Drug Facts

Novel Psychoactive Substances

ABOUT THIS BRIEFING: This briefing provides an overview of "Novel Psychoactive Substances" in the UK. It is not intended to provide detailed information on each compound or a list of all such compounds. Where substances have become sufficiently popular or enough is known about them separate briefings will be available on the KFx site and elsewhere. Look up charts of key drugs are also available on the KFx site.
This is version 2.1 (rewritten July 2016 to reflect changes as result of PSA 2016)

AKA: Generic terms: "Legal Highs," "Legals, "Herbal Highs," "Research Chemicals," party pills, Novel Psychoactive Compounds, NPCs, NPS, RCs, Designer Drugs

Generic Slang terms: *Monkey dust, Bubble, BubbleLuv, Pulse, Plant food, Bath Salts, Incense, Mamba, Spice, and many others*

Chemicals include: 4-MMC, Ethylphenidate, AMT, 1P-LSD, MDAI, MPA, 5-FMP, AKB-48 and many others

Terms and Frame of Reference: Lots of terms are used to refer collectively to NPS, some better than others.

The term "legal highs" was always dubious and with the passage of the Psychoactive Substances Act is now wholly obsolete.

Even before the law changed, the term was unhelpful. "Legal" has connotations of substances being licensed or regulated which of course was not the case. They were unregulated: legal by omission not permission.

Novel Psychoactive Substances: This is the term preferred by policy makers, Academics and some drugs workers. Novel Psychoactive Substances (or Compounds) is typically shortened to NPS or NPC.) It's a bit of a mouthful, and hasn't caught on with actual users. Pedants would argue it's not wholly accurate as not all the substances of interest are truly "novel." 4-MMC for example was probably first synthesized in around 1929. Nitrous Oxide has been used for almost 200 years. They may well be new to market but they're not all new to science.

Research Chemicals: On a lot of user-led discussion forums, "***Research Chemicals***" is commonly used. Some chemicals were being used in research settings and have started to appear recreationally. Before the PSA shops sold products for "research" rather than human consumption as a legal workaround. Some users like the terms as they would rather view their use as being an intellectual "research" pursuit rather than a hedonistic quest to get intoxicated. Whatever the reason the term "Research Chemicals" is more familiar to some users than NPCs.

Emergent Drugs: The terms RCs, NPS and Legal Highs all side-step the word "drugs." "Drugs" and "drug user" are to an extent value-laden and stigmatizing terms. Avoiding this term means people can consciously and sub-consciously distance themselves from being involved in "drug use." So even if terms such as NPS are used it is important to reinforce the point that these substances are still drugs, with all the attendant risks.

NOMENCLATURE: Newer drugs may end up with a confusing array of names, making it hard to know which substance people are talking about.

Chemical Names: Drugs will have a long chemical name. Some will have more than one as there may not yet be an agreed chemical name. The "official" one is the IUPAC name, but not everyone will use it. It describes the chemical structure.
The long chemical name may well be shortened to a short chemical name – often based on the initials. If a drug comes to market and becomes more popular it may end up with a more user-friendly shorter name.
When drugs were being retailed via Headshops and on-line stores, different companies produced "branded" products so people may refer to these rather than the chemical or drug name. The same branding phenomenon occurs with some street drugs, such as MDMA pills.
Finally, some compounds may end up with slang names, popularized by end-users or in some situations by the media.

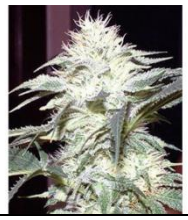
Common Drug Name	Chemical Name	Abbreviations	Brands	Slang
Mephedrone	(RS)-2-methylamino-1-(4-methylphenyl)propan-1-one (IUPAC name) 4-methyl-*N*-methylcathinone 2-methylamino-1-*p*-tolylpropan-1-one	4-mmc MCAT		Meph Plant food Bubble Miaow Miaow Monkey Dust
Ecstasy	(RS)-1-(1,3-benzodioxol-5-yl)-N-methylpropan-2-amine (IPUAC) 3,4-Methylenedioxymethamphetamine	MDMA	Mitsubishi Doves Minions	E, Molly XTC

Brand Names: Before the Psychoactive Substances Act came in, retailers were importing drugs, bagging and selling them in branded packages. Rival companies would copy successful brand names but their own product may contain different drugs of different strength.

Now that such retailing has effectively been outlawed by the PSA, the vast number of branded products have been pulled from the shelves, but some of the "brand names" persist so people for example still talk about smoking "spice" or "mamba."

A few brand names have become sufficiently widespread that they have become generic slang. So for example there was once a synthetic cannabinoid product sold as **Spice.** It contained the chemical JWH-018. This form of Spice is long gone but the term "***spice***" has persisted and is now a generic term for synthetic cannabinoids, especially in the prison system.

Confusion with older drugs:
In order to piggyback on the cachet (or notoriety) of "traditional" drugs, some of the newer drugs used brand names that drew on drug slang or had been previously used in relation to older drugs. This creates significant confusion: if someone says that they have been smoking "squidgy black," anyone over the age of 40 would assume it refers to old cannabis resin. Now it could also to refer to a synthetic cannabinoid. Again with a reduction in packaged, branded products on the market this is less likely to be an issue in the future. It will always be worth double checking when someone uses a name which could be a synthetic or a traditional drug.

Older Drug	Synthetic newcomer	Older Drug	Synthetic newcomer
China White		**Snow**	
a high grade of white heroin 	Synthetic stimulant blend 	Slang for cocaine 	Synthetic stimulant mix 
White Widow		**Squidgy Black**	
A strain of strong skunk 	Synthetic cannabinoids receptor agonist 	Form of cannabis resin 	Synthetic cannabinoids, in resin form 

Plant Foods: In order to get around the Medicines Act, and to reinforce the idea that the substances were not being sold for human consumptiomn, some compounds were sold under the "cover" of being ***plant foods*** or ***bath salts***. These slipped in to general use as a blanket term for some NPS.

As newer products came to market, more cover terms have been employed including ***pond cleaner, fish tranquilliser, incense*** and ***pot-pourri.*** In much U.S. coverage of NPS, the term Bath Salts has been used a huge amount in the media and by commentators. The snag with such terms is they create confusion: some naïve users believe specific plant foods or bath salts are psychoactive.

This is especially confusing when some genuine products (e.g. certain nail varnish removers, whipped cream propellants, various medicines) do have the potential to intoxicate if misused.

User and Media Slang: The term *Mephedrone* was shortened to '*drone,* and some, especially the media, called it *Miaow Miaow*.

Regional slang terms such as *Monkey Dust* or *Bubble* emerged. These are often used as a generic reference to white stimulant powder drugs, where the active contents are unknown. In the same way that "E" related to MDMA, so "*bubble*" was originally slang for a preparation on sale in the north of

England containing 4-MMC and MDPV. Later, just as E became a generic term for "*a pill that I necked in a club, not sure what's in it but hopefully it will be a bit speedy and trippy*," so *Bubble* became a generic term for "*a white powder that I bought and I'm not sure what's in it but hopefully it will be a bit like 'drone but here goes…*"

Other "Herbal Highs," and "Ethnobotanicals:"

There are a few herbal substances, that weren't new. hadn't been regulated and weren't that widely used. They now fall under the Psychoactive Substances Act if sold for intoxication.

These are psychoactive plants or plant extracts. Some have cultural or ritual use and are sometimes called "ethnobotanicals," especially if it has elements of spirituality or new-age mysticism attached to it. **Peyote cactus,** with its associated sacramental use by American Indians, often ends up being called an ethnobotanical. **Khat** despite being botanic and associated with distinct ethnic groups doesn't usually get called an ethnobotanical. Presumably because it's not mystical enough. Other plants have no such rituals attached to them, but may also end up being called ethnobotanicals.

Some of the ethnobotanicals contain substances which, if extracted, would constitute a controlled drug. For example, the plant Chacruna *(Psychotria Viridis)* contains the hallucinogenic compound **DMT**. Chacruna is used in the South American hallucinogenic brew **Ayahuasca.** Chacruna is legal to supply provided such supply doesn't fall foul of the Psychoactive Substances Act. A small number of on-line suppliers do offer it for sale, and there are still vendors offering plant extracts which is likely to be a breach of the PSA. DMT itself is a Class A controlled drug, and people have been prosecuted for making brews with Chacruna as it is can be considered production of a Controlled Drug.

Other plants, such as **Salvia Divinorum** are now regulated by the Psychoactive Substances Act 2016.

The plants are generally grown abroad and imported in to the UK. Excessive cropping for the international drug market has increased cost and reduced availability. There is no quality control to 'guarantee' the identity or potency of substances being sold, and so the plant-based products being sold could contain a different substance, or no psychoactive compounds at all.

Some plant-based legal substances can have unpleasant and possible dangerous effects. There's a small and less-commonly used collection of plant-based compounds which are notorious for being risky and having unpleasant side effects. These include plants such as **Henbane** and **Datura** which contain the psychoactive and toxic chemicals Hyoscyamine and Atropine.

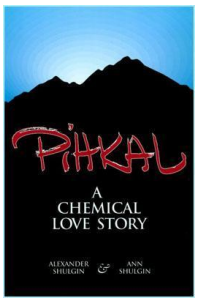
Most plant-based products will be covered by the PSA if sold for the purpose of ingestion and intoxication. High availability on line reflects paucity of enforcement rather than the plants remaining legal.

Medicines: a small number of Pharmacy Medicines (e.g. those containing **codeine**) or substances with legitimate non-medical use (e.g. **nitrous oxide, Buscopan**) are also used for their psychoactive properties. Although not really NPS in the usual sense of the term they are included here as the patterns of use are relatively novel.

The Backstory: The world of recreational drug use has never been static. New substances constantly emerge. Coca leaf was the NPS of its day. Later, cocaine was extracted and refined from the leaf, it in turn became an RC, used for genuine experimentation and recreation. Rather than today's psychonauts and web discussion forums being at the cutting edge of drug experimentation, people like Sigmund Freud and the upper echelons of society were pushing the drug boundaries.

In truth, wholly new substances had been thin the ground for a while. Prior to the early Eighties, outside of those with good connections to post-graduate chemists with well-equipped labs, drug users in the UK had the tried and tested opiates, LSD, magic mushrooms, cannabis, benzos, amphetamines, and for the well off, cocaine. Plus solvents, if you had to. Legal alternatives were promoted. A stroll around the less salubrious ends North London's Camden Market in the 90s would reveal a range of "smoking mixtures." These were typically blends of herbs with a reputedly cannabis-like effects but would generally have all the intoxicating properties of a small bonfire and a similar aroma.

