



## Rise in LSD use among Regular Psychostimulant Users: Why the increase and is it a cause for concern?

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### KEY FINDINGS

- Significant increase in recent use of LSD from 2008-2013.
- Increase in both recent and lifetime use of Emerging Psychoactive Substances with hallucinogenic properties.
- From 2007 onwards, seizure and arrest data from the IDDR have increased for tryptamines and hallucinogens.
- The NDSHS reports an increase in the number of individuals approving the use of hallucinogens from 2007 to 2010.
- No significant differences in mental health disorder prevalence when comparing recent vs. non-recent LSD users.

### INTRODUCTION

Lysergic acid diethylamide (LSD) is a semi-synthetic psychedelic drug of the ergoline family (Nichols, 2004), first produced in 1938 (Hoffman, 1980). Mass production as a psychiatric drug began in 1947 and is commonly associated with social and cultural development during the 1960s. Although currently, LSD is not as popular and wide spread as its peak in the 1960s it is still considered one of the main illicit drugs used in Australia.

Users of LSD report various psychedelic effects such as altered thinking processes, hallucinations, altered sense of time and synaesthesia. Unlike other illicit drugs which for the most part are classed as stimulants, LSD is part of the hallucinogen class (see Nichols, 2004). As a result, LSD does not produce the compulsive drug use patterns of other psychostimulants such as methamphetamines, ecstasy and cocaine (Hyman, Malenka & Nestler, 2006) making it quite a unique drug in a recreational context (Gurreiro, Carmo, Silva, Navarro & Gois, 2011).

Compared to the US and the UK, the use of LSD and other hallucinogens in Australia is substantially more prevalent. Just over one percent (1.4%) of Australians in 2010 reported taking hallucinogens in the last 12 months which is a significant increase from 0.9% in 2007 (AIHW, 2008, 2011). Comparatively only 0.3% of England and Wales report using LSD in the past 12 months (Home Office, 2012) and 0.4% reported taking hallucinogens in the US in the last month (SAMHSA, 2012).

According to the Illicit Drug Data Report (Australian Crime Commission, 2013) the major embarkation point for tryptamine importations in the 2011-2012 period was The Netherlands (73.9% of all detections) with other prominent embarkations being Canada, Spain, Austria and the US. It is unknown how much domestically produced LSD contributes to the market in Australia.

Since the 2005-2006 period New South Wales (NSW) has accounted for the greatest proportion of national hallucinogen seizures by number and until the 2011-2012 period accounted for the greatest proportion of seizures by weight (Australian Crime Commission, 2013). Therefore it is important to examine the use of LSD in Australia with specific focus on NSW. This is the primary focus of the current bulletin, primarily looking at data from the Ecstasy and Related Drugs Reporting System.

## METHOD

Between April and July of 2013, 686 people were recruited from the capital city of each state and territory of Australia (100 participants in NSW) for the Ecstasy and Related Drugs Reporting System (EDRS). Participants were recruited through street press advertising, metropolitan magazines, social media, websites and word of mouth.

The interviews conducted were face-to-face and conducted in a public location. Written informed consent was obtained prior to the interview and participation was voluntary and confidential. Participants were reimbursed for their time and expenses.

Eligibility criteria required participants to be regular ecstasy or other psychostimulant users (i.e. at least 6 times in the last 6 months), residents of their respective capital city in the 12 months prior to the interview and be 17 years of age or above.

Data was analysed using IBM SPSS statistics, version 21.

## RESULTS

### Recent Use of LSD

Figure 1 shows the recent use (use in the 6 months prior to the interview) of LSD both nationally and in NSW for regular psychostimulant users (RPU) from 2003-2013. Although there has been a steady upward trend in the national data, there has been a significant increase in NSW from 2008-2013 ( $p < .001$ ).

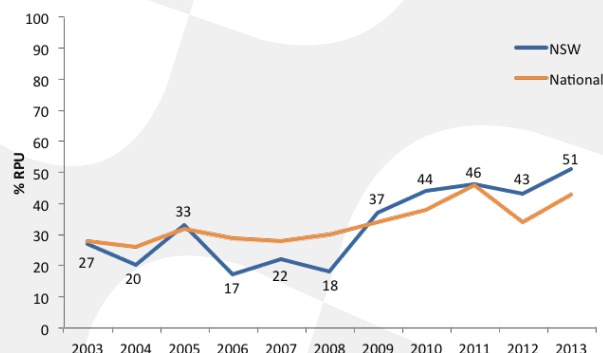
However, number of participants who had ever taken LSD (lifetime use) has remained stable since 2003 both nationally and in NSW. Approximately seven out of ten individuals (71%) of the 2013 sample reported ever taking LSD in their lifetime.

