality and a preference for the effects of particular forms of NPS. Again, the constellation of key motivations for NPS-use will vary by user group.

*Prevalence of NPS-use:* Data from the Scottish Crime and Justice Survey (SCJS) suggests that prevalence of NPS-use in the general population and in comparison to established drugs is low. There are, though, limitations to this data. Prevalence of NPS-use within subgroups of the general population, including marginal groups such as chaotic drug users and individuals with mental health issues, is missed. The scale of use may be significantly higher in some subpopulations.

*Harms associated with NPS-use:* Issues in responding to the emergence of new forms of NPS, identifying chemical compounds present in NPS products and gaps in reporting mean that comprehensive evidence on the harms of NPS is limited. Certain patterns of use may place users at greater risk, for example, polydrug use and/or injecting NPS.

## Defining NPS

The Home Office recently defined NPS as ‘psychoactive drugs, newly available in the UK, which are not prohibited by the UN Drug Conventions, but which may pose a public health threat comparable to that posed by substances listed in these conventions’.<sup>1</sup> This wide definition has some utility in mapping out the boundaries of the issue. For example, it notes that such drugs are not new *per se*, but ‘newly available’. The EMCDDA adds that ‘*this is an area characterised by limited data on use, with the risks and harms largely unknown, and where high potency levels are of serious concern*’.<sup>2</sup>

Stakeholders in Scotland, though, have noted a degree of uncertainty at ground level over what does and does not constitute an NPS. This has implications both for gathering and sharing data on the issue. For example, during the Scottish Government Evidence Group Meeting on NPS on 26 August 2014, it was questioned whether a substance such as mephedrone, which has been under control in the UK for over 4 years and is relatively well-understood, should still be referred to as an NPS. Further to this, inconsistency in terminology was raised: when the term ‘legal high’ may be used and whether NPS refers to the chemical compound(s) or ‘brand name’.<sup>3</sup> This ambiguity also extends to the categorisation of different forms of NPS. For example, NPS may be placed under their chemical compound group (e.g. synthetic cannabinoid, cathinone, piperazine, etc.) or according to their neurochemical effect (e.g. stimulant, sedative, dissociative, hallucinogenic, etc.).

These questions may be resolved through consultation with key organisations and the rolling-out of practical, Scottish national guidelines for defining and categorising NPS. A clear and settled schema, establishing standardisation across sectors, would ease communication between stakeholders and the collection of data on the issue.<sup>4</sup>

This would also help to ensure distinctions are made between different forms of NPS. The umbrella term ‘NPS’, and the common challenges of substances in this area, must not obfuscate the distinct demographics and patterns of use between different forms of NPS. For example, reports suggest that NPS are used as substitutes for established drugs. Club drug users, then, may seek out empathogen and stimulant-type NPS, while heroin users look to opioid and ‘downer’ NPS. Additionally, a first-time drug user may favour a synthetic cannabinoid over cannabis, but then never move onto other forms of NPS. Within the broad category of NPS, then, there is variety in substance-types, and these are being utilised by different groups, in different settings, for different reasons. Drawing out these distinctions is crucial to understanding prevalence of NPS-use within subpopulations and matching particular NPS to acute and long-term harms. This includes the relationship between

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<sup>1</sup> Home Office, (2014), [New Psychoactive Substances Review: Report of the Expert Panel](#), p.4.

<sup>2</sup> EMCDDA, (2014a), [Perspectives on Drugs: Synthetic Cannabinoids in Europe](#), p. 2

<sup>3</sup> The EMCDDA, for example, suggests that a distinction be made between NPS, which refers to the chemical compound, and ‘legal high’ – the product sold openly, under a brand name via the internet and ‘head-shops’.

<sup>4</sup> The UK [Drug Watch Drugs Wheel](#) provides a useful model for categorising NPS, placing them according to their neurochemical effect and showing their relationship to established drugs

the consumption of established drugs and NPS. A national-level model for identifying and categorising NPS should recognise this nuance.

### Proposal

Work with stakeholders to formulate national guidelines for defining and categorising NPS. By establishing standardisation across organisations, the collection and sharing of data will be enhanced. This is crucial to strengthening the evidence base on NPS.

## **The NPS market in Scotland**

### *Production and supply of NPS*

NPS are designed to circumvent existing drug laws.<sup>5</sup> They typically mimic controlled drugs, such as cannabis, cocaine and MDMA, but are chemically distinct from these substances. Many NPS were synthesized as far back as the 1970s, and have recently been 'rediscovered' and reintroduced to the drug market.<sup>6</sup> These and other forms of NPS may be modified, altering their chemical structure to stay ahead of drug controls.<sup>7</sup> Moves to place NPS under control, then, often have the unintended consequence of fuelling innovation in the market.

Producers in China and India are believed to be the main suppliers of NPS to the European market, although local producers have also been identified.<sup>8</sup> These suppliers are linked both directly and indirectly through European networks, to distributors in Scotland and the rest of the UK. NPS may be imported as packaged, branded products, or wholesale chemicals, which are then mixed with other substances and sold under different names. This adds to uncertainty over the chemical contents of NPS products. Elements of organised crime are believed to be involved in the NPS trade, but this does not currently constitute their primary commodity. Police Scotland continues to work with UK and EU partners in law enforcement to map supply in NPS source and transit countries.