So when Ecstasy (MDMA) arrived in the UK in the mid-eighties, it was the first really 'new' drug to hit the recreational scene in a fair while. MDMA was (being pedantic) not that new, having been discovered way back in 1912. It was another 65 years before it was "rediscovered" by Alexander Shulgin and another ten years before it became a popular club drug.



If MDMA was the first major NPS, another key part of the story of NPS was Shulgin's *magnum opus* **Pikhal,** a book describing the synthesis and effects of a large number of drugs in the ***phenethylamine*** family.

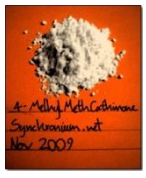
The next key development was the explosive growth of the World Wide Web. On-line communities emerged where people with an interest in making or taking newer drugs could share knowledge and experiences. More recently, it has allowed people to sell and buy new (and old) compounds with relative impunity.

With Ecstasy dropping in quality fast in the UK people looked for an alternative clubbing drug. A compound called **BZP**, one of the piperazine family, was at the time legal and became briefly popular. After MDMA it was probably the next proper "NPS." It was made a Controlled Drug in 2009. Others tried out, with varying degrees of success, GHB (not a great clubbing experience) ketamine (ditto) and a range of other less familiar and relatively new compounds.

Then somewhere around 2008, with a shortage of both cocaine and MDMA, 4-MMC ('Mephedrone') arrived. As a new, legal, effective, cheap drug, it reached high levels of popularity in the UK. It reached a peak in around 2010 when it was made a Controlled Drug.

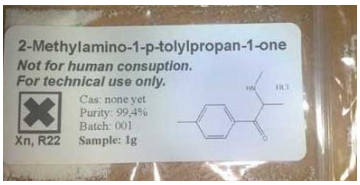
The pieces of the jigsaw had come together: underground chemists with the knowledge to make new compounds, bolstered by the collective mind of some drugs forums, with the technological might of Chinese and other labs happy to making the new compounds, and a ready market of net-savvy end users willing to research, order and pay for the new compounds on-line.

The natural history of a Research Chemical: Emerging NPS, like mephedrone, had an interesting life-cycle which has evolved over the past few years and will change again as a result of the PSA.



Often, a chemical had been identified by scientists or in the past. Some had been patented by pharmaceutical companies in anticipation of their medical use. They then languished, unused, in old

journal articles and patent files for a number of decades. A small number of keen post-grads might synthesize these for personal use, but they wouldn't reach a wider audience.



Eventually, a particularly popular compound might start to grow in popularity and availability. Initially this was underground, maybe not being discussed on bulletin boards yet, and certainly not being marketed on-line.

After a while, through forums and underground drug markets, some of these chemicals start to get produced in larger quantities. Labs may be commissioned to produce the drug in bulk. At this stage use becomes more extensive, the media and wider world becomes aware of the substance.

Finally after the drug comes to wider media and Government attention, it is likely to be added to the list of Controlled Drugs. There may be a "tail" of use as residual drugs in the system are used up. If the substance was especially popular or effective, it may continue to be made and distributed but through more traditional street markets rather than on-line selling. However, it seems that with the majority of NPS, their key market advantages were cost, legality and availability. Once banned, the majority drop out of the market. 6-APB ('Benzo Fury') was one of the post-mephedrone NPS widely hyped by retailers. It was made a Controlled Drug and vanished from the market place.

Newer products coming to market: After the heady days of mephedrone, the market changed a great deal. New products were still coming out quickly. Some, like JWH-018 or Ethylphenidate jumped from research settings to the recreational market. Some were older compounds (e.g. phenazepam) and others were brand new, designed drugs (e.g. 5F-AKB48).

Key websites were quick to expand their range. MDPV, Naphyrone and other drugs were added to the roster of products on sale, whether or not they were yet available. Lots of websites highlighted that products would be "coming soon," and encouraging people to register or offering samples.

The extent to which these compounds were genuinely available or going to be available is hard to judge. By the time Naphyrone (NRG-1) had started to emerge and been made illegal, the next generation of compounds like NRG-2 and NRG-3 were being touted – and all the evidence indicates that these were wholly fictitious compounds.

"Proprietary blends" with interesting brand names were flogged via numerous websites and in a fair few pubs and clubs. Some of these contained little or no psychoactive material. White powders could contain caffeine and lidocaine which will give a mildly stimulating effect plus some nasal numbness, and thus can be passed off as a cocaine-esque research chemical. It could equally be a mix of old, now banned research chemicals or there may simply be inert material pressed in to a pill. Without lab analysis we couldn't know. For example, a study published in 2011 analyzed seven compounds bought from online retailers in the UK. Six out of the seven samples didn't contain the advertised compound, and five of the seven contained banned controlled drugs.

The on-line retailers could be accused of killing the golden goose: by offering and making claims for a growing name of poor quality products, those with money and sense became increasingly wary of on-line retailers.

Leftovers: As individual drugs were prohibited, leftover products remain in the marketplace.

Some left-overs got combined with currently legal, or inert compounds, were repackage, relabeled and sold through "legal high" channels as a new "legal" high. Lots of newly-banned MDPV ended up being sold as the then-legal drug Naphyrone (NRG-1). People who thought they were getting "legals" were in fact buying controlled drugs.

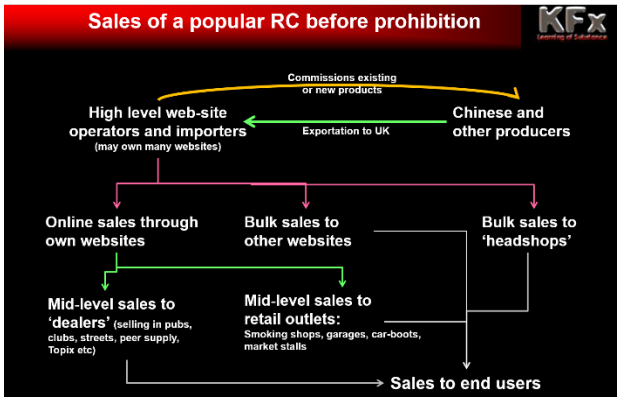
Some (more popular ones) continue to be sold by name. So sales of mephedrone continued after it was made a Controlled Drug in 2010. It's not clear how much "new" mephedrone has been manufactured or imported since then, and how much pre-ban mephedrone was already in the system.

Residual mephedrone was bulked out or mixed with other white powders. So when newer users (who started use post-ban) say that they are using "*mephedrone,*" it may well be that they are using any one of a range of substances. It could be mephedrone, another new compound sold in place of mephedrone, or something else. In one area young people were being sold speed as 'mephedrone.'

It's probably better, if people say they are using mephedrone, to mentally interpret this as being an "unknown white powder." It certainly won't be pure mephedrone.

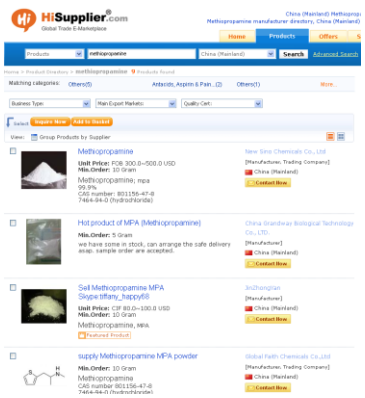
Other white powders were sold on to old-school dealers and started to appear in place of, or as a cut in existing CDs. So MDPV may turn up in place of MDMA, MPA in Speed and Methoxetamine was passed off as ketamine.

Production: The NPS market in part follows traditional drug markets but is also intrinsically linked to web-driven global markets. It is simultaneously old-fashioned but at the cutting edge of technology.



There are different stages to any drugs market. So for example when 4-MMC was widely available and legal the model looked something like the diagram to the right.

We don't know where each NPS is produced. Some were produced in mainland Europe and some possibly in the UK. Significant amounts came from China. Sometimes, Chinese labs developed new products themselves (or at least claimed to.) In most cases labs offered to produce new products for international vendors. Purchasers arrange to buy product, may visit a lab to sample product or inspect the process and then drugs are shipped internationally to the purchasers.



A development that eased this process was the emergence of international trade websites such as Alibaba. This made it easier for purchasers in the UK with little or know knowledge or experience of dealing with Chinese laboratories to find producers willing to produce NPS.

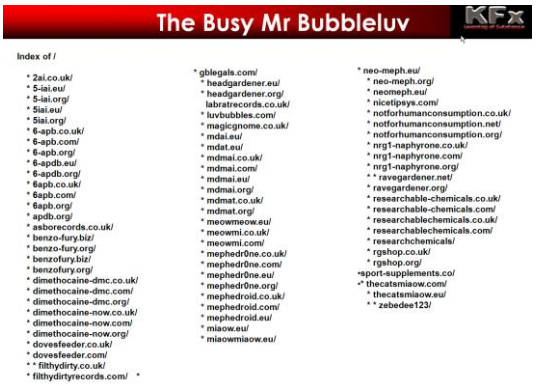
Markets and Marketing:

Pre Psychoactive Substances Act, a number of markets had emerged:

Forums: When 4-mmc newer drugs first appeared distribution was relatively clandestine. Supply took place via forum personal message.

On-line shops: At this stage, many NPS were still unregulated and so were openly sold on-line. At first there were a small number, but by late 2009-early 2010 there was a huge growth in the number of these sites.

Most of these appeared quite professional, with capacity to take payment by credit card, shopping-cart technology and claims made for the purity of the drugs. For anyone with start-up capital, the ability to source product from China and the knowledge to set up a website, this was an unparalleled chance to make money quickly.



We don't know how many different people were involved in this. Some individuals undoubtedly controlled numerous websites selling the same products through different sites. One individual controlled in excess of sixty different web domains ready to sell compounds.

As this process escalated, some people set up on-line but with no product at all – and so ended up bagging and selling other things – caffeine, inert powders and so on.

Classic markets include peer-to-peer supply and low level dealers buying bulk on-line and then redistributing at a street level and via pubs and clubs.

Retail outlets have been a key sales point for NPS. Initially this was primarily "head-shops" and similar but as the market expanded, more and more outlets joined in. This has included tattoo parlours, sex shops, fast-food outlets, corner shops, market stalls, car boot sales, and, according to a couple of correspondents, even petrol stations.

