New psychoactive substance markets and monitoring in Australia: An update

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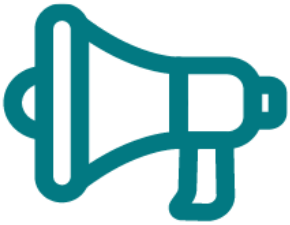
Key Findings

National 2010-2022

Witting (i.e. intentional) self-reported use of NPS in EDRS and IDRS samples peaked in the mid 2010s and has since declined.

Drug warnings, toxicosurveillance and drug checking programs demonstrate ongoing cases of substitution of NPS in substances sold as more typical illicit substances.



Continued support and expansion of programs aiming to facilitate identification of NPS in Australian drug markets, and openly communicate these findings in a timely manner, will be essential to respond to the ongoing risks from NPS.

Introduction

New Psychoactive Substances (NPS) are those substances that are not controlled by drug conventions, however may still pose a threat to public health and safety (1). These drugs mimic the effects of other substances, and have been described as "fast-evolving, typically volatile and often diversified". (2 p87). NPS can be categorised in different ways, including by origin (plant or synthetic), psychotropic effects, or chemical structure (2).

There is limited information available on the level of use of NPS, with the latest World Drug Report suggesting an average international past year population prevalence of NPS use of 2.4% in 2021 (2), with some indications of declining use based on international school surveys. Additionally, data from the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) shows a slowing in the rate of new drugs identified in each class in the last 10 years (8). Similarly, the Illicit Drug Data Report (3) suggests weights of synthetic NPS seizures have declined globally. In Australia, results from the latest National Drug Strategy Household Survey showed a decrease in the use of emerging psychoactive substances between 2016 and 2019 (4).

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This bulletin aims to: i) examine trends in NPS use among people who regularly use illicit drugs across Australian jurisdictions, using data from the Ecstasy and Related Drugs Reporting System (EDRS) and the Illicit Drug Reporting System (IDRS) between 2010 – 2022, and ii) examine other data on NPS use and markets in Australia.

Methods

Data from the national EDRS and IDRS interviews between 2010 and 2022 were used for this study.

The EDRS includes interviews with sentinel samples of people (18 years or older) who regularly use ecstasy and/or other illicit stimulants, that live in capital cities, recruited via social media, advertisements on websites and via word-of mouth. Data are typically collected between May – July each year. Please refer to EDRS Background Methods document for further information.

The IDRS sample is a sentinel group of people (18 years or older) who injected illicit drugs at least once monthly in the six months preceding the interview, and had resided in capital cities in that time. Participants were recruited via advertisements in needle syringe programs and other harm reduction services, as well as via peer referral. Data is typically collected between May – July each year. Please refer to IDRS Background Methods document for further information

For both of these studies, the results are not representative of all people who use illicit drugs, nor of use in the general population. Participants provided consent for interviews, and were reimbursed $40 for their time.

Participants were asked about the range of substances that they had used in the six months prior to being interviewed. Due to the illicit nature of drug markets, unless substances are tested in a checking service prior to use, consumers are not necessarily aware of the exact contents of the drugs that they purchase. Here, participants report on what they believed they had purchased. This information typically comes from their vendor or supplier, others that had consumed the substances or, on occasion, from informal colorimetric testing. This can be considered *witting* NPS use. There is high potential for a substantial level of *unwitting* NPS use where these drugs are present as a primary or component agent within drugs sold as more traditional illicit drugs such as ecstasy.

In addition to EDRS and IDRS data NPS seizure data from Australian Federal Police agencies was taken from the Australian Criminal Intelligence Commission Illicit Drug Data Report (IDDR).

Results

Trends in self-reported NPS use over time in EDRS and IDRS samples

Witting use of NPS in the past six months has consistently been higher in EDRS than IDRS participants over time, however since 2020 the percentages have been more similar (Figure 1). Use of NPS among EDRS participants peaked in 2013 (42%) and has been generally declining since this time.

The percentage of reported synthetic cannabinoid receptor agonists peaked in 2012 in EDRS participants (24%) and have been declining since this time, with less than 10% of participants reporting recent use in each of the past seven years (Figure 2).

The percentage of reported psychedelic NPS use has been minimal in IDRS participants. Use in EDRS participants peaked in 2013 and 2014 (21%) and has been declining in subsequent years, however has remained between 5% and 11% of participants in the past five years (Figure 3).

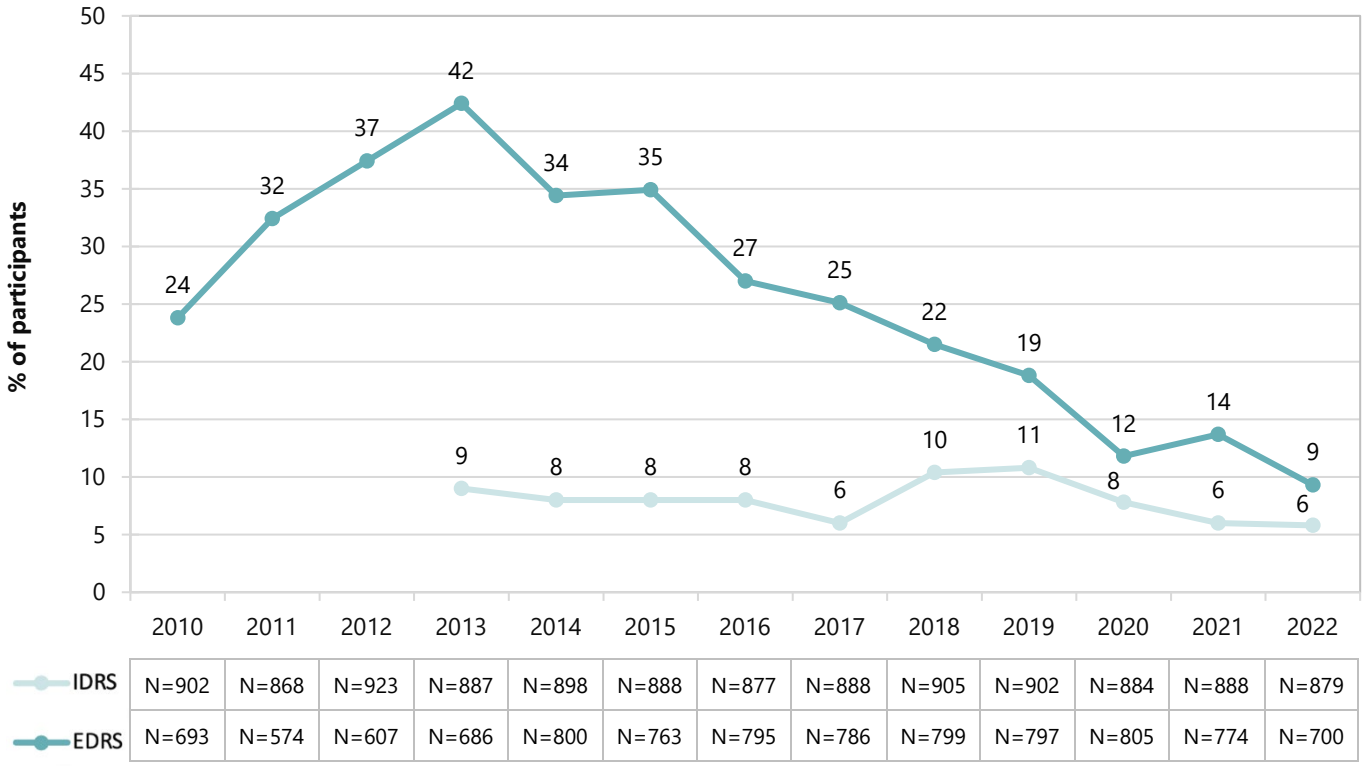
Use of stimulant NPS fell from one in five EDRS participants in 2010 to less than 5% of participants since 2015 (Figure 4).

