

What works.
Testing drugs for harm
reduction.





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About 360Edge.

360Edge is Australia's leading specialist consultants in alcohol and other drug policy and practice.

We combine more than 25 years of academic research with hands-on clinical experience to provide you with solutions that are both evidence-based and practical to implement. When it comes to alcohol and other drugs, we understand the complexities that can get in the way of successful change.

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In brief.

The recent deaths of 6 young people at music festivals in Australia connected to MDMA has led to local calls for the introduction of drug checking services (sometimes called 'pill testing' in Australia and drug safety testing in the UK) to assist people who use drugs to make safer decisions about the drugs they intend to consume.

Drug checking services both vary in the primary purpose of the testing; who conducts the analyses and how; the range of quantitative or qualitative analytical methods used; who disseminates test results and how; where testing is located; whether test results go directly to consumers or via an intermediary; and the level of engagement with other stakeholder.

Evidence supports on-site rapid 'real time' testing where drugs are also sourced on-site, mostly directly from people who use, and information is provided direct-to-consumers and emergency services onsite, as well as via

broadcast alerts to attendees through social media and other channels.

There is also evidence supporting approaches where drugs are primarily sourced from drop off sites and medical incidents, with results provided via stakeholder meetings, alerts broadcast through social media and other channels.

Although evidence is still emerging, there is research showing that drug checking alters behaviour of people who use drugs. They are more likely to consume less when the drug profile differs from expectations. Drug-checking services also alter drug markets in positive ways and provide valuable information to front-line emergency services.

Further research is required to determine the effectiveness of drug checking to reduce hospitalisations and fatalities as a result of drug taking, but the limited research available is promising.



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01 Introduction.

Music festivals are a key environment where young people use illicit drugs, most commonly cannabis and MDMA (Methylenedioxymethamphetamine) or ecstasy. The recent deaths of 6 young people at music festivals in Australia connected to MDMA have led to calls for the introduction of drug checking (also sometimes referred to as 'pill testing' in Australia and 'drug safety testing' in the UK).

What is drug checking?

Many illicit drugs, including MDMA, started as pharmaceutical compounds and are less risky when consumed in their pure state at known and appropriate doses. But because the illicit drug market is unregulated, not knowing what one is consuming is a major risk associated with taking illicit drugs.

Because they are illegal, consumers are unable to determine the contents or strength of the chemicals contained in a

substance, and are also unable to titrate the dose themselves to reduce risks. Unlike regulated drugs, such as alcohol and pharmaceuticals, which are clearly labelled with strength and contents, unregulated drugs are a bit of a mystery.

Drug checking involves taking a sample of a drug and testing the contents using one or more forensic analyses in order to identify the contents and strength of the submitted sample.

Analysis of street drugs by community-based services began in the US in the late 1960s and early 1970s.¹ Drug safety testing expanded in Europe in the 1990s with growing concern about synthetic 'party drugs' such as MDMA at dance events. In 1992, the Dutch government-funded Drug Information and Monitoring System (DIMS) was established and similar services sprung up across Europe in subsequent years.²

In Australia, two small trials of drug checking have been undertaken at the Groovin' the Moo festival in the ACT in 2018 and 2019³ and there have been

1 Street Drug Analysis and its Social and Clinical Implications. In J. Marshman (Ed.). (1998) International Symposia on Alcohol and Drug Addiction. Ontario: Addiction Research Foundation.

2 Measham F. C. Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural

outcomes of the UK's first onsite 'drug checking' service, International Journal of Drug Policy 2019.

3 Makkai, T., Macleod, M., Vumbaca, G., Hill, P., Caldicott, D., Noffs, M., Tzanetis, S., & Hansen, F. (2018). Report on the ACT GTM Pill Testing Pilot: A Harm Reduction Service, Harm Reduction Australia.



calls to expand trials to other festivals. In November 2019, the NSW Coronial Inquest into a number of deaths at music

festivals recommended the introduction of drug checking.⁴

A note about terminology

There isn't a globally accepted definition of drug checking, although international organisations are working to standardise the term. The lack of universally accepted terminology is a hinderance to comparing the strengths and weakness of various interventions. Variations exist in location of testing, source of tested drugs and how information is communicated to the public. We have used the broadest possible definition of drug checking as: *Testing drugs for the purpose of harm reduction, where results are communicated to the public.*

'Drug checking' is the internationally accepted term for this activity. Although used elsewhere in the past, 'pill testing' is now a particularly Australian term. The terminology changed to recognise that not many drugs that are brought in for testing are not pills, and may also be powders or capsules. We have used the term drug checking throughout this report rather than pill testing.

Why drug checking?

Drug checking services are based on the principle of harm reduction. This primary aim of this approach is to reduce the harms associated with the use of psychoactive drugs in people who currently use alcohol or other drugs.

It has a different aim to demand reduction (prevention and treatment) or supply reduction (law enforcement and customs) initiatives, which aim to reduce the level of illicit drug consumption in the community. Some have argued that drug checking has both demand and supply reduction impacts as well as harm reduction impacts.⁵

4 Inquest into the death of six patrons of NSW music festivals, NSW Coroners Court, 8 November 2019
<http://www.coroners.justice.nsw.gov.au/Documents/Redacted%20findings%20in%20the%20joint%20inquest%20into%20deaths%20arising%20at%20music%20festivals%20including%20annexures%20-%208%20November%202019.pdf>

5 Hughes CE, Moxham-Hall V, Ritter A, Weatherburn D, MacCoun R (2017) The deterrent effects of Australian street-level drug law enforcement on illicit drug offending at outdoor music festivals. *International Journal of Drug Policy*;41:91–100



Drug checking reduces harms by providing people with better information about what they intend to take to enable them to make safer decisions about their use. This includes not taking that drug at all; taking less of the drug; taking it over a longer period of time; taking it in a different setting; taking more care in mixing with other substances, or using a different route of administration.

Community support.

Current government policy at Australian music festivals has largely focused on supply reduction through law enforcement activities. Police are routinely engaged to maintain law and order at festivals, including related to policing illicit drug use, possession and dealing.

However, these strategies have not been shown to reduce use or harms. In fact, evidence suggest that they increase harms. In a recent study, 70% of festival goers said a police presence does not deter them from using drugs at festivals,⁶

suggesting that drug use is likely to continue regardless of the presence of law enforcement.

In addition, the use of drug detection dogs has been shown to increase harms significantly. There are many documented cases of people swallowing all the drugs in their possession in response to sniffer dogs, increasing risk of adverse impact including overdose.⁷ They may have been intending to take these drugs over several days of a festival. People are also more likely to purchase drugs inside a festival when police dogs are present to avoid carrying drugs into a venue.⁸ As a result their drugs may be purchased from unknown sellers, which increases risks of drug-related harms more than buying from a trusted known source. A UK study found that festival drug dealers were twice as likely to mis-sell substances as neighbourhood dealers.⁹

There is significant support for a harm reduction approach to illicit drugs, including drug checking. Around 39% of teenagers and 52% of young adults in Australia believe that if a person is

6 Hughes CE, Moxham-Hall V, Ritter A, Weatherburn D, MacCoun R (2017) The deterrent effects of Australian street-level drug law enforcement on illicit drug offending at outdoor music festivals. *International Journal of Drug Policy*;41:91–100

7 Grigg J, Barratt MJ, Lenton S. (2018) Drug detection dogs at Australian outdoor music festivals: Deterrent, detection and iatrogenic effects. *International Journal of Drug Policy*.

8 Hughes CE, Moxham-Hall V, Ritter A, Weatherburn D, MacCoun R. The deterrent effects of Australian street-level

drug law enforcement on illicit drug offending at outdoor music festivals. *International Journal of Drug Policy*. 2017;41:91–100.

9 Measham F. C. (2019) Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service, *International Journal of Drug Policy*



caught in possession of MDMA, they should be handled in a non-punitive way: either given a caution; referred to a treatment or education program; or fined (34.9% teenagers, 26.6% young adults). Around 10% of young people (aged between 18 and 29) believe ecstasy should be regulated for sale.

Drug checking is well accepted among the target audience for this service. More

than 82% of the 2,300 young Australians aged between 16 and 25 years surveyed in 2013 were supportive of drug checking facilities.¹⁰

A recent survey of 851 Australians who reported using psychostimulants and/or hallucinogens and attending licensed festival or clubs reported that nearly all (94%) would use an on-site drug checking service if it was available.¹¹



10 Lancaster, Kari & Ritter, Alison & Matthew-Simmons, Francis. (2013). Young people's opinions on alcohol and other drugs issues.

11 Barratt, M. J., Bruno, R., Ezard, N., Ritter, A. (2017) Pill testing or drug checking in Australia: Acceptability of service design features 37 Drug and Alcohol Review 3 226–236

02 Operational elements.

Overview of key elements.

Drug checking facilities operate in a variety of ways both locally and overseas.

Commonly services differ on:

- Setting: where testing is located
- Source: where the drugs for testing are sourced
- Communication: who disseminates test results and how; whether test results go directly to users or via an intermediary; and the varying levels of engagement and support from other stakeholder groups
- Technique: the range of quantitative or qualitative analytical methods used; and who conducts the analyses and how

Setting.