Other markets include an increase in selling via other websites, including Topix, Facebook and other social media. However, such arenas attracted a high level of scammers. Dark-web sites such as Dream Market do sell some NPS but the bulk of the product for sale remains "traditional" controlled drugs and more esoteric psychedelics.

Google, Sock Puppets and Forums: In 2009, a Google search was the easiest way to find an on-line NPS retailer. Google AdWords programme would promote vendor websites in response to search terms such as Plant Food, or Mephedrone. At some point a decision was made to end this advertising.

New drugs got discussed on drug-discussion forums such as Bluelight or Drugs Forum. Both prohibit naming specific websites and on-line vendors. On one hand this prevented promoting sites. Unfortunately, it also meant they couldn't out the "rogue" sites selling bogus products.

This forum self-censorship on these websites drove suppliers to less-well-moderated websites and

forums. A key promotional tool on such sites was the "sock-puppet," where a retailer creates several alternative identities who can then converse, extol the benefits of a new product, say how reliable they find specific vendors and so on. Such Sock Puppets are generally removed from Drugs Forum and Bluelight, but on other sites promoting NPS, the majority of accounts seemed to be Sock Puppets. This made it harder to sort fact from fiction in discussion forums.

LAW: In May 2016 the Psychoactive Substances Act came in to force, as a response by Government to the use of NPS. Prior to that a number of piece-meal measures had been used to control the market including:

- Adding drugs to the Misuse of Drugs Act (1971)
- Use of Trading Standards Powers
- Public space protection orders
- Community Protection Notices

Concerned that the existing measures were not addressing the issue, the Government proceeded with a blanket-ban approach.

The Psychoactive Substances Act[1] creates Criminal and Civil Powers to control the production, importation, export, supply, possession with intent to supply and possession in custodial settings of any psychoactive substance (unless exempt.)

The legislation effectively made the sale of NPS by Headshops and on-line retailers illegal overnight. Because it covered any Psychoactive Compound, the process of tweaking molecules to bypass a legal definition ceases to be a solution, as does creative "not for human consumption" labelling. If it's demonstrably psychoactive, and not exempt, it's covered.

The legality of substances will vary on a drug-by-drug basis. Some are specifically covered by the Misuse of Drugs Act **e.g. 4-mmc**. Others are not currently Controlled Drugs and but will instead be covered by the Psychoactive Substances Act. At some point, drugs covered by the blanket PSA may be added to the Misuse of Drugs Act.

Schedule 1 controlled drugs: these are not currently held to have any medical use and so outside of possession by law enforcement or Home Office-licensed researchers, possession will generally be illegal. This includes drugs like LSD and MDMA and newer drugs like Mephedrone.

Schedules 2, 3 and 4i: these are controlled drugs but also Prescription Only Medicines. Outside of professionals authorized to possess them, it will be lawful to possess them if they are prescribed to you, and some other specific circumstances. Methadone, buprenorphine and diazepam are in schedules 2, 3 and 4i respectively.

Schedule 4ii Controlled Drugs: Anabolic steroids and other performance enhancing drugs fit in to this Schedule. Possession without a prescription is not an offence, although supply is.

Schedule 5 Controlled drugs: A small number of Controlled Drugs (including codeine and morphine) are legal to purchase from Pharmacies and possess without prescription in certain

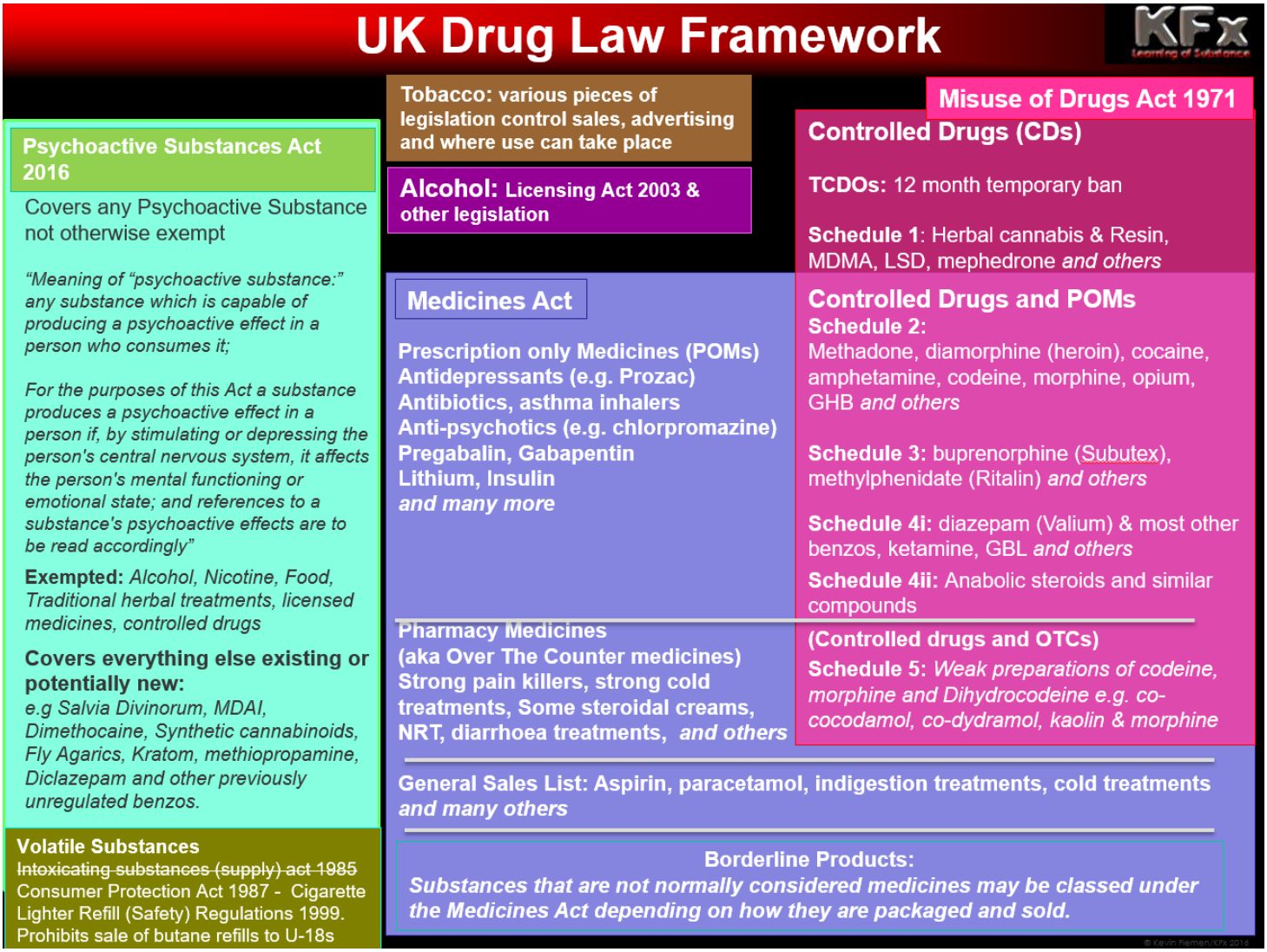
[1] There's a separate KFx briefing on the KFx Website at http://www.kfx.org.uk/resources/PSA2016briefing.pdf

formulations (e.g. codeine-paracetamol tablets containing 8mg codeine.) These are the subject of significant misuse in the UK.

Temporary Class Drug Orders: There was concern that process of new products coming to market, the ACMD being able to research it and a decision Schedule it was too slow. New legislation was passed to allow drugs to be temporarily added to the list of Controlled Drugs, pending review by the ACMD and decision on scheduling.

Temporary Class Drug Orders (TCDO) came in to force in 2011. Drugs can be placed in this category by the Home Secretary. This makes it an offence to produce, import or supply the drug, and offences carry a maximum of 14 years imprisonment and/or unlimited fine.

Possession of drugs subject to a TCDO is not a criminal offence. As all new compounds are automatically covered by the PSA, and the new Act like the TCDO category restricts supply but not possession, it seems unlikely that many new drugs will be added to the TCDO list.



Analogue clauses: once upon a time, drug legislation listed specific compounds as being controlled drugs. As science has advanced, a drug-by-drug approach can't keep up with numerous molecular variants. An analogue clause is intended to cover a range of compounds by describing the likely chemical variants that could be produced based around the same core structure. So for example in relation to some tryptamines, the legislation prohibits:

> *any compound (not being a compound for the time being specified in sub-paragraph (a) above) structurally derived from tryptamine or from a ring-hydroxy tryptamine by substitution at the nitrogen atom of the sidechain with one or more alkyl substituents but no other substituent;*

Analogue clauses prohibit whole families of drugs and potential future drugs. However, it does mean that we don't always know if a new drug is illegal or not. The wording can be so complex and technical that few people with sufficient knowledge of chemistry will understand what it prohibits. Further legal arguments would need to determine what the phrase "structurally derived from tryptamine" means on a case by case basis.

New compounds had got around analogue clauses by departing sufficiently from the prohibited structure, thus avoiding being "Controlled Drugs." As the new Psychoactive Substance Act covers all psychoactive structures irrespective of structure, such molecular tweaks are covered by the newer legislation.

Pharmacy Medicines: Similarly, there are a few pharmacy-only medicines which are <u>not</u> controlled drugs, but also may be used outside of medical settings. So for example the antihistamine **diphenhydramine** is used for its psychoactive properties. Recently the misuse of Buscopan in prisons has been a growing cause for concern.

Volatile Substances: As part of the Psychoactive Substances Act, the older Intoxicating Substances (supply) Act 1985 was repealed. This had made it an offence to supply any substance to a person under 18 where the product was to be inhaled for intoxication. The PSA also covers household products sold for the purpose of intoxication, so the older law was no longer needed.

Borderline Products: Some products contain psychoactive compounds or those that have a medical use. Depending on how the products are processed, packaged, labeled and promoted they may or may not be considered Medicines. The Borderline Products Team within the Medicines and Healthcare Products Regulatory Authority (MHRA) will consider such products to determine if they should be considered medicines or not. Those that are considered medicines will then be subject to all the relevant regulations, and risk of prosecution for those who sell them outside of these regulations.

Products which the MHRA hasn't ruled on, or has determined are not Medicines fall outside the Medicines legislation. So for example, Nitrous Oxide may be packaged and sold as an anaesthetic. In such situations it would constitute a medical preparation and would be regulated as such. But the same compound sold (for example) as a propellant for whipped cream would not be regulated in this way.

