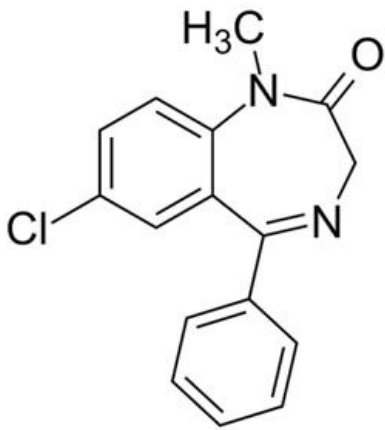
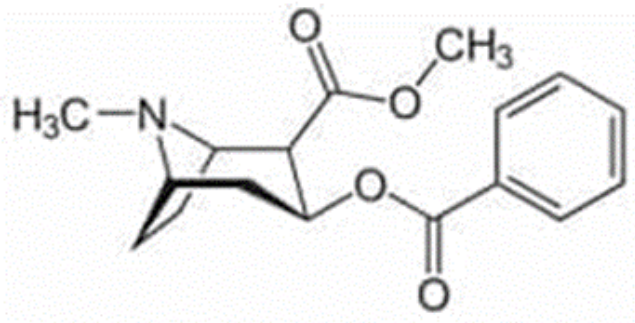


WEDINOS:

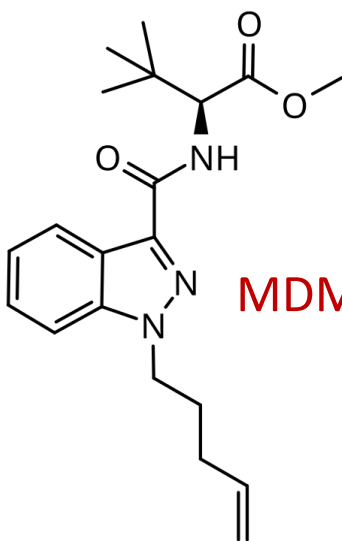
Philtre April 2024 – March 2025



Diazepam



Cocaine



MDMB-4en-PINACA

Headline Figures

Total to date (Project launch 1st October 2013 to 31st March 2024):

- Over 53,000 samples received
- Almost 47,000 analysed
- Over 650 substances identified either in isolation or combination.
- Samples received from over 300 organisations and services
 - Including: Emergency Departments, Local Health Teams, Substance Misuse Services, Housing and Homelessness, Education Centres, Training Providers, Night Time Economy (NTE) Venues, Festivals, Criminal Justice Services and Welsh Prisons
 - Samples are also provided by individuals not engaged with / accessing services

This Year (2024-2025):

- 9,784 samples received representing an increase from 8,466 in 2023/24.
 - 8,032 analysed, **UP** from 7,064
- Community samples increased to 6,894 from 5,793
 - 211 substances identified, **UP** from 206
 - Samples received from 103 different organisations, services and Night Time Economy (NTE) venues as well as from individuals
 - Median age of sample providers is 35 years (range 11 to 87 years)
 - As in the previous seven years benzodiazepines were the most commonly identified class of psychoactive substance with 22 benzodiazepines identified, up from 19 last year
- **Cocaine** was the most commonly identified substance overall
- Most commonly identified substance in the community was **diazepam**, followed by **cocaine**, then **bromazolam**
- **Cocaine** was the most commonly identified substance in the NTE
- Criminal justice settings – the Synthetic Cannabinoid Receptor Agonist (SCRA) **MDMB-4en-PINACA** was the most commonly identified substance

WEDINOS: A sample Journey: From receipt to publication

WEDINOS Sample Journey

Samples arrive in the WEDINOS laboratory daily during the working week. Samples are opened in batches. Opening of samples is done safely under external extraction, as they are 'unknown' substances. When a sample is opened, it is first photographed. Information from the WEDINOS submission form, such as purchase intent and self-reported effects, is then entered onto the laboratory computer system, this is also uploaded to the website along with the image and the results of analysis once complete.

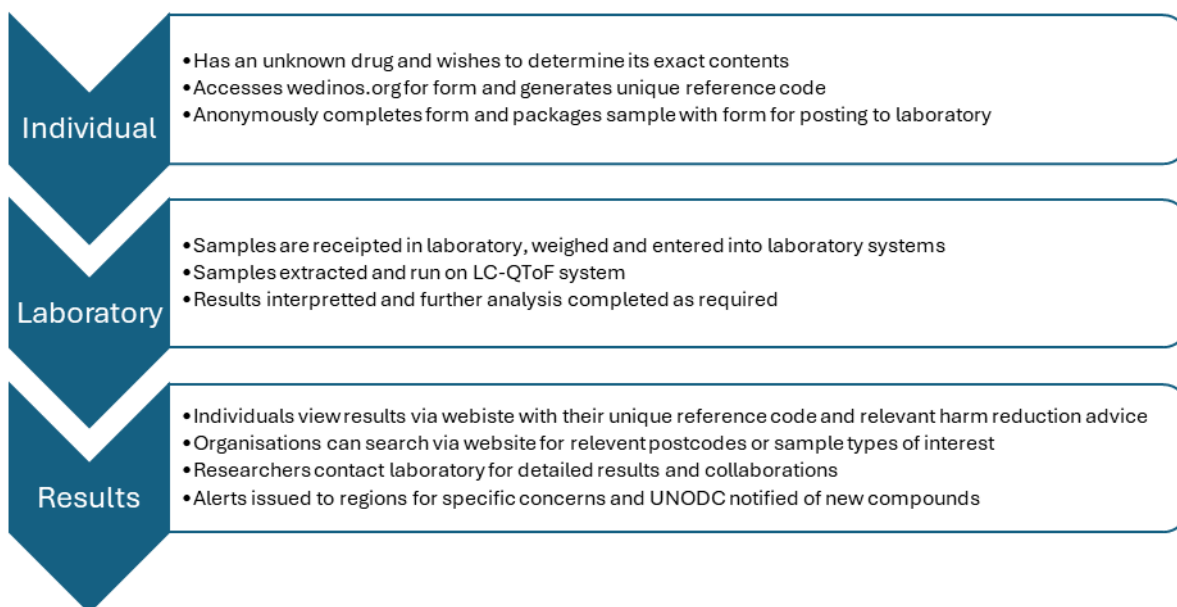
Next a small portion of the sample is taken and placed in an extraction tube. Care is taken to ensure tablets are crushed and mixed before sampling, and that any powders, plant material or liquids are also mixed to ensure that the portion taken for analysis is representative of the whole sample. Solvent is added to the extraction tube and the tube then vigorously mixed (called vortex mixing) to ensure all analytes in the sample are extracted into the solvent. The sample is now ready to go on the analyser.

The laboratory analysis of WEDINOS samples is performed on a Liquid Chromatographic Quadrupole Time of Flight analyser (LC-QTOF). The aim of this analyser is to separate all the different analytes we report in WEDINOS samples from each other so that we can correctly report the contents of the sample. The analyser achieves this in two ways. First is by chemical separation in the LC. The analytes in the solvent extract interact differently with the LC column and are eluted from the column at different times depending on their chemical properties. Secondly the QTOF part of the analyser separates the eluted analytes on their mass. The mass is calculated from all the carbons, hydrogens, nitrogens etc that make up the core structure of a substance. The QTOF can very accurately tell the mass of different drugs to 4 decimal places. The QTOF also fragments the analyte once it's measured its mass, and the pattern of fragments is very specific to a drug.