Reported use of entactogen and dissociated NPS has never been reported in less than 10% of the EDRS participants since monitoring commenced, and have been particularly low (2% or less of participants) in the past three years (Figure 5 & Figure 6).

Monitoring for benzodiazepine and opioid NPS commenced from 2017; the per cent reporting use of these substances have remained uncommon at 2% or less of participants in either EDRS or IDRS surveys reporting use (Figure 7).

Results

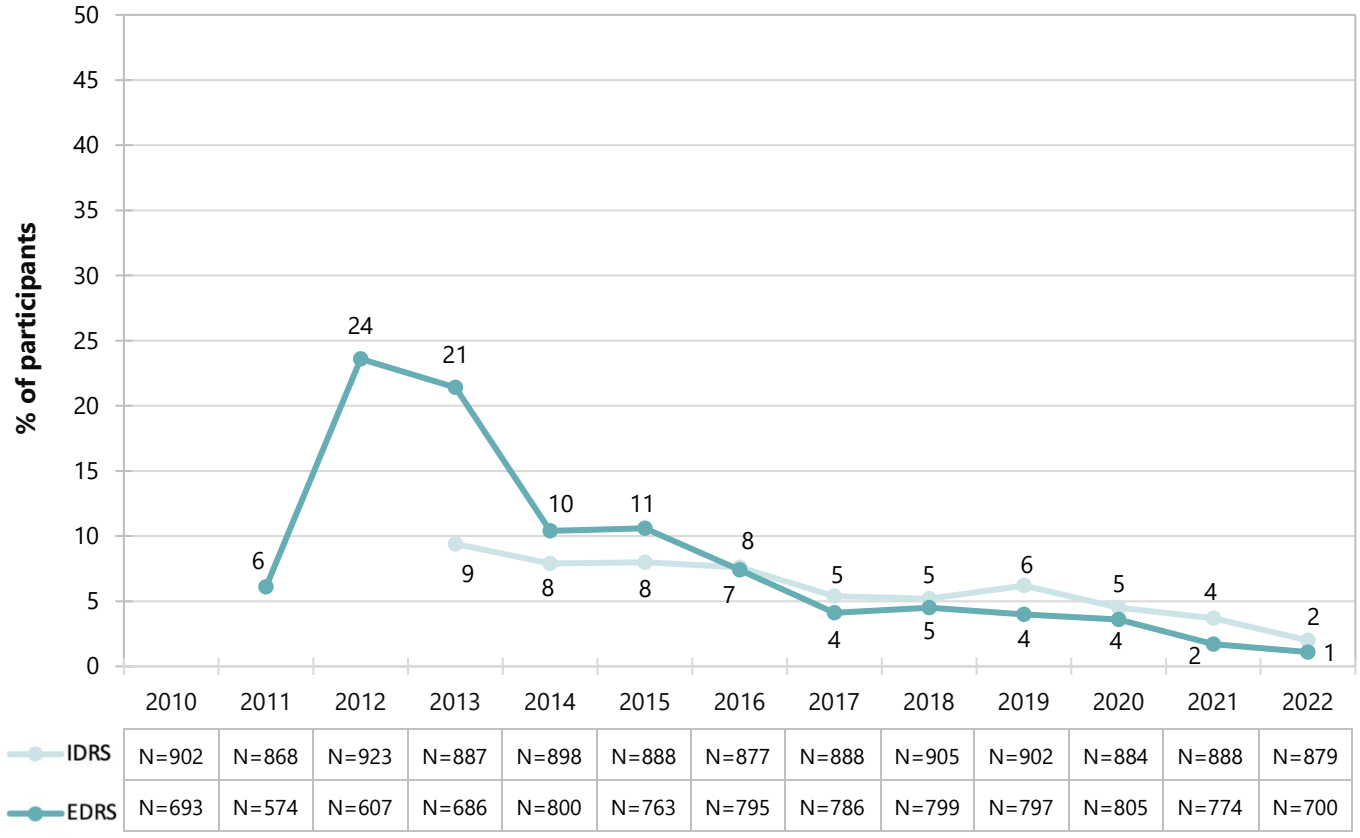
Figure 1. Per cent of EDRS and IDRS participants reporting use of any new psychoactive substance in the past 6 months (2010-2022)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
IDRS	N=902	N=868	N=923	N=887	N=898	N=888	N=877	N=888	N=905	N=902	N=884	N=888	N=879
EDRS	N=693	N=574	N=607	N=686	N=800	N=763	N=795	N=786	N=799	N=797	N=805	N=774	N=700

Note. Y axis reduced to 50% to improve visibility of trends. IDRS 2010 – 2012: new psychoactive substances were not systematically assessed. N refers to the national sample size for each study in each year. Per cent consists of participants who endorsed any of the NPS categories mentioned in this bulletin.