NPS retailers avoided Medicines legislation by labelling products "not for human consumption," but such an approach isn't usable against the Psychoactive Substances Act.

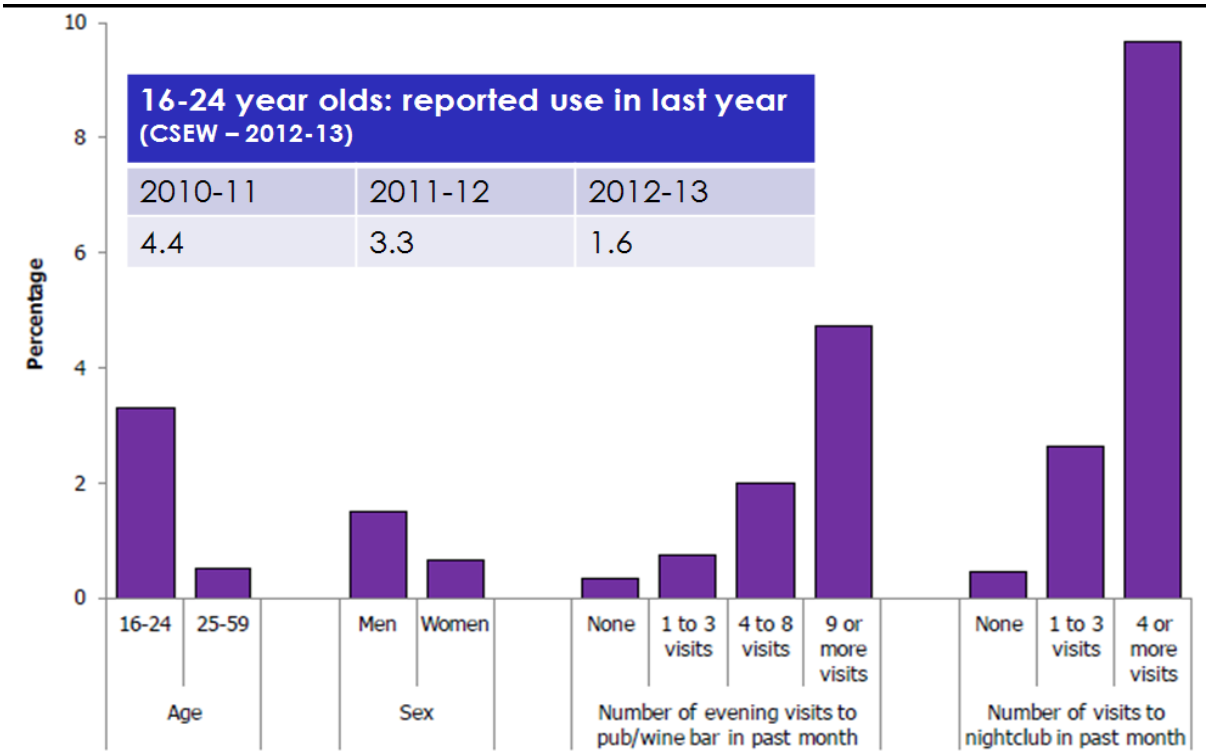
TRENDS: It is hard to get an accurate prevalence data on NPS.

Drug Misuse Declared is specifically concerned with Controlled Drugs and so until a drug becomes a CD the CSEW doesn't tend to look at it. Newer uncontrolled compounds don't feature in detail in the CSEW, and the overall reporting levels of NPS are low, making it hard to see what impact newer compounds are having.

To make matters worse, the speed with which new drugs are identified and then added to the survey is relatively slow so effectively drugs that come to market in one year and have been prohibited the next year won't end up accurately reflected in the CSEW.

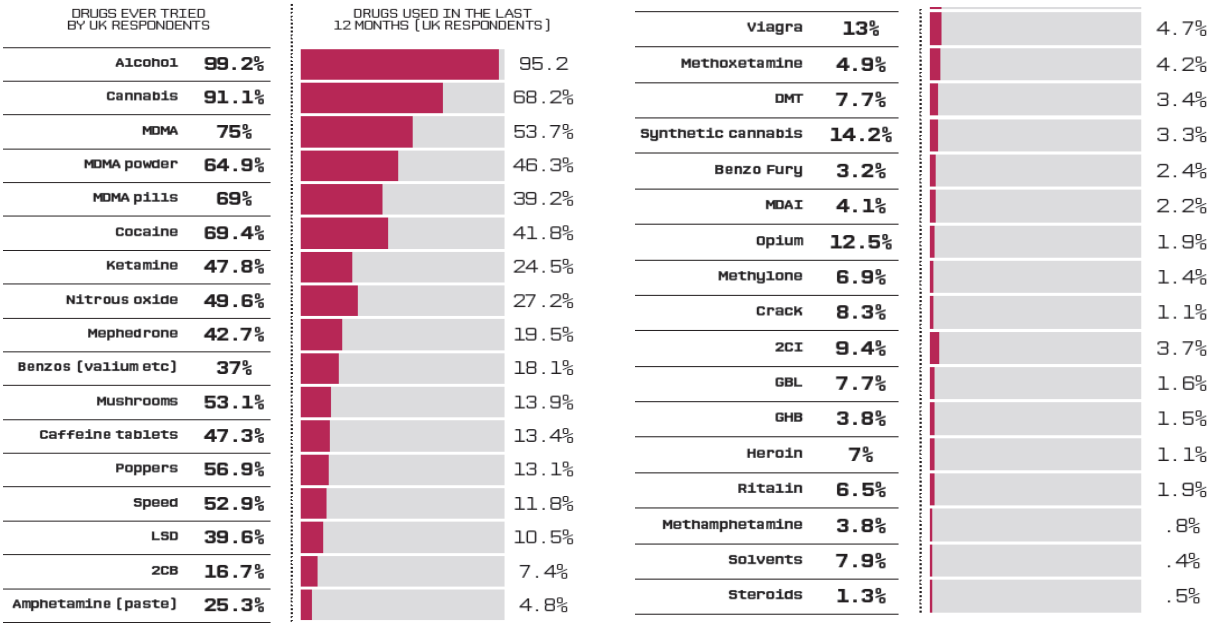
Finally, with some new compounds, terminology and geography may be very variable. Where drugs are concentrated in specific regional pockets or where some drugs are only known by specific names, this may not be well picked up by a broad piece of research such as the CSEW.

So based on the CSEW, the proportion of young people aged 16-24 who reported mephedrone use in the 2012-13 was1.6%, down from 4.4% in 2010-11, the year that it was made a CD.. The levels of use amongst regular clubbers was higher.



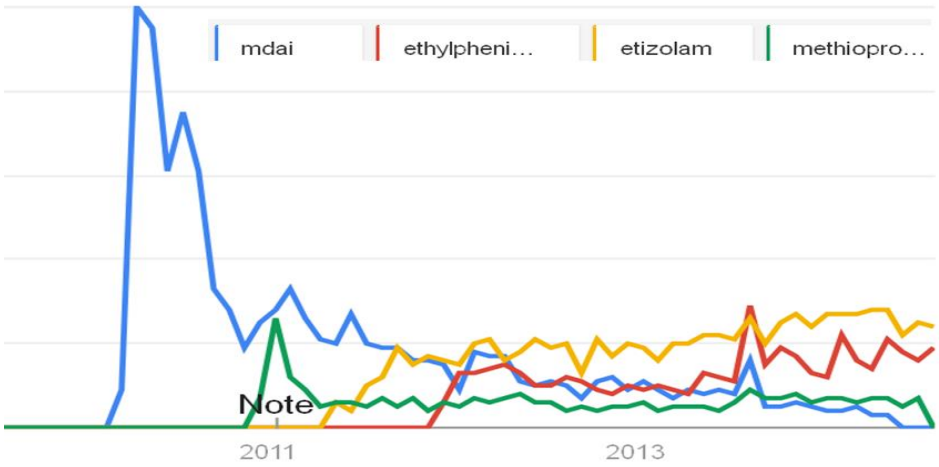
In a self-reporting survey conducted by Mixmag in 2012, levels of mephedrone use were reportedly much higher. However, these surveys are very highly selective and probably significantly over represent levels of drug use just as the CSEW is liable to under-report use.
The **Mixmag** survey above reported 19.5% of UK respondents had used mephedrone in the past twelve months, twice what the CSEW reported even for frequent club-goers.

The survey also highlights the ongoing popularity of "traditional" substances and the relatively low up-take of NPS even when they were legal and widely available.



An interesting way of looking at trends in novel drugs is to use a proxy indicator such as Google Trends. This can help to indicate shifts in levels of interest in a drug. It seems reasonable to assume that these shifts in interest trends will correlate with usage trends. This doesn't mean that interest equals use, but that ups and downs in interest may well correlate with ups and downs in use.

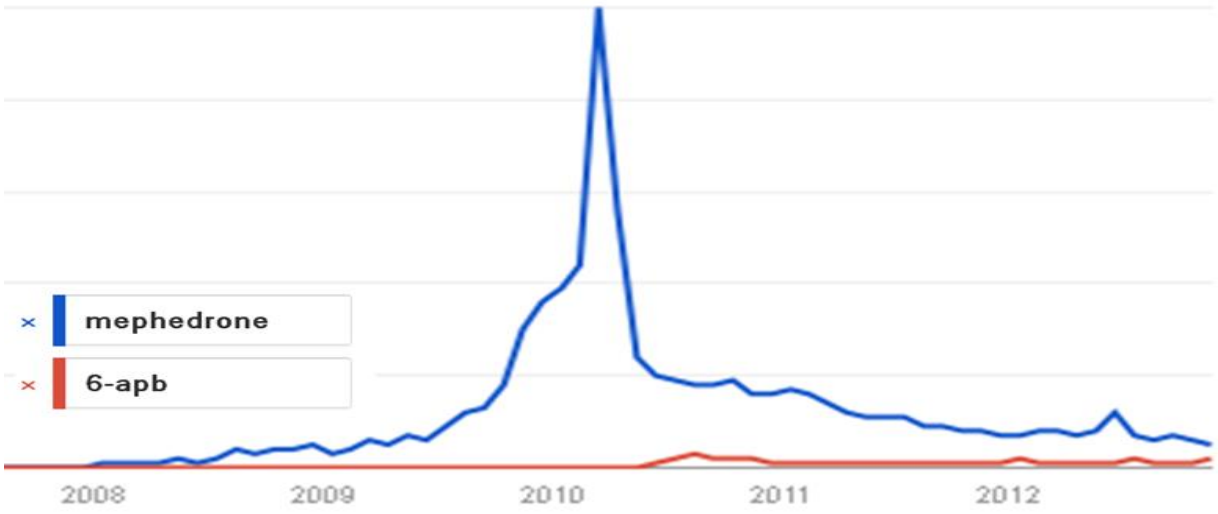
When we look at interest in key novel psychoactives, interest in MDAI started high and, although it remained unregulated until the passing of the PSA, interest had tailed off significantly. Interest in Ethylphenidate had increased until it was prohibited. There was more interest in the drug Etizolam a benzodiazepine-type drug.