Once the elution time, accurate mass and fragments have been detected, they are compared to a database/library of 1800 analytes. All positive matches are reported. If they have a very strong signal, they are reported as a 'major component', if they have a weaker signal, they are a 'minor component'.

A scientist also reviews the results of each sample for new analytes not matching to the library and investigates this further. We use techniques such as FTIR (Fourier transform infrared spectroscopy) and NMR (Nuclear magnetic resonance) to find more information about the structure of the new analyte to work out its chemical formula. Once confirmed we report the new compounds to the WEDINOS website, and they are added to our LC-QTOF library. We sometimes report new compounds to UNODC (United Nations Office on Drugs and Crime) if it is new to the UK.

The key things to remember is that only if a drug can be detected in an LC-QTOF and if it is a psychoactive drug will we report it. We do not use any additional techniques than those listed above, even if a result is negative. It will be reported as 'no active component identified'.



Wider perspective....

Global, European, England and Wales, and Welsh estimates:

October 2024 marked the 11th anniversary of the launch of the WEDINOS programme, along with the receipt, analysis, and publication of results from the first sample. This sample was an unknown white powder, submitted via a community-based drug service.

Analysis revealed it contained para-chloroamphetamine, amphetamine, N-ethylnorethamphetamine, and benzocaine, which had caused unexpected effects including nosebleeds, depression, and suicidal ideation.

Since then, WEDINOS has monitored drug trends across the UK while sharing information with and receiving data from regional, national, and international partners to provide timely, pragmatic harm reduction information for people who use drugs and those involved in their care.

WEDINOS routinely feeds drug market data into a broad range of services, from local drug services to members of the Royal College of Emergency Medicine in Wales, the UK National Drug Alerts System, the Advisory Council on the Misuse of Drugs, the Trans European Drugs Information project, and the United Nations Office for Drugs and Crime (UNODC), among others.

Globally, The United Nations Office for Drugs and Crime (UNODC) reports that in 2023 the estimated number of people who used drugs worldwide reached 316 million, a 28 per cent increase in a decade; representing roughly 6% of the global population aged 15-64. This marks an increase from 5.2 per cent in 2013. More than 64 million people globally are estimated to have drug use disorders, an 18 per cent rise since 2013.

The number of people who inject drugs globally is estimated at around 14 million, 0.27 per cent of the population.

An estimated 64 million people worldwide are dependent on drugs and/or require treatment services, yet only about one in twelve receive such treatment.

The largest proportion of these individuals are people in treatment for opioids, followed by amphetamine type substances and cannabis (1).

The World Health Organization estimates the number of drug-attributable disease deaths in 2019 for all psychoactive drugs to be nearly 600,000 deaths, with opioid deaths accounting for just under 450,000 of these(2).

In the **United Kingdom**, the 2023 Crime Survey for England and Wales (3), reported that approximately 2.9 million people, or 8.8 per cent of adults aged 16 to 59, had taken a drug in the last year. The prevalence was higher amongst young people with 16.5 per cent of 16- to 24-year-olds reporting taking a drug in the last year.

Cannabis remains the most commonly used substance in the UK, having been reported as such since records began in 1995. There was no statistically significant change in the prevalence of cocaine use, to the previous year (2.1 per cent of 16- to 59-year-olds). MDMA use remained similar to the previous year, alongside the use of hallucinogens.

1) UNODC, World Drug Report 2025 (United Nations publication, 2025); <https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2025.html>

2) Global status report on alcohol and health and treatment of substance use disorders. Geneva: World Health Organization; 2024.

3) Office for National Statistics (ONS), released 12 December 2024, ONS website, article, Drug misuse in England and Wales: year ending March 2024

Wider perspective....continued...

A picture from Wales

The following section utilises data from the Public Health Wales report 'Data mining Wales: The annual profile for substance misuse 2023-24'

Provisional headline figures for problem drug use estimates in Wales,* including populations not in contact with any services, suggest that the total number of problem drug users in 2020-21 was 51,110 (95% confidence interval (CI) 38,100 – 68,340) (4).

There were 15,959 assessments (14,565 unique individuals) within substance misuse services in Wales in 2023-24, representing a decrease of 8.8 per cent compared to the previous year (17,502 assessments). Of the individuals assessed:

- 6,748 (46.3 per cent) were primary problematic alcohol clients
- 6,336 (43.5 per cent) were primary problematic drug clients
- 1,481 (10.2 per cent) did not have a substance recorded (4)

Amongst assessments for problematic drug use, opioids were cited as the most prevalent primary substance with 2,862 assessments (41.2 per cent). Of these, 2,273 assessments cited heroin as the primary substance. Cannabis was the next most frequently reported substance with 1,347 assessments (19.4 per cent). The number of assessments with cocaine, including crack cocaine, as the primary substance increased to 1,843 in 2023-24 and represents 25 per cent of all referrals to substance misuse services in 2023-24(4).

In Wales, overall, the number of hospital admissions for poisonings with named illicit drugs has decreased by 10.6 per cent in the last year from 4,347 in 2022-23 to 3,850 in 2023-24. Opioids accounted for the highest number of individuals admitted to hospital for illicit drugs, followed by cannabinoids.(4) **

In 2023, 377 deaths due to drug poisoning were registered in Wales, a substantial increase of 18.6 per cent from the previous calendar year. Of all drug-poisoning deaths, 253 (67.1 per cent) were identified as a drug misuse death, remaining high with an increase from the previous year (4).

* In this context problem drug use (PDU) is defined by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) as "injecting drug use or long duration or regular use of opioids, cocaine and/or amphetamines [including amphetamine type substances]".

** It is important to note that no distinction is possible in hospital admission data for differentiation between cannabinoid products: cannabis resin, stronger strains of herbal cannabis 'skunk;' or newer forms of synthetic cannabinoid receptor agonists (SCRAs), sometimes referred to as 'Spice'

4) Data mining Wales: The annual profile for substance misuse 2023-24; Public Health Wales; March 2025; <https://phw.nhs.wales/publications/publications1/data-mining-wales-the-annual-profile-for-substance-misuse-2023-2024/>

WEDINOS

WEDINOS Drug Sample Analysis Report

Reporting Period: 1st April 2024 to 31st March 2025

Introduction

WEDINOS has analysed a total of 8,032 samples collected from 96 services and settings across the UK, in addition to samples submitted by individuals. These samples originate from three main categories:

- Community settings
- Night Time Economy (NTE)
- Criminal Justice Settings

Samples from NTE and Criminal Justice Settings are primarily collected from amnesty bins or non-attributable sources, and as such, lack detailed information on purchase intent, user demographics, or effects.

Key Findings

Substances Identified

- A total of 8,032 samples have been analysed, revealing 211 distinct psychoactive substances either individually or in combination.
- For the sixth consecutive year, benzodiazepines remain the most frequently identified group, with 22 different benzodiazepines detected—an increase from 20 in 2021/22. Notably, 13 benzodiazepines appeared in fewer than ten samples each.
- Diazepam was the second most commonly detected substance overall and the top benzodiazepine, with 978 identifications, despite being the declared purchase intent in 1,532 samples.
- Bromazolam was identified 616 times, although it was listed as purchase intent only 8 times, suggesting it is frequently used as a substitute. Given its higher potency compared to diazepam, this substitution carries significant risk.
- Cocaine was the most commonly detected psychoactive substance overall, strongly influenced by high submissions from the Night Time Economy.
 - The Crime Survey for England and Wales (year ending March 2024) reported stable prevalence rates for powder cocaine use among ages 16–59 (2.1%) and 16–24 (3.8%), with crack cocaine use at 0.10% (5).
- Contrastingly, Public Health Wales data indicates an increase in cocaine-related drug service assessments from 1,582 in 2019-20 to 1,843 in 2023-24 (+16.5%), accounting for 25% of all referrals (6).
- Consistent with previous years, caffeine remains the most common bulking or cutting agent and is frequently found mixed with stimulants such as amphetamine, MDMA, and cocaine. Some samples submitted as MDMA were found to contain caffeine alone.