The location of facilities has a major impact on the analytical techniques used and the ability to communicate harm

reduction information to people who use drugs.

A review by the NSW-based Drug Policy Modelling Program concluded that the location of drug checking services is largely driven by the local regulatory environment and the willingness and capacity of venues to host the services.¹²

The global review found that:¹³

- Twenty-three of 31 services reported conducting on-site setting, including at festivals, nightclubs and other mass gatherings.
- Eighteen of 31 services reported operating in fixed-site settings, including offices and outreach centres, and 2 of these services operated in hospital or emergency department settings.
- Three services reported offering a postal submission service.

Considering the different combinations of modes of submission, 12 operated only on-site, 10 ran on-site and fixed-site services, 6 operated only a fixed-site service, and single services reported

12 Barratt, M., Kowalski, M., Maier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12.

13 Barratt, M., Kowalski, M., Maier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12.



operating on-site/fixed-site/postal, fixed-site/postal and only postal.¹⁴

A web survey of 851 Australians who attend festivals by Barratt et al (2017) found that 94% would use a mobile drug checking on site and 80% would use a fixed site service external to a site.¹⁵

On-site mobile services

On-site or mobile drug checking facilities usually operate at festivals or venues where illicit drugs are sourced and consumed. However, some mobile sites can operate and 'pop up' in other areas to better provide accessible drug checking information.

Internationally, Check It in Austria, Safer Dance in Switzerland, The Loop UK, Know Your Stuff in New Zealand and CheckIn in Portugal are examples of on-site facilities that test drugs on the spot in clubs or at dance events and immediately communicate the results to consumers. Pill Testing Australia has also operated a mobile facility at one festival in Australia.

In most cases, the analytical techniques at these on-site facilities are more limited but many services such as Check it, Safer Dance and the Loop also utilise

fixed site laboratories to conduct further testing with more sophisticated equipment.

Despite some limitations of on-site facilities they have proven effective at identifying discrepancies between user expectations and test results. In particular mobile sites that utilise a combination of techniques have the most effectiveness.

An evaluation of Portugal's CheckIn facility at one festival in 2014 found that 45 per cent of the samples were not what users expected and, as a result, 29 per cent indicated that they would not consume them. Of the 71 per cent that intended to consume them, 10 per cent aimed to obtain more information, 15 per cent would take a smaller amount and 30 per cent would not mix it with other substances.¹⁶

Localised, on-site testing also has the distinct advantage of sourcing drugs from the festival or club in which the drugs would be consumed as well as the ability to communicate information to consumers either directly or in-directly via alerts at the venue.

14 Barratt, M., Kowalski, M., Marier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12.

15 Barratt, M. J., Bruno, R., Ezard, N., Ritter, A. (2017) Pill testing or drug checking in Australia: Acceptability of service design features 37 Drug and Alcohol Review 3 226-236

16 EMCDDA (2016) Health responses to new psychoactive substances, Lisbon,

Agencies operating on-site (including first-aid workers, peer educators and police) can also interact with the on-site lab improving frontline responses.

Fixed site services

Fixed site facilities operate from permanent offices, outreach centres, community centres and even churches. These may involve mobile laboratories or access full laboratories for the most advanced chemical analysis techniques to provide the most accurate information on drug composition.



The Netherlands' Drugs Information and Monitoring System (DIMS) was established in 1992. It now provides 30 testing and drop off facilities around the country where service users can submit their drug samples.

More than 100,000 samples were collected and analysed by DIMS between 1992 and 2010.¹⁷ DIMS works by people submitting their samples anonymously. If a person attends a drop off centre, the person can be provided with some testing results on-site (reagent testing, chromatography etc) or can wait for the sample is sent directly to a central laboratory for further testing.¹⁸

A fixed site drug checking facility also operates within the City of Zurich. The Drug Information Centre Zurich (DIZ) was established in 2006, and comprises free analysis of substances and a consultation with a social worker.¹⁹

The DIZ is open twice a week and conducts 40 analyses per week. Obligatory counselling includes drug information, safer use advice and referrals, and clients must also complete a questionnaire.²⁰

17 Brunt, T. M. and Niesink, R. J. (2011), The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Test Analysis*, 3: 621-634

18 Brunt, T. M. and Niesink, R. J. (2011), The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Test Analysis*, 3: 621-634

19 Hungerbuehler, I., Buecheli, A., & Schaub, M. (2011). Drug Checking: A prevention measure for a heterogeneous group with high consumption frequency and polydrug use. *Evaluation of Zurich's Drug Checking services. Harm Reduction Journal*, 8(1), 16

20 City of Zurich Safer Party, 'Drug-Checking in Zürich: Results, Alerts, Methods, Counselling, Impressions'



Postal

Whole drugs are sent in the post to the fixed site laboratory which communicates the results of the analysis back to the poster, typically via email or on a website using an anonymous key. Fixed site services have a longer wait time for results. No drugs are returned via post in this model.²¹

Home

Home-testing of drugs with colorimetric reagent kits are also commonly used by people who use drugs. Kits are legally available for purchase online as well as from adult shops.

In Australia, kits have been provided by harm reduction groups such as the University of Melbourne Chapter of Students for Sensible Drug Policy. These testing kits are very rudimentary and are not able to provide comprehensive information on risks on their own.

Source of drug.

The source of drugs to be tested often depends on the regulatory environment of where the drug checking agency is to be operated. Nevertheless, both on-site and fixed site facilities can source drugs from a variety of sources, including:

- **Direct-from-consumer:** Drug checking facilities may acquire drug samples directly from the consumer. Ideally, formal legal exceptions have been made, although there are drug checking services operating within a legal 'grey area' with police discretion or 'underground' through self-organised peer drug checking. This is the preferable method for testing facilities as it allows micro-level drug-market information from that specific time and place as well as an ability to communicate harm reduction information directly to consumer. It is also the only way to accurately track the difference between what people expect the substance to be and what it is actually is.
- **Amnesty bins:** Providing drug disposal bins within and near festivals and leisure events allows consumers to discard illicit drugs safely without fear of police intervention. These drugs can then be provided to on-site or off-site facilities for testing.
- **Police seizures:** Police currently test seized drugs in their own laboratories but results are not usually released in a timely manner that has harm reduction benefits. Seizures by police can be provided to on-site or off-site facilities for testing.

21 Barratt, M., Kowalski, M., Marier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug

Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12.

- **Emergency services:** Emergency services, first aid and welfare staff will often encounter illicit drugs in the process of helping festival goers with their medical needs. These drugs can be provided to on-site or off-site facilities for testing to help identify the best treatment for drug affected people.
- **Ground finds:** Venue attendees and staff may find substances on the ground that they bring for testing.

Communication.

Drug checking most commonly refers to communication models that interact directly with the person intending to take the drug, but how test results are delivered is often heavily dependent on setting, source and the regulatory environment in which facilities operate.

A global review of 31 drug checking services found that, in addition to communicating results with consumers directly, more than half of the services also alerted the public (24),

health/welfare/outreach (21), researchers (19) and promoters/event managers (16) of the test results.²²

Methods of communication of results were primarily in person (27), public website (21), email (21), and reports using aggregate data (20). Services that provided analysis results directly to individual service users did so in person (27), by phone call (11), email (10), website public (6), website with a code (4), report using aggregate data (4), text message (2) and app (1).

The main methods of providing harm reduction information are directly to a consumer, via a general alert system or a combination of both.²³

Direct-to-consumer

Although there have not been any direct comparisons with other methods of communication, personal contact with well-informed professionals is considered by many to be more effective at encourage people who use drugs to pay attention to preventive information and reduce risky behaviours.^{24 25 26}

22 Barratt, M., Kowalski, M., Marier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12.

23 Barratt, M., Kowalski, M., Marier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12.

24 Allott, R., Paxton, R. and Leonard, R. (1999), 'Drug education: a review of British Government policy and

evidence on effectiveness', Health Education Research 14, pp. 491-505

25 Falck, R. S., Carlson, R. G., Wang, J. and Siegal, H. A. (2004), 'Sources of information about MDMA (3,4-

methylenedioxyamphetamine): perceived accuracy, importance, and implications for prevention among young adult users', Drug and Alcohol Dependence 74, pp. 45-54

26 Toumbourou, J., Stockwell, T., Neighbors, C., Marlatt, G., Sturge, J. and Rehm, J. (2007), 'Interventions to reduce harm associated with adolescent substance use', The Lancet 369, pp. 1391



Direct contact potentially serves as an immediate intervention tool to change behaviour when drugs are shown to contain unwanted or unknown contents, or unexpected strength substances.²⁷

Direct contact is also the preferred method for people who use the service; a majority (64%) of festival goers report that they would not use a service that did not provide individual feedback of results.²⁸

General alerts

Either independently or in conjunction with direct-to-consumer communication of results, many facilities provide some sort of public alert system to disseminate information about concerning results about substances in circulation.

Alert-based systems disseminate public results on boards at festivals or post them online or through social media or festival apps.