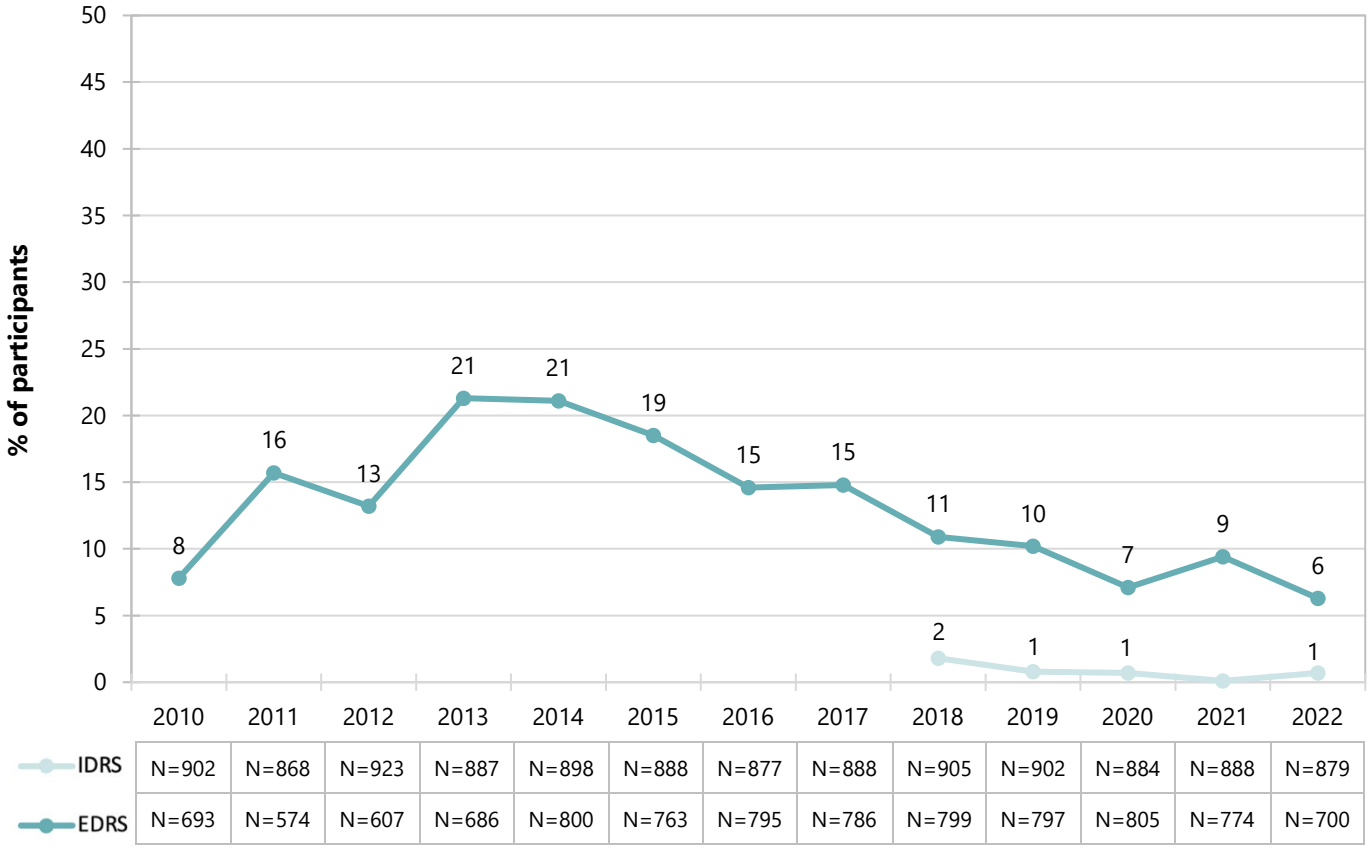
Figure 2. Per cent of EDRS and IDRS participants reporting use of any new drug that mimicked the effects of cannabis in the past 6 months (2010-2022)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
IDRS	N=902	N=868	N=923	N=887	N=898	N=888	N=877	N=888	N=905	N=902	N=884	N=888	N=879
EDRS	N=693	N=574	N=607	N=686	N=800	N=763	N=795	N=786	N=799	N=797	N=805	N=774	N=700

Note. Y axis reduced to 50% to improve visibility of trends. This figure includes: K2/spice, Kronic, Herbal High, Synthetic cannabinoids, and 'other new drugs that mimic the effects of cannabis'. IDRS 2010 – 2012; EDRS 2010; synthetic cannabinoid receptor agonists were not systematically assessed. N refers to the national sample size for each study in each year.

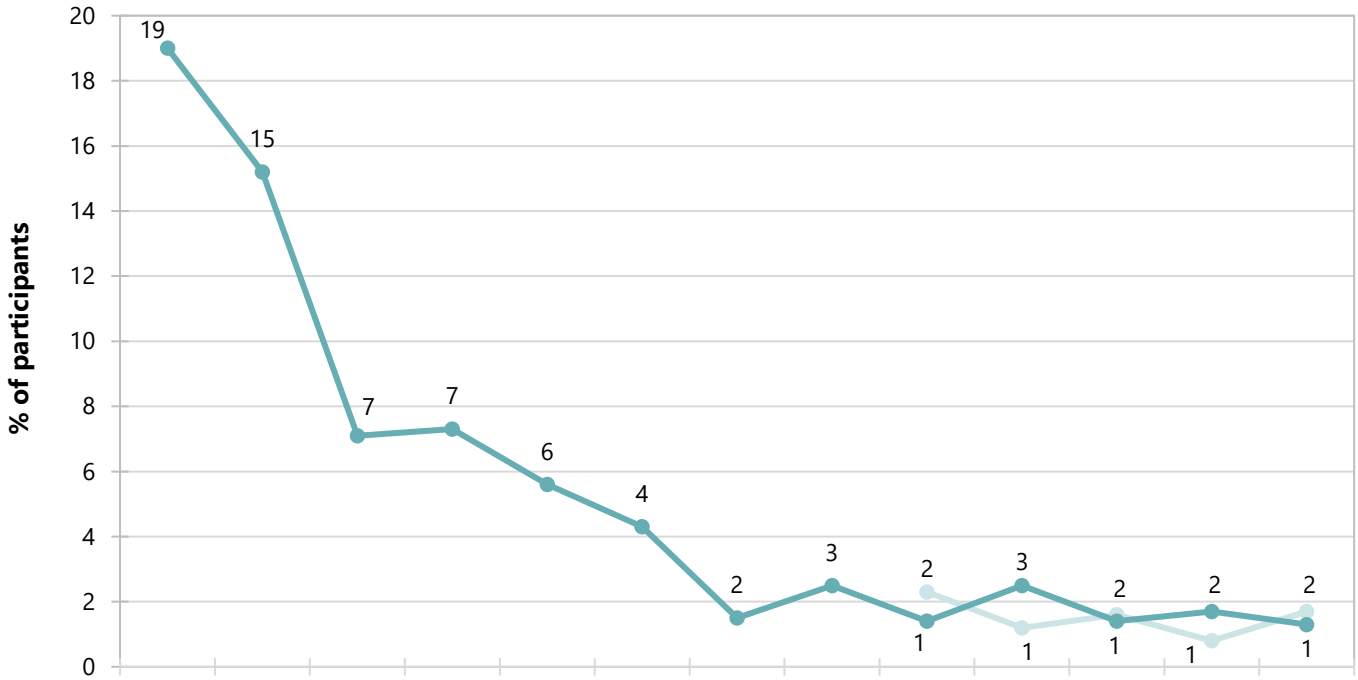
Figure 3. Per cent of EDRS and IDRS participants reporting use of any new drug that mimicked the effects of psychedelic drugs like LSD in the past 6 months (2010-2022)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
IDRS	N=902	N=868	N=923	N=887	N=898	N=888	N=877	N=888	N=905	N=902	N=884	N=888	N=879
EDRS	N=693	N=574	N=607	N=686	N=800	N=763	N=795	N=786	N=799	N=797	N=805	N=774	N=700