5) Office for National Statistics (ONS), released 12 December 2024, ONS website, article, Drug misuse in England and Wales: year ending March 2024

6) Data mining Wales: The annual profile for substance misuse 2023-24; Public Health Wales; March 2025;

<https://phw.nhs.wales/publications/publications1/data-mining-wales-the-annual-profile-for-substance-misuse-2023-2024/>

WEDINOS

2024/2025	2023/2024
Cocaine	Cocaine
Diazepam	Diazepam
MDMA	MDMA
Bromazolam	Bromazolam
Ketamine	Ketamine
Caffeine	Caffeine
Alprazolam	Paracetamol
Cannabinol	Tetrahydrocannabinol
Tetrahydrocannabinol	Alprazolam
MDMB-4en-PINACA	Heroin

Table 1: Most commonly identified psychoactive substance WEDINOS samples.

WEDINOS

Community Settings Analysis

WEDINOS receives samples from diverse community sources including education, healthcare (Emergency Departments), mental health, housing and homelessness services, substance misuse services, and individuals. Collaborations with Welsh prisons continue for samples that have no evidentiary value, findings from these are reported separately.

Sample Demographics

- 6,894 samples were submitted from community settings.
- Demographic data was available for 94% (6,476 samples).
- Among these, 76% were submitted by males and 24% by females.
- Median age across all submitters was 35 years (range 11–87), compared with 34 years (range 12–80) in 2022-23.
 - Females: median age 36 years (range 13–75)
 - Males: median age 35 years (range 11–87)

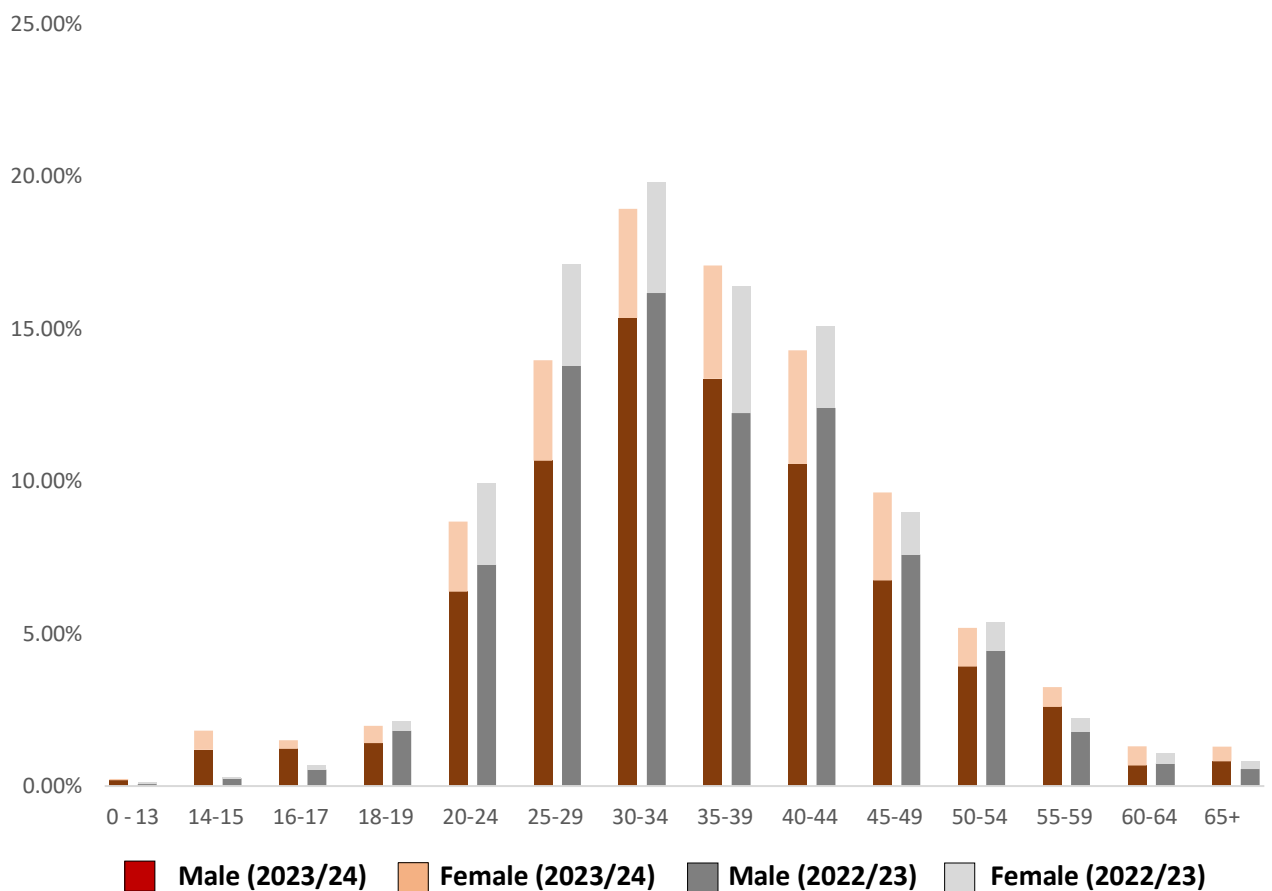


Chart 1: Demographic profile of psychoactive sample providers

WEDINOS

Community Samples Analysis

Since the launch of WEDINOS in 2013, data has consistently shown widespread substitution of substances in the illicit drug market.

Among the 6,894 community samples, 211 substances were detected alone or in combination. Table 2 details the changes in the top ten substances at both submission (purchase intent) and post-analysis stages, note this is not a direct substitution from the right column to the left.

Samples classified as “unknown” either had unclear submission names or were from acute care settings where no purchase intent was listed

Number	Purchase intent	Post-analysis
1	Diazepam	Diazepam
2	MDMA	Cocaine
3	Cocaine	Bromazolam
4	Alprazolam	MDMA
5	Unknown	Ketamine
6	THC	Paracetamol
7	Heroin	Caffeine
8	Ketamine	Alprazolam
9	Zopiclone	No Active Component Identified
10	Pregabalin	Heroin

Table 2 Most common substances pre (perceived) and post (actual) analysis

WEDINOS

Community Samples Analysis...continued...

As in 2022-23 and 2023-24, bromazolam remains high on the list of the most commonly identified substances, third behind diazepam and cocaine, being profiled on 616 occasions. However, it was listed as purchase intent only 8 times, highlighting how frequently it is used as a substitute, particularly within the illicit benzodiazepine market.

It may be argued that the high pre analysis prevalence of “unknown” substances would be the biggest influencer of this change. However, even following removing these samples we find that over the past year 35 per cent of samples submitted to WEDINOS with a substance listed in the purchase intent did not contain what was expected. This is down from 42 per cent in 2023-24.