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<sup>5</sup> There are exceptions to this. Khat, for example, is widely used in the Horn of Africa and the Arabian Peninsula as a mild stimulant. The market for this drug has been based around migrant communities from these areas settling in the UK.

<sup>6</sup> UNODC, (2013), [The Challenge of New Psychoactive Substances](#), a Report from the Global SMART Programme, UNODC: Vienna, p.1.

<sup>7</sup> The EMCDDA describes how chemists are accessing 'the back catalogue of chemical substances developed by the pharmaceutical and medical research industries', and exploiting access to cheap chemicals to synthesise such substances in bulk. EMCDDA-Europol, (2014), [EMCDDA-Europol Annual Report on the Implementation of Council Decision 2005](#), p.6.

<sup>8</sup> Production of NPS was also identified in Scotland. The operation involved export of a particular NPS to Australia, where it had been banned. (DCI Garry Mitchell, interview with the Author, 2 October 2014)

## Case Study One: Synthetic Cannabinoids<sup>9</sup>

Synthetic cannabinoids act on the same receptors in the brain as cannabis. There is extensive variation in the chemical structure of NPS in this group. The EMCDDA reported the identification of 102 new forms of synthetic cannabinoid between 2009 and 2013, a number of which have since been placed under control in the UK.

To replicate the user experience of cannabis, the cannabinoid is mixed with acetone (or an equivalent) and sprayed onto plant material.<sup>10</sup> This 'carries' the chemical mixture and allows users to smoke the NPS. As in the case of many other forms of NPS, there is limited evidence on the pharmacology and toxicology of this group of substances in humans. In addition to this, there is extensive 'inter-and intra-batch variability in 'legal high' products containing synthetic cannabinoids', both in terms of contents and potency.

### *Access to NPS*

High-street 'head-shops' and online stores are important sources of NPS for users. NPS, sold under brand names, such as 'Gogaine' and 'Spice', are marketed as 'research chemicals', 'bath salts' or 'herbal incense', for example. Packaging also carries warnings against human consumption. In this way, sellers seek to evade trading standards and consumer protection controls, staying within the boundaries of the law.<sup>11</sup> In the absence of bespoke legislation against the selling of NPS, Police Scotland has faced challenges in addressing the issue.

It is difficult to establish how much of the demand for NPS in Scotland is met directly by 'head-shops' and online stores. The experience of some stakeholders suggests that most NPS in Scotland are bought from street-level dealers. The Scottish Crime and Justice Survey<sup>12</sup> (SCJS) noted in 2012/13 that, of all those who had taken drugs in the last month, 1.8 per cent and 0.4 per cent reported accessing their 'most used drugs' from a shop or online respectively. It must be noted, though, that this represents a percentage of the total drug market and does not include more sporadic drug users.

In addition to this, the 2013 Global Drug Survey (GDS)<sup>13</sup> found that 53 per cent of UK respondents who had used NPS obtained it from the internet, 43 per cent from a shop, 18 per cent from a friend and 9 per cent from a dealer.<sup>14</sup> It may be assumed

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<sup>9</sup> Drawn from EMCDDA, (2014a) [Perspectives on Drugs: Synthetic Cannabinoids in Europe](#)

<sup>10</sup> For example, large quantities of damiana leaf have been seized in Scotland, reportedly for this purpose.

<sup>11</sup> This also means that 'head-shop' operators will not offer advice on 'safe' consumption of the products they sell; doing so would leave them open to prosecution. See Home Office, (2014), [New Psychoactive Substances Review: Report of the Expert Panel](#), p.15.

<sup>12</sup> Robertson, Laura, with Bates, Ellie, (2014), [The Scottish Crime and Justice Survey Drug Use](#), Scottish Centre for Crime and Justice Research: University of Glasgow, Scottish Government Social Research

<sup>13</sup> Mixmag (2013) [Mixmag's Global Drug Survey: The Results](#), accessed 3.2.2015

<sup>14</sup> This survey comes with caveats around self-selection, e.g. the survey is targeted at clubbers, while marginal subpopulations are likely to be under-represented.

that a large proportion of NPS obtained from peer groups also originated from 'head-shops' and online sources. Furthermore, the 2014 GDS<sup>15</sup> found that 20.5 per cent of all Scottish respondents had experience of purchasing drugs from the internet.<sup>16</sup>

Although these trends would indicate a sizable number of users purchasing NPS from 'head-shops' and websites, it should be noted that the GDS is largely targeted at clubbers. For other NPS-user subgroups, the picture may be different. For example, long-term opiate users may be purchasing certain forms of NPS alongside heroin from street-level dealers. Work is needed to map pathways to NPS-use for different sub-groups in Scotland.

### *NPS present in Scotland*

The composition of supply and demand for NPS changes rapidly. However, Police Scotland's 'day of action on NPS' on 22 August 2014 gave a 'snapshot' of the market.<sup>17</sup> Working with partner enforcement agencies, 6000 packets of NPS were recovered from 58 'head-shops' throughout the country. Analysis of 400 samples identified 37 different chemical compounds present across samples, but with great variation in the contents of products, e.g. chemical mixture, potency and ratio. This extended to packages carrying the same brand name. The vast majority of these recovered packages contained no controlled substances.<sup>18</sup> Reflecting trends at European-level, cannabinoids made up the largest share of recovered NPS products. Additionally, Police Scotland seizure data indicates that mephedrone and ketamine, banned substances which may fall into the NPS bracket, remain on the market, although seizures of these drugs are considerably lower than for cannabis or cocaine. Figures from 2012/13 show that there were 21,169 seizures of cannabis, 2,140 seizures of cocaine, 194 of mephedrone and 19 of ketamine<sup>19</sup>.

