



Drug checking behaviours among a sample of people in Australia who regularly use ecstasy and/or other illicit stimulants, 2019-2023

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Data was collected as part of the Ecstasy and Related Drugs Reporting System (EDRS). Annual interviews were conducted with people residing in capital cities of Australia who used ecstasy and/or other illicit stimulants monthly or more frequently and were aged 18 or older.

Key Findings

National  EDRS



In 2023, 38% of participants reported that they or someone else had tested their illicit drugs in the past year (hereafter referred to as 'drug checking'). On the most recent occasion of testing, 87% reported that their drugs had been tested via 'informal' sources (e.g., themselves, friend, dealer), while 13% reported testing via formal drug checking services.



Among those who engaged in drug checking in 2023, 22% reported that, on the last occasion of testing, they received an unexpected result, with substances sold as ketamine yielding the highest percentage of unexpected results (38%).



Among those who engaged in past year drug checking in 2023, participants who received an expected result were more likely to report having used the drug compared to those who received an unexpected result (95% versus 64%; $p < 0.001$).



Conversely, those who received an unexpected results were more likely to report not using the drug, disposing/destroying the drug, or still having the drug but with no plans to use, compared to those who received an expected result.

Introduction



Drug checking involves the analysis of illicit drugs to determine their composition and/or potency. This process aims to provide individuals with accurate information about the substances they possess, allowing them to make more informed decisions about otherwise unregulated substances. By identifying harmful or contaminated substances, drug checking has the potential to prevent overdoses, adverse reactions, and even save lives.

While formal drug checking services, whereby people can anonymously submit samples for professional forensic analysis and receive a tailored intervention, have been successfully implemented in countries such as the Netherlands, Portugal, and Switzerland (1), Australia has been more cautious in its approach. There have been limited instances of drug checking at festivals (e.g., Groovin the Moo festival 2018, 2019) and in July 2022, the CanTEST clinic opened in Canberra, Australia's first fixed-site drug checking service (2). CanTEST is a free service and provides not only confidential drug checking but also personalised information, counselling, and advice to service users based on their specific test results. In February 2023, the Queensland Government announced support for the introduction of drug checking services in Queensland; service delivery had not commenced at the time of publication of this bulletin.

In the absence of formal drug checking services, people must rely on using colorimetric reagent kits or immunoassay strips. These types of tests may assist in providing objective information about illicit drugs, however, are conducted by the individual and so do not involve any interaction with health professionals: this is sometimes referred to as 'guerrilla' (3) or informal drug checking. The presumptive nature of these tests generally only allows identification of the presence or absence of particular substances, depending on the test.

The aim of this bulletin is to examine engagement in drug checking, and associated behavioural responses, among a sample of people who regularly use ecstasy and/or other illicit stimulant drugs recruited from capital cities of Australia.

Methods

This bulletin uses data from the 2019-2023 national Ecstasy and Related Drugs Reporting System (EDRS) via annual interviews with people residing in Australian capital cities aged 18 and above who reported using ecstasy and/or other illicit stimulants at least six days in the preceding six months. Please refer to the [EDRS Background and Methods](#) document for further details. For information regarding the characteristics of the EDRS sample, please refer to the [National 2023 EDRS report](#).

Participants were asked whether they or someone else had tested the contents and/or purity of their illicit drugs in Australia, either in their lifetime or in the past year. Participants who had had their drugs tested in the past year, were then asked a series of additional questions, including who did the testing, which tests were used, and whether they had changed their behaviours after receiving the result. Although there are important differences between 'formal' and 'guerilla' drug checking (3,4), from here-on we use the term 'drug checking' to refer to anyone who reported having their drugs tested.