Public-alerts can have broad reach. A recent alert from the Netherlands Drugs Information and Monitoring System (DIMS), which was set up to gain

information about the drug market for policy purposes and to provide information to the public, led to national mass media warning campaigns that included national radio and television broadcasts, posts on social media and on the internet, and flyers and posters at large dance events.²⁹

Testing technique.

Two major harms of illicit drugs are unexpected contents (eg active adulterants, inactive fillers and drugs that mimic other drugs) and unexpected purity.

Most drug checking facilities provide information on the presence or absence of certain drugs as well as the presence of certain adulterants by comparing the drug profile with a library of reference profiles of known substances.

Drug checking services vary considerably in the chemical drug analysis techniques used. As a general overview the different analytical

27 Johnston, J., Barratt, M. J., Fry, C. L., Kinner, S., Stoové, M., Degenhardt, L., George, J. et al. (2006), 'A survey of regular ecstasy users' knowledge and practices around determining pill content and purity: implications for policy and practice', *International Journal of Drug Policy* 17, pp. 464-472

28 Barratt, M., Kowalski, M., Marier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug

Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12

29 Keijsers L., Bossong MG, Waarlo A.J. (2008), Participatory evaluation of a Dutch warning campaign for substance users. *Health, Risk and Society*. 10, pp. 283-295.



techniques used by drug checking facilities include:

- **Colorimetric reagents:** These are kits containing chemicals that change colour when combined with particular chemicals. The most well-known reagents are marquis (often used for testing MDMA and speed), mandelin (often used for testing for ketamine and PMA) and mecke (often used to test for opiates) These tests only provide information about the presence or absence of a substance but not how much of the substance is present or what else is present.
- **Chromatography:** Chromatography separates mixtures of substances into their components. The most commonly used techniques are thin-layer chromatography ('TLC'), high performance liquid chromatography ('HPLC') and Ultra-High Performance Liquid Chromatography ('UHPLC').
- **Spectroscopy:** Spectroscopy uses electromagnetic radiation to get information about the structure of a substance Commonly used techniques include fourier transform infrared spectroscopy (FTIR), ultraviolet-visible spectroscopy (UV-Vis) and Raman spectroscopy.
- **Mass spectrometry:** Mass spectrometry separates different

chemicals in a substance by their mass. Techniques unique include gas chromatograph mass spectrometry (GC-MS), liquid chromatography mass spectrometry (LC-MS) and ion trap mass spectrometry (IT-MS).

Generally, the more of a drug used in analysis, the greater the accuracy of information that can be provided to the consumer. Barratt (2017) found that a third of Australian potential service users reported willingness to donate a whole dose for testing.³⁰

Some critics of drug checking cite the limitations of forensic techniques as a reason not to implement drug checking. Their argument is that the equipment can sometimes return a false negative (fail to identify something that is there) and people may take a drug thinking it is safe. However, this argument is a logical fallacy because the risk of harm, and the likelihood someone will take a drug, is significantly greater when consumers have no information about the drug's contents. Drug checking services generally have clear messaging that there is risk with all drug use – the focus is on highlighting risk, not guaranteeing safety.

30 Barratt, M. J., Bruno, R., Ezard, N., Ritter, A. (2017) Pill testing or drug checking in Australia: Acceptability of service design features 37 *Drug and Alcohol Review* 3 226–236

Many services use multiple methods of testing to reduce the risks of false positives. The global survey of drug checking service providers found that 15 of the 31 services reported at least 1 mass spectrometry or liquid chromatography method and 11 reported at least 1 spectroscopy method (including FTIR, UV-Vis, Raman). TLC was utilised by 13 services. Sixteen of 31 services reported use of reagent tests. A quarter (4 of 16) services that used reagent kits reported only using this method in combination with other analysis techniques. The Loop UK, for example, uses six different types of analytic technique with triangulation between results and repeat testing if required.³¹

An international collaborative effort between 2011 and 2013, the Trans European Drug Information (TEDI)

project, combined data from the drug checking systems of Spain, Switzerland, Belgium, Austria, Portugal and the Netherlands to compare results and exchange knowledge about the different analysis techniques used.³² Laboratory techniques used were often dependent on the setting, meaning the nature of the drug-checking service affects the speed, accuracy and reliability of the analysis results and, therefore, the potential extent of harm reduction.³³

There is a likely compromise in conducting forensic analyses in challenging conditions that necessitates a trade-off between speed, accuracy, reliability and portability of equipment.³⁴ However, the technology is advancing rapidly and the combined use of multiple analytical techniques increases the effectiveness of these interventions.

31 Measham F. C. (2019) Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service, *International Journal of Drug Policy*

32 Brunt, T (2017) Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges. Brunt, T. s.l. : European Monitoring Centre for Drugs and Drug Addiction

33 Brunt, T (2017) Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges. Brunt, T. s.l. : European Monitoring Centre for Drugs and Drug Addiction

34 Measham F. C. (2019) Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service, *International Journal of Drug Policy*



03 Case examples.

Fixed site drug checking: DIMS.

Who are they?

The Drugs Monitoring and Information System (DIMS), based in the Netherlands, is the oldest drug checking service in the world. DIMS receives financial support from the Ministry of Health, Welfare and Sports and coordinates drug checking with over 30 office locations throughout the country. In nearly two decades, more than 100,000 drug samples have been handed in at DIMS testing facilities.

Services offered

- Fixed site drug checking
- Direct-to-consumer harm reduction information
- Qualitative and quantitative testing
- Sourced directly from consumer.
- Monitoring and alerts

How the fixed-site model works

DIMS consists of a nationwide network of fixed-site facilities at drug prevention

institutions in different places in the Netherlands.

People who use drugs hand in pills or other substances anonymously for a test. Staff consist of health and prevention professionals who communicate to consumers about the effects of the particular substances and their associated risks.³⁵

Important information, such as experiences with adverse effects with the drug in question are recorded and saved in the DIMS database. Other important inputs in the database are regional origin, date, source of purchase, price, and reason for testing.³⁶

Some sites are merely receiving stations and directly send all the samples they receive to the DIMS Bureau at the Trimbos Institute and do not offer on-site testing.

A number of analytical techniques are used on site with reagent testing occurring initially at intake to determine whether a tablet contains any Ecstasy-like substances, amphetamine, a

35 Brunt, T. M. and Niesink, R. J. (2011), The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Test Analysis*, 3: 621-634. doi:10.1002/dta.323

36 Brunt, T. M. and Niesink, R. J. (2011), The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Test Analysis*, 3: 621-634. doi:10.1002/dta.323



hallucinogenic compound, or none of these.

Moreover because of weekly input of information on tablets and because of the fact that Ecstasy tablets are usually produced in large batches, certain tablets can be determined and recognised through a specially developed a database on the DIMS website known as the 'recognition list'.³⁷ This allows for more rapid identifying of substances at the fixed site, without the need to be sent off for further testing.

Tablets that are not recognised by this online system are sent for further testing. Qualitative and quantitative analyses of the drugs samples occur at the DIMS bureau using a combination of thin layer chromatography, UV spectroscopy and mass spectrometry techniques.³⁸

Individuals who submitted pills for lab testing phone the fixed site a week after submission for an explanation of results.

Information is also used to assist with alerts as well as to improve the provision of direct-to-consumer harm reduction

information and to monitor illicit drug markets.

Evaluation

An evaluation of Jellinek Prevention, which is part of DIMS and operates in Amsterdam, along with two other European drug checking facilities in 2002, concluded that people who used these services were better informed and showed more health-conscious behaviour.³⁹ The evaluation further noted that drug checking services such as DIMS are crucial to understanding emerging trends in the synthetic drugs market.⁴⁰

'Pop up' festival drug checking: Know Your Stuff NZ.

Who are they?

KnowYourStuffNZ started in 2015, offering qualitative substance analysis on-site at festivals in New Zealand. The

37 Brunt, T. M. and Niesink, R. J. (2011), The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Test Analysis*, 3: 621-634. doi:10.1002/dta.323

38 Brunt, T. M. and Niesink, R. J. (2011), The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Test Analysis*, 3: 621-634. doi:10.1002/dta.323

39 Benschop, A., Rabes, M., & Korf, D. (2002). Pill testing, Ecstasy and Prevention. A scientific evaluation in three European cities. Amsterdam: Rozenberg Publishers.

40 Benschop, A., Rabes, M., & Korf, D. (2002). Pill testing, Ecstasy and Prevention. A scientific evaluation in three European cities. Amsterdam: Rozenberg Publishers.



service is self-funded by volunteers, and indirect national funding.

Services offered

- On-site mobile drug checking
- Direct-to-consumer harm reduction information
- Qualitative testing
- Sourced directly from consumer.
- Monitoring and alerts

How the 'pop up' festival model works

Drugs are provided by users on-site at festivals and are testing using a combination of reagents and FT-IR Spectroscopy. Information provided to users is purely qualitative in nature noting potential content and not purity of substances. Moreover, consumers are provided with harm reduction information on site. Results are recorded and conveyed in terms such as: "This result is consistent with the presence of XYZ" rather than "This is XYZ" in order to adequately convey limitations of testing techniques.

