



European Monitoring Centre
for Drugs and Drug Addiction

Appendix 2 to Annex 1 (Technical report on mephedrone):

**MEPHEDRONE: ADDITIONAL STUDIES
OVERVIEW OF PREVALENCE, USE PATTERNS, EFFECTS**

EMCDDA, July 2010

Note: Parts of this report contain data or research which are unpublished or in press.

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Introduction

This annex includes a summary of additional material collected in the course of the risk assessment on mephedrone that has not been (or only partially been) incorporated in the Technical Report. Six reports are presented, three from the UK and one each from France, the Netherlands and Slovenia. Two studies came as reports from the REITOX network of national focal points, two are as yet unpublished academic studies, and two are published as research reports. These reports provide additional insight into mephedrone's prevalence, patterns of use and effects. In terms of structure, key findings from individual studies and reports are presented first in this annex, then results and implications summarised under the main topics of individual, public health and social risks ⁽¹⁾.

1) Internet survey with clubbers (UK)

During the Autumn of 2009, an on line cross sectional survey was undertaken amongst readers of a popular UK dance music publication called MixMag. The following results are based on an analysis of a subset of 2295 UK responses.

41.7% of the survey sample had used mephedrone at some point in their lives. Mephedrone came sixth in the list of any drug used in the previous month. It came in fourth place if alcohol and tobacco are removed, with a third of the sample having used it – see below.

	Ever used (percentage)	Used last year (percentage)	Used in last month
CANNABIS ANY	93	70.0	54.4
Ecstasy ANY	91	80	53.1
Cocaine (powder)	86.7	83.1	47.4
Mephedrone	41.7	37.3	33.6
Amphetamine (speed/base)	72.0	30.1	14.7

Mephedrone

900 users reported consumption of mephedrone in the last 12 months. In terms of route of administration, 70% commonly snort it, 30% take it orally. 14.5% reported using at least weekly, whilst 44% used once every 3 months. When asked what amount they used in an average session, just over a quarter of respondents (28%) used ¼ gm or less, 50% used between ½-1gm with 8% using more than 2gm. The reported experiences of users after taking mephedrone are summarized below:

(1) Prepared by Jane Mounteney, EMCDDA

	Often Always/nearly always	Never
Excessive sweating	22.9	32.9
Increase sex drive	22	40.3
Headache	12	48.8
Palpitations	10.4	57.0
Nausea	7.2	62.7
Cold blue fingers	3.3	84.6

Respondents were asked how mephedrone compared with cocaine. 65% said it gave a longer high and 55% a better high than cocaine. 55% of respondents said it was less addictive and 25% reported mephedrone has 'more risks' than cocaine.

Source: Brief summary of the 2009/10 Mixmag survey for the EMCDDA Annual report (Winstock, A)

2) Focus groups with school children (UK)

As part of a larger PhD study on drug education in Northern Ireland, focus groups were conducted with 154 pupils (aged 14-15) selected from three post primary schools in May 2010. Individual interviews with six teachers and youth workers with the responsibility for the provision of drug education in schools were also undertaken. The sample was drawn from Belfast and Derry, from areas characterized by deprivation, drug use and paramilitary activity.

All of the pupils reported having heard of mephedrone, most commonly known as 'magic' in Belfast and 'monkey madness' in Derry. Roughly 40% of the young people admitted trying mephedrone at least once and approximately 70% stated that their friends had tried or used mephedrone. Males reported highest levels of personal use/ friends use and those who smoked cannabis were more likely to have used mephedrone. The most common method of use was snorting. The most common setting was at a party or friends house and its use was usually coupled with alcohol use. Around 80% of pupils reported knowing where to buy mephedrone and the most customary method of purchase was off friends or a dealer. The pupils suggested that mephedrone was more easily accessible than cannabis at present but they purported that they were more afraid of paramilitary violence if caught with mephedrone.

None of the pupils who participated in the study were aware of the contents of mephedrone. The majority of young people received their information concerning mephedrone from their friends and the media. There was some confusion over the difference between mephedrone and methadone and whether 'regular' plant food contains mephedrone.

Source: Meehan, C. Doctoral study on adolescent drug taking in Northern Ireland. University of Ulster. Unpublished

3) Focus groups with mephedrone users (UK)

A 2009 study from Middlesbrough UK reports on three focus groups with a total of 10 mephedrone users, nine males and one female. All participants were poly-drug users, and were mainly users of three recreational drugs: cannabis, alcohol and amphetamine. Most participants also mentioned being users of cocaine and ecstasy in the past. 8 members were in their late teens to mid 20s, largely unemployed, and generally reported using mephedrone and other recreational drugs while in nightclubs and parties. Two members were in their 40's/50's and were long-term dedicated users of hallucinogens (psychonauts).

Awareness and knowledge

Most participants had become aware of mephedrone during 2009 through coverage in the mass media and on the internet. However, few knew anything about the chemical nature and origins of mephedrone. Six participants reported obtaining their supplies of mephedrone from drug dealers (who sold other drugs such as amphetamine, cocaine and ecstasy), or from friends. Four participants mainly obtained their supplies from the internet.