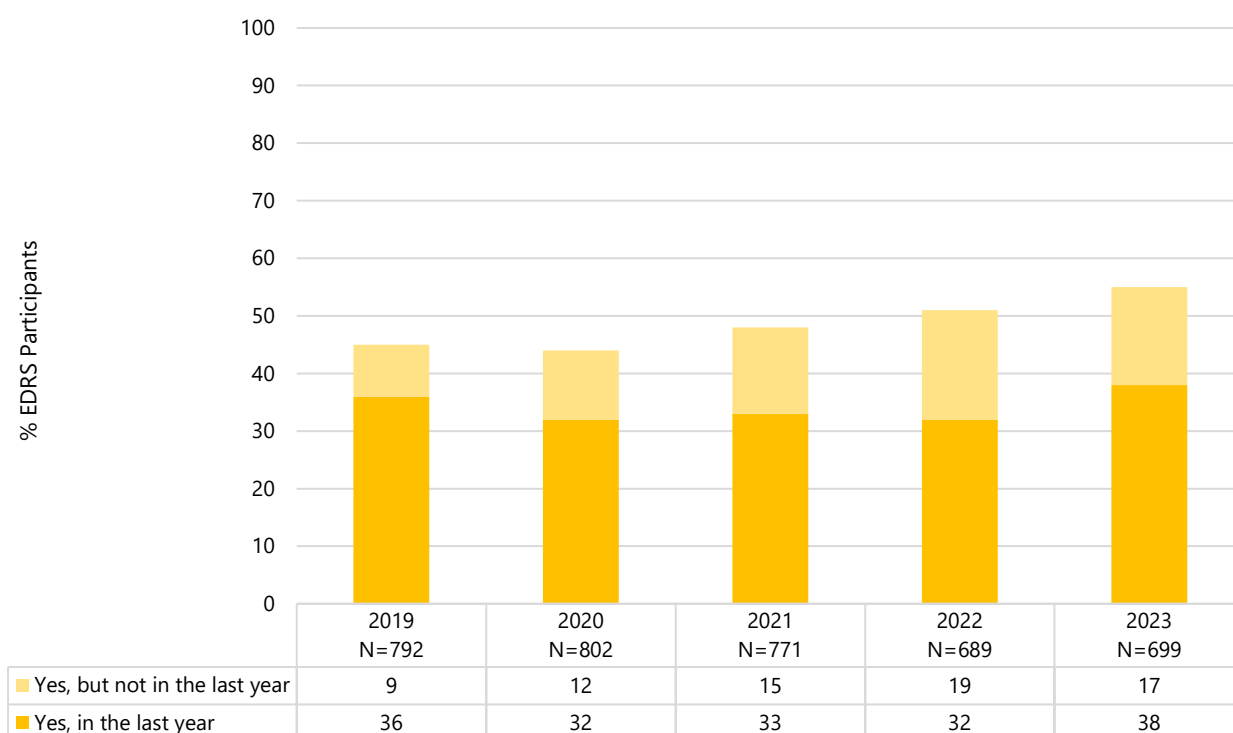
Descriptive statistics were used to examine engagement in drug checking and chi-square analysis was used to examine whether there were any differences in behavioural outcomes among those who received unexpected versus expected results.

Results

Engagement in drug checking and results

Lifetime engagement in drug checking has been increasing since monitoring began, from 45% in 2019 to 55% in 2023. In addition, there were significantly more participants who had had their drugs tested in the past year in 2023 (38%) compared to 2022 (32%), although the percentage was similar to that observed in 2019 (36%). In 2023, past year drug checking was particularly high in Canberra (53%) and Melbourne (51%) samples (Appendix 1).

Figure 1: Lifetime and past year engagement in drug checking, nationally, 2019-2023



Note. The response option 'Don't know' was excluded from analysis.

Among participants who had their drugs tested in the past year in 2023 (n=262), the largest proportions reported that, on the most recent occasion of testing, the substance had been tested by themselves (40%) or a friend/partner/acquaintance (37%); this has remained relatively stable over time. One in ten reported that the test had been conducted at CanTEST (11%) or by a dealer (10%).

Table 1: Who conducted the test on the last occasion of drug checking in the past year, 2019-2023

	2019	2020	2021	2022	2023
Who conducted the testing last time?	N=283	/	N=252	N=219	N=262
I did	44	/	44	45	40
Someone else did	56	/	/	/	/
Friend/partner/acquaintance	/	/	46	46	37
Dealer	/	/	9	7	10
Event-based face-to-face testing service	/	/	n≤5	n≤5	n≤5
CanTEST	/	/	/	/	11
Other	/	/	/	n≤5	n≤5

Note. Per cent suppressed due to small cell size (n≤5 but not 0). / Not asked.

Among participants who had their drugs tested in the past year, the large majority reported that, on the most recent occasion of testing, their drugs had been tested using a colorimetric or reagent test kit, although this declined slightly over time (Table 2). In 2023, one in seven reported that their drugs had been tested for whether a particular substance was present or not (72%), two in five for whether multiple substances were present (42%) and the quantity of a known substance (38%).