### LSD Use in NSW, 2013

In 2013, RPUs who used LSD, used an average of 1.5 tabs (blotted paper doses) per session and when asked the amount most used in a session, the average was

2 tabs. LSD users spent most of their time intoxicated: at a friend's house (14%), outdoors (11%) or in a public place such as on a street or in a park (7%). This is in stark contrast to the most widely used psychostimulant by this sample, ecstasy, which was used mostly at nightclubs (51%), live music events (13%) or at private parties (9%).

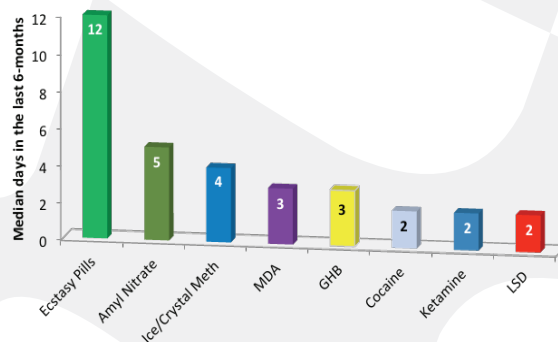
**Figure 1: Recent use of LSD by RPUs in NSW and nationally from 2003-2013.**



Source: EDRS participant interviews

As can be seen in figure 2, LSD use in 2013 for RPUs was low comparable to other drugs such as ecstasy, crystal methamphetamine and amyl nitrate. This was even more so compared to the most widely used substances; over the 6 months prior to being interviewed, LSD was used on a median of 2 days, which was quite low compared to tobacco (72 days), cannabis (40 days), and alcohol (42.5 days).

**Figure 2: Median number of days used each notable drug in the past 6 months, NSW, 2013.**



Source: EDRS participant interviews

Since 2007 there have been no differences in the median number of days RPUs have used LSD in the 6 months prior to completing the survey. However there has been a significant decrease in the mean age of first use from 19.8 years of age in 2007 to 18.8 years in 2013 ( $p < .05$ ).

## Market Trends in NSW

Since 2008 the number of RPUs who answered questions on purity rose from 10% to 46% in 2013 and the same sharp trend was shown for availability (12% to 51% in 2013).

In 2013, 63% of commenters reported LSD as easy or very easy to obtain and only 5% of commenters reported LSD to have a low purity. These statistics have not changed since 2008.

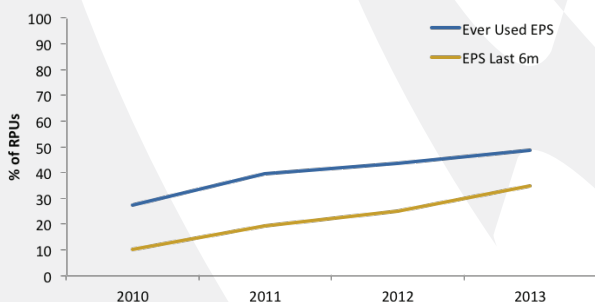
The price for a tab of LSD in NSW was \$20 in 2013 which has remained stable for the past 10 years.

When asked about source and source location of their last LSD purchase, 50% of commenters reported purchasing from friends and 38% reported purchasing at an agreed public location.

## Emerging Psychoactive Substance Use

In 2010, the EDRS began reporting on the use of Emerging Psychoactive Substances (EPS), substances which mimic the effects of the most common illicit drugs but are chemically different and have slightly different effects on the body (Smith, Williams & Shaikh, 2013). Figure 3 shows the lifetime and recent use of EPS since 2010, specifically psychedelic EPS that mimic the hallucinogenic properties of LSD. Across the four years there has been a significant increase in both the number of people reporting ever using a psychedelic EPS ( $p < .01$ ) and the number of people reporting taking an EPS in the 6 months prior to being interviewed ( $p < .001$ ).

**Figure 3: Lifetime and recent use of hallucinogenic EPS\* in NSW from 2010-2013.**



Source: EDRS participant interviews

\*Hallucinogenic EPS include 2C-I, 2C-B, DMT and DXM.

## OTHER INDICATIVE DATA

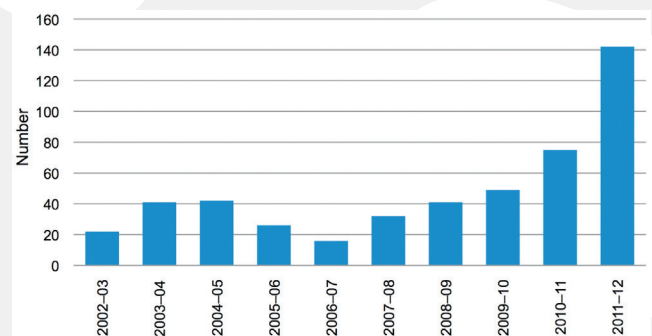
### Illicit Drug Data Reports

The Australian Crime Commission releases an annual data report on the Australian illicit drug market and takes data from sources including law enforcement,

health and academia. Specifically, the 2011-2012 report (Australian Crime Commission, 2013) provides data on border detections and drug seizures and arrests in Australia which were related to LSD.