What is more striking is comparing relative interest in 6-APB with mephedrone. What is evident from this is that interest in 6-APB, even at its peak, is relatively low compared to interest in mephedrone. The very tip of the 2010 mephedrone spike represents the furore of media interest up to the point where mephedrone was made a controlled drug. But even disregarding this spike, the peak in interest in

mephedrone was far greater than in terms of other new drugs. It appears that nothing since then has generated the same level of interest.

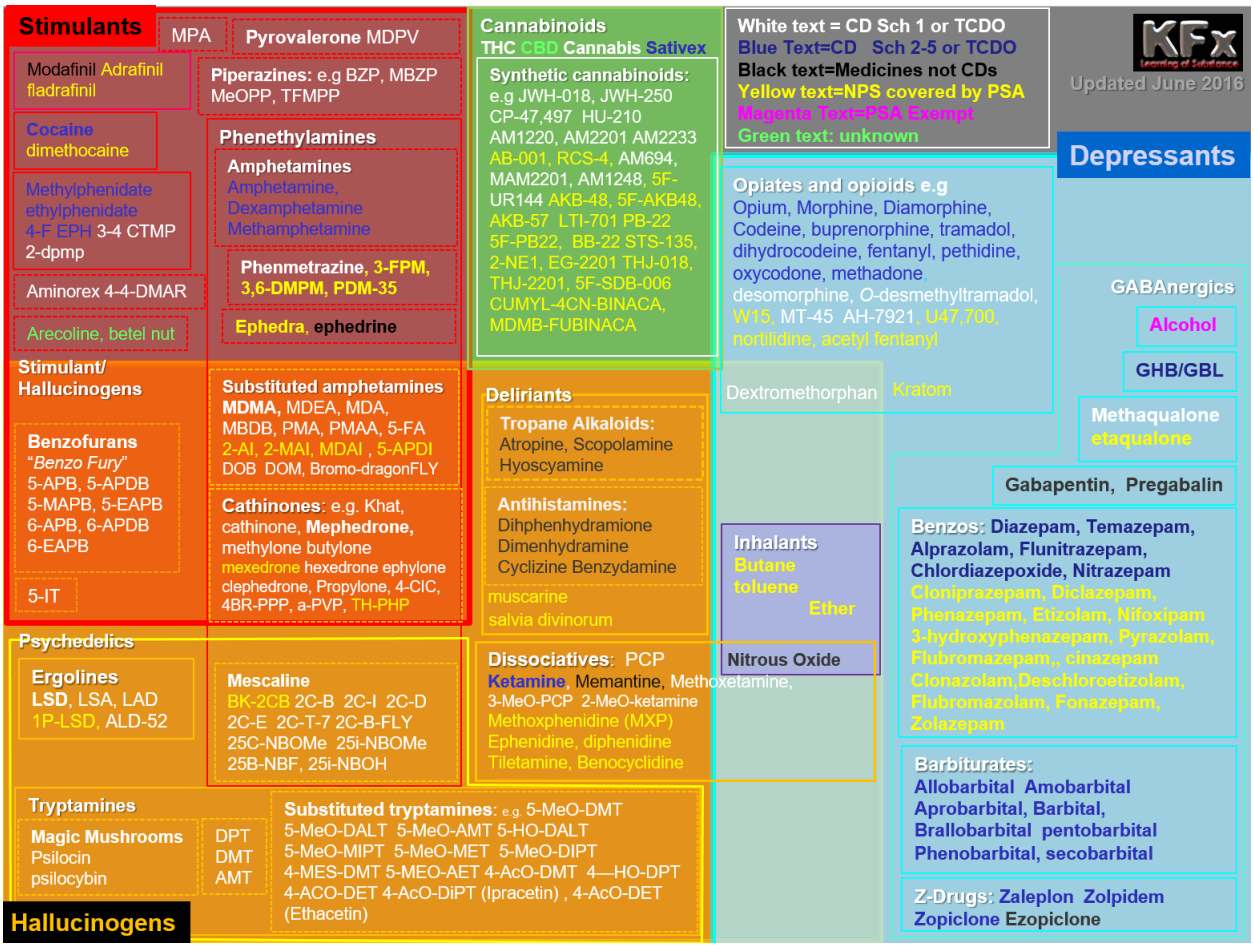
Despite all the media interest in NPS the substances were not as widely used as their traditional counterparts with the exception of some key cohorts, such as in prisons, or amongst homeless populations.



DRUG FAMILIES: There are several ways of trying to classify drugs. We could split our drugs up by:

- Chemical structure: this means that families of drugs with similar chemical structures will be grouped together. Some will have similar properties but there may be others which don't. These could be very broad families (e.g. the **phenethylamines** would be a very large family, or smaller groups within the larger family – e.g. the **beta-ketones** of which mephedrone would be an example.
- User-perceived effects: here drugs will be grouped by how they are meant to make people feel. Alongside our "stimulants" drugs could be "psychedelics" "dissociatives" or "empathogens."
- Pharmacological effect: this would look at how the drugs are working at a brain-chemistry level. This can be especially useful as it can highlight potential risks of a compound. But, especially when a drug is new we may not know a huge amount about how it actually works.
- The context in which they are used: for example, to induce sleep, as a club drug or for profound hallucinatory experience.

For most people a model which draws on a bit of each model is useful. Having a little bit of a grounding on the behind-the-scenes brain chemistry is very helpful too. The schematic below locates some of the key compounds in terms of effects and legal status.



Stimulant Drugs elevate key neurotransmitters, including nor-adrenalin, and possibly dopamine and serotonin. They could do this through different mechanisms such as increasing release of and/or inhibiting reuptake of these chemicals. The extent to which levels of a specific compound is elevated will determine the effect. Drugs with elevate dopamine significantly will induce greater reward and euphoria, but are more likely to increase a desire to redose. Those that have only elevate nor-adrenalin will offer little euphoria, but may increase alertness and cause anxiety. They also increase strain on heart and circulatory system.

Hallucinogens are drugs that have less stimulant activity but significantly alter perception. Many of these work on serotonin receptors in the brain. They may mimic serotonin or elevate serotonin levels by increasing release and/or inhibiting reuptake.

Drugs which elevate levels of serotonin can be more hallucinogenic, and can also increase feelings of empathy. The emotional closeness engendered by these drugs sometimes earns them the name "empathogens." Drugs such as MDMA fit in to this category.

Other hallucinogenic drugs have different mechanism of action and can feel profoundly different to serotoninergic drugs. So for example the deliriants atropine and hyoscamine, found in certain plants, induce hallucinations through a wholly different mechanism, and this is associated with profound disorientation, disordered thinking and confusion.

Depressant drugs, as a term is something of a misnomer, as they can also be significant euphoriants. They act as depressants on the central nervous system, slowing down breathing and heart rate, and inducing relaxation and drowsiness. Several drugs in this family act on the regulatory neurotransmitter GABA, elevating or mimicking it.

Opiates work differently, by reducing levels of nor-adrenalin and so having a calming effect. Combinations of depressant drugs are a key cause of fatal overdose. They also tend to cause significant physical dependency with extended use.

Synthetic cannabinoids are also referred to as synthetic cannabinoid receptor agonists. They bind to CB1 or CB2 cannabinoid receptors in the brain and body. The chemicals THC and CBD in cannabis activate these receptors and synthetic cannabinoids can do the same. Some are much more powerful than THC and others have greater specificity to different receptors. They can have a range of effects, and straddle the Stimulant/Depressant/Hallucinogen as they have some of the characteristics of each.

COSTS: Massively variable depending on drug, quantity, source and other factors.

QUALITY CONTROL: Even when NPS were unregulated, quality control was highly variable. In response to seizures by Trading Standards, some suppliers made efforts to ensure that packaged products were more accurately labelled. Often, there was still significant variance in strength and quality.

In the wake of the PSA, residual product sold away from shops isn't hampered by Trading Standards or labelling. Left-over stock gets mixed up and sold on, and so, for example generic "Spice" sold on the streets could contain a mix of any synthetic cannabinoids. There is absolutely no quality control at a street level and each new batch of synthetic cannabinoid or white powder should be treated as an unknown substance.

DRUG TESTING: Most of the NPS produce different metabolites to those that are routinely detected by urine test kit and so may give negative results. Even when more detailed testing is done, some new drugs won't be detected by most immunoassay tests as the drugs haven't been around long enough for such tests to become available. So for example a new urine testing kit to test for synthetic cannabinoids came out in July 2012 in the UK – but won't test for all the new synthetics.

Even if actual drugs are found, testing them using GC/MS testing to ascertain their identity is complex as any testing needs to be compared against reference samples. So typically a new substance emerges, a reference sample is analysed and this forms the benchmark against which later testing is compared. For some new drugs, where this hasn't yet happened, compounds may not be correctly identified or identified at all.

A small number of compounds produce sufficiently similar metabolites so may trigger false positives on a urine test. High levels of 4-MMC use can result in a false positive for methamphetamine use.

As many drugs are blends of different compounds, positive testing may show up one substance in a cocktail but doesn't mean other non-detectable substances aren't present.

End users, unable to access any such testing, may end up using chemical testing kits available on-line. These change colour in the presence of different drugs and allow people to partially identify some drugs to an extent. This is somewhat hit and miss, and may not identify dangerous adulterants.

DOSES: Given the newness of NPS, the variability in quality and adulteration of street projects it is impossible to speak with certainty about doses. Unlike traditional street-drugs, some very potent drugs are sold on-line in very pure forms requiring minute doses to avoid unpleasant effects. Conversely, other less potent drugs are being sold which requires significant doses for any effect.

Whereas amphetamines sold on the streets may have had purity of 5-10% products such as MDPV were initially sold at purities in excess of 90%, meaning users needed to rethink dosing with drugs of higher purity.

Dose ranges will also vary according to the users' body weight and their familiarity with psychoactive compounds.