Evaluation

There have been no external evaluations of KnowYourStuffNZ but internal evaluations indicate that the intervention has been effective at positive behaviour change. In 2018/19 KnowYourStuffNZ

attended 13 events and tested 805 samples. Key findings included⁴¹ 87% of the season's samples were what people expected and 62% of service users who received a negative test result said that they did not intend to consume the substance.



Postal drug checking: Energy Control Spain.

Who are they

Energy Control is a drug prevention project founded in 1998 in Spain that consists of peer-to-peer interventions, school workshops, and the use of new technologies and other activities in the area of risk reduction associated with drug use.

41 KnowYourStuffNZ, 2018/2019 Results accessible online: <https://knowyourstuff.nz/2018-19-results/>

The service is partly funded by the government, and also charges users for some services. As at 2014, the service had analysed more than 12,000 substances.⁴² Some of the main drugs tested include MDMA, cocaine, speed and a range of new psychoactive substances.

Drug checking services are offered through on-site drug checking at events or via a drop-in centre. There is also scope to receive drugs to test via post from anywhere in the world.

Services offered

- Fixed site drug checking
- On-site mobile drug checking
- Direct-to-consumer harm reduction information
- Sourced directly from consumer, on-site and via postal service
- Qualitative and quantitative testing
- Monitoring and alerts

How the mail service works

Energy Control's fixed site operations can receive drugs to test via post. Once received drugs are tested via a number of qualitative and quantitative methods including HPLC, GC-MS, UV/Vis and

TLC testing. No drugs are returned in the post, with consumers phoning the service to be provided with results and harm reduction information.

Evaluation

Internal evaluations have found that the drug checking services have effectively monitored the illicit drug market and assisted in targeting hard-to-reach user demographics.⁴³

Multi Agency Safety Testing: The Loop UK.

Who are they?

The Loop UK is a non profit social enterprise established in 2013 that provides drug checking as well as welfare and harm reduction services at nightclubs, festivals and other leisure events.

The Loop also provides staff training on drugs awareness, in-house welfare service delivery, the prevention of drug related harm at events, and the delivery of drug safety testing services.

42 Giné, C. V., Espinosa, I. F., & Vilamala, M. V. (2014). New psychoactive substances as adulterants of controlled drugs. A worrying phenomenon? *Drug Testing and Analysis*, 6, 819–824.

43 Giné, C. V., Vilamala, M. V., Measham, F., Brunt, T. M., Büchel, A., Paulos, C., & Barratt, M. J. (2017). The utility of drug checking services as monitoring tools and more: A response to Pirona et al. *International Journal on Drug Policy*, 45, 46–47. <https://doi.org/10.1016/j.drugpo.2017.05.018>.



Prior to 2016, The Loop UK provided forensic testing of samples from agencies on site at festivals and nightclubs and reported the results back to the collecting agencies for harm reduction purposes. After 2016, The Loop introduced publicly accessible drug checking to the UK in the form of Multi Agency Safety Testing (MAST). The Loop also conduct non-public testing to improve agency responses.

Services offered

- Community-based city centre and event-based festival and nightlife drug checking with mobile pop-up laboratories and fixed site commercial and university laboratories
- Direct-to-consumer individual test results and healthcare consultations (-2016 onwards)
- Sourced directly from consumer and from collaborative agencies and individuals
- Agency consultancy and information service
- Qualitative and quantitative analysis
- Monitoring and alerts issued through media, social media and apps
- Staff training

How MAST works

Along with users submitting drugs directly for testing at on-site facilities, The Loop UK refers to their approach as a Multi Agency Safety Testing approach. This includes sourcing drug for testing from a variety of agencies on site including, amnesty bins, the police, emergency services, welfare and general staff on site. This information is then communicated back to agencies to assist their work as well as via alerts, with samples associated with medical incidents prioritised. The key to the multi-agency framework is to harness support of all onsite agencies including police and healthcare staff, as well as utilising professional chemists and healthcare staff to deliver the Loop's testing service to the highest standards, with the primary aim of harm reduction.

Evaluation

A recent evaluation of The Loop facilities across four days at a UK festival⁴⁴ revealed that one in five substances was not as sold or acquired. One in five service users utilised the independently verified disposal service for onwards safe destruction of further substances of concern in their possession and another one in six moderated their consumption.

44 Measham F. C. (2019) Drug safety testing, disposals and dealing in an English field: Exploring the operational and

behavioural outcomes of the UK's first onsite 'drug checking' service, International Journal of Drug Policy



04 Evidence.

The evidence supporting drug checking in the academic literature is still emerging, but early indications are promising for the use of drug checking as a harm reduction intervention.

Although concerns have been raised that allowing drug checking services will increase the use of recreational drugs, this is not supported by international evidence. Several studies have demonstrated that the presence of a drug checking facilities does not encourage those who do not use drugs to begin drug use.^{45 46 47 48} Instead, drug checking facilities appear to make it less likely a drug will be consumed if it contains a substance they were not expecting, potentially reducing drug use.⁴⁹

Overall there is no evidence that drug prevalence, initiation or mortality rates have increased in European countries with drug safety testing by comparison with those without.^{50 51 52}

A global review⁵³ found that most drug services (20 of 31) reported that there has been some type of evaluation of their service. However, evaluation reports that were published and available to the public were less common; many evaluations were either in-house, unpublished or currently underway.

Monitoring and data collection.

Monitoring of illicit drug markets is crucial for understand drug trends to

45 Benschop, A, Rabes, M and Korf, D.J. (2002) Pill testing, ecstasy and prevention: A scientific evaluation in three European cities. European Commission, Directorate-General Health and Consumer Protection, University of Amsterdam, Bongor Institute of Criminology

46 EMCDDA (2016) European Drug Report 2016: Trends and Developments. Publications Office of the European Union. Luxembourg

47 Brunt, T (2017) Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges: European Monitoring Centre for Drugs and Drug Addiction

48 Hungerbuehler, I, Buecheli, A and Schaub, M. (2011) Drug Checking: A prevention measure for a heterogeneous group with high consumption frequency and polydrug use - evaluation of Zurich's drug checking services., Harm reduction , Vol. 8.

49 Brunt, T (2017) Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges: European Monitoring Centre for Drugs and Drug Addiction

50 Benschop, A., Rabes, M., & Korf, D. (2002). Pill testing, Ecstasy and Prevention. A scientific evaluation in three European cities. Amsterdam: Rozenberg Publishers.

51 Brunt, T. (2012). Monitoring illicit psychostimulants and related health issues, PhD. University of Amsterdam

52 Hungerbuehler, I., Buecheli, A., & Schaub, M. (2011). Drug Checking: A prevention measure for a heterogeneous group with high consumption frequency and polydrug use. Evaluation of Zurich's Drug Checking services. Harm Reduction Journal, 8(1), 16.

53 Barratt, M., Kowalski, M., Marier, L., Ritter, A. (2018) Global review of drug checking services operating in 2017, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Bulletin 24, 1-12



assist front-line services. New psychoactive substances are increasingly being misused as drugs such as MDMA and LSD, the monitoring of which is assisted by data from drug checking services.^{54 55 56}

The drug checking service operated by Energy Control has made 50 and 82 notifications reporting the identification of new NPS to the Spanish Early Warning System (EWS) in 2015 and 2016, respectively. The same applies to most other European drug checking services that report their information on NPS directly to the European EWS.

Establishment of centralised databases such as those in the Netherlands and France provide strong evidence for the

utility of drug checking services as public health surveillance tools. Findings of adulterated drugs can be communicated to the public through posters at events, press releases, and written, broadcast, and social media.^{57 58 59 60} as well as through peer networks of PWUD.⁶¹

In addition to local and national warnings, results of the Dutch drug checking experience led to the Early Warning System (EWS) of the EMCDDA. This system allows for cross-border information sharing and the generation of “red alerts” related to detection of adulterated drug supplies.^{62 63 64}

Novel collaborations in Europe have recently sought to combine drug checking data from European drug

54 Barratt, M. J., & Ezard, N. (2016). Drug checking interventions can track the nature and size of the discrepancy between self-report and actual drugs consumed. *Addiction*, 111, 558–559.

55 Giné, C. V., Espinosa, I. F., & Vilamala, M. V. (2014). New psychoactive substances as adulterants of controlled drugs. A worrying phenomenon? *Drug Testing and Analysis*, 6, 819–824.

56 Brunt, T. M., Nagy, C., Bücheli, A., Martins, D., Ugarte, M., Beduwe, C., et al. (2017). Drug testing in Europe: Monitoring results of the Trans European Drug Information (TEDI) project. *Drug Testing and Analysis*, 9, 188–198.

57 Brunt, T. M., & Niesink, R. J. M. (2011). The drug information and monitoring system (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Testing and Analysis*, 3(9), 621–634. <https://doi.org/10.1002/dta.323>

58 Brunt, T. M., Nagy, C., Bücheli, A., Martins, D., Ugarte, M., Beduwe, C., ... Ventura Vilamala, M. (2017). Drug testing in Europe: Monitoring results of the Trans European drug information (TEDI) project. *Drug Testing and Analysis*, 9(2), 188–198. <https://doi.org/10.1002/dta.1954>.