Some samples were found to contain the purchase intent and other substances, such as a sample purchased as heroin that was found to contain heroin and xylazine upon analysis. Other samples were found to contain a different substance or substances. For example, a sample purchased as diazepam which was found to contain bromazolam and metonitazene.

The levels of additional substances and substitution are shown in chart 2

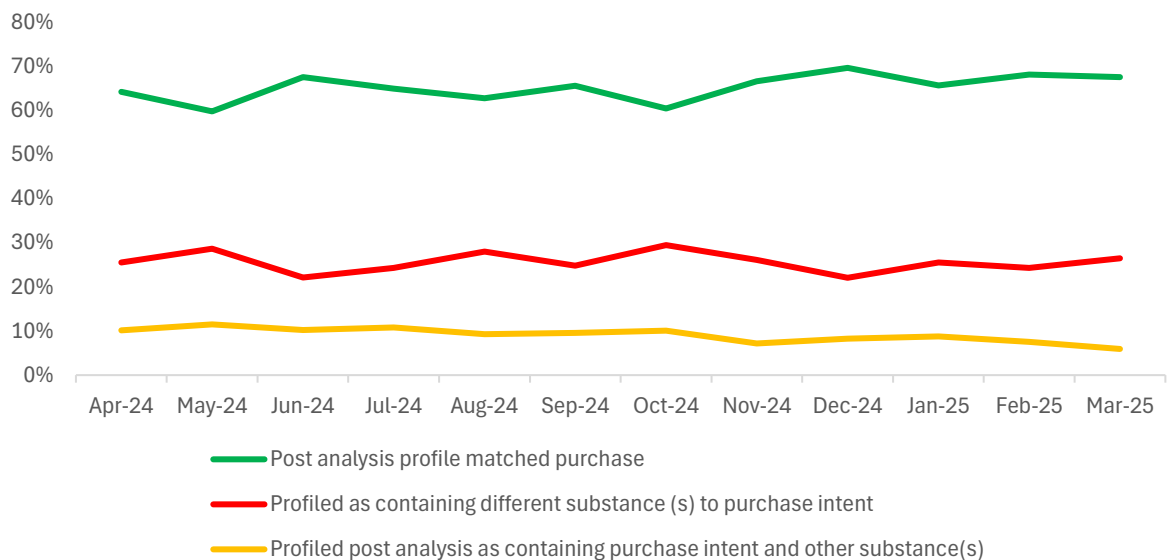


Chart 2: Levels of substitution and adulteration amongst samples submitted to WEDINOS April 2024 – March 2025

The latest data from WEDINOS confirms ongoing challenges in the illicit drug market, including the prevalence of potent benzodiazepines like bromazolam as substitutes, often profiled alongside nitazenes, the presence of synthetic cannabinoid receptor agonists within cannabis vapes and the presence of xylazine and nitazenes within the heroin market.

This substantial substitution of intended purchases and actual substance content highlights the risks users face, emphasising the need for continued harm reduction and education efforts.

WEDINOS

Community Sample Types

Form of sample

WEDINOS requests the 'form of sample' for each submission to monitor and report the various forms in which substances appear on the market and potential differences in method of consumption.

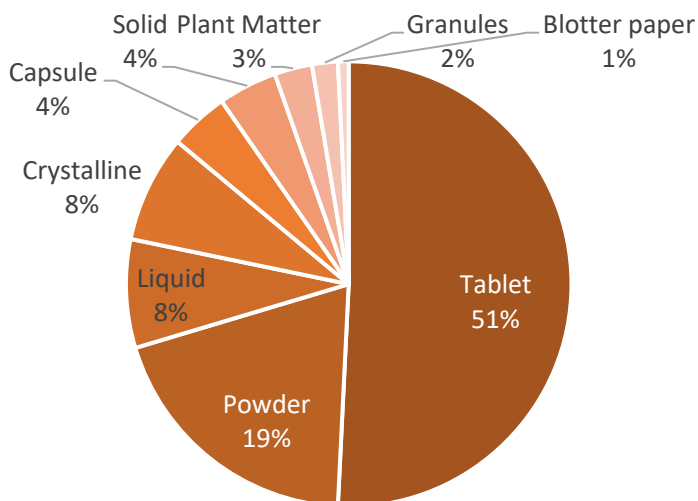


Chart 3: Forms of psychoactive substance samples submitted to WEDINOS April 2024 to March 2025

As in the previous three years, we see a high prevalence in the number of tablets submitted, this is mirrored by the high numbers of samples submitted believed to be diazepam, MDMA and alprazolam.

Method of consumption and harm reduction advice

Assuming that all plant matter samples and vape liquids are smoked/vaped, the remaining samples (pills, liquids, tabs, granules etc.) were ingested through a variety of methods. The most common method of consumption (67 per cent) was oral (swallowing, 'bombing'). This high prevalence of oral consumption is likely linked to the high number of submissions purchased as benzodiazepines, particularly diazepam and alprazolam, alongside submissions of zopiclone and a high prevalence of MDMA tablets.

The second most common method was snorting / sniffing at 18 per cent, as shown in Chart 4.

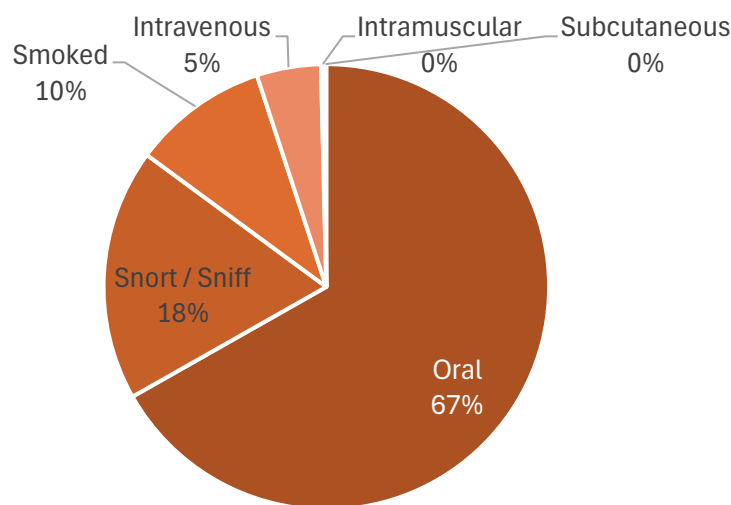



Chart 4: Method of consumption (samples submitted as tablet, powder, crystalline, capsule, solid, granules, blotter paper) April 2024 to March 2025

5 per cent of sample providers reported intravenous injecting of substances. This is an increase from 3.5 per cent in 2023-2025. 7 per cent and 3 per cent of individuals reported intramuscular or subcutaneous use respectively.

Samples injected were purchased as, and found to contain, heroin, cocaine, ketamine,, nitazenes and xylazine.

All injecting, regardless of the substance, carries a significant risk of serious infection and other complications. Individuals who currently inject drugs, or have previously injected, should get tested for blood borne viruses

Injecting



Do not share any injecting equipment; this includes water, spoons and filters as well as needles and syringes. It is best practice to use a filter for drawing up.

Ensure you have enough needles for repeat injecting. Rotate sites.

Ensure any wounds are treated as soon as possible

If you experience heat or redness at an injecting site - seek medical attention

Ensure that your equipment is correct for its intended use

Injecting intensifies everything about the drug experience

Most New Psychoactive Substances are water soluble and do not require the addition of an acid (usually citric acid or ascorbic acid (Vit C)).