Note. Y axis reduced to 50% to improve visibility of trends. This figure includes: all 2C-X drugs, 5-MeO-Dmt, 4-AcO-DMT, Dox, NBOMes, PMA, X-NBOH, and 'other new drugs that mimic the effects of psychedelic drugs like LSD'. IDRS 2010 – 2017: hallucinogen NPS were not systematically assessed but no participant reported use of any of the abovementioned substance groups. Data labels are suppressed where there are small numbers (i.e., n≤5 but not 0). N refers to the national sample size for each study in each year.

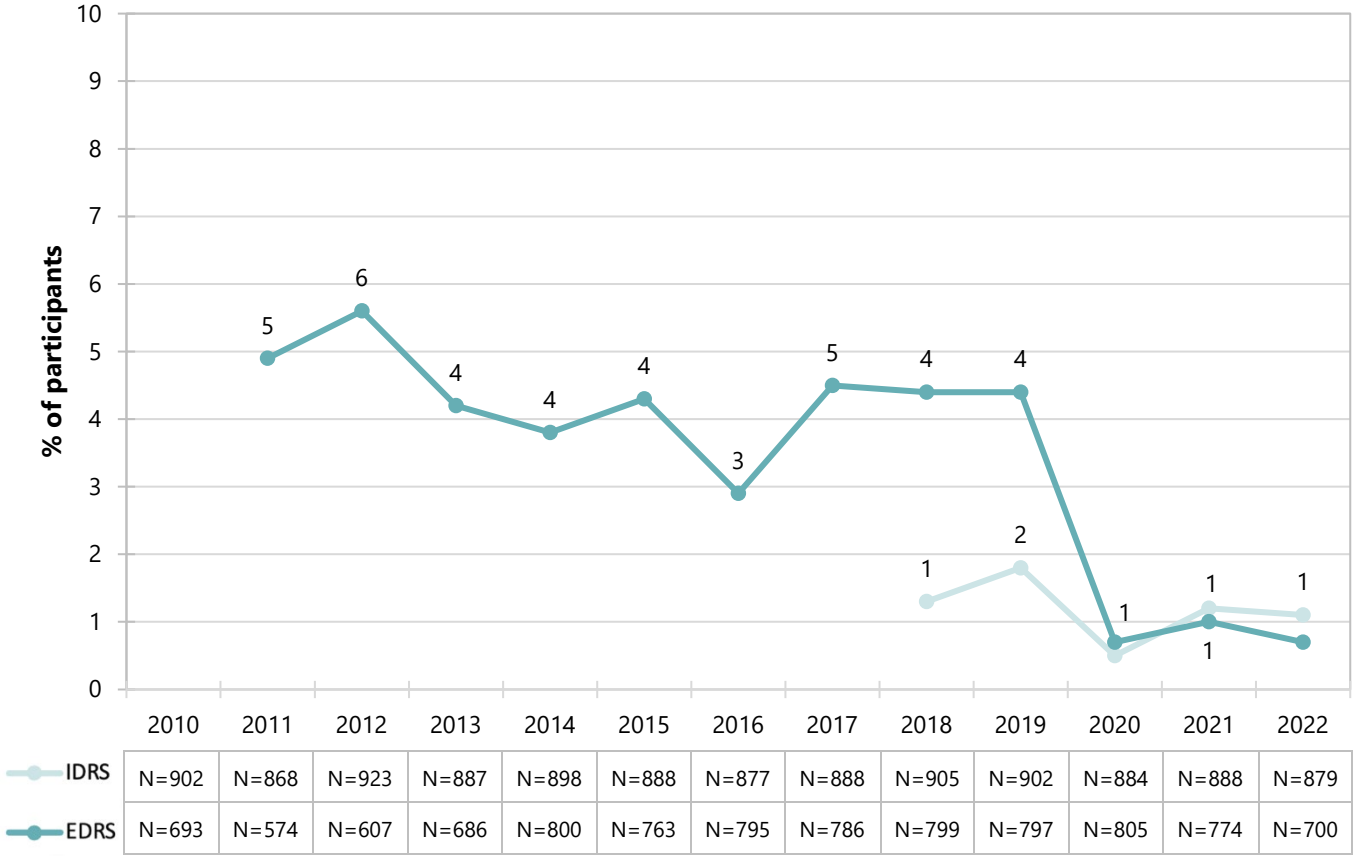
Figure 4. Per cent of EDRS and IDRS participants reporting use of any new drug that mimicked the effects of amphetamine or cocaine (stimulants) in the past 6 months (2010-2022)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
IDRS	N=902	N=868	N=923	N=887	N=898	N=888	N=877	N=888	N=905	N=902	N=884	N=888	N=879
EDRS	N=693	N=574	N=607	N=686	N=800	N=763	N=795	N=786	N=799	N=797	N=805	N=774	N=700

Note. Y axis reduced to 20% to improve visibility of trends. This figure includes: mephedrone, PMMA, 4-FA, 4-MEC, alpha-PHP, dimethylpentylone, N,N-Dimethyl Pentylone, pentylone, 2,3,4-methyl methcathinone, MDPV, N-ethylpentylone, N-ethyl hexedrone, BZP, 3-chloromethcathinone, other substituted cathinones, and 'other new drugs that mimic the effects of amphetamines or cocaine'. IDRS 2010 – 2017: stimulant NPS were not systematically assessed, but no participant reported use of any of the abovementioned substance groups. N refers to the national sample size for each study in each year.