59 Keijsers, L., Bossong, M. G., & Waarlo, A. J. (2008). Participatory evaluation of a Dutch warning campaign for

substance-users. *Health, Risk & Society*, 10(3), 283–295. <https://doi.org/10.1080/13698570802160913>

60 Spruit, I. P. (2001). Monitoring synthetic drug markets, trends, and public health. *Substance Use & Misuse*, 36(1-2), 23–47. <https://doi.org/10.1081/JA-100000227>

61 Giné, C. V., Vilamala, M. V., Measham, F., Brunt, T. M., Bücheli, A., Paulos, C., & Barratt, M. J. (2017). The utility of drug checking services as monitoring tools and more: A response to Pirona et al. *International Journal on Drug Policy*, 45, 46–47. <https://doi.org/10.1016/j.drugpo.2017.05.018>

62 Keijsers, L., Bossong, M. G., & Waarlo, A. J. (2008). Participatory evaluation of a Dutch warning campaign for substance-users. *Health, Risk & Society*, 10(3), 283–295. <https://doi.org/10.1080/13698570802160913>.

63 Spruit, I. P. (2001). Monitoring synthetic drug markets, trends, and public health. *Substance Use & Misuse*, 36(1-2), 23–47. <https://doi.org/10.1081/JA-100000227>.

64 Pirona, A., Bo, A., Hedrich, D., Ferri, M., van Gelder, N., Giraudon, I., & Mouteney, J. (2017). New psychoactive substances: Current health-related practices and challenges in responding to use and harms in Europe. *International Journal on Drug Policy*, 40, 84–92. <https://doi.org/10.1016/j.drugpo.2016.10.004>



checking NGOs as part of the Trans European Drug Information (TEDI) project.⁶⁵ The TEDI Workgroup has identified drug checking as a cost-effective healthcare resource, with attributable reductions to both short- and long-term healthcare costs associated with illicit drug use.

Drug checking can also be a useful tool to monitor demographic data about users of drugs, drug trends and patterns of use that are useful for state agencies related to health and law enforcement.⁶⁶ This information in-turn can be relayed to users to provide education about substances of concern onsite and the

risks associated with ecstasy consumption.⁶⁷

Behaviour change.

Evidence suggests that drug checking assists young people in making informed choices about drugs they wish to consume.^{68 69}

Service user disposal rates have been measured by intentions after hearing test results;^{70 71 72 73}; self-reported historical recall;⁷⁴ hypothetical intentions into the future,^{75 76 77 78} or actual disposal rates

65 Brunt, T. M., Nagy, C., Büchel, A., Martins, D., Ugarte, M., Beduwe, C., ... Ventura Vilamala, M. (2017). Drug testing in Europe: Monitoring results of the Trans European drug information (TEDI) project. *Drug Testing and Analysis*, 9(2), 188–198. <https://doi.org/10.1002/dta.1954>.

66 Foxcroft DR, Tsertsvadze A. *Cochrane Database of Systematic Reviews*. s.l. : Cochrane, 2011.

67 Brunt, T (2017) Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges: European Monitoring Centre for Drugs and Drug Addiction

68 Ecstasy in het uitgaanscircuit. Van de Wijngaart, G, et al. 1997, Utrecht.

69 Kriener, H., & Schmid, R. (2002). Check your pills. Check your life. ChEck it!! High quality on-site testing of illicit substances: Information counselling and safer use measures at raves in Austria, Vienna: CheckIT!

70 Kriener, H., & Schmid, R. (2002). Check your pills. Check your life. ChEck it!! High quality on-site testing of illicit substances: Information counselling and safer use measures at raves in Austria, Vienna: CheckIT!

71 Makkai, T., Macleod, M., Vumbaca, G., Hill, P., Caldicott, D., Noffs, M., Tzanetis, S., & Hansen, F. (2018). Report on the ACT GTM Pill Testing Pilot: A Harm Reduction Service, Harm Reduction Australia.

72 Martins, D., Barratt, M., Pires, C., Carvalho, H., Vilamala, M., Espinosa, I, et al. (2017). The detection and prevention of unintentional consumption of DOx and 25x-NBOMe at

Portugal's Boom Festival. *Human Psychopharmacology Clinical and Experimental*, 32, e2608.

73 Saleemi, S., Pennybaker, S., Wooldridge, M., & Johnson, M. (2017). Who is 'Molly'? MDMA adulterants by product name and the impact of harm-reduction services at raves. *Journal of Psychopharmacology*, 31(8), 1056–1060

74 Van de Wijngaart, G., Braam, R., de Bruin, D., Fris, M., Maalste, N., & Verbraeck, H. (1999). Ecstasy use at large-scale dance events in the Netherlands. *Journal of Drug Issues*, 29, 679–702.

75 Benschop, A., Rabes, M., & Korf, D. (2002). Pill testing, Ecstasy and Prevention. A scientific evaluation in three European cities. Amsterdam: Rozenberg Publishers.

76 Day, N., Criss, J., Griffiths, B., Gujral, S., John-Leader, F., Johnston, J., et al. (2018). Music festival attendees' illicit drug use, knowledge and practices regarding drug content and purity: A cross-sectional survey. *Harm Reduction Journal*, 15(1), 1–8.

77 Johnston, J., Barratt, M., Fry, C., Kinner, S., StooVé, M., Degenhardt, L., et al. (2006). A survey of regular ecstasy users' knowledge and practices around determining pill content and purity: Implications for policy and practice. *The International Journal on Drug Policy*, 17(6), 464–472.

78 Michelow, W. and Dowden, C. (2015), "Start Small, Take it Easy". Results from the ANKORS Harm Reduction Survey at the 2013 Shambhala Music Festival, Vancouver: University of British Columbia. At:



immediately after hearing test results⁷⁹ ⁸⁰
⁸¹with the potential for independent
 verification.⁸²

Evaluation of the Checkit! initiative in
 Vienna, Austria, which provides on-site
 testing at raves and music festivals,
 found that two thirds of participants who
 received an unexpected test result
 reported that they would not use the
 tested drug and would warn their peers
 of a potential contaminated source.⁸³

Data from a dance festival drug checking
 initiative in Portugal found that 74% of
 participants would not use the tested
 drug after receiving unanticipated
 results, citing concerns related to the
 “unknown” nature of the adulterants or
 potential harms of known adulterants.⁸⁴

A more recent evaluation by the same
 researchers of another festival found
 94.3% of the service users reported that
 they would not to take the drug when
 results were ‘unexpected’.⁸⁵ An
 Australian survey showed 76% of
 frequent ‘ecstasy’ consumers (N = 178)
 would not take a drug if a test could not
 determine the content.⁸⁶

Results from the recent pilot in the ACT
 by Pill Testing Australia, reported that
 after receiving their results, 58% said
 they intended to consume the drugs as
 planned, 18% said they would not use
 any illicit drugs, 12% said they would use
 less than they originally intended, 5%
 said they would not use this drug but
 another drug, 7% said they were
 undecided.⁸⁷

http://www.ankorsvolunteer.com/uploads/4/6/9/3/46939087/ankors_2013_shambhala_survey_report.pdf.

79 Sage, C. (2015), Harm Reduction and Drug Checking: A wrap-around service for festivals. Case Study: Shambhala Music Festival/ ANKORS Drug Checking Harm Reduction, Service data 2015, Nelson: ANKORS. At:

http://www.ankorsvolunteer.com/uploads/4/6/9/3/46939087/sham_2015_report_-_pdf.pdf.

80 Measham F. C. Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK’s first onsite ‘drug checking’ service, *International Journal of Drug Policy* 2019.

81 Parrott, A. C. (2004). Is ecstasy MDMA? A review of the proportion of ecstasy tablets containing MDMA, their dosage levels, and the changing perceptions of purity.

Psychopharmacology, 173, 234–24.

82 Measham F. C. Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK’s first onsite ‘drug checking’ service, *International Journal of Drug Policy* 2018.

83 Kriener, H., & Schmid, R. (2002). Check your pills. Check your life. ChEck iT! High quality on-site testing of illicit

substances. Information, counselling and safer use measures at raves in Austria. In. As quoted in Ritter and Cameron, 2005, monograph No. 06: A systematic review of harm reduction. Turning Point Alcohol and Drug Centre.

84 Martins, D., Barratt, M. J., Pires, C. V., Carvalho, H., Vilamala, M. V., Espinosa, I. F., ... Valente, H. (2017). The detection and prevention of unintentional consumption of DOx and 25x-NBOMe at Portugal’s Boom festival. *Human Psychopharmacology: Clinical and Experimental*, 32(3), <https://doi.org/10.1002/hup.2608> e2608-n

85 Valente, H, Martins, D, Carvalho, H, Pires, C, Carvalho, M, Pinto, M and Barratt, M 2019, 'Evaluation of a drug checking service at a large scale electronic music festival in Portugal', *International Journal of Drug Policy*, vol. 73, pp. 88-95.

86 Johnston J, Barratt MJ, Fry CL, et al. A survey of regular ecstasy users’ knowledge and practices around determining pill content and purity: implications for policy and practice. *Int J Drug Policy* 2006;17:464–72.

87 Makkai, T., Macleod, M., Vumbaca, G., Hill, P., Caldicott, D., Noffs, M., Tzanetis, S., Hansen, F., 2018, Report on Canberra GTM Harm Reduction Service, Harm Reduction Australia.