In 2013, the UK Forensic Early Warning System (FEWS) reported 11 new forms of NPS to the EMCDDA<sup>20</sup>. In the same year, the EMCDDA Early-Warning System (EWS) detected 81 new forms of NPS European-wide, which compares to 74 in 2012, 49 in 2011 and 41 in 2010.<sup>21</sup> While many of these NPS fail to become popular or are only available in a limited number of countries, the figures demonstrate the rate of change in the NPS market and the large number of NPS which may potentially become available in Scotland. In addition to this, the internet enables NPS distributors to reach consumers across borders. The EMCDDA identified 651 online stores selling NPS across the EU in 2013.<sup>22</sup> Online stores may offer NPS not present in Scottish 'head-shops', including substances which have been placed

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<sup>15</sup> Winstock, A (2014) [The Global Drug Survey 2014 Findings](#), accessed 3.2.2015

<sup>16</sup> This may also include 'dark web' purchases of established drugs, though.

<sup>17</sup> Carried out as part of Police Scotland's Operation Redwall.

<sup>18</sup> Police Scotland's findings correlate with the UK-wide picture: 'Analysis of NPS samples collected by The UK Forensic Early Warning System (FEWS) (in 2013/14) found that around nine out of ten were mixtures of either two (61 per cent) or three (30 per cent) different active components. The analysis also found that few samples collected from the internet or 'head-shops' contained controlled drugs'. See Home Office, (2014), [New Psychoactive Substances Review: Report of the Expert Panel](#), p.8.

<sup>19</sup> Scottish Gov., (2014), [Drug Seizures by Scottish Police Forces, 2012-13](#),

<sup>20</sup> Home Office, (2014), [New Psychoactive Substances Review: Report of the Expert Panel](#), p. 8

<sup>21</sup> EMCDDA-Europol, (2014), [EMCDDA-Europol Annual Report on the Implementation of Council Decision 2005](#), p.5.

<sup>22</sup> *Ibid.* (It is unclear how many of these sites offer delivery to Scottish consumers)

under control in the UK. Monitoring the NPS market in Scotland, then, presents significant challenges.

### *NPS and the illicit drug trade*

NPS are also present in the illicit drug trade in Scotland. This has two main aspects. First, reports suggest that drug dealers have moved to meet demand for NPS which have been made illegal, e.g. mephedrone. Placing substances under control, then, may also have the unintended consequence of pushing NPS into the illicit sphere. Second, unbeknown to users, NPS are used as adulterants and substitutes for established drugs by suppliers and dealers.

Cheap forms of NPS are cut with drugs such as cocaine, to increase profit margins. This is intended to maintain potency, but users may experience unwanted and/or adverse reactions to the substance. There may also be hidden acute and/or long-term harms from mixing NPS with different drugs.

Further to this, fake ecstasy pills, substituting MDMA for an NPS, pose substantial dangers. NPS may offer a cheaper and/or more available alternative than MDMA for suppliers and dealers, while entailing greater health risks for consumers.<sup>23</sup> The emergence of 'Green Rolex' pills in 2013 is an example of this phenomenon. The pills were found to contain PMA (methoxyamphetamine), which is more toxic than MDMA, has a longer delay in effect and a steeper dose-response curve. Users, believing that the pills had low MDMA content due to the delayed effect time of PMA, took additional doses, exposing themselves to higher toxicity and more intense effects. Seven deaths in Scotland were linked to the pills before they faded from the market. The Glasgow Drug Trend Monitoring Group played a pivotal role in formulating and sharing effective warning messages on the potential harms of these pills. Such practices, though, are by their nature reactive, rather than proactive in reducing harm.

In the Netherlands, widely available 'pill-testing' facilities are believed to be responsible for the withdrawal of fake ecstasy from the domestic market. As users have become more aware of what they are consuming, suppliers have been forced to withdraw such products. Additionally, harm reduction messages around consuming ecstasy are more effective, i.e. tailored to MDMA rather than an NPS with incomplete knowledge on the associated harms. The provision of such facilities, though, may also have led to higher MDMA content in ecstasy pills sold to Dutch users, and the diversion of PMA 'ecstasy' to the UK market.<sup>24</sup>

#### Proposal

Support work mapping the market for NPS in Scotland, including how different subgroups are accessing NPS.

Explore the possible advantages and disadvantages of introducing 'pill-testing'

<sup>23</sup> EMCDDA, (2013), [The EU Drug Markets Report: a Strategic Analysis](#), p.108.

<sup>24</sup> Power, Mike, (2013), ['Killer Pills: Myth or Murder?'](#), *Mixmag*, 4 April 2013 .



facilities in Scotland as a harm-reduction measure.

## Motivations for NPS-use in Scotland

Work is needed to establish the motivations for NPS-use in Scotland. As discussed previously (page 2-3), there is diversity in the NPS market, which means that there is likely to be variation between user groups along this variable. The general motivations for taking NPS are assumed to be similar to those for established drugs, e.g. peer pressure, boredom, etc. The question, then, is what is distinct about demand for NPS? Stakeholders in Scotland have identified common themes.