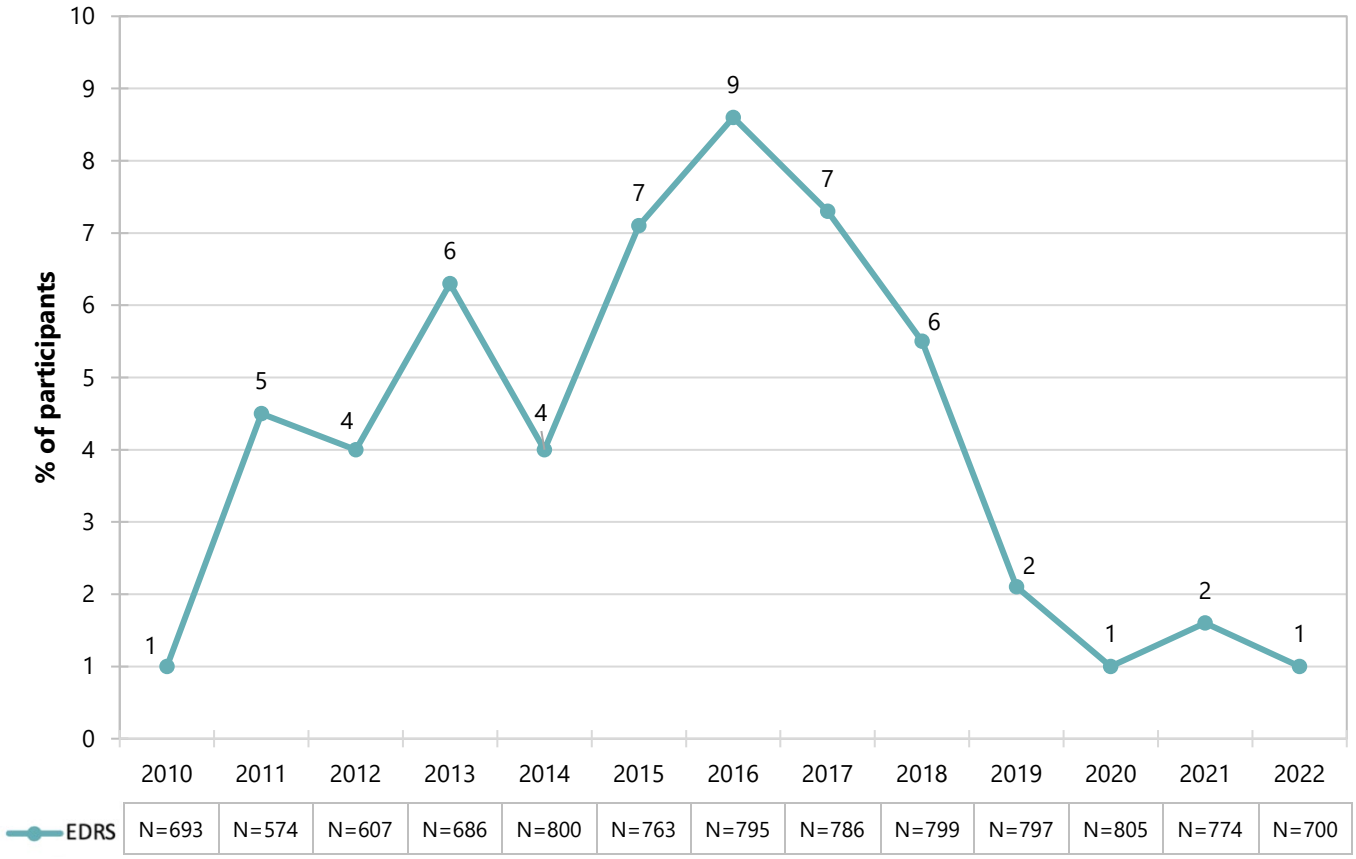
Figure 5. Per cent of EDRS and IDRS participants reporting use of any new drug that mimicked the effects of ecstasy (entactogens) in the past 6 months (2010-2022)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
IDRS	N=902	N=868	N=923	N=887	N=898	N=888	N=877	N=888	N=905	N=902	N=884	N=888	N=879
EDRS	N=693	N=574	N=607	N=686	N=800	N=763	N=795	N=786	N=799	N=797	N=805	N=774	N=700