With all novel compounds, users can't tell if they are going to have an aversive or allergic response to the drugs, so it can reduce risk if the person takes a very small tester dose – below the level of an effective dose, to ensure that this doesn't cause a bad reaction. If this doesn't cause an unpleasant reaction, the person could then, after a reasonable time has elapsed, consider taking a dose at the low end of the range for an effective dose.

As some NPS are very potent even at low doses, high quality sensitive scales are advised. However, good quality scales are expensive, and need to be correctly calibrated. Given an entry-level set of laboratory scales will cost in excess of £150, one must be wary of sites offering scales being sold by legal high sellers for £20-30.

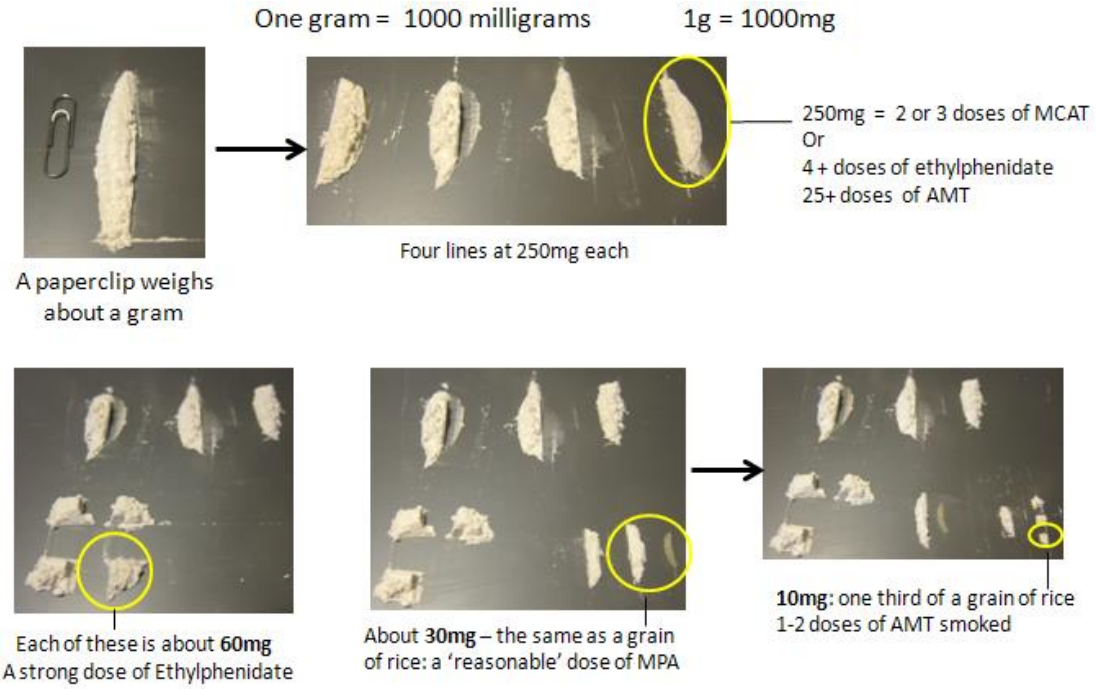
The lack of good scales or, for that matter any scales means a lot of people will try and judge their dose-sizes by eye – or "eyeballing" the drugs. So many people will gauge doses by comparing to "a grain of rice" or divisions thereof. Such an approach is of course highly risky, especially where people are using drugs where the difference between a weak dose and a strong dose could be very small.

When discussing or reading about doses, it's worth double checking what units are being used. The abbreviation **mg** will be used a lot – short for milligram. It is important not to get milligrams mixed up with micrograms (mcg). So:

1 gram = 1000 milligrams	1 milligram = 0.001g	1mg = 1000 mcg (micrograms)
100mg = 0.1g	100mcg = 0.1mg	

The drug MDPV, as an example, is active from 1mg so sub-threshold doses would require scales accurate to 1mg as a minimum.

For comparison, on average a grain of rice weighs 20-30mg so a low dose of MDPV of 2-3mg would be the equivalent of a **tenth of a single grain of rice.**



METHODS OF USE: Routes of administration will vary from research chemical to research chemical, and person to person.

Synthetic cannabinoids: almost invariably smoked. This may involve pipes, bongs or vapourisers. More commonly the herbal smoking mixture is smoked with tobacco or another substance in a spliff. There have been some reports of eating herbal preparations and a few reports of snorting the raw powder but this is not typical.

Powder drugs (*e.g. mephedrone)***:*** As with other powder stimulants such as cocaine, snorting is common. Lots of people experienced significant pain when snorting NPS and some people experienced a lot of nasal damage. To avoid these problems, swallowing (bombing) powder stimulants has become much more common.

A relatively small number of people take their powder stimulants rectally and for some people seriously experimenting with new compounds it is a preferred route.

Some of the powder stimulants (e.g. MDPV) are smokeable and there have been a few reports of smoking becoming more popular.

As most of the powder stimulants are water soluble, there have been reports of injecting, discussed below.

Injecting RCs: Injecting is inherently risky. These risks are still greater for NPS as we don't know what is in them.

Incidence of injecting is relatively low, and is primarily restricted to existing injectors. However, reports from the UK and further afield have noted significant problems amongst new and existing injectors using NPS. 4-mmc (mephedrone) and other white powders were the main substances reported being injected.

Some of the people injecting 4-mmc or other research chemicals are experimental or recreational users. Others are people who have been using NPS, whose use has escalated and so use has migrated to injecting. This population are typically not experienced injectors and the complications they have experienced may be a result of inexperience, poor technique and hygiene as much as the drug itself.

The other key population is existing injectors, especially heroin injectors who have started injecting 4-mmc or other compounds instead of, or along with heroin. These injectors have typically been more experienced but have still presented with infections suggesting that this may be related to the drugs themselves rather than injecting technique.

As the main products are short-acting stimulants, injectors may end up injecting more frequently and so expose themselves to greater risk.

Heavy use of stimulants may impact on diet and general health, slowing down healing and increase risk of infections.

If working with people injecting RCs:

- Explore other routes and options rather than injecting
- For all injectors, especially less experienced ones, a discussion about injecting technique and hygiene
- Ensure that injectors have enough equipment given frequency of injecting
- Discuss drug preparation – most RCs are water soluble and won't require addition of an acid
- If the drug isn't dissolving, don't just add acid. This step is only required to convert base drugs to acidic salts. If an NPS isn't dissolving, this could be for numerous reasons, other than it being a base drug. Adding acid to insoluble NPS just creates an acidic insoluble mess.
- Always let heated drugs cool in the spoon; if it's going to congeal better in spoon than in vein
- Rotation of sites will be important for frequent injectors
- Get wounds treated promptly and professionally

DEATHS: As with the difficulty in establishing trends in usage in relation to new drugs it is hard to establish rapidly and accurately the number of deaths related to these drugs. Whilst the media and initial reports are quick to report links to specific drugs when deaths occur, it is hard to establish categorically which drugs were involved and the extent to which they were a significant factor in any fatality. Especially with new drugs, they may not have been tested for, or shown up in testing.

The most frequently recorded NPS to date has been Mephedrone was present in 46 fatalities and attributed as cause of death in 29 cases in 2010. This was an increase on the previous year. As mephedrone was made a controlled drug in 2010 and saw a subsequent decline in interest (and possibly use) there may be a resultant downturn in deaths in the next study. The rise in the use of Synthetic Cannabinoids is likely to mean this will feature to a greater extent. The report of deaths in 2014 recorded the following:

PMA / PMMA	0	1	20	29	24
Cannabis / Cannabinoids	11	7	18	13	31
New psychoactive substances	22	31	55	63	82
Benzodiazepines	307	293	284	342	372
Diazepam	186	179	207	228	258

Deaths Related to Drug Poisoning in England and Wales: 2014 registrations

Key Messages and Harm Reduction regarding NPS:

As we (a) don't know a huge amount about NPS and (b) can't be confident about what specific compounds people are actually taking, it is not easy to offer specific harm reduction advice.

We should really be very cautious about offering highly detailed information about risk or risk-reduction as we don't know enough to do so from a position of robust evidence. We don't know which compounds will turn out, for example, to be highly liver toxic or which ones at low doses with cannabis could trigger convulsions.

Given these significant unknowns, harm reduction information needs to be couched in relatively general terms until we can be confident that more specific and detailed information is supported by some evidence.

Key messages: There are some general messages that are applicable to all new compounds, irrespective of drug family.

- As with older drugs, you don't ever know what you are taking
- With newer drugs we don't have the same "kept knowledge" that we have with older ones, which means we can't easily advise on doses, likely effects and side effects
- Specialists, including paramedics and addiction workers, aren't as familiar with newer drugs and this makes it harder to respond in emergencies and when problems develop
- Just because something is new, it doesn't make it safer than older drugs.