Table 2: Type of drug checking test on the last occasion of drug checking in the past year, 2019-2023

	2019	2020	2021	2022	2023
Type of tests used last time among those that tested their drugs in the past year:	N=267	N=244	N=228	N=198	N=214
Colorimetric / reagent test kit	91	87	85	84	79
Testing strips (e.g. BTNX fentanyl strips or other immunoassay testing strips)	n≤5	7	14	13	10
Fourier Transform Infrared Spectroscopy or other method of spectroscopy/ chromatography (e.g., GCMS)	/	/	n≤5	n≤5	9
Face-to-face testing service (e.g., festival pill-testing service)	4	4	/	/	/
Other	2	3	n≤5	n≤5	n≤5

Note. Per cent suppressed due to small cell size (n≤5 but not 0). / Not asked.

Among participants who had had their drugs tested in the past year in 2023, the majority reported that, on the most recent occasion, the tested drug had been obtained as ecstasy (73%), followed by cocaine (15%) and ketamine (9%). Three per cent had last tested drugs obtained as LSD and methamphetamine and few (n≤5) reported on any other drug (Table 3). This has remained relatively consistent over the past five years.

Table 3: Type of drug checked on the last occasion of drug checking in the past year, 2019-2023

	2019	2020	2021	2022	2023
Still thinking about the last time your illicit drugs were tested, what was it sold/given to you as?	N=283	N=254	N=251	N=217	N=261
Ecstasy	84	89	73	67	73
Cocaine	6	9	14	19	15
Ketamine	n≤5	n≤5	6	9	9
Methamphetamine	5	4	4	5	3
LSD	n≤5	3	6	7	3

Note. Per cent suppressed due to small cell size (n≤5 but not 0).

Behavioural responses among those who received expected versus unexpected results, 2023

Among participants who had had their drugs tested in the past year in 2023, on the last occasion of testing, 79% reported receiving an expected result and 22% received an unexpected result*. When examining the three most commonly tested drugs separately, two in five participants (38%) reported receiving unexpected results when testing for ketamine, one in five (19%) for ecstasy and few for cocaine (n≤5) (Table 4).

* Definition of unexpected results: results received were either different from the expected outcome (e.g., MDMA was not detected in substance believed to be ecstasy) or as expected but also involved a different drug (e.g., MDMA was detected in substance believed to be ecstasy, but so was 2C-B).

Table 4: Expected versus unexpected results per drug type on the last occasion of drug checking in the past year, 2023

	2023		
	Ecstasy % (N=172)	Cocaine % (N=35)	Ketamine % (N=24)
Expected results	81	86	63
Unexpected results	19	n≤5	38

Note. Per cent suppressed due to small cell size (n≤5 but not 0).

Table 5 shows the behavioural responses of those who reported receiving expected versus unexpected results on their most recent occasion of testing. Participants who reported receiving an expected result were more likely to report having used the drug compared to those who received an unexpected result (95% versus 64%; $p<0.001$). Conversely, those who received an unexpected result were more likely to report having not used the drug ($p<0.007$), to have disposed of/destroyed the drug ($p=0.007$), or to still have the drug but have no plans to use it ($p=0.007$) compared to those who received an expected result.

Among those who had used the tested drug, participants who reported receiving an expected result were more likely to report that they had not used any differently than intended compared to those who had received an unexpected result (73% versus 53%; $p=0.024$). Conversely, those who received an unexpected result on the last occasion of testing were more likely to have used less of the drug than intended ($p=0.001$), to have used the drug in a different setting or at a different event than intended ($p=0.022$), or to have ensured that they were with people who knew they were using drugs and what drugs they were using ($p<0.001$).

There were similar percentages of participants reporting the results to others regardless of the outcome of their test, with the majority of both groups reporting that they had reported the results of their tested drugs to their friends.

Table 5: Behavioural responses following the most recent occasion of drug checking in the past year, among those who received expected versus unexpected results, 2023

Actions	Expected N=194	Unexpected N=53	p-value
Used the tested drug	95	64	$p<0.001$
Did not use the tested drug	n≤5	26	$p<0.001$
I still have the drugs and plan to use them in the future	n≤5	0	$p=0.292$
I still have the drugs and do not plan to use them in the future	0	n≤5	$p=0.007$
I still have the drugs and don't know if I will use them in the future	0	0	
I gave/sold them to someone else	5	n≤5	$p=0.759$
Disposed of/destroyed the drug	0	n≤5	$p=0.007$
Returned drug to dealer/supplier	0	0	
Other	0	n≤5	$p=0.055$
Of those who used the tested drug:	N=178	N=34	
Had not made plans for use	5	0	$p=0.208$
Did not use any differently than intended	73	53	$p=0.024$
Used more of the drug than intended	n≤5	n≤5	$p=0.622$
Used less of the drug than intended	9	29	$p=0.001$