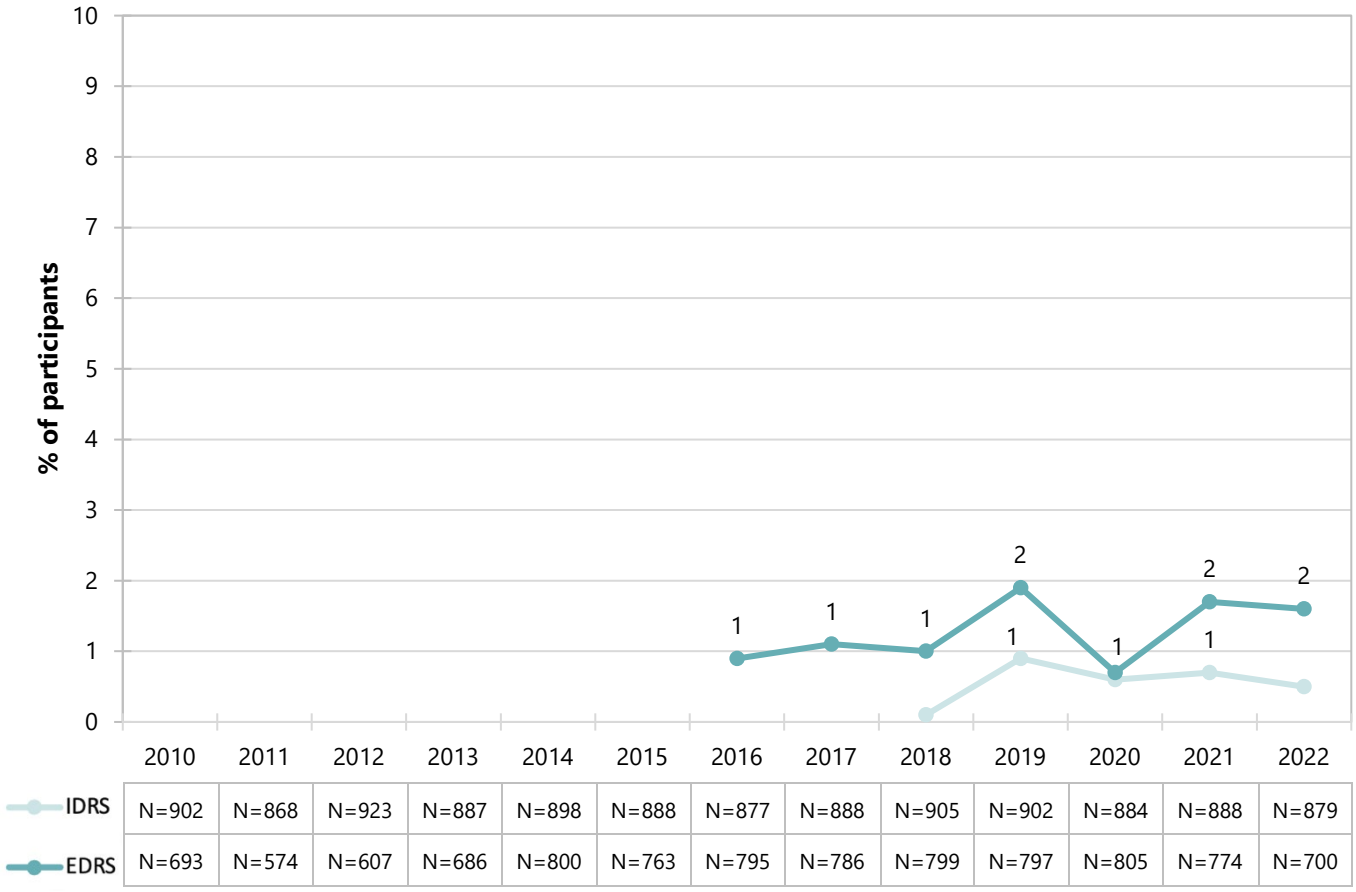
Note. Y axis reduced to 10% to improve visibility of trends. This figure includes: methylone, n-ethylbutylone, MDAI, 5-IAI, Benzo Fury, and 'other new drugs that mimic the effects of ecstasy'. EDRS 2010 & IDRS 2010 – 2017: entactogen NPS were not systematically assessed, but no participant reported use of any of the abovementioned substance groups. Data labels are suppressed where there are small numbers (i.e., n≤5 but not 0). N refers to the national sample size for each study in each year.

Figure 6. Per cent of EDRS participants reporting use of any new drug that mimicked the effects of dissociatives like ketamine in the past 6 months (2010-2022)



Note. Y axis reduced to 10% to improve visibility of trends. This figure includes: DXM, methoxetamine, 3-Cl-PCP, 3-Cl-PCP, 3-HO-PCP, 3-HO-PCP, 3-MeO-PCP, 4-MeO-PCP, 2-FDCK and 'other new drugs that mimic the effects of dissociatives like ketamine'. N refers to the national sample size in each year.

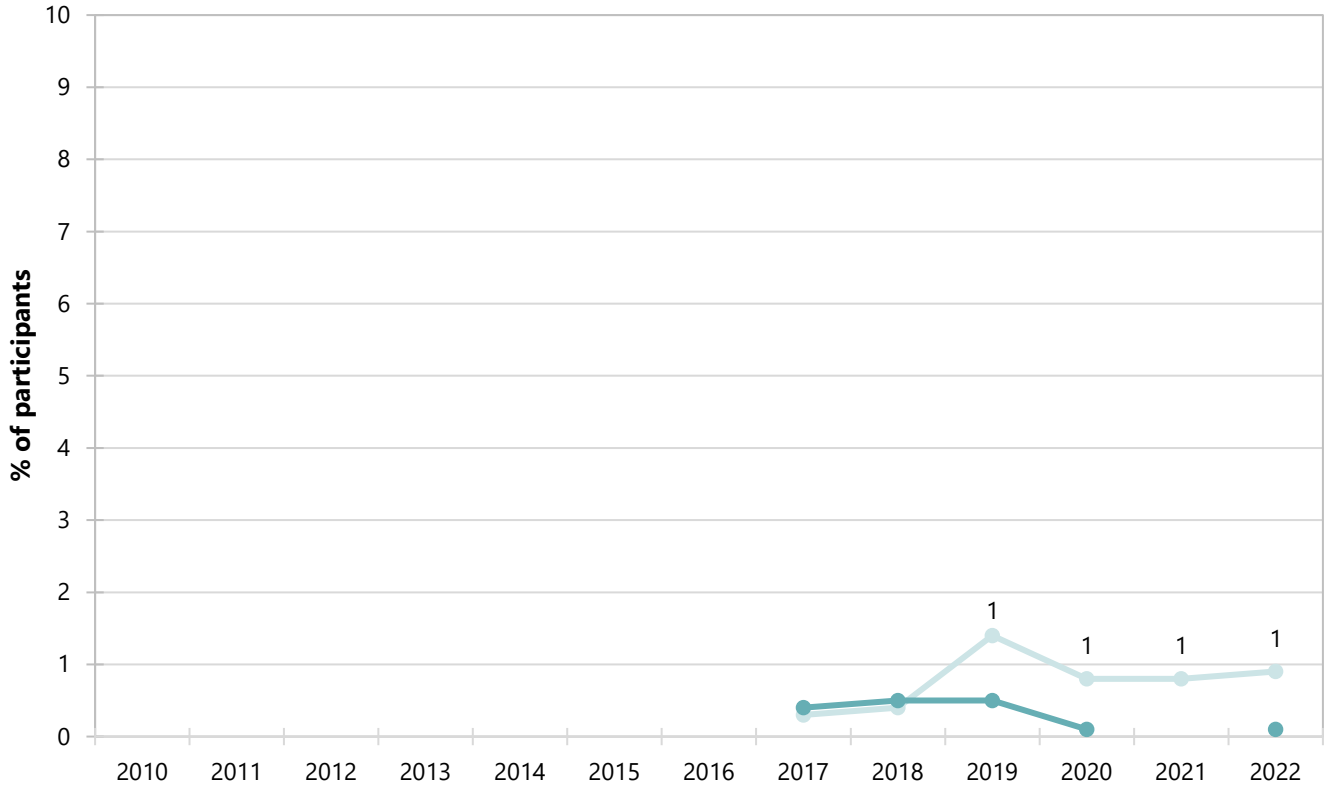
Figure 7. Per cent of EDRS and IDRS participants reporting use of any new drug that mimicked the effects of benzodiazepines (sedatives/hypnotics) in the past 6 months (2010-2022)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
IDRS	N=902	N=868	N=923	N=887	N=898	N=888	N=877	N=888	N=905	N=902	N=884	N=888	N=879
EDRS	N=693	N=574	N=607	N=686	N=800	N=763	N=795	N=786	N=799	N=797	N=805	N=774	N=700