Figure 4 shows the number of tryptamine detections at the Australian border. Tryptamines are a class of psychedelics of which LSD has been grouped. The number of border seizures from the 2011-2012 period has rose substantially since 2006-2007.

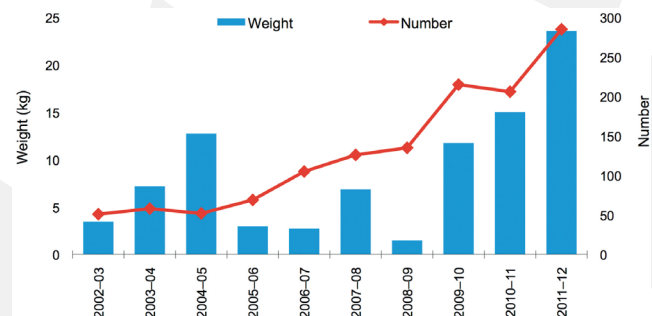
**Figure 4: Number of tryptamine detections at the Australian border, 2002-03 to 2011-12**



Source: Australian Customs and Border Protection Service

Figure 5 shows similar data with hallucinogen seizures by weight and number in Australia. Similar to border detections, there is a dramatic increase in the number of seizures from the 2008-2009 period to 2011-2012.

**Figure 5: National hallucinogen seizures, by weight and number, 2002-03 to 2011-12**



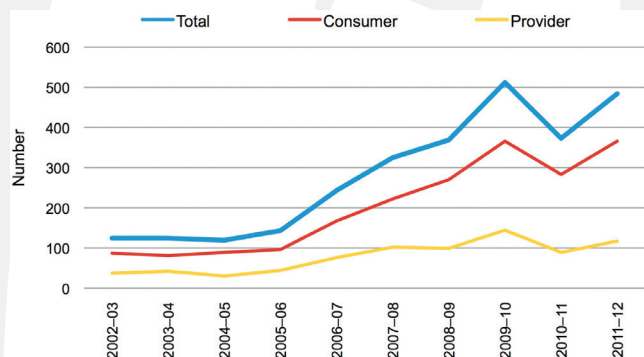
Source: Australian Customs and Border Protection Service

Finally, in relation to possession arrests, for both providers (dealers) and consumers (users), there has once again been a notable increase in the number of arrests from 2005-2006 up until 2009-2010 which has fluctuated until 2011-2012 as shown in figure 6.

In summary, the data from these sources suggest that since the 2005-2006 period, more tryptamines (including LSD) are being illegally imported and

the hallucinogen market in Australia has grown substantially.

**Figure 6: Number of national hallucinogen arrests, 2002–03 to 2011–12**



Source: Australian Crime Commission

### National Drug Strategy Household Survey (NDSHS)

The NDSHS is a report released every 3 years by the Australian Institute of Health and Welfare which provides information on drug use in the general population as well as providing comments on community awareness and attitudes of licit and illicit drugs.

Participants of the NDSHS were asked whether they approve of regular use of specific drugs and which drug they consider the ‘most serious concern for the community’. In relation to hallucinogens, 2.4% of individuals approved their regular use in 2010 which was a significant increase from 1.7% in 2007. The approval rating in 2010 was most prominent for individuals aged 18-29, with 4.9% of this age category approving regular hallucinogen use.

Additionally, there was a significant increase in the percentage of people who considered hallucinogens the ‘drugs of most concern in the community’ from 0.5% in 2007 to 0.9% in 2010. Note that these questions regard the attitudes of the general population and not specifically the attitudes of hallucinogen users.

When comparing the approval rating of recent and non-recent users, 35.8% people who had used hallucinogens in the 12 months prior to completing the survey approved of its regular use compared to only 1.8% of non-regular users.

### Mental Health Issues for LSD Users

Analysis of the national EDRS 2013 data indicates no major differences in mental health disorder prevalence between recent LSD users and all other respondents. As shown in table 1, recent LSD users report slightly

lower mental health problems however this was not significant ( $p > .05$ ).

**Table 1: Percentage of recent LSD users and all other RPUs who self-report having any mental health problem and specifically depression, anxiety and paranoia, nationally.**

	Recent LSD users	Other RPUs
Any MH problem (%)	12.2	17.9
Depression (%)	8.6	11.5
Anxiety (%)	7.7	11.4
Paranoia (%)	1.6	2.2

Source: EDRS participant interviews

The Kessler Psychological Distress Scale (K10) is a set of 10 questions asking about emotional states and provides a simple measure of psychological distress (Kessler et al., 2002; Andrews & Slade, 2001). Raw scores are classed into four categories to describe degree of distress (AIHW, 2011). As can be seen in table 2, there were no major differences in K10 severity across recent LSD users and other RPUs ( $p > .05$ ). However a slightly higher proportion of recent LSD users were classified as having very high severity, nonetheless this was not significant ( $p > .05$ ).