Results from UK's first on-site festival drug checking service (Multi Agency Safety Testing [MAST]) found that one in five individuals handed over further substances of concern in their possession for onwards safe destruction by the police.⁸⁸ Furthermore, service users whose sample contents were as expected but higher strength planned to take a lower dose of the substance in future. Other harm reduction behaviours included taking care in mixing substances and talking with friends and acquaintances about their test result.⁸⁹

Research from drug checking at dance festivals in Western Canada found that individuals were more likely to discard drugs on-site when unknown or harmful contaminants were detected, and were more likely to discard drugs if contaminants were either "unknown" (36%) or known to have high toxicity (31%; such as PMMA/PMA, NBOME and 2C-T-7).^{90 91}

Market change.

People who use drugs tend to have a high level of trust in their drug dealers, but less so when drugs are sourced opportunistically from an unfamiliar source such as at music festivals.⁹² Festival drug dealers in a UK study were found to be twice as likely to mis-sell products as neighbourhood dealers.⁹³

A survey of twenty people who use drugs in Vancouver, Canada indicated that people would provide knowledge to drug dealers about drug contents if they were to use a drug checking service.⁹⁴ Drug checking can act as quality control on the illicit market, with drug manufacturers and dealers less likely to distribute highly dangerous substances when clients are able to check their drugs.⁹⁵ Survey reports of people who access drug checking suggest that

88 Measham F. C. Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service, *International Journal of Drug Policy* 2018.

89 Measham, F. (2017). Swimming against the tide? Piloting a radical local harm reduction Initiative – on-site festival drug testing – in a context of conservative prohibitionism (May) Paper Presented at the 10th International Conference on Nightlife, Substance Use, and Related Health Issues

90 Sage, C., & Michelow, W. (2016). Drug checking at music festivals: A how-to guide. <http://michelow.ca/doc/drug-checking-guide-online-v1.pdf>

91 Sage, C. (2015). Harm reduction and drug checking: a wrap-around service for festivals. Case study: Shambhala music festival /ANKORS drug checking harm reduction service data 2015. ANKORS

92 Bardwell G, Boyd J, Arredondo J, McNeil R, Kerr T 'Trusting the source: The potential role of drug dealers in reducing drug-related harms via drug checking' *Drug Alcohol Depend* 2019 ;198:1-6.

93 Measham F. C. Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service, *International Journal of Drug Policy* 2018.

94 Bardwell G, Boyd J, Arredondo J, McNeil R, Kerr T 'Trusting the source: The potential role of drug dealers in reducing drug-related harms via drug checking' *Drug Alcohol Depend* 2019 ;198:1-6.

95 Brunt, T. M., Nagy, C., Bücheli, A., Martins, D., Ugarte, M., Beduwe, C., ... Ventura Vilamala, M. (2017). Drug testing in Europe: Monitoring results of the Trans European drug information (TEDI) project. *Drug Testing and Analysis*, 9(2), 188–198. <https://doi.org/10.1002/dta.1954>.



inconsistent or contaminated drugs means that people will find a new dealer.^{96 97} In countries where drug checking is well-established, tested samples more closely follow anticipated composition trends, as compared to countries not employing drug checking.⁹⁸

While the DIMS system has not been directly linked to prevention of drug-related deaths, monitoring systems have shown decreases in detected batches of harmful drugs from local supplies following alerts.⁹⁹ Early reviews of DIMS found that after each campaign, compounds people were warned against were no longer found in samples brought in for testing.¹⁰⁰ Some dangerous substances which were used to adulterate MDMA have disappeared from the market in Europe following the introduction of drug checking.¹⁰¹

Although further research is required,

this is potentially the result of increased consumer pressure for drug profiles to match expectations.¹⁰²

Overdose.

Although research is limited, there is some evidence that drug checking can play a role in preventing drug-related hospitalisations and deaths.^{103 104 105}

Deaths and hospitalisations as a result of illicit drugs such as MDMA are relatively rare in Australia, and are heavily dependent on changes illicit drug markets, weather and patterns of consumption. Nevertheless, comparisons between festivals providing drug checking facilities and those without indicate a role in reducing hospitalisations.

96 Korf, D., Benschop, A., & Rabes, M. (2002). Pill testing, ecstasy and prevention: A scientific evaluation in three European cities. Amsterdam: Rozenberg

97 Martins, D., Barratt, M. J., Pires, C. V., Carvalho, H., Vilamala, M. V., Espinosa, I. F., ... Valente, H. (2017). The detection and prevention of unintentional consumption of DOx and 25x-NBOMe at Portugal's Boom festival. *Human Psychopharmacology: Clinical and Experimental*, 32(3), <https://doi.org/10.1002/hup.2608> e2608-n/a

98 Giné, C. V., Vilamala, M. V., Measham, F., Brunt, T. M., Bücheli, A., Paulos, C., & Barratt, M. J. (2017). The utility of drug checking services as monitoring tools and more: A response to Pirona et al. *International Journal on Drug Policy*, 45, 46–47. <https://doi.org/10.1016/j.drugpo.2017.05.018>

99 Butterfield, R. J., Barratt, M. J., Ezard, N., & Day, R. O. (2016). Drug checking to improve monitoring of new psychoactive substances in Australia. *Medical Journal of Australia*, 204(4), 144–145

100 Spruit, I. P. (2001). Monitoring synthetic drug markets, trends, and public health. *Substance Use & Misuse*, 36(1-2), 23–47. <https://doi.org/10.1081/JA-100000227>

101 Brunt, T (2017) Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges: European Monitoring Centre for Drugs and Drug Addiction
102 EMCDDA. An inventory of on-site pill testing interventions in the EU. Lisbon: European Monitoring Centre for Drugs and Drug Addiction , 2001.

103 Groves, A 'Worth the test?' Pragmatism, pill testing and drug policy in Australia. 2018, *Harm Reduction Journal*
104 Brunt, T. M. and Niesink, R. J. (2011), The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison. *Drug Test Analysis*, 3: 621-634

105 Kriener, H, Schmid, R. Check your pills. Check your life. ChEckIT High quality on-site testing of illicit substance: Information counselling and safer use measures at raves in Austria. . *Drug Text*. [Online] 2005



A recent evaluation of onsite drug checking facilities at a festival in the UK found a 95% reduction in drug-related transportations to hospital compared with the previous year.¹⁰⁶

Brief intervention.

Under a direct-to-consumer model of drug checking, there is a captive audience of people who use drugs in order to deliver harm reduction information.

Both onsite or offsite testing facilities also provide people who use drugs with an opportunity to gain accurate harm reduction information as well as brief counselling or referral to treatment services if required.^{107 108}

Reports from Energy Control, Know Your Stuff and The Loop show that a great majority of drug checking users have never been in touch with drug services before so these services are able to access a new and 'hidden' user group from a service perspective.¹⁰⁹

Other areas of festival safety.

Drug checking services are not a panacea and should exist alongside a number of other harm reduction interventions at music festivals. Some of the harm reduction interventions identified in a recent set of guidelines released by the NSW government include:¹¹⁰

- Effective site and crowd management including planning for emergency vehicle access, providing appropriate sanitation and allowing for smoke-free areas
- Providing harm reduction information and education on-site
- Peer-based drug and alcohol reduction programs
- Quality on-site medical service provision
- Providing free, cool water to patrons
- Responsible service of alcohol and food safety
- Providing shade, cooling measures and sun safety
- Providing 'chill out' spaces
- Preventing noise related harms

106 Measham F. C. Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service, *International Journal of Drug Policy* 2018.

107 Camilleri, M and Caldicott, D (2005) Underground pill testing, down under, *Forensic Science International*, pp. 53-58

108 Kriener, H. (2001). An inventory of on-site pill-testing interventions in the EU. Lisbon: European Monitoring Centre for Drugs and Drug Addiction

109 Kriener, H. (2001). An inventory of on-site pill-testing interventions in the EU. Lisbon: European Monitoring Centre for Drugs and Drug Addiction

110 NSW Health, Guidelines for Music Festival Event Organisers: Music Festival Harm Reduction, September 2019





Drug-checking facilities exist as one feature of a number of interventions designed to reduce drug related harms at music festivals.

Future evaluation and research.

Existing research and evaluations of drug checking services indicate support for drug checking as a harm reduction intervention, but have notable limitations. Generally, evaluations have focused on operational outputs (such as number of drugs tested; number of brief interventions delivered; contaminants and purity levels found) rather than outcomes (such as changes in intended behaviour, actual behaviour, overdose

rates and market behaviour) or process measures (such as operations, acceptability).

An evaluation framework was developed by researchers Australian National University to the latest drug checking pilot at Groovin' The Moo festival in Canberra.¹¹¹ The evaluation framework uses participant surveys (pre, post and two months follow up from service use), observational data and administrative data such as policing and health services data. Key research questions intended to be answered by the evaluation are:

1. How successfully was the program implemented, given its specific context?
2. To what extent was the program received positively by participants and by other key stakeholders?
3. To what extent did the program result in participants' attitudinal

111 Olson, A Dilkes-Frayne, E Wong, G and McDonald, D (2019) Pill testing trial in the ACT: Evaluation Progress report)

<https://www.health.act.gov.au/sites/default/files/201908/Progress%20report%20pill%20testing%20evaluation%202019.pdf>



and/or behavioural change related to illicit drug use?