Note. Y axis reduced to 10% to improve visibility of trends. This figure includes: etizolam, 8-aminoclonazepam, bromazolam, clonazolam, flualprazolam and 'other new drugs that mimic the effects of benzodiazepines'. Note that these data were not collected prior to 2016. Data labels are suppressed where there are small numbers (i.e., n≤5 but not 0). N refers to the national sample size for each study in each year.

Figure 8. Per cent of EDRS and IDRS participants reporting use of any new drug that mimicked the effects of opioids in the past 6 months (2010-2022)



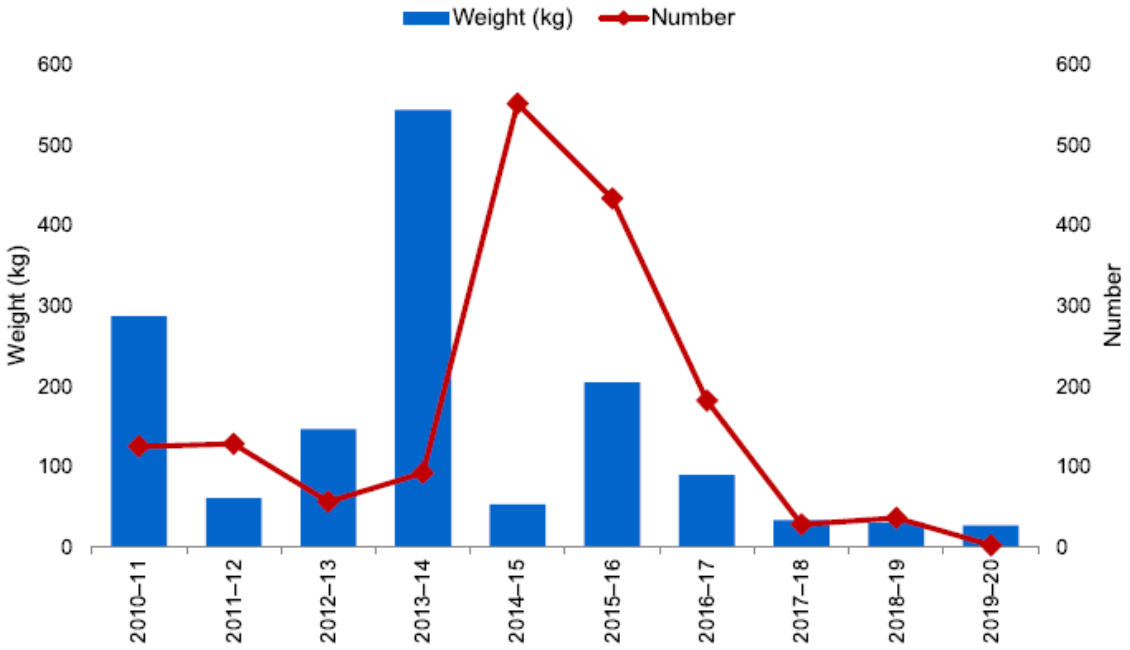
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
IDRS	N=902	N=868	N=923	N=887	N=898	N=888	N=877	N=888	N=905	N=902	N=884	N=888	N=879
EDRS	N=693	N=574	N=607	N=686	N=800	N=763	N=795	N=786	N=799	N=797	N=805	N=774	N=700

Note. Y axis reduced to 10% to improve visibility of trends. This figure includes: 'new drugs that mimic the effects of opioids'. Note that these data were not collected prior to 2017. Data labels are suppressed where there are small numbers (i.e., n≤5 but not 0). N refers to the national sample size for each study in each year.

Australian Federal Police NPS seizure data

Seizures of NPS by Australian Federal Police show a decline in both the weight and number of NPS seizures since 2013/14 and 2014/15 respectively. It should be noted that declines in weight may be somewhat misleading as many NPS classes have been trending toward greater potency in recent years.

Figure 9. Number and weight of seizures found to contain novel psychoactive substances, 2010-11 to 2019-20