- *Availability and cost:* NPS are generally more accessible than established drugs. Buying from 'head-shops' or the internet cuts out the 'middle-man', i.e. drug dealers. Additionally, some NPS are perceived to be of higher purity and lower cost than established drugs. For example, the rise in demand for mephedrone in 2010 is correlated to falls in the purity of cocaine in the UK.
- *Legality:* Users wary of being prosecuted for drug offences may favour 'legal highs'. Related to this, NPS are generally not picked-up on drug tests. The legality of certain forms of NPS also carries connotations of safety for some users, who falsely assume these products carry fewer health risks than controlled drugs.
- *Preference for NPS effects:* Users may favour the effects of certain NPS over established drugs. For example, where mephedrone initially emerged as an alternative to cocaine, the drug is now popular in its own right. There may also be a desire to experiment with new forms of NPS; chasing new and distinct experiences.

Some of these motivations may be more important to different NPS-user groups than others. For example, avoidance of detection in drug tests may be a primary motive for prisoners, while cost is an important consideration for teenage users.<sup>25</sup> Respondents to the 2012 GDS, which focuses on clubbers, rated the ability to buy online and the unavailability of other drugs as the most influential factors behind NPS use.<sup>26</sup> Measham argues that understanding such motivations, and mapping the relationship both between them and with the illicit drug market, is key to identifying NPS-user groups.<sup>27</sup>

### Proposal

Consider commissioning research into the motivations of NPS-use in key subgroups of the population, e.g. high school pupils, college/university students, long-term drug users, etc.

<sup>25</sup> Home Office, (2014), [New Psychoactive Substances Review: Report of the Expert Panel](#), p.13.

<sup>26</sup> Mixmag, (2012), [Mixmag's Drug Survey: The Results](#), 14 March 2012

<sup>27</sup> Measham, Fiona, (2013), 'Social Issues in the Use of Novel Psychoactive Substances: Differentiated Demand and Ideological Supply', in Dargan & Wood, (Eds.), *Novel Psychoactive Substances: Classification, Pharmacology and Toxicology*, London: Academic Press, pp.105–127.



## Prevalence of NPS-use in Scotland

### *Survey data*

Existing sources would suggest that the scale of NPS-use in Scotland is relatively small. The SCJS gathers information on the prevalence of self-reported drug use among the general population, aged 16 and over<sup>28</sup>. For 2012/13, 0.5 per cent of adults reported taking a 'new drug' in the last year. The 'new drugs' included in the survey were BZP, GBL, synthetic cannabinoids, khat and salvia divinorum. For the same period, 0.4 per cent of respondents reported taking mephedrone, and 0.2 per cent had taken ketamine. This compares to 5.1 per cent for cannabis (the most reported drug used), 1.7 per cent for cocaine, and 1.3 per cent for ecstasy. The SCJS found NPS-use to be more prevalent in the 16-24 age group than those aged 25-44.<sup>29</sup>

The Scottish Schools Adolescent Lifestyle and Substance Use Survey 2013 (SALSUS)<sup>30</sup> also reported low rates of NPS-use. For example, four per cent of 15 year olds reported ever using one or more new psychoactive substances (including GBL/GHB, mephedrone, salvia, synthetic cannabis and powers or pills that are sold as legal highs). Of these, 2 per cent reported having taken at least one NPS in the last month. By contrast, 9 per cent of the same cohort reported cannabis use in the past month. Therefore, while NPS now constitute an important part of the Scottish drug economy, the SCJS and SALSUS suggest prevalence of use is low, both in the general population and in comparison to other drugs.

There are, though, limitations to this data. First, marginal groups are likely to be missed in these general surveys. The SCJS is a survey of private households, while SALSUS targets school pupils. Those with chaotic drug use and/or precarious living arrangements, for example, are under-represented. Furthermore, when drug use is focused in a particular subpopulation, such surveys will under-report use. This may well be the case with NPS, e.g. concentrated prevalence in club drug and opiate users. Second, not all NPS are included in these surveys. Supply and demand for NPS fluctuate, which means new substances rapidly appear, before fading quickly from the market. Surveys, such as the SCJS and SALSUS struggle to keep-up with this rate of change. This is compounded by problems in establishing the chemical contents of NPS products. NPS-users are often unable to accurately state what they have consumed, due to a lack of product information and inconsistencies between packages.<sup>31</sup>

Targeted online surveys may provide valuable information on prevalence of NPS-use within certain subgroups of the population, but they too face similar problems to

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<sup>28</sup> Robertson, Laura, with Bates, Ellie, (2014), [The Scottish Crime and Justice Survey Drug Use](#), Scottish Centre for Crime and Justice Research: University of Glasgow, Scottish Government Social Research

<sup>29</sup> Ibid.

<sup>30</sup> NHS National Services Scotland (2014) [Scottish Schools Adolescent Lifestyle and Substance Use Survey \(SALSUS\) Drug Use](#) Report .