4. To what extent did the program produce valuable information about illicit drug availability in Canberra, and how did the authorities use that information?
5. Did the program have any unintended consequences, either positive or negative? If so, what were they?
6. Should the program continue and, if so, what changes in the program and its contexts are desirable?

Whilst this evaluation framework provides some insight into the effectiveness of drug checking facilities at music festivals, what is required is a number of pilot programs to occur across different festivals, different jurisdictions and different countries to provide robust comparative data. Given the nature of festival environments, randomised controlled trials are not a

viable method to evaluate drug checking as an intervention.

Drug checking facilities are analogous to other harm reduction interventions such as safe injecting facilities and needle syringe programs. The evidence-base for safe injecting facilities was developed through the allowance of pilot programs to allow comparisons across jurisdictions and to monitor local effects. Through this process of comparison, safe injecting facilities were found to:

- Reduce drug-related deaths due to overdose at a local level^{112, 113}
- Reduce emergency call-outs in areas of concern¹¹⁴
- Decrease visible public injecting and needle litter^{115, 116}
- Increase referrals to drug treatment centres^{117, 118}
- Effectively engage marginalised target populations of substance

112 Poschadel, S., Höger, R., Schnitzler, J. and Schreckenber, D. (2003), 'Evaluation der Arbeit der Drogenkonsumräume in der Bundesrepublik Deutschland', Nr 149, Schriftenreihe des Bundesministeriums für Gesundheit und Soziale Sicherheit, Baden-Baden.

113 Marshall, B. D., Milloy, M. J., Wood, E., Montaner, J. S. and Kerr, T. (2011), 'Reduction in overdose mortality after the opening of North America's first medically supervised safer injecting facility: a retrospective population-based study', *The Lancet* 23 April, 377(9775), pp. 1429–37.

114 Salmon, A. M., Van Beek, I., Amin, J., Kaldor, J. and Maher, L. (2010), 'The impact of a supervised injecting facility on ambulance call-outs in Sydney, Australia', *Addiction* 105, pp. 676–83.

115 Wood, E., Kerr, T., Small, W., et al. (2004), 'Changes in public order after the opening of a medically supervised safer

injecting facility for illicit injection drug users', *Canadian Medical Association Journal* 28 September, 171(7), pp. 731–4.

116 Salmon, A. M., Thein, H. H., Kimber, J., Kaldor, J. M. and Maher, L. (2007), 'Five years on: what are the community perceptions of drug-related public amenity following the establishment of the Sydney Medically Supervised Injecting Centre?' *International Journal of Drug Policy* 18(1), pp. 46–53.

117 Wood, E., Kerr, T., Small, W., et al. (2004), 'Changes in public order after the opening of a medically supervised safer injecting facility for illicit injection drug users', *Canadian Medical Association Journal* 28 September, 171(7), pp. 731–4.

118 DeBeck, K., Kerr, T., Bird, L., et al. (2011), 'Injection drug use cessation and use of North America's first medically supervised safer injecting facility', *Drug and Alcohol Dependence* 15 January, 113(2–3), pp. 172–6.



users, including homeless and co-morbid clients^{119 120}

- Improve both hygiene and safer use behaviours amongst clients^{121 122}
- Reduce needle sharing and other injecting risk behaviour^{123 124}

Similarly, drug-checking facilities should be evaluated to measure outcomes of:

- Drug disposals, both intended and verified

- Localised drug-related morbidity and mortality, such as first aid attendance and hospitalisations at festivals
- Effective engagement with target populations

Drug checking services could be used to also estimate the prevalence of drug use at festivals, similar that conducted by the Loop UK.¹²⁵

119 Hedrich, D. and Hartnoll, R. (2015), 'Harm reduction interventions', in El-Guebaly, N., Carrà, G. and Galanter, M. (eds), *Textbook of addiction treatment: international perspectives*, Section IV: main elements of a systems approach to addiction treatment, Springer, Milan, pp. 1291–313.

120 Potier, C., Laprévote, V., Dubois-Arber, F., Cottencin, O. and Rolland, B. (2014), 'Supervised injection services: what has been demonstrated? A systematic literature review', *Drug and Alcohol Dependence* 145, pp. 48–68.

121 Small, W., Wood, E., Lloyd-Smith, E., Tyndall, M. and Kerr, T. (2008), 'Accessing care for injection-related infections through a medically supervised injecting facility: a qualitative study', *Drug and Alcohol Dependence* 98(1–2), pp. 159–62.

122 Small, W., Van Borek, N., Fairbairn, N., Wood, E. and Kerr, T. (2009), 'Access to health and social services for IDU: the

impact of a medically supervised injection facility', *Drug and Alcohol Review* 28(4), pp. 341–6.

123 Milloy, M. J. and Wood, E. (2009), 'Emerging role of supervised injecting facilities in human immunodeficiency virus prevention', *Addiction* 104(4), pp. 620–1.

124 Stoltz, J. A., Wood, E., Small, W., et al. (2007), 'Changes in injecting practices associated with the use of a medically supervised safer injection facility', *Journal of Public Health (Oxford)* 29(1), pp. 35–9.

125 Turner, T. and Measham, F. (2019), *Into The Woods: Contextualising atypical intoxication by young adults in music festivals and nightlife tourist resorts*, in Conroy, D. and Measham, F. (ed.s), *Young Adult Drinking Styles: Current Perspectives on Research, Policy and Practice*, London: Palgrave Macmillan.



References.

- Allott, R., Paxton, R. and Leonard, R. (1999), 'Drug education: a review of British Government policy and evidence on effectiveness', *Health Education Research* 14, pp. 491-505
- Bardwell G, Boyd J, Arredondo J, McNeil R, Kerr T (2019) 'Trusting the source: The potential role of drug dealers in reducing drug-related harms via drug checking' *Drug Alcohol Depend* ;198:1-6
- Barratt, M. J., & Ezard, N. (2016). Drug checking interventions can track the nature and size of the discrepancy between self-report and actual drugs consumed. *Addiction*, 111, 558–559
- Barratt, M. J., Bruno, R., Ezard, N., Ritter, A. (2017) Pill testing or drug checking in Australia: Acceptability of service design features *Drug and Alcohol Review* 3 226–236
- Barratt, M.J., Kowalski, M., Maier, L.J., & Ritter, A. (2018). Global review of drug checking services operating in 2017. *Drug Policy Modelling Program Bulletin* No. 24. Sydney, Australia: National Drug and Alcohol Research Centre, UNSW Sydney
- Benschop, A, Rabes, M and Korf, D.J. (2002) Pill testing, ecstasy and prevention: A scientific evaluation in three European cities. *European Commission, Directorate-General Health and Consumer Protection, University of Amsterdam, Bonger Institute of Criminology*
- Brunt, T (2017) Drug checking as a harm reduction tool for recreational drug users: opportunities and challenges. Brunt, T. s.l. : European Monitoring Centre for Drugs and Drug Addiction
- Brunt, T. (2012). *Monitoring illicit psychostimulants and related health issues*, PhD. University of Amsterdam
- Brunt, T. M. and Niesink, R. J. (2011), *The Drug Information and Monitoring System (DIMS) in the Netherlands: Implementation, results, and international comparison*. *Drug Test Analysis*, 3: 621-634
- Brunt, T. M., Nagy, C., Bücheli, A., Martins, D., Ugarte, M., Beduwe, C., ... Ventura Vilamala, M. (2017). Drug testing in Europe: Monitoring results of the Trans European drug information (TEDI) project. *Drug Testing and Analysis*, 9(2), 188–198
- Butterfield, R. J., Barratt, M. J., Ezard, N., & Day, R. O. (2016). Drug checking to improve monitoring of new psychoactive substances in Australia. *Medical Journal of Australia*, 204(4), 144–145
- Camilleri, M and Caldicott, D (2005) Underground pill testing, down under, *Forensic Science International*, pp. 53-58