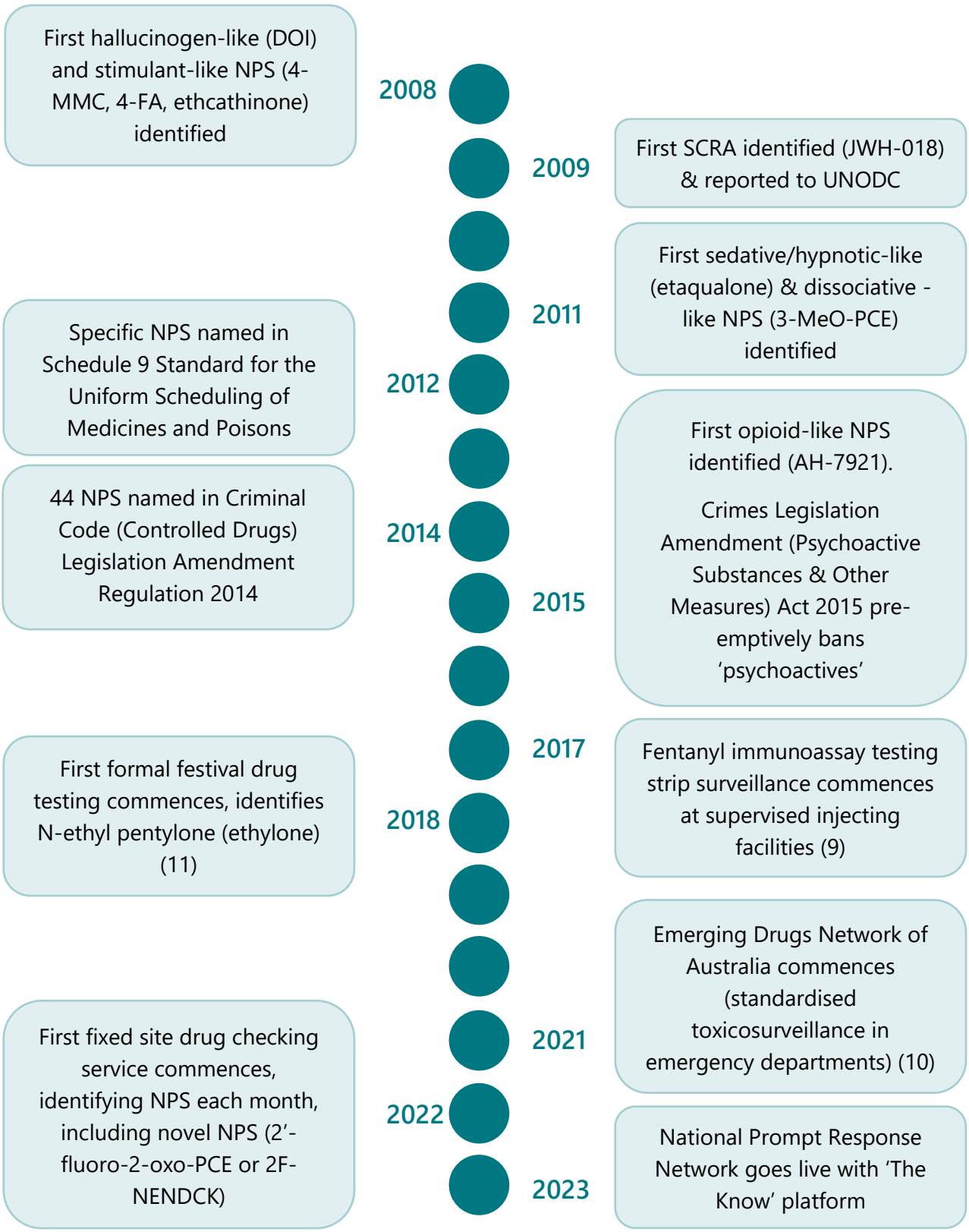


b. The data above refers only to seizures made and examined by the AFP and examined by AFP crime scene teams.

Source: Australian Criminal Intelligence Commission Illicit Drug Data Report 2019-20 (3).

Results

Figure 10. Key dates for NPS in Australia



Results

Table 1. Summary of Australian public drug alerts 2019 – 2023 and CanTEST drug checking results (2022 – 2023) where NPS were detected in substances sold as more common illicit drugs

	Drug sold as					
	Stimulants (amphets; cocaine)	**MDMA/ ecstasy**	**LSD**	**Ketamine**	**Heroin**	**Benzo-diazepine (alprazolam)**
Drug actually contained						
Stimulant NPS	Ephylone; pentylone; dibutylone; dipentylone; 3-CMC	Ephylone; PMMA; pentylone; dipentylone;	-	Dipentylone	-	-
Entactogen NPS	Butylone; methylone	4-EMC; MDA	-	-	-	-
Psychedelic NPS	-	bk-2C-B	25B-NBOH; 25I-NBOMe; 25D-NBOMe	-	-	-
Dissociative NPS	-	2F-NENDCK; 2-FDCK	-	3-HO-PCP; fluorexetamine; 2F-NENDCK; 2-FDCK	-	-
Opioid NPS	Acetyl-fentanyl; protonitazene	-	-	Acetyl-fentanyl; protonitazene	Acetyl-fentanyl; nitazene	Etodesnitazene; O-desmethyl-tramadol
Sedative/hypnotic NPS	-	-	-	-	-	Etizolam; bromazolam; clonazolam; flualprazolam; flubromazepam
Combination NPS		Stimulant NPS 4-FA & psychedelic NPS 25C-NBOMe				Opioid NPS protonitazene & sedative/ hypnotic NPS bromazolam

Source: 'The Know' drug alert database (https://community.theknow.org.au) and 'CanTest' monthly reports (https://directionshealth.com/cantest). Information is current as of date.

Discussion

The per cent reporting recent witting use of NPS in our samples of people who regularly use illicit drugs (EDRS & IDRS) has declined in recent years. However, based on information from numerous sources, it appears highly likely that there is substantial unwitting use of NPS in the Australian drug market. These include:

- Reports in February 2023 from Australian Federal Police of more than 50 interceptions of the stimulant NPS dimethylpentylone since October 2021 (6); and
- Wastewater surveillance studies in Australia have identified stimulant (*N*-ethyl-pentylone, methiopropopamine, and mephedrone); entactogen (ethylone, methylone) and dissociative (methoxetamine) NPS in samples between 2019-20 and 2021-22 (5).

Indications from US (7) and European (8) sources demonstrate that, while the pace of discovery of novel NPS has slowed since the peak in 2014 (101 per annum), more than one new substance is identified every 10 days on average (41 per annum in Europe during 2022). In contrast to the seizure trends in Australia, both the quantity and the number of seizures of NPS in Europe have increased between 2020 and 2021, with the stimulant NPS 3-CMC, 4-CMC and mephedrone (3-MMC) comprising a substantial proportion of these seizures. It is unlikely that Australia will be isolated from these international trends.

Together it is clear that, while indications of NPS use have declined since the early-mid 2010s, they remain an ongoing part of the illicit drug market, whether used wittingly or unwittingly. This latter aspect, where individuals are misled and unaware of the substance they are about to consume, is a particularly risky aspect of NPS use. As noted in Figure 11 and Table 1, in the past three years Australia has implemented multiple significant programs that are facilitating identification (fixed site drug checking services; standardised toxicosurveillance systems in emergency medical centres) and communication about emergent NPS risks (the Prompt Response Network). It will be essential to continue to support these systems and increase the openness and timeliness of reporting in order to better respond to the ongoing risks from NPS.

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