<sup>31</sup> For more discussion of the challenges of gathering data on NPS, see Gillies, Allan, (2014), *Mapping Current and Potential Sources of Routine Data Capture on NPS in Scotland*, Scottish Government document.

those described previously. For example, the 2014 GDS demonstrates that prevalence of NPS-use in clubbers is substantially higher than the general population. In UK-wide data, 12 per cent of respondents reported using legal highs, research chemicals and/or synthetic cannabis in the 12 months prior to the survey (conducted during November / December 2013)<sup>32</sup>. The online survey My Legal High is aimed more widely, seeking information from young people and adults throughout the UK.<sup>33</sup> As in the previous cases, though, marginal groups are likely to be missed, while a reliance on self-reporting reduces reliability. Therefore, although survey data has a role to play, a variety of sources are needed to strengthen the evidence base on NPS prevalence in Scotland.

### *Existing and potential systems of data capture on NPS*

Stakeholder organisations may be able to support this process through their systems of data capture. Existing sources may be exploited to outline prevalence of NPS-use in Scotland, at a general level and within specific subgroups.<sup>34</sup> For example, records of telephone and online enquiries to the National Poisons Information Service (NPIS) provide an indicator of trends in NPS-use.<sup>35</sup> Currently, this data is collected at a UK-level, but it may be disaggregated to give Scotland-specific analysis. Additionally, the Scottish Drug Misuse Database (SDMD) collects data on individuals presenting to drug treatment services, including those reporting NPS-use. At this stage, though, data on NPS-users in the SDMD is relatively sparse; constituting a small percentage of the total number of people presenting to drug treatment services in Scotland. Further to this, efforts to incorporate NPS into the national system for recording transactions in needle exchanges (NEO) for 2013/14 may give an insight into the scale of NPS-use in injecting drug users.

There are also a number of potential sources of data capture on NPS in Scotland, which currently do not include NPS in their reporting systems. Within NHS Scotland, for example, patient recording systems do not have coding for NPS. This means that information is being lost on patients presenting due to NPS-use. A & E, in particular, is potentially a valuable source of data capture on NPS, picking-up on prevalence and harms in a range of populations.

Although there is scope to improve this, it is important to first clearly define the key research questions on NPS prevalence in Scotland and how best to address them. Mining information on NPS from across the Health Service and other sectors may be an ineffective use of resources. Due to the fast-moving nature of the NPS market, information gleaned from these data systems may quickly become outdated. Bespoke research may, then, offer a more efficient and timely alternative for addressing certain research questions.

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<sup>32</sup> Winstock, A (2014) [The Global Drug Survey 2014 Findings](#), accessed 3.2.2015

<sup>33</sup> Yet to publish full results, although a summary of the key findings is available at: <http://www.drugmisuseresearch.org/>

<sup>34</sup> These are described in greater detail in Gillies, (2014).

<sup>35</sup> NPIS, (2014), [National Poisons Information Service Report 2013/14](#), , p.36.

### *Investigating NPS-prevalence in subpopulations*

Stakeholders have expressed their concerns over NPS-use in marginal subgroups of the population. Anecdotal reports suggest that NPS-use is on the increase among long-term drugs users, young people in care, those with mental health issues and prisoners. The consequences of NPS-use in these vulnerable groups may be more severe, especially where NPS are taken with other drugs (polydrug use). Frontline staff are already witnessing extreme adverse reactions to NPS in these subgroups, e.g. psychosis. Operating with incomplete information, staff are often unsure of how best to respond. There are also reports indicating differentiation between areas, e.g. NPS-use among injecting drug users is believed to be especially pronounced in Edinburgh. These trends may be temporary: 'drug fads' which die out. However, there are fears that the problem could escalate.

Bespoke research projects, focusing on these subgroups, may strengthen the evidence base on NPS. By establishing prevalence within vulnerable subpopulations where NPS-use may be more concentrated, such research may supplement the high-level data collected by general population surveys. Outlining the scale of the problem within these 'at-risk' groups is critical to prioritising resources and developing guidelines around treatment, prevention and harm reduction.

#### Proposals

Exploit existing sources to outline NPS prevalence in Scotland, including the SCJS, SALSUS, My Legal High and records of enquiries to the NPIS.

Work with stakeholder organisations to support integration of NPS into standard reporting procedures where appropriate, thereby enhancing data capture of NPS-use.

Consider bespoke research into the prevalence of NPS-use in vulnerable subgroups of the general population. This may also include geospatial mapping of the problem.

### **The associated harms of NPS-use**

Stakeholders identified the harms associated with NPS-use as one of the most pressing evidence gaps on the issue. There is generally a lack of comprehensive information on the acute and long-term harms of such substances. As the market evolves, new forms of NPS emerge. Gathering accurate and up-to-date information on their effects, then, poses difficulties. This is compounded by the following problems:

- Matching specific chemical compound(s) present in NPS products to harms: There are hundreds of NPS products, sold under different brand names. Packages contain different mixtures and ratios of chemical compounds. Even for products with the same brand name, chemical compositions are inconsistent. Furthermore, individuals buying substances from street-level dealers may be unaware of the contents. NPS users, then, are often unable to state accurately what they have consumed.

- Routine blood and urine screens do not pick-up on NPS: Although there are new rapid detection methods to identify these substances, access, at this time, is limited. Incomplete information on how long different NPS stay in the body, how they synthesise with different substances, and difficulties in testing for miniscule quantities add to the problem.
- Integrating NPS into formal data capture systems: As noted in the previous section, incomplete recording systems mean that evidence related to patients presenting with reported NPS-use is currently limited. Again, there may be scope to enhance systems of data capture in some sectors to pick-up on these harms.