- Day, N., Criss, J., Griffiths, B., Gujral, S., John-Leader, F., Johnston, J., et al. (2018). Music festival attendees' illicit drug use, knowledge and practices regarding drug content and purity: A cross-sectional survey. *Harm Reduction Journal*, 15(1), 1–8
- DeBeck, K., Kerr, T., Bird, L., et al. (2011), 'Injection drug use cessation and use of North America's first medically supervised safer injecting facility', *Drug and Alcohol Dependence* 15 January, 113(2–3), pp. 172–6
- EMCDDA (2016) ,Health responses to new psychoactive substances, Lisbon.
- EMCDDA (2001) An inventory of on-site pill testing interventions in the EU. Lisbon.
- EMCDDA (2016) European Drug Report 2016: Trends and Developments. Publications Office of the European Union. Luxembourg
- Falck, R. S., Carlson, R. G., Wang, J. and Siegal, H. A. (2004), 'Sources of information about MDMA (3,4-methylenedioxymethamphetamine): perceived accuracy, importance, and implications for prevention among young adult users', *Drug and Alcohol Dependence* 74, pp. 45-54
- Foxcroft DR, Tsertsvadze (2011) A. Cochrane Database of Systematic Reviews . s.l. : Cochrane
- Giné, C. V., Espinosa, I. F., & Vilamala, M. V. (2014). New psychoactive substances as adulterants of controlled drugs. A worrying phenomenon? *Drug Testing and Analysis*, 6, 819–824.
- Giné, C. V., Vilamala, M. V., Measham, F., Brunt, T. M., Bücheli, A., Paulos, C., & Barratt, M. J. (2017). The utility of drug checking services as monitoring tools and more: A response to Pirona et al. *International Journal on Drug Policy*, 45, 46–47.
- Grigg J, Barratt MJ, Lenton S. (2018) Drug detection dogs at Australian outdoor music festivals: Deterrent, detection and iatrogenic effects. *International Journal of Drug Policy*
- Groves, A (2018) 'Worth the test?' Pragmatism, pill testing and drug policy in Australia., *Harm Reduction Journal* 15(12)
- Hedrich, D. and Hartnoll, R. (2015), 'Harm reduction interventions', in El-Guebaly, N., Carrà, G. and Galanter, M. (eds), *Textbook of addiction treatment: international perspectives*, Section IV: main elements of a systems approach to addiction treatment, Springer, Milan, pp. 1291–313.
- Hughes CE, Moxham-Hall V, Ritter A, Weatherburn D, MacCoun R (2017) The deterrent effects of Australian street-level drug law enforcement on illicit drug offending at outdoor music festivals. *International Journal of Drug Policy*;41:91–100
- Hungerbuehler, I., Buecheli, A., & Schaub, M. (2011). Drug Checking: A



prevention measure for a heterogeneous group with high consumption frequency and polydrug use. Evaluation of Zurich's Drug Checking services. *Harm Reduction Journal*, 8(1), 16

Johnston, J., Barratt, M. J., Fry, C. L., Kinner, S., Stoové, M., Degenhardt, L., George, J. et al. (2006), 'A survey of regular ecstasy users' knowledge and practices around determining pill content and purity: implications for policy and practice', *International Journal of Drug Policy* 17, pp. 464-472

Keijsers L., Bossong MG, Waarlo A.J. (2008), Participatory evaluation of a Dutch warning campaign for substance users. *Health, Risk and Society*. 10, pp. 283-295

Korf, D., Benschop, A., & Rabes, M. (2002). Pill testing, ecstasy and prevention: A scientific evaluation in three European cities. Amsterdam: Rozenberg

Kriener, H, (2001) An inventory of on-site pill-testing interventions in the EU. Lisbon : European Monitoring Centre for Drugs and Drug Addiction

Kriener, H., & Schmid, R. (2002). Check your pills. Check your life. ChEck it!! High quality on-site testing of illicit substances: Information counselling and safer use measures at raves in Austria, Vienna: CheckIT!

Lancaster, K & Ritter, AI & Matthew-Simmons, F (2013). Young people's

opinions on alcohol and other drugs issues.

Makkai, T., Macleod, M., Vumbaca, G., Hill, P., Caldicott, D., Noffs, M., Tzanetis, S., & Hansen, F. (2018). Report on the ACT GTM Pill Testing Pilot: A Harm Reduction Service, Harm Reduction Australia.

Marshall, B. D., Milloy, M. J., Wood, E., Montaner, J. S. and Kerr, T. (2011), 'Reduction in overdose mortality after the opening of North America's first medically supervised safer injecting facility: a retrospective population-based study', *The Lancet* 23 April, 377(9775), pp. 1429–37

Martins, D., Barratt, M. J., Pires, C. V., Carvalho, H., Vilamala, M. V., Espinosa, I. F., ... Valente, H. (2017). The detection and prevention of unintentional consumption of DOx and 25x-NBOMe at Portugal's Boom festival. *Human Psychopharmacology: Clinical and Experimental*, 32(3)

Measham F. C. (2019) Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service, *International Journal of Drug Policy*

Measham, F (2017). Swimming against the tide? Piloting a radical local harm reduction Initiative – on-site festival drug testing – in a context of conservative prohibitionism (May) Paper Presented at the 10th International Conference on



Nightlife, Substance Use, and Related Health Issues

Michelow, W. and Dowden, C. (2015), "Start Small, Take it Easy". Results from the ANKORS Harm Reduction Survey at the 2013 Shambhala Music Festival, Vancouver: University of British Columbia

Milloy, M. J. and Wood, E. (2009), 'Emerging role of supervised injecting facilities in human immunodeficiency virus prevention', *Addiction* 104(4), pp. 620–1

NSW Health, Guidelines for Music Festival Event Organisers: Music Festival Harm Reduction September 2019

Olson, A Dilkes-Frayne, E Wong, G and McDonald, D (2019) Pill testing trial in the ACT: Evaluation Progress report.

Parrott, A. C. (2004). Is ecstasy MDMA? A review of the proportion of ecstasy tablets containing MDMA, their dosage levels, and the changing perceptions of purity. *Psychopharmacology*, 173, 234–24

Pirone, A., Bo, A., Hedrich, D., Ferri, M., van Gelder, N., Giraudon, I., & Mounteney, J. (2017). New psychoactive substances: Current health-related practices and challenges in responding to use and harms in Europe. *International Journal on Drug Policy*, 40, 84–92

Poschadel, S., Höger, R., Schnitzler, J. and Schreckenberg, D. (2003), 'Evaluation der Arbeit der Drogenkonsumräume in der Bundesrepublik Deutschland', Nr 149,

Schriftenreihe des Bundesministeriums für Gesundheit und Soziale Sicherheit, Baden-Baden

Potier, C., Laprèvote, V., Dubois-Arber, F., Cottencin, O. and Rolland, B. (2014) 'Supervised injection services: what has been demonstrated? A systematic literature review', *Drug and Alcohol Dependence* 145, pp. 48–68

Sage, C. (2015), Harm Reduction and Drug Checking: A wrap-around service for festivals. Case Study: Shambhala Music Festival/ ANKORS Drug Checking Harm Reduction, Service data

Sage C, Michelow W (2016). Drug checking at music festivals: A how-to guide. Nelson, BC, Canada ANKORS.

Saleemi, S., Pennybaker, S., Wooldridge, M., & Johnson, M. (2017). Who is 'Molly'? MDMA adulterants by product name and the impact of harm-reduction services at raves. *Journal of Psychopharmacology*, 31(8), 1056–1060

Salmon, A. M., Thein, H. H., Kimber, J., Kaldor, J. M. and Maher, L. (2007), 'Five years on: what are the community perceptions of drug-related public amenity following the establishment of the Sydney Medically Supervised Injecting Centre?' *International Journal of Drug Policy* 18(1), pp. 46–53

Salmon, A. M., Van Beek, I., Amin, J., Kaldor, J. and Maher, L. (2010), 'The impact of a supervised injecting facility on ambulance call-outs in Sydney, Australia', *Addiction* 105, pp. 676–83.



- Small, W., Van Borek, N., Fairbairn, N., Wood, E. and Kerr, T. (2009), 'Access to health and social services for IDU: the impact of a medically supervised injection facility', *Drug and Alcohol Review* 28(4), pp. 341–6
- Small, W., Wood, E., Lloyd-Smith, E., Tyndall, M. and Kerr, T. (2008), 'Accessing care for injection-related infections through a medically supervised injecting facility: a qualitative study', *Drug and Alcohol Dependence* 98(1–2), pp. 159–62
- Spruit, I. P. (2001). Monitoring synthetic drug markets, trends, and public health. *Substance Use & Misuse*, 36(1-2), 23–47.
- Stoltz, J. A., Wood, E., Small, W., et al. (2007), 'Changes in injecting practices associated with the use of a medically supervised safer injection facility', *Journal of Public Health (Oxford)* 29(1), pp. 35–9
- Toumbourou, J., Stockwell, T., Neighbors, C., Marlatt, G., Sturge, J. and Rehm, J. (2007), 'Interventions to reduce harm associated with adolescent substance use', *The Lancet* 369, pp. 1391–1401
- Turner, T. and Measham, F. (2019), *Into The Woods: Contextualising atypical intoxication by young adults in music festivals and nightlife tourist resorts*, in Conroy D. and Measham, F. (ed.s), *Young Adult Drinking Styles: Current Perspectives on Research, Policy and Practice*, London: Palgrave Macmillan.
- Valente, H, Martins, D, Carvalho, H, Pires, C, Carvalho, M, Pinto, M and Barratt (2019) 'Evaluation of a drug checking service at a large scale electronic music festival in Portugal', *International Journal of Drug Policy*, vol. 73, pp. 88-95
- Van de Wijngaart, G., Braam, R., de Bruin, D., Fris, M., Maalste, N., & Verbraeck, H. (1999). Ecstasy use at large-scale dance events in the Netherlands. *Journal of Drug Issues*, 29, 679–702
- Wood, E., Kerr, T., Small, W., et al. (2004), 'Changes in public order after the opening of a medically supervised safer injecting facility for illicit injection drug users', *Canadian Medical Association Journal* 28 September, 171(7), pp. 731–4.





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