WEDINOS

Powders, granules and crystalline materials

Focusing on the method of consumption for powders, granules and crystalline materials, the most common method was snorting/sniffing with 57 per cent reporting this as shown in Chart 5. There has been an increased number of samples of this form reported to be injected intravenously. This can be attributed to an increased number of heroin samples received during this reporting period.

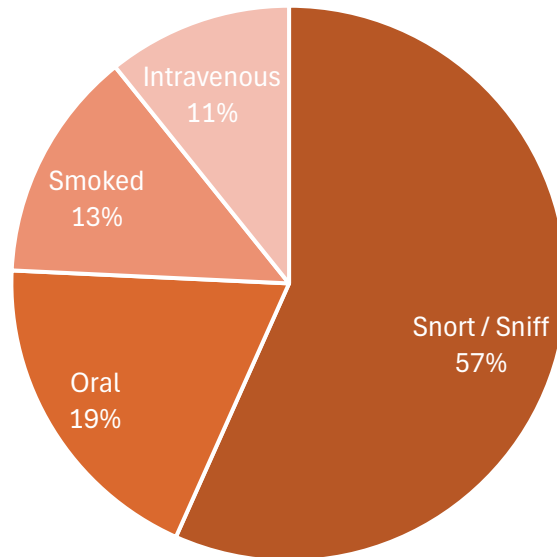


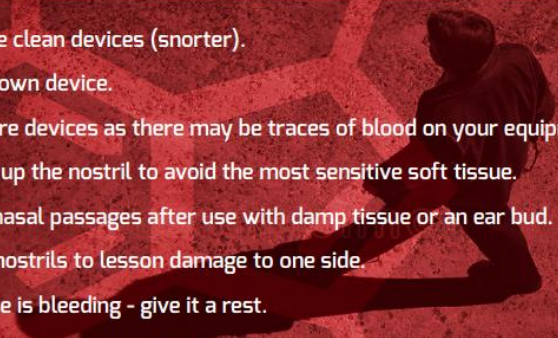
Chart 5: Method of consumption: Powders

Snorting/sniffing potentially caustic or toxic substances carries additional risks related to damage to the nasal passages, as well as potential transmission of blood borne viral infection when sharing snorting paraphernalia in the presence of nasal passage damage and blood.

Insufflation (Sniffing/Snorting)



- Always use clean devices (snorter).
- User your own device.
- Do not share devices as there may be traces of blood on your equipment.
- Snort high up the nostril to avoid the most sensitive soft tissue.
- Clean out nasal passages after use with damp tissue or an ear bud.
- Alternate nostrils to lesson damage to one side.
- If your nose is bleeding - give it a rest.



Nitazenes

Nitazenes

From April 2024 to March 2025, a total of 110 samples were found to contain nitazene(s).

First synthesised in the late 1950s, 2-benzylbenzimidazole opioids, collectively known as nitazenes, were initially intended to be developed as analgesics but were never approved for any therapeutic purpose (7). They still have no approved human use.

Described also as New Synthetic Opioids and New Psychoactive Substances, nitazenes have been presenting an increasing public health challenge over recent years (8). With increasing numbers of nitazenes being reported to the United Nations Office for Drugs and Crime Early Warning System since the first report in 2019 (9).

In February 2025, with data collection for 2024 and 2025 not fully completed, the United Nations Office for Drugs and Crime had reports of 26 nitazenes being identified in 30 countries in Europe, North America, Oceania, South America and Southeast Asia.

WEDINOS first detected a nitazene in April 2021, detecting metonitazene in a sample of an unknown white powder, submitted from the Wakefield area of England.

W018254

Date Received: 14 Apr 2021
Postcode: WF1 -
Purchase Intent: Found in taxi
Package Label: Not Stated
Sample Colour: White
Sample Form: Powder
Consumption Method: Not Stated
Self-Reported Effects: Not Stated
Sample Upon Analysis (Major): Metonitazene
Sample Upon Analysis (Minor):



[Click to Enlarge](#)

To date WEDINOS has identified 13 different nitazenes, up from eight last year: butinitazene, etonitazepyne, isotonitazene, isotonitazepyne, metonitazene, N-desethyl etonitazene, N-desethyl isotonitazene, N-desethyl protonitazene, N-pyrrolidino isotonitazene, N-pyrrolidino protonitazene, protodesnitazene, protonitazene and protonitazepyne.

In the reporting period 2024 to 2025 metonitazene was the most commonly identified nitazene, being identified on 74 occasions.

From WEDINOS submissions and wider reports (10) we know that nitazenes are being increasingly detected as adulterants within heroin, a range of counterfeit pills (such as benzodiazepines and painkillers) and other substances to strengthen the effects. Very often the end user is unaware of the presence of a nitazene.

7) Pergolizzi J Jr, Raffa R, LeQuang JAK, Breve F, Varrassi G. Old Drugs and New Challenges: A Narrative Review of Nitazenes. *Cureus*. 2023 Jun 21;15(6):e40736. doi: 10.7759/cureus.40736. PMID: 37485167; PMCID: PMC10361140

8) Advisory Council for Misuse of Drugs: ACMD advice on 2-benzyl benzimidazole and piperidine benzimidazolone opioids, updated 29th January 2025; <https://www.gov.uk/government/publications/acmd-advice-on-2-benzyl-benzimidazole-and-piperidine-benzimidazolone-opioids/acmd-advice-on-2-benzyl-benzimidazole-and-piperidine-benzimidazolone-opioids-accessible-version>



9) UNODC EWA: Nitazenes – a new group of synthetic opioids emerges; February 2024; <https://www.unodc.org/LSS/Announcement/Details/cbec8f4c-73aa-49ee-9e2b-75620af8a910>

10) National Crime Agency; National Strategic Assessment 2025 of Serious and Organised Crime; <https://nationalcrimeagency.gov.uk/images/campaign/NSA/2024/NSA%202025%20Website%20-%20PDF%20Version%20v1.0.pdf>

Nitazenes

110 samples were submitted to and analysed by WEDINOS between April 2024 and March 2025 that were profiled as containing a nitazene. This represents 1.4 per cent of all samples analysed, down from just under 2 per cent (138 out of 7064 samples) in 2023-24.

Of those 110 samples, 3.6 per cent (n=4) were submitted with a nitazene listed as the purchase intent. However, it is important to remember that as WEDINOS is a self-selecting service our data is it not an indicator of prevalence.

<p>W062969</p> <p>Date Received: 11 Mar 2025</p> <p>Postcode: N16 -</p> <p>Purchase Intent: Valium</p> <p>Package Label: Not Stated</p> <p>Sample Colour: Blue</p> <p>Sample Form: Tablet</p> <p>Consumption Method: Oral</p> <p>Self-Reported Effects: Relaxed</p> <p>Sample Upon Analysis (Major): Metonitazene, Bromazolam</p> <p>Sample Upon Analysis (Minor):</p>	 <p>Click to Enlarge</p>	<p>W062874</p> <p>Date Received: 11 Mar 2025</p> <p>Postcode: EH52 -</p> <p>Purchase Intent: Heroin</p> <p>Package Label: Not Stated</p> <p>Sample Colour: Brown</p> <p>Sample Form: Powder</p> <p>Consumption Method: Intravenous</p> <p>Self-Reported Effects: Euphoria, Relaxed</p> <p>Sample Upon Analysis (Major): Noscapine, Paracetamol, Heroin, Caffeine, 6-MAM</p> <p>Sample Upon Analysis (Minor): Thebacon, Etonitazene, Papaverine, Morphine</p>	 <p>Click to Enlarge</p>
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Samples containing nitazenes were submitted from throughout the UK mainland.