### *Sources on NPS-harms in Scotland*

There are efforts to improve knowledge of the harms caused by NPS-use in Scotland.

Information on deaths related to NPS is captured in reports from National Records of Scotland (NRS), and as part of the National Drug Related Death Database (NDRDD), which has been managed by NHS Scotland – Information Services Division (ISD) since 2009<sup>36</sup>. The most recent NRS annual report on drug related deaths shows that NPS have been implicated in a number of deaths from 2009 onwards (when the first Scottish deaths involving NPS were registered<sup>37</sup>). Deaths where NPS were found to be present in the body have increased over this period, from 4 in 2009, 47 in 2012, to 113 in 2013<sup>38</sup>. Deaths where it was reported that one (or more) NPS were implicated in, or potentially contributed to, the death were lower, but again have increased, from 3 in 2009 to 60 in 2013<sup>39</sup>. However, in only 5 of the 60 cases reported in 2013 were NPS the only substances implicated in the death<sup>40</sup>.

In addition to these figures, the most recent NDRDD report was published in 2014, (based on deaths recorded in 2012)<sup>41</sup>. This analysed a subset of drug-related deaths involving NPS, providing more detail on the characteristics of 36 individuals and the circumstances surrounding their death. This showed that the majority of deaths were amongst males (29 deaths) and that two distinct groups of drugs were present in NPS related deaths - 'benzodiazepine' type drugs, mainly phenazepam, and 'stimulant' type drugs. Polydrug use was a key feature of the NPS related drugs related deaths.<sup>42</sup>

The NPIS draws on medical and scientific evidence, as well as analysis from the EMCDDA, to provide information on NPS-toxicity to healthcare professionals. As

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<sup>36</sup> NHS National Services Scotland – ISD Scotland (2014) [The National Drug-Related Deaths Database \(Scotland\) Report: Analysis of Deaths occurring in 2012](#)

<sup>37</sup> National Records of Scotland (2014) [Drug-related deaths in Scotland in 2013](#)

<sup>38</sup> Ibid

<sup>39</sup> Ibid

<sup>40</sup> Ibid

<sup>41</sup> NHS National Services Scotland – ISD Scotland (2014) [The National Drug-Related Deaths Database \(Scotland\) Report: Analysis of Deaths occurring in 2012](#)

<sup>42</sup> Ibid

part of this, information is gathered on patients and their symptoms during phone enquiries to the NPIS<sup>43</sup>. This UK-level data may also be disaggregated, giving Scotland-specific analysis on the associated harms of NPS-use. There are also moves to supplement NPIS clinical data with routine analysis of blood samples.<sup>44</sup> Collaboration between NPIS and NHS Lothian, for example, used laboratory based follow up to confirm clinical diagnoses from poisoned patients who reported taking 'Ivory Wave'.<sup>45</sup>

Those providing frontline services are also gathering information on various aspects of NPS. This includes third-sector organisations and local practitioners, such as healthcare professionals and service providers. Although evidence collected at this level is largely anecdotal, such groups are sensitive to the changing dynamics of NPS-use on the ground. The focus tends to be on formulating practical guidelines for responding to NPS, such as advancing harm reduction messages. For example, local practitioners in Edinburgh have recently formed an NPS group, to discuss and share their experiences of NPS-use. This included representatives from the Forensic Medical Examiner Service, community based addiction specialists, acute health wards, psychiatric services, A & E and toxicology. Immediate plans are to introduce interim protocols for treatment, and pathway for sharing information.

In addition to this, the Scottish Government-funded, 'Recreational Drug Intoxication Project: Detecting Novel Psychoactive Substances' will screen blood and urine samples in those presenting with recreational drug intoxication/complications at A & E in the Glasgow Royal Infirmary. The project is a collaboration between NHS Greater Glasgow and Clyde, and the University of Glasgow Toxicology Department. In such cases currently, the implicated-NPS is rarely identified; in others, it will only be detected at autopsy. The project aims to address this, aiding the process of matching harms to specific NPS.

#### *Exploiting UK-wide and European sources*

Information gathered at a UK-wide and European level is also crucial in closing this evidence gap. Although there are unique dynamics to the issue in Scotland, the harms caused by specific forms of NPS are common across borders. Initiatives, such as the Welsh Emerging Drugs and Identification of Novel Substances Project (WEDINOS), then, should be utilised. WEDINOS analyses samples of NPS provided by individuals and partner organisation. This resource can offer information on the chemical compounds present in NPS products, as well as trends and harms associated with their use.

There are numerous EU-funded projects exploring the harms associated with NPS.<sup>46</sup> The Euro-DEN project, for example, was established in recognition of the important

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<sup>43</sup> NPIS (2014) [National Poisons Information Service Report 2013/14](#)

<sup>44</sup> To implement in all cases, this would require additional resources.

<sup>45</sup> Desoxypradol was the active ingredient identified in samples of 'Ivory Wave' powder and biological fluids. For more information see Murray, et al, (2012), 'Ivory wave' toxicity in recreational drug users; integration of clinical and poisons information services to manage legal high poisoning', *Clinical Toxicology*, Vol. 50, No. 2.