**Table 2: Percentage of recent LSD users and all other RPUs who score across four separate K10 severity groups, nationally.**

K10 severity	Recent LSD users	Other RPUs
Low (%)	32.8	36.9
Moderate (%)	34.3	32.6
High (%)	22.6	24.6
Very High (%)	10.2	5.9

Source: EDRS participant interviews

## DISCUSSION:

The purpose of the current bulletin was to look at LSD usage trends in a sentinel sample of RPUs for NSW. Analysis of the data shows a significant increase in the number of individuals reporting recent use (use in the 6 months prior to taking the survey) from 2008-2013. Importantly, there were no significant changes over the same period in the mean number of days that individuals used LSD in the previous 6 months or the number of individuals who reported lifetime use of LSD. Therefore the increase in LSD use reflects a greater proportion of people using LSD recently; however it does not necessarily reflect more people trying LSD for the first time or people showing more frequent patterns of LSD use compared to previous years.

Considering the data sources of the current bulletin, there are three possible explanations for significant increase in recent usage.

### Increase in the hallucinogen market in Australia

The Illicit Drug Data Report (2011-2012) reports a significant increase in the number of border tryptamine detections and hallucinogen seizures and arrests since the 2005-2006 period. Thus it may be the case that hallucinogens are becoming more available or at least more prevalent and given that NSW accounts for most of the seizures by number this may explain why NSW has seen an increase in recent usage. However according to EDRS data in NSW there have been no reported changes in the price, purity or availability of LSD since 2008. One possible reason for this may be that EDRS questions on availability are largely subjective and as new individuals enter the LSD market, these users may not be sensitive with respect to year to year changes in LSD availability. Therefore the LSD market may still be increasing however given the nature of EDRS interview questions, this may not be captured in the sample of RPUs.

### Increase in Purchasing Emerging Psychoactive Substances

In 2010, the EDRS began reporting the use of EPS; since this point there has been a significant increase in the number of individuals who reported recent and lifetime use of EPS, specifically psychedelic EPS that mimic the effects of LSD. Although each year the scope of EPS asked about has increased, the analysis conducted involved only 2C-I, 2C-B, DMT and DXM as these substances have been consistently asked across all four years.

When answering questions on drug use patterns, EDRS participants are asked to report on substances they thought they purchased, not necessarily what substances they actually received. Thus RPUs may be unknowingly purchasing EPS when they have intended to purchase LSD. Coincidentally the increase in LSD use is mirrored by the increase in EPS use.

### Acceptance by the General Community

The National Drug Strategy Household Survey (NDSHS) reports an increase in the percentage of individuals who consider regular LSD use acceptable from 2007 to 2010. Although this question is not asked in the EDRS this change in perspective may be yet another contributing factor to the increase in recent use of LSD from 2008-2010.

The next NDSHS report will be released in 2014, disseminating data for the year of 2013. It is unclear whether this significant increase in acceptance will continue to 2013, especially after the recent media focus on 'synthetic-LSD', and the issues associated with these emerging psychoactive substances such as the recent death in NSW after consuming 25I-NBOMe. It is worthy to note that recent hallucinogen users are much more likely to rate LSD as acceptable for regular use and thus RPUs may be resistant to such media influences.

### Issues Surrounding an Increase in LSD Use

When comparing recent LSD users versus all other RPUs there were no differences in self-reported mental health disorder prevalence or severity scores on the Kessler Psychological Distress Scale. In most cases individuals recently using LSD actually reported less mental health disorders and lower severity scores on the K10. As mentioned previously, LSD use does not produce the same compulsive drug use patterns as other psychostimulants such as methamphetamine, ecstasy, and cocaine (Hyman, Malenka & Nestler, 2006). These drugs act on the mesolimbic dopamine system, motivating individuals to continue use of the drug (Badiani, Belin, Epstein, Calu & Shaham, 2011).

Further, when looking at usage patterns from 2013, RPUs who used LSD recently only used it a median of 2 days in a 6 month period which is in stark contrast to drugs such as alcohol, tobacco, cannabis, ecstasy and crystal methamphetamine, all of which are associated with mental and physical health concerns (Agrawal, Budney & Lynskey, 2012; Wu, Ringwalt, Weiss & Blazer, 2009; Nasirzadeh, Eslami, Sharifirad & Hasanzadeh, 2013). It may be that due to the nature of LSD as a recreational drug, people simply do not take enough to promote the development of problems that are more common in other drug use. Although this isn't a problem currently (as recent users do not show signs of increased frequency of use), it may be in the future if frequency of use increases.

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## Suggested citation

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