The majority of nitazenes were profiled in samples submitted as diazepam, 40 per cent (n=44). Followed by heroin, 26 per cent (n=29), and Oxycodone 15 per cent (n=17) with 6 per cent (n=7) found within samples from criminal justice services.

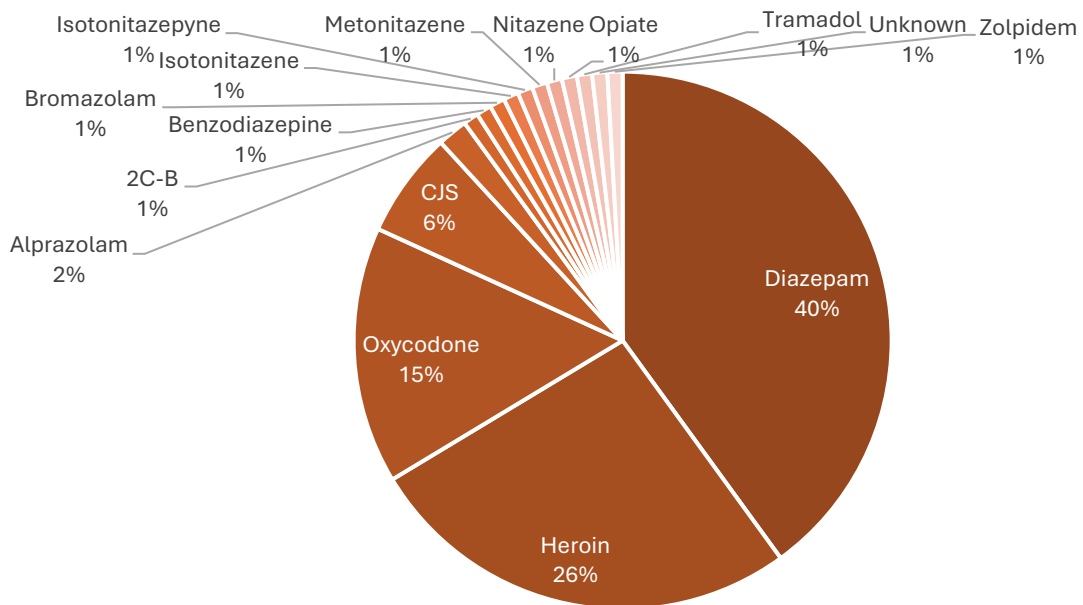


Chart 6: Purchase intent as reported by sample providers, where a nitazene was profiled – 2024/25

Nitazenes

Nitazenes and the Law (United Kingdom)

In March 2024, 15 new synthetic opioids (14 nitazenes) were controlled as Class A drugs under the Misuse of Drugs Act (MDA) 1971.

The 15 synthetic opioids controlled were buprenorphine, butorphanol, ethylhexanediol, etodesnitazene (etazene), flunitazene, isotonitazene, metodesnitazene (metazene), metonitazene, protonitazene, n-desethyl etonitazene, n-desethyl isotonitazene, n-desethyl protonitazene, n-piperidinyloxy etonitazene (etonitazepipne), n-pyrrolidino etonitazene (etonitazepyne), and n-pyrrolidino protonitazene (11).

On 15 January 2025, the Misuse of Drugs Act was amended to control all substances falling under the generic definition for nitazenes as Class A drugs.

Potency

They are generally highly active, with potencies and efficacies of several analogues exceeding that of fentanyl (12). However, there is very little information on their effects in humans.

Animal studies have shown a wide range in potency for this group of substances, which may also vary depending on the route of administration.

A 2021 review of early mice studies, where nitazenes were administered to mice subcutaneously indicated potencies compared to morphine ranging from 1 (equal potency) for flunitazene to 500 times more potent for isotonitazene and 1,000 times more potent for etonitazene (13).

The rank order of potency of a series of nitazenes was reported to be etonitazene > isotonitazene > protonitazene > metonitazene > butorphanol > etodesnitazene >> 5-aminoisotonitazene = flunitazene > metodesnitazene.

Nitazenes and Drug-Related Deaths

In 2024, there were at least 333 drug related deaths involving nitazenes in the UK, this number is expected to rise once testing is confirmed (14).

Nitazenes and Naloxone

As with other opioids, naloxone is effective at reversing nitazene toxicity in cases of overdose, although higher and/or repeated doses of naloxone may be required given the relatively high potency of nitazenes (15).

TOXBASE and the UK National Poisons Information Service suggest the use of naloxone if a patient has been exposed to any opioid drug and develops respiratory depression, airway obstruction or vomiting with impaired consciousness.

11) Home Office Correspondence: 001/2024: The Misuse of Drugs Act 1971 (Amendment) Order 2024 and The Misuse of Drugs and Misuse of Drugs (Designation) (England and Wales and Scotland) (Amendment and Revocation) Regulations 2024; 20th March 2024 <https://www.gov.uk/government/publications/circular-0012024-control-of-20-new-drugs/0012024-the-misuse-of-drugs-act-1971-amendment-order-2024-and-the-misuse-of-drugs-and-misuse-of-drugs-designation-england-and-wales-and-scotland>

12) Vandeputte MM, Van Uytendaele K, Layle NK, St Germaine DM, Lula DM, Stove CP. Synthesis, Chemical Characterization, and μ -Opioid Receptor Activity Assessment of the Emerging Group of "Nitazene" 2-Benzylbenzimidazole Synthetic Opioids. ACS Chem Neurosci. 2021 Apr 7;12(7):1241-1251. doi: 10.1021/acscchemneuro.1c00064. Epub 2021 Mar 24. PMID: 33759494

13) Ujváry et al., DARK Classics in Chemical Neuroscience: Etonitazene and Related Benzimidazoles, ACS Chemical Neuroscience 2021 12 (7), 1072-1092 DOI: 10.1021/acscchemneuro.1c00037

14) Bromig, G. About new powerful analgesics and their clinical trials. Klin Wochenschr 36, 960–963 (1958). <https://doi.org/10.1007/BF01486702>
National Crime Agency and Office of Health Improvements and Disparities, data confirmed as of 6th March 2025

15) Amaducci A, Aldy K, Campleman SL, Li S, Meyn A, Abston S, Culbreth RE, Krotulski A, Logan B, Wax P, Brent J, Manini AF; Toxicology Investigators Consortium Fentanyl Study Group. Naloxone Use in Novel Potent Opioid and Fentanyl Overdoses in Emergency Department Patients. JAMA Netw Open. 2023 Aug 1;6(8):e2331264. doi: 10.1001/jamanetworkopen.2023.31264. PMID: 37642962; PMCID: PMC10466160.

THC / CBD / Cannabis Vapes

Substitution of CBD/THC and Cannabis with Synthetic Cannabinoid Receptor Agonists (SCRAs) in the Vape Market

Between April 2024 and March 2025, WEDINOS received 297 samples submitted as containing THC, CBD, or cannabis for vaping.

39% of these samples (n = 117) were found to contain one or more synthetic cannabinoid receptor agonists (SCRAs) instead.

Deceptive labelling in Illicit Vape Products

A study by Craft et al. analysed seven sealed, illicitly sourced vape products sold as cannabis products. These vapes were accompanied by a certificate of analysis indicating the presence of four semi-synthetic cannabinoids

- Hexahydrocannabinol (HHC)
- Hexahydrocannabiphorol (HHC-P)
- Tetrahydrocannabiphorol (THC-P)
- Tetrahydrocannabinol acetate ester (THC-O)

However, laboratory analysis revealed that all seven samples actually contained a SCRA, not the cannabinoids listed (16).