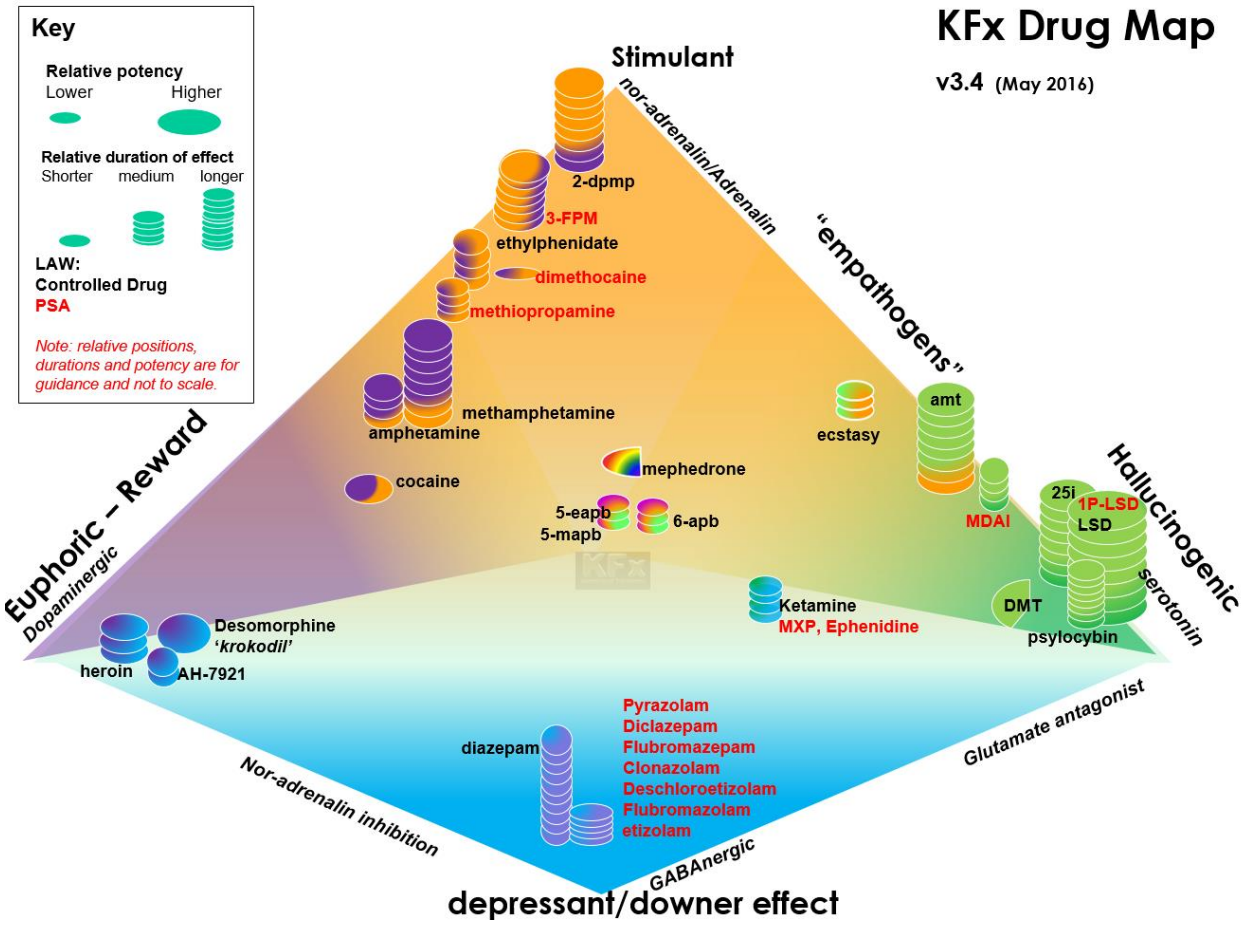
Key Harm Reduction:

1: Research: do research first. Read up online. Read a variety of user reports. Use the better websites which weed out shills and trolls and suppliers.
2: Think: do you really want to be a guinea pig with an unknown substance?
3: Start with a very small quantity. Don't try and gauge quantities by eye, it's too inaccurate. If you can't access or afford highly sensitive, correctly calibrated scales, don't play with unknown drugs. Where possible base initial dose at the low end of the active dose range, allowing for your body weight where possible.
4: Don't mix drugs: if you are trying an unknown compound, don't mix it with other drugs (including alcohol) or medicine.
5: Don't do unknown chemicals unless you are in good physical and mental health.
6: Have a friend with you who knows what you are taking, will not use anything themselves, and will call an ambulance without any hesitation.
7: Don't overdo it: Give yourself a good chance to recover before redosing.

8: If you like the experience only increase quantities very slowly and carefully.
9: Know the related drugs: Assume at the least that these compounds will have similar risks to related compounds in the same family
10: Don't supply compounds or bulk buy large amounts

EFFECTS and RISKS:

The KFx Drugs Map:



The KFX Drug Map is a model for showing the key effects of key substances both old and new. It is a scalar model so, rather than pigeon-holing drugs they are located along scales: stimulant-hallucinogenic, stimulant-euphoriants and so on. The height of each stack is a relative representation of effect, and the diameter of the stack indicative of the relative potency of the drug.

Drug Family Summaries: As we are covering a very large number of different drugs this briefing will not list and detail the effects of each. By grouping key drugs it's possible to provide a summary of key effects and risks. More detailed information about some specific compounds is on the KFx website. (Colour coding as per Drugs Table on p15.)

Synthetic Cannabinoids	
aka Synthetic Cannabinoid Agonist Receptors**,** *Incense, Pot Pourri, Synth Canna*	
Examples:	Covered by PSA: AKB48, 5F-AKB48, PB-22, 5F-PB22 and numerous others. Covered by MDA include JWH-018 and AM-2201. Pre-PSA brands included *Exodus Damnation, Pandora's Box, Clockwork Orange, Sensate, Psyclone.*
Description:	these compounds appear to mimic the effect of THC at cannabinoid receptors. Some are more potent than THC. Prior to ban usually sold in branded foil packages; post ban, old stock being sold on and loose herbal material being sold in non-branded jiffy-bags. Some are sprayed on to inert smoking mixture and a small number may be sold as powder for adding to tobacco. Liquid preparations for use in E-Cigs also available.
Route:	Generally smoked either with or without tobacco; also in E-Cigs. Rarely snorted or swallowed.
Effects:	Generally, as for very strong cannabis including euphoria, disorientation, stoned feeling
Risks:	At lower doses, as for strong cannabis, including panic, anxiety, dysphoria and confusion. More severe symptoms include numbness of limbs, loss of consciousness, respiratory distress, severe panic attacks, palpitations, acute mental illness, psychosis, hallucinations, nausea, vomiting, convulsions, paralysis and rapid heart rate. A small number of fatalities have been linked to use of these compounds. Some users report long-lasting comedown and feeling depressed for several days afterwards. They can cause tolerance and withdrawal symptoms, including severe stomach cramps, sweats and pain.
Harm reduction:	Use at very low doses, if at all. Dose sizes should start no bigger than the size of a match-head. Don't use in conjunction with cannabis or other drugs. Avoid if prone to panic, anxiety or mental health problems.

Stimulants	
Examples:	3-FMP, Ethylphenidate, MPA, camfetamine, ephedrine, khat, amphetamines, cocaine
Appearance	White or off white powders; may be sold in wraps, small self-seal bags, or printed foil bags old pre ban-stock). Substances may also be sold in capsules or pressed in to tablets. Khat comes as fresh or freeze-dried leaves.
Description:	Central Nervous System (CNS) stimulants with little or no hallucinogenic activity. Some primarily elevate levels of adrenaline and nor-adrenaline; others also elevate levels of dopamine. Those with less dopaminergic activity will be less euphoric & rewarding. One may be left with a more functional stimulant, which keeps you awake without feeling especially pleasant. If the drug also has a marked impact on serotonin levels, there is likely to be more change in perception and emotion. These drugs are considered separately below.
Route:	Swallowed or snorted; rarely injected
Effects:	As for amphetamine or cocaine – increased alertness, reduced fatigue. Possible euphoria depending on drug. Increased heart-rate and blood pressure. Reduced appetite.
Risks:	As for other stimulants: damage to mucous membranes through snorting. Risk of cardiac or circulatory problems. Weight loss, insomnia. Risks of panic and anxiety, possible paranoia. Excessive or extended use could trigger acute mental health problems. Strongly dopaminergic drugs increase risk of compulsive redosing. Post-use users may experience intense craving and low mood.
Harm reduction:	Use only at low doses. Avoid frequent redosing or extended binges. Don't use if any history or cardiac, circulatory or mental health problems. Research in to new drugs prior to use to understand effects, doses and risks.

Hallucinogenic Stimulants	
aka Empathogens, enactogens, psychedelic amphetamines;	
Examples:	**MDMA mephedrone (4-mmc), 5-apb, 6-apb,** MDAI, MDAT
Appearance	White or off white powders, and also pellet, capsules and tablet forms.
Description:	Substances which have a mixed action including some stimulant/euphoriants properties but also significantly alter perception. This is usually because the drug elevates levels of serotonin by increasing release and/or blocking reuptake of this brain chemical. Altered senses could include some level of auditory or visual hallucination. Drugs which create an increased sense of closeness and sociability are sometimes described as empathogens or enactogens.
Route:	Mucous membranes (e.g. snorted), swallowed, rarely smoked and injected.
Effects:	Will vary widely from substance to substance, with dose, user and context. Could include physical symptoms similar to other stimulants (elevated heart rate and blood pressure, reduced appetite). Altered perception, auditory and visual hallucinations, enhanced sense of touch. Feelings of sociability and closeness to other people, sexual arousal. May also include side effects such as reduced urine output, clenched jaws, perspiration and restlessness
Risks:	In addition to all the risks of stimulant use (e.g. panic, anxiety, heart problems, insomnia, weight loss) other risks include powerful changes to perception, intense feelings of panic and paranoia. Drugs could elevate serotonin, leading to serotonin syndrome. This could have a big impact on body temperature leading to overheating. Risk of loss of circulation at the extremities. Risk of convulsions. Heavy use could trigger episodes of psychosis. Drugs which are also strongly dopaminergic (e.g. mephedrone) tend to encourage bingeing and redosing. Heavy use can lead to or worsen depression after use.
Harm reduction:	Use only at low doses. Avoid frequent redosing or extended binges. Don't use if any history or cardiac, circulatory or mental health problems. Don't use in conjunction with other drugs or medicines. Undertake research to understand specific risks related to each drug being used.

Hallucinogens	
aka Psychedelics, tryptamines	
Examples:	**LSD** 2-ci, **2-cb**, **dmt, 5-meo-dipt**, **5-meo-dalt**, 2-ai, **amt,** chacruna, morning glory, psilocybin, p-lsd, **25I-NBoMe**
Appearance	White or off white powder, white or clear crystals, capsules containing the drug, LSD – blotting paper squares, plant seeds (morning glory and Hawaiian baby woodrose), dried leaves (chacruna) , magic mushrooms (psilocybin)
Description:	Substances which primarily alter cognition and/or perception but do not have such a marked stimulant activity (like MDMA). Many of the drugs of interest here are acting as agonists at serotonin receptors, mimicking the effects of the naturally occurring brain chemical serotonin. Some drugs such as ketamine are powerfully hallucinogenic, but have a very different mechanism of action and are considered in a different category in this briefing.
Route:	Varies with drug; swallowed or mucous membranes, some are swallowed, DMT is smoked.
Effects:	Will vary massively with drug, dose, setting and user. Could include significant hallucinatory activity, feelings of profound enlightenment or conversely intense paranoia. May enhance senses of sight, sound and touch. Some can cause feelings of sexual arousal and increased sensuality

Risks:	Short term risk of significant panic, anxiety and disorientation. Risk of accidents while intoxicated. Longer terms risks of triggering or exacerbating mental health problems. Strongly serotoninergic drugs can cause convulsions, circulatory problems including reduction in blood flow to extremities. Can also cause convulsions and increased body temperature.
Harm reduction:	Undertake research before using any such drugs to establish risks, effects and dose ranges. Use only if in good physical and mental health. Have a non-using friend on hand to help guide and manage experiences.