<sup>46</sup> For a complete list and description of these, see: EMCDDA, (2014b) [New Psychoactive Substances Projects, Studies and Research funded by the European Commission](#)

role hospital emergency departments can play in gathering information on the frequency of NPS-related presentations and patterns of acute harm associated with NPS-use. As in the case of NHS Scotland, data from hospital coding systems on NPS from across Europe is limited. A network of European emergency departments, then, has been created to gather data on these aspects of NPS and strengthen the evidence base.<sup>47</sup>

As well as identifying existing sources on NPS at a national level and dispersing these through the network, 'a minimum dataset collection tool has been developed to enable collection of data on individual cases, including basic demographics, self-reported recreational drugs/NPS used, circumstances of use, clinical features, management and outcome'.<sup>48</sup> This will be collected over 12 months to geospatially map emerging NPS and their pattern of use. Findings will be reported to the EMCDDA EWS and national focal points to inform the risk assessment process for NPS.

### *Patterns of NPS-use*

Patterns of NPS-use also have important implications for harms. In terms of NPS-use in existing drug users, NPS may replace or supplement established drugs.<sup>49</sup> Such users may be part of particular sub-groups of the population, where there are commonalities in the types of NPS sought out, how they are used (quantity, in what combinations) and method of consumption (see Case Studies Two and Three, page 15).

It is also important to explore pathways to NPS-use in first-time drug users; whether greater availability of NPS is leading to more people trying drugs, for example. Additionally, factors such as demographics (gender, age, income, etc.), geospatial trends in drug use (e.g. anecdotal reports suggest injecting NPS is more prevalent in Edinburgh than Glasgow), and context of use (setting as well as social context) shape patterns of NPS-use. For example, anecdotal reports suggest a trend, related to NPS-use, in weekend 'house parties' involving polydrug and alcohol binges over several days, without any break in use. Patterns of use here, and the associated harms, are distinct to socially isolated individuals using NPS alone.

Enhancing knowledge on the patterns of NPS-use is critical to formulating an effective policy response, as well as guidelines around treatment, education and harm reduction. As patterns of use vary between subgroups, the harms they are exposed to also vary.

Again, while survey data can pick-up on these dynamics in some user groups, small-scale studies of particular subgroups may be needed. In this way, information may be gathered, not only on the direct harms caused by particular NPS and trends in dependency, but how these are affected by patterns of use. This would also be valuable in exploring how users understand the harms associated with their NPS-use.

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<sup>47</sup> This network does not include any Scottish hospitals.

<sup>48</sup> Wood, D.M., et. al., (2014), 'The European Drug Emergencies Network (Euro-Den)', *Clinical Toxicology*, Early Online 1-3.

<sup>49</sup> Raising issues around polydrug use in the latter case.



### Case Study Two: Opiate Users

The 2013 report for drug-related deaths in Scotland identified a trend in Benzo-type NPS – e.g. phenazepam and etizolam – being used alongside established drugs, such as methadone and heroin. This is indicative of the ways in which ‘downer’-type NPS are being used by opiate users. Variation in potency between batches of such NPS presents significant health risks to individuals using these alongside heroin, for example.

Related to this, reports suggest that injecting drug users within this subgroup are increasingly turning to NPS. In Edinburgh, for example, frontline staff have noted cases of individuals injecting stimulant-type NPS (cathinones). Users are believed to be drawn, not only by availability and price, but also the intense high of consuming these forms of NPS in this way.

Injecting such NPS is corrosive to the skin and veins, and gives a highly potent dose. There are also fears that harm reduction measures, based around heroin use, are having a limited impact on NPS-injecting behaviour, e.g. individuals experiencing drug induced psychosis not following harm reduction advice. These are magnified for first-time drug injectors, who have no connections to heroin injecting circles and the ‘folk knowledge’ of this community. There are major public health risks related to this, in terms of the spread of blood borne viruses, for example.

### Case Study Three: Gay/Men who have Sex with Men Clubbers

NPS are also used by gay/men who have sex with men clubbers, but in different ways to the previous case.

Anecdotal reports indicate that NPS are popular in the Glasgow gay/MSM club scene. Although work is needed to outline the patterns of use, there may be parallels with similar groups in London. For example, mephedrone remains popular despite control, and is often taken alongside ketamine and GBL. Furthermore, polydrug use with established drugs, such as cocaine and ecstasy, is common.<sup>50</sup> In these cases, consumption through ingestion or nasal insufflation is more prevalent.

The practice of injecting as part of ‘chem-sex parties’ is believed to be present in this subgroup, although there is limited evidence for this in Scotland. ‘Chem-sex parties’ involve individuals injecting each other with NPS, typically cathinones, before engaging in ‘risky sexual practices’. Health bodies in other parts of the UK have expressed concerns that this may increase the spread of blood borne viruses. For example, uncertainty over the contents and strength of NPS, may lead individuals to lower inhibitions and place themselves at risk.<sup>51</sup>

<sup>50</sup> Home Office, (2014), [New Psychoactive Substances Review: Report of the Expert Panel](#), p.13.

<sup>51</sup> Wales Online, (2014), [‘Legal high party drugs are leading to increase in sexually transmitted diseases](#), warn experts’, available from <http://www.walesonline.co.uk/news>, 25 October 2014.



## Proposal

Where appropriate, support integration of NPS into standard reporting procedures to pick-up on the associated harms of use.

Consider bespoke research into the associated harms of NPS-use in vulnerable subgroups of the general population. This could also include patterns of use and geospatial mapping of the problem.