SCRAs

SCRAs currently represent the largest group of new psychoactive substances (NPS).

The term “synthetic cannabinoids” refers to all synthetic compounds that bind to one or both of the two known cannabinoid receptors: CB1 and CB2.

Unlike tetrahydrocannabinol (THC), which acts as a partial agonist at the CB1 receptor, most SCRAs are full agonists with a much higher binding affinity. This results in significantly stronger and more prolonged receptor activation than that produced by cannabis.

Natural cannabis contains over 100 cannabinoids, including THC and cannabidiol (CBD), which can modulate each other’s effects and reduce potential harm. In contrast, SCRA-containing products typically include only one or a few synthetic compounds, often without moderating agents like CBD, contributing to their unpredictable and more toxic effects.

A retrospective cohort study of acute toxicity presentations to European hospitals (2013–2020) compared outcomes of lone cannabis exposure with lone SCRA exposure. The study found that patients exposed to SCRAs had statistically significantly higher rates of:

- Drowsiness
- Coma
- Agitation
- Seizures
- Bradycardia

These findings highlight the greater acute health risks associated with SCRA use compared to natural cannabis (17).

16) Craft S, Sunderland P, Millea MF, Pudney CR, Sutcliffe OB, Freeman TP. Detection and quantification of synthetic cannabinoids in seven illicitly sourced disposable vapes submitted by an individual presenting to a UK drug and alcohol service. *Addiction*. 2025 Mar;120(3):549-554. doi: 10.1111/add.16671. Epub 2024 Sep 10. PMID: 39256058; PMCID: PMC11813733.

17) Waters ML et al. Clinical effects of cannabis compared to synthetic cannabinoid receptor agonists (SCRAs): a retrospective cohort study of presentations with acute toxicity to European hospitals between 2013 and 2020. *Clin Toxicol (Phila)*. 2024 Jun;62(6):378-384. doi: 10.1080/15563650.2024.2346125. Epub 2024 Jun 27. PMID: 38934347.

THC / CBD / Cannabis Vapes

Depending on the substances and route of administration, SCRAs can have a faster onset and longer duration of effects than cannabis.

Vaping SCRA (knowingly...or unknowingly)

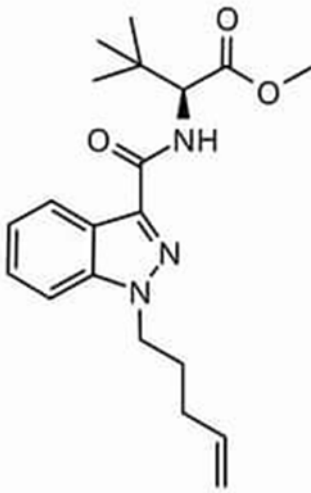
Vaping SCRA produces extremely rapid and potent effects. When inhaled, SCRA in vape liquids are absorbed almost instantly through the lungs, entering the bloodstream directly and bypassing first-pass metabolism. This results in fast and intense intoxication.

Compared to smoking, vaping often delivers a higher dose per puff, providing little time or sensory feedback for users to adjust their intake—increasing the risk of overdose.

There is growing evidence that vape cartridges purchased as and labelled as containing cannabis have been found to contain potent SCRA instead. These substances are often unknowingly consumed, and have been linked to sudden adverse effects, including palpitations, vertigo, and nausea (17).

In conclusion, vaping SCRA delivers these substances more efficiently—and more dangerously—than smoking. The onset of effects is rapid and intense, often occurring before the user is fully aware of what is happening.

Because vaping allows little control, the risk of overdose is significantly increased. As a result, users face a heightened risk of acute adverse effects, ranging from mental health crises to serious cardiovascular complications.



MDMB-4en-PINACA

MDMB-4en-PINACA is a potent synthetic cannabinoid receptor agonist (SCRA) belonging to the indazole-3-carboxamide family. It's part of a newer generation of SCRA that have been linked to severe adverse effects, including acute toxicity and psychiatric disturbances.

MDMB-4en-PINACA has an extremely high binding affinity for CB1 receptors and is potent in very low concentrations (18).

Because of its high potency and full agonist activity, it carries a high risk of overdose, which can cause severe symptoms such as rapid heart rate, seizures, hallucinations, and psychosis (19).

In the UK, MDMB-4en-PINACA is classified as a Class B controlled substance under the Misuse of Drugs Act 1971.

17) Altintas M, Inanc L, Oruc GA, Arpacioğlu S, Gulec H. Clinical characteristics of synthetic cannabinoid-induced psychosis in relation to schizophrenia: a single-center cross-sectional analysis of concurrently hospitalized patients. *Neuropsychiatr Dis Treat.* 2016 Aug 2;12:1893-900. doi: 10.2147/NDT.S107622. PMID: 27536110; PMCID: PMC4977070.

18) Heal DJ, Gosden J and Smith SL (2024) A critical assessment of the abuse, dependence and associated safety risks of naturally occurring and synthetic cannabinoids. *Front. Psychiatry* 15:1322434. doi: 10.3389/fpsy.2024.1322434

19) Gitto, L., Wadsworth, T., Isenschmid, D., & Arunkumar, P. (2024). MDMB-4en-PINACA-Related Deaths in Cook County Jail: Awareness and Preventive Measures. *American Journal of Forensic Medicine & Pathology*, July 2024.

Benzodiazepines

The European Union Drugs Agency (EUDA) reports on a market for new and illicit benzodiazepines existing in Europe, with non-controlled and new benzodiazepines continuing to be available in more than two thirds of European countries. This availability and accessibility of a variety of substances is contributing to increased harms, although we do not know their full extent (25).

Benzodiazepine-Related Deaths in the UK

The Office for National Statistics (ONS) reported that there were 512 deaths relating to drug poisoning involving benzodiazepines registered in 2023 in England and Wales. Deaths involving benzodiazepines have increased markedly over the last decade, rising from 342 registered in 2013.

Since 2014, with the introduction of etizolam, ONS has also shown an increase in the number of deaths involving potent novel benzodiazepines, as well as the selected substances listed, with etizolam, flualprazolam and flubromazolam recorded specifically within the benzodiazepines section and a wider benzodiazepines analogues group recorded under New Psychoactive Substances (26).

Illicit Benzodiazepine Market in the UK

The UK has witnessed a growing illicit market for benzodiazepines, especially diazepam and its analogues. This market is fuelled by prescription diversion, counterfeit production, and online sales via the darknet. Increased misuse is particularly apparent among people who use drugs and those with substance dependence histories.

Drug Substitutions in the Illicit Diazepam Market

A critical feature of the illicit diazepam market in the UK is the substitution of genuine diazepam tablets with other benzodiazepines or benzodiazepine analogues, often without the user's knowledge. These substitutes include substances such as alprazolam, bromazolam, ethylbromazolam, etizolam, clonazepam, and clonazolam, which differ in potency, onset, and duration compared with diazepam.

Since 2023 WEDINOS has also been reporting the presence of nitazenes in tablets submitted as diazepam or other benzodiazepines. Nitazenes, are not benzodiazepines but belong to a separate class of synthetic opioids structurally unrelated to diazepam or any benzodiazepine derivative. Their presence is concerning as they are significantly more potent than morphine and other common opioids and are linked with an increased risk of overdose and death (27).