Left more time between dosing than intended	n≤5	n≤5	p=0.068
Used other drugs/alcohol (and had not intended to)	n≤5	0	p=0.661
Did not use other drugs/alcohol (and had not intended to)	n≤5	0	p=0.661
Reduced use of other drugs/alcohol	n≤5	n≤5	p=0.062
Used in a different setting or at a different event than where I had intended	0	n≤5	p=0.022
My plan was dependent on the test results	9	n≤5	p=0.552
Ensured I was with people who knew I was using drugs/what I was using	n≤5	n≤5	p<0.001
Ensured I had naloxone on me or close at hand	0	0	
Bought more of the drug	n≤5	n≤5	p=0.358
Other	n≤5	n≤5	p=0.411
Dissemination of results:	N=191	N=53	
Reported results of tested drug back to provider/dealer	24	34	p=0.148
Reported results of tested drug to friends	74	70	p=0.509
Reported results of tested drug to people I supply/sell the drug to	10	15	p=0.291
Reported results of tested drugs online (e.g., pill reports, reddit, etc)	n≤5	n≤5	p=0.049
Reported results to other	0	0	
Did none of the above	22	25	p=0.635

Note. Chi-square analyses are not adjusted for multiple tests/comparisons, so results need to be interpreted with caution. Per cent suppressed due to small cell size (n≤5 but not 0).

Discussion

This bulletin describes engagement in drug checking, and associated behavioural responses, among a sample of people who regularly use ecstasy and/or other illicit stimulants in Australia. Our findings show that there has been sustained engagement in drug checking practices, with between one third and two fifths of participants reporting past year drug checking in each year between 2019-2023. In 2023, the majority of participants who had engaged in past year drug checking reported that, on the most recent occasion of testing, their drugs had been tested using colorimetric reagent tests, and that the test had been conducted by either themselves or a friend/acquaintance. This has remained relatively consistent over time and suggests that while there remains a persistent desire to gain accurate knowledge about the substances they consume, participants remain reliant on suboptimal technologies. Further, these represent potential missed opportunities, in which participants could have engaged in conversation with a health professional regarding their substance use and potential associated harms.

In 2023, approximately one in five participants reported that, on the last occasion of testing, they received an unexpected result. When examined by drug type, substances that had been obtained as ketamine yielded the highest percentage of unexpected results (38% versus 19% for ecstasy), although small numbers mean these findings should be interpreted with caution. This is broadly consistent with findings from CanTEST, which found that 26% of ketamine samples did not identify the expected drug, compared to 10% and 11% of cocaine and MDMA samples, respectively (2). This highlights the need for targeted interventions and education specific to substances with potential higher risks of adulteration within the drug market.

We also found significant behavioural differences among those who received an unexpected versus expected result on the last occasion of testing. Specifically, participants who received an unexpected result were more likely to report that they had not used the tested drug, that they had disposed of/destroyed the drug, or that they still had the drug but had no plans to use it. Further, among those who *did* use the tested drug, those who received an unexpected result were more likely to report using less of the drug than intended, to have used the drug in a different setting or at a different event than intended, or to have ensured that they were with people who knew they were using drugs and what drugs they were using. Interestingly, there were no differences in the dissemination of results post testing, with the majority of both groups reporting that they had shared the results with friends. These findings highlight the importance of drug testing as a harm reduction strategy, both in terms of behaviour change and in terms of instigating peer-to-peer conversations about drug use and potential harms.

In conclusion, these findings demonstrate sustained engagement in proactive and safety-oriented behaviours among our sample of people who use ecstasy and/or illicit stimulants, highlighting the importance of drug checking as a harm reduction strategy. Given the continued reliance on sub-optimal technologies, there is a clear opportunity to establish additional fixed-site and event-based drug checking services. This would allow for more sophisticated testing, and provide an opportunity to engage with a population who may otherwise have had minimal drug-related conversations with a health professional. Such services may also serve as a valuable source of data that can inform public health policies and drug monitoring systems.

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Appendices

Appendix 1. Jurisdictional breakdown of Lifetime and past year engagement in drug checking, 2023