Dissociatives	
aka dissociative anaesthetics	
Examples:	Ketamine, PCP, methoxetamine, methoxphenidine, ether, nitrous oxide, ether, salvia divinorum, tiletamine
Appearance	Ketamine, PCP and Methoxetamine take the form of white, crystalline powders. Ether is a volatile liquid. Nitrous oxide comes as a gas under pressure in small canisters or cylinders or as a propellant in some foods (e.g. whipped cream). Salvia divinorum comes as dried leaves, or powdered plant extracts.
Description:	Dissociatives fit in to the wider family of hallucinogenic or psychedelics. They have distinctive characteristics partly related to how they work, and how they are experienced. Unlike other hallucinogens they are not working primarily on the serotonin system like tryptamines. Instead they are believed to work in some cases by blocking NMDA receptors in the brain or by acting as agonists at the k-opioid receptor. They can cause very vivid hallucinogens. They are termed Dissociatives as they can cause a sense of separation from the body, where the user may feel a sense of disconnectedness. This can include out-of-body sensations, loss of control of body, feeling emotionally and physically separate from the body. Some can cause euphoria.
Route:	White powder drugs like ketamine are snorted, swallowed or less commonly injected. Volatile compounds such as ether or Nitrous oxide are inhaled. Salvia is smoked, typically through bongs.
Effects:	Reduced muscular control, paralysis, euphoria, profoundly altered state, reduced sensitivity to pain, hallucinations, hilarity, confusion and disorientation. Nitrous Oxide – enhanced effects of psychedelic drugs
Risks:	Risk of falls and accidents when intoxicated; nausea and vomiting Anoxia related to Nitrous Oxide use Bladder problems related to ketamine use mental health problems
Harm reduction:	Use in safe environment with sitter; Use low doses and avoid injecting Nitrous Oxide – ensure adequate oxygen supply – don't inhale more than one breath of Nitrous per minute; avoid using through masks – always use an intermediate device such as a balloon

Deliriants	
aka Tropane Alkaloids, Antihistamines	
Examples:	Diphenhydramine, muscarine, atropine, scopolamine, hyoscamine
Appearance	Plants such as Deadly Nightshade, Jimson Weed, Datura, Thornapple Medical products including Nytol, Valoids, Benadryl

Description:	Deliriants are the most unpopular end of the hallucinogen spectrum. They are unpredictable, can cause a lot of nausea and are not especially pleasant. Some antihistamines at high doses also work as Deliriants. Deliriants are sometimes considered as a distinct group within the wider family of hallucinogens because they can cause a markedly different type of hallucination – rather than distorting existing perception causing fantastical auditory and visual hallucinations, conversations with fantastical beings. The plant-based compounds used formed the basis of "witch's brew."
Route:	Plant based products usually swallowed or taken rectally. The powder based compounds such as benadryl can be swallowed or snorted.
Effects:	Significant hallucinations, confusion, disorientation, drowsiness
Risks:	Headaches, convulsions, shakes, tremors, breathing problems, heart failure
Harm reduction:	Don't use any of the plant-based tropane alkaloids – the level of risk is very high.

Depressants (GABA-nergic)	
aka benzos, Z-drugs, GHB, Barbiturates, downers, sleepers	
Examples:	**Benzodiazepines:** diazepam, temazepam, etizolam, phenazepam, flubromazepam, Nifoxipam, deschloroetizolam **Z-Drugs:** Zopiclone; Zimovane GHB and GBL; Gabapentin and Pregabalin, Alcohol
Appearance	GHB: liquid or white powder GBL: Liquid, either on its own or in commercial cleaning products Z-drugs/Gabapentin – pharmaceutical products Benzodiazepines: pharmaceutical products or non pharmaceutical pills, often blue in colour
Description:	These drugs act on GABA-receptors to reduce electrical stimulation of the brain. Different substances have different mechanisms of action. Some are legitimate pharmaceuticals either being used with or without prescription. There has been a huge increase in the amount of non-pharmaceutical diazepam and other benzodiazepines being used in the UK. The strength and quality of these products is highly variable.
Route:	Mostly used orally. Some benzos are soluble and can be snorted. Some are prepared for injection.
Effects:	Highly dependent on strength, dose and tolerance. Low doses produce euphoria and relaxation, reduced motor control and decrease in anxiety. Higher doses see further relaxation, possible amnesia, sleep and possibly unconsciousness.
Risks:	Combinations of these drugs, especially alcohol with one of the others here, is a significant cause of fatal overdose. Use of non-prescribed benzos increases risk of taking drugs of unknown strength. Risk of out-of-character behavior when intoxicated. Regular use will produce tolerance, dependence and risk of withdrawal symptoms which for several of these drugs can be dangerous. Vulnerability when intoxicated.
Harm reduction:	Don't use for sustained periods of time; don't mix drugs within this family or with opiates. Seek medical help in withdrawal. Be cautious of benzos or other net-sourced drugs.
Depressants (Opioids and **Opiates)**	
Examples:	Heroin, opium, codeine, morphine, dihydrocodeine, buprenorphine pethidine, oxycodone, fentanyl, desomorphine, methadone, AH-792, nortilidine
Appearance	White or brown powder (heroin) Dark brown/black resin (opium) Phamaceutical preparations (various)

Description:	Either drugs derived from the opium poppy (opiates) or synthetic chemicals based on the same structure (opioids). Medically used for analgesia, cough suppression and the treatment in some cases of opiate dependency.
Route:	Depending on the user and the drug includes oral administration, sublingual, smoked, snorted, injected and rectal.
Effects:	Reduction in pain, sense of euphoria, calm and well being Reduced bowel activity, shallow breathing, drowsiness, possible stupor
Risks:	Addiction, overdose through respiratory suppression, injecting complications, death
Harm reduction:	Avoid use in combination with other sedating drugs; use infrequently if not dependent; preferably use another route other than injecting and if injecting practice safer injecting techniques.

OTHER INFORMATION:

The KFx website (www.kfx.org.uk)
Lots of resources including screening and assessment tools. All are free to download and can be reproduced for in-house use.

You can find the following resources on the KFx Wesbite:

Psychoactive Substances Act Briefing
Synthetic Cannabinoid Briefing
Synthetic Cannabinoid Use Screening Tool
NPS Screening and Assessment Tool
NPS Fact Cards
SCRA Fact Cards

More sites:

The mainstream drugs education channels are way behind the curve when it comes to novel compounds. So anyone seeking to educate themselves about newer drugs will need to undertake a level of research themselves. However, many of the sources of information are very biased: anti-drugs, pro-drugs, run by manufacturers and so on.

Many sites will simply cut and paste information from the same sources so it is important to try and gain information from a variety of sites and critically assess it to gauge its validity.

The following sites have been useful in the preparation of this and other resources:

Resource	Description
Drugs Forum Drugs-Forum http://www.drugs-forum.com/	Premier drugs discussion forum. High standards of moderation and ratings for user comments ensure that poor quality information and attempts to promote products are rapidly dealt with. If a drug isn't being discussed here it is probably not really available.
Bluelight BLUELIGHT http://www.bluelight.ru	Very active drugs discussion forum. Hampered by poor moderation and over-long threads which become unwieldy
Erowid www.erowid.org/	Long established drugs awareness website. Lots of information about newer compounds but a little slow to update.

Drugwatch	Collective group of drugs agencies and workers who produce briefings and collate information about new compounds. Website should be forthcoming.
DrugWise http://www.drugwise.org.uk/	Successor to Drugscope website
Drugswheel http://thedrugswheel.com/index.htm	Tool for understanding drug families and up-to-date lists of legal status of newer compounds
Crew2000 www.crew2000.org.uk/	Edinburgh-based drugs service with a great track record of club and festival outreach. Lots of information and downloads on newer compounds
Neptune: http://neptune-clinical-guidance.co.uk/	Output from the CNWL NPS project including this guide on clinical management of NPS. The guidance doc is a 355 page tome! Essential reading – but very academic and a hard read.
Partyvibe http://www.partyvibe.com/	Forum which grew out of dance and club scene. Has a lively drugs discussion section. Some very good contributions but lack of moderation means it's a bit of a field day for people promoting their wares. Plus, now takes some dodgy adverts.
PsychonautWiki http://psychonautwiki.org/wiki/Main_Page	Styled after Wikipedia but focussed on NPS. Some good content but not clear how much scrutiny there is of content.
Snopes www.snopes.com/	Not a drugs website, debunks urban myths. When drug myths (e.g. strawberry meth) do the rounds, a good place to check.
WEDINOS: www.wedinos.org	Welsh emergent drugs testing service
Wikipedia http://en.wikipedia.org/	On-line, user written encyclopaedia A good starting point for research in to any NPCs. The odds are that even if there is only a stub there should be some limited information here. Important to see if this has been (a) referenced and (b) cut and pasted elsewhere.
Why Not Find Out http://www.whynotfindout.org/	Wesbite set up by the Angelus Foundation and Amy Winehouse Foundation. Primarily interested in new compounds. Some good information.
What Martha Did Next http://www.whatmarthadidnext.org/	Blog and campaign site set up up by Anne-Marie Cockburn after her daughter Martha died following taking MDMA. Not much drugs info but lobbies for harm-reduction and drugs education.
Talk To Frank http://www.talktofrank.com/	Government-funded website. Had improved its NPC content lately but is not very detailed at this stage. Limited information about a large number of drugs is now included.
Microgram http://www.justice.gov/dea/pr/micrograms.shtml	Journal of the DEA in the US. Highly detailed and technical articles including chemistry of new and emergent compounds.
EMCDDA http://www.emcdda.europa.eu/	The EMCDDA exists to provide the EU and its Member States with a factual overview of European drug problems and a solid evidence base to support the drugs debate. Produces regular reports about NPCs across the EU
RedNet https://www.rednetproject.eu/	The Recreational Drugs European Network (ReDNet) project is a multi-site research study with the aim of improving the level of information available to young people (16-24) and professionals on the effects of these new recreational drugs and the potential health risks associated with their use.
Psychonaut Project http://www.psychonautproject.eu/	The Psychonaut Web Mapping Project was a 2-year European Union funded project (January 2008 - December 2009) with the aim of developing a web scanning system to identify and categorise novel recreational drugs/psychoactive compounds, and new trends in drug use based on information available on the Internet. Project now closed but publications can be downloaded from this site