25) European Union Drugs Agency, European Drug Report 2025: Trends and Developments, June 2025; https://www.euda.europa.eu/publications/european-drug-report/2025_en

26) Office for National Statistics (ONS), released 23 October 2024, ONS website, statistical bulletin, Deaths related to drug poisoning in England and Wales: 2023 registrations

27) National Crime Agency, Press Release, 15th August 2024; <https://nationalcrimeagency.gov.uk/news/there-has-never-been-a-more-dangerous-time-to-take-drugs-says-national-crime-agency-as-annual-threat-assessment-is-published>

Benzodiazepines

WEDINOS: Samples submitted as Diazepam 2024-2025

Between 1st April 2024 and 31st March 2025, WEDINOS received 1,532 samples submitted as diazepam (an increase from 1,402 in 2023-24). Within those samples 58 substances were identified, either in isolation or combination (an increase from 40 last year), with 77 samples profiled as containing no active compounds.

Diazepam, was the most commonly identified substance, being profiled in 59 per cent (n=903) of these samples, followed by the novel benzodiazepine, bromazolam.

Bromazolam was profiled in 26 per cent (n=384) of samples submitted as diazepam, in 43 samples of those identifications bromazolam, was identified alongside the nitazene metonitazene, and bromazolam alongside N-desethylprotonitazene, protonitazene.

Bromazolam is a thienotriazolodiazepine (closely related to alprazolam and flubromazolam).

Other potent novel benzodiazepines, etizolam, ethylbromazolam and clonazolam were identified in 5 per cent of samples submitted as diazepam. All of these substances are more potent than diazepam and have a different time of onset and duration of effects.

As mentioned above, WEDINOS also profiled the presence of nitazenes in samples submitted as diazepam. Just over 3 per cent contained nitazene(s), 3 per cent (n=43) were profiled as containing metonitazene alongside bromazolam, and one sample was profiled as containing N-desethylprotonitazene, protonitazene and bromazolam.

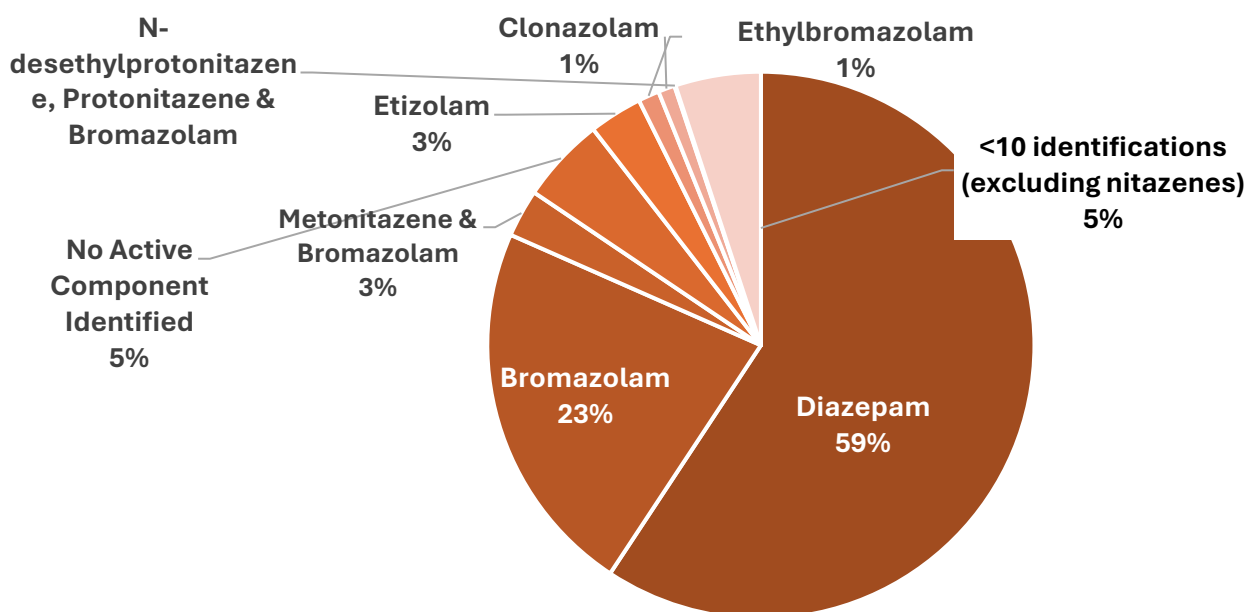


Chart 7: Substances profiled within samples submitted to WEDINOS as diazepam 2024-2025

Benzodiazepines

Differences Between Nitazenes and Diazepam

Pharmacology: Diazepam acts as a GABA-A receptor positive allosteric modulator, producing sedation, anxiolysis, and muscle relaxation. Nitazenes act primarily on the mu-opioid receptors, producing potent opioid analgesia and respiratory depression.

Potency: Nitazenes are extremely potent opioids, whereas diazepam's effects are milder and primarily anxiolytic and sedative.

Risks: While both drug classes depress central nervous system activity, nitazenes pose a higher risk of fatal respiratory depression, especially when mixed unknowingly with other depressants like benzodiazepines (such as bromazolam) or alcohol. Diazepam is more associated with overdose risk in polydrug use.

UK Legislation on Benzodiazepines and Analogues

In the UK, many benzodiazepines, including diazepam, are classified as Class C controlled substances under the Misuse of Drugs Act 1971 and are listed in Schedule 4, Part 1 of the Misuse of Drugs Regulations 2001.

However, many newer analogues were initially not explicitly controlled under the Misuse of Drugs Act. In response, the UK government has progressively expanded the controlled substances list to include several new benzodiazepines (for example, etizolam was classified in 2017).

What do we mean by: Potency, Onset and Duration Comparison

Potency reflects the relative strength of each drug's effect at equivalent doses. Knowing what substance you are consuming is critical to managing potency. However, with continued significant levels of substitution in the illicit market many consumers will not be aware of what substance they are taking; with this varying potency there is an increased risk of overdose.

Onset of action refers to the time taken for the drug's effects to begin after administration. Most of these benzodiazepines have rapid onset (15–30 minutes), especially alprazolam, bromazolam, and etizolam, which can lead to quicker intoxication.

Duration of effects describes how long the drug's effects persist. Diazepam and clonazepam have relatively long durations (up to 24 and 50 hours, respectively), which can result in prolonged sedation and accumulation with repeated use. In contrast, shorter-acting drugs like alprazolam tend to wear off within 6–12 hours but may cause withdrawal symptoms sooner.

These pharmacokinetic and potency differences contribute significantly to the unpredictability and dangers of illicit benzodiazepine use. Individuals exposed to highly potent analogues or substituted drugs with unknown contents face increased risks of unintentional overdose, severe sedation, and complex withdrawal syndromes, all of which present major challenges for public health and harm reduction services.

Given the complexity and risks associated with the illicit benzodiazepine market in the UK, drug testing services are vital for harm reduction. By analysing samples from end users and disseminating accurate information about drug content, potency and risks, WEDINOS can help to:

- Reduce harms by alerting users to dangerous substitutions.
- Inform healthcare providers and policymakers for timely response and intervention.
- Support safer use practices and encourage engagement with addiction services.

In the context of an unpredictable and evolving illicit benzodiazepine market, drug checking platforms like WEDINOS represent an essential public health tool, improving safety and potentially reducing morbidity and mortality among people who use drugs.