## **Data sharing between stakeholders**

Stakeholders have noted a need for greater collaboration between agencies in responding to NPS. The experiences of NPS of different sectors may be used in conjunction to enhance collective knowledge of the issue.

The issue of NPS has many moving parts, with supply and demand fluctuating. From an operational perspective, this poses challenges in gathering and cascading accurate information to stakeholder organisations. Frontline staff may face uncertainty when responding to NPS-use due to a lack of information. Subsequently, knowledge acquired in such cases may be lost, as gaps remain in reporting.

At this time, systems for data sharing are largely informal. For example, regional drug trend monitoring groups meet to discuss the local dynamics of drug consumption and supply. They typically consist of representatives from the Health Service, Police Scotland, the local ADP and forensic toxicologists. Stakeholders are able to identify emerging problems and formulate a response. This has included advancing credible health warnings and halting the spread of misinformation.

This model, however, relies on goodwill between agencies, and there is no mechanism to disperse this knowledge at a national level, e.g. a Scottish NPS database. Information on the appearance of a new form of NPS in one region may be of great value to practitioners facing the issue for the first time in another area. A nation-wide formal system of data collection and sharing could potentially contribute to a fuller picture of the prevalence and harms of NPS in Scotland, and the spread of timely and accurate information on emerging drug risks. From an analytical perspective, continuous monitoring of the NPS market would help to capture changing trends in use, including geospatial mapping of NPS. The Salford Early-Warning pilot (Case Study Four) may provide a template for a Scottish model of data sharing.

## Case Study Four: The Salford Early-Warning Pilot

The Salford Early-Warning pilot is designed to enhance scarce existing resources and knowledge exchange of practitioners confronting NPS; facilitating the identification, risk assessment and response to localised outbreaks of NPS or

adulterated drug use. It has been supported by the third sector organisation, UK DrugWatch.

It is a multi-agency system, tailored to the information needs/concerns of stakeholders, which enables cascading of information on NPS to frontline staff. This information may also be shared through the media and with other regions and national bodies where appropriate.

An online forum is managed by the local Drug and Alcohol Action Team (DAAT, equivalent to Scottish ADPs), building on their existing links to local stakeholders, e.g. A & E, Police, drug services, etc. This local professional network allows for the rapid sharing of information between organisations, and may be linked into regional/national networks in time. It is a ground-up response to NPS, with an operational focus. However, the information gathered may enhance general knowledge on prevalence, harms and trends in NPS-use.

More detailed operational information may be found at:  
<http://www.nta.nhs.uk/uploads/salfordewsmodelver10.pdf>

#### Proposal

Consider supporting efforts to set-up formal regional systems of data sharing on NPS between stakeholders, linked into a national framework.

### **Closing evidence gaps**

Progress has been made in strengthening the evidence base for NPS in Scotland. There is greater awareness of the issue across sectors and, as stakeholder organisations have responded to the emergence of NPS, data has been collected on a range of indicators. This includes, beginning to map out the NPS market, and the prevalence, harms, motivations and patterns of use.

Significant gaps, though, remain. For example, although it may be said that the scale of NPS-use in the general population is low, the picture is less clear for certain subgroups of the population. Equally, evidence on the harms of some forms of NPS has improved, while knowledge around newer forms of NPS and risks associated with particular patterns of use is incomplete. In closing these gaps, it is critical to take into consideration the diversity which exists within the NPS market. Variation along NPS-types, subpopulations, motivations, settings and behaviour must be taken into account when engaging with the issue.

The following proposals are set out to aid the process of closing evidence gaps on NPS in Scotland. Several of these represent different dimensions of the same issue; for example, understanding prevalence, motivations of use, and the associated harms within particular subgroups of the general population. Taken together, it is hoped that these proposals will help to ensure an effective and proportionate response to NPS-use in Scotland.

## Proposals

### *Defining and categorising NPS*

Work with stakeholders to formulate national guidelines for defining and categorising NPS. By establishing standardisation across organisations, the collection and sharing of data will be enhanced. This is crucial to strengthening the evidence base on NPS.

### *The NPS market in Scotland*

Support work mapping the market for NPS in Scotland, including how different subgroups are accessing NPS.

Explore the possible advantages and disadvantages of introducing 'pill-testing' facilities in Scotland as a harm-reduction measure.

### *Motivations for NPS-use*

Consider commissioning research into the motivations of NPS-use in key subgroups of the population, e.g. high school pupils, college/university students, long-term drug users, etc.

### *Prevalence of NPS-use*

Exploit existing sources to outline NPS prevalence in Scotland, including the SCJS, SALSUS, My Legal High and records of enquiries to the NPIS.

Work with stakeholder organisations to support integration of NPS into standard reporting procedures where appropriate, thereby enhancing data capture of NPS-use.

Consider research into the prevalence of NPS-use in vulnerable subgroups of the general population. This may also include geospatial mapping of the problem.

### *Harms of NPS-use*

Support integration of NPS into standard reporting procedures where appropriate to pick-up on the associated harms of use.

Consider research into the associated harms of NPS-use in vulnerable subgroups of the general population. This should also include patterns of use and geospatial mapping of the problem.

### *Data sharing*

Consider supporting efforts to set-up formal regional systems of data sharing on

NPS between stakeholders, linked into a national framework.

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