Participants reported that mephedrone was mainly sold in gram-bags, at the price of £10 to £15 per gram/bag - typically £10 when purchased from the internet, and £15 when bought from drug dealers. Most participants also stated that given that mephedrone was generally high-purity and that several doses could be had from one gram/bag, its price was fairly cheap, particularly when compared with the price of standard deals of other popular drugs – notably cocaine (£25-£40 per gram) or skunk-cannabis (£20-£30 for an 'eighth' – typically about 2.5 grams).

Prevalence and use

Asked about how common mephedrone use was in Middlesbrough, the clear consensus was that "everyone is doing it" – presumably meaning most or all of the local recreational drug users and/or clubbers. Though users appeared to be largely young adults (16-29s), comments by participants suggested that the age range of local mephedrone users stretched from the early teens to the late 50s, with more male than female users.

The reasons given for using mephedrone were similar to those given by users of recreational drugs in other research. In short, the reasons for starting to use mephedrone included curiosity, liking the effects of drugs, and having nothing else to do. The reasons for continuing to use mephedrone included pleasure (wanting to repeat a desirable fun experience), and developing a habit (craving and dependence). The main settings of use were nightclubs, parties and people's homes.

Mephedrone powder was usually sniffed or swallowed. Sniffing mainly took the forms of 'keying it': sticking a key into the bag of powder, piling up some powder on the thin end of the key, and then holding the key under a nostril and sniffing vigorously. Swallowing took one of two forms: 'bombing' (wrapping a dose of powder in a paper wrap) or drinking (mixing the powder into a beverage, and drinking it quickly). Many participants, reported switching from sniffing to swallowing mephedrone, mainly because of its painful effects on the nasal membranes.

Many participants stated that when they first tried mephedrone it was effective in fairly small doses:– equivalent to about 50 to 75 mg. But with regular use – even within the first session – the amounts used soon escalated. All participants began as experimental occasional users of mephedrone, but most had quickly progressed to regular recreational use, with weekend use being the norm. However, two reported that they had been using on a near daily basis for the

past six weeks. In addition, some participants reported having friends and associates who had become daily users. The most common drugs used in the same session as mephedrone were alcohol and skunk-cannabis – with some participants mentioning ecstasy and ketamine.

Effects of mephedrone

The initial physical effects of mephedrone were related to methods of administration. Most participants reported nose burns and nose-bleeds when it was sniffed. As the effects ‘came on’, physical effects were the most common, along with ‘head rushes’. These physical effects often continued into the main stage of effects, and included fully dilated pupils, rapid eye-movements, blurred vision, dry mouth, hot flushes, fast/erratic heart-beats, and muscular tension in the face and limbs – including trismus and bruxism (jaw-clenching and teeth-grinding). These are all common effects of the amphetamine group of drugs, both stimulant and hallucinogenic. One sexual effect was reported by most participants: shrunken penis and testicles.

Mental effects. The mental effects were reported by most participants to start with the rapid onset of ‘head rushes’, similar to the onset of the effects of ecstasy (MDMA etc.). A number of participants mentioned trips or hallucinations. But the main effects of mephedrone were reported to be intense feelings of euphoria and boundless energy, similar to the effects produced by cocaine, speed and ecstasy: Over half of participants also mentioned ecstasy-like feelings of friendliness and enhanced empathy.

Several participants commented that they were surprised at how intense and pleasant the effects of mephedrone were, and that the effects were clearly distinguishable from those of other recreational drugs. There was a general consensus that the effects of mephedrone were similar to the effects of ecstasy and cocaine: “the effects are in the middle, between E and coke” and half of participants explicitly stated that mephedrone’s effects were superior to those of cocaine and ecstasy.

Consequences of mephedrone use

Though most participants had become regular users of mephedrone, none explicitly indicated that they felt dependent on it or that they had become daily users. Even so, though withdrawal symptoms were not reported, craving and tolerance were clearly evident in the experiences of most participants. In addition, about half of participants stated that they knew several people who had developed a mephedrone ‘habit’ – as evidenced by consumption factors like daily use and heavy use; by psychological indicators like craving and tolerance; and by behavioural indicators like taking mephedrone to the exclusion of other activities, continuing regular use despite health problems like skin rashes.

The main damage to health reported by most participants included nose-bleeds (when mephedrone was sniffed), though some also mentioned skin rashes. Around half of participants also reported experiencing amnesia about sessions of mephedrone use. Given that all participants had been using mephedrone for between one and three months only, it is perhaps to be expected that more serious health problems associated with regular and long-term drug use were hardly mentioned.

Source: Newcombe, R. Mephedrone. The use of mephedrone in Middlesborough. Lifeline publications. December 2009.

4) Pill testing and interviews with mephedrone consumers (Netherlands)

The Dutch Drug Information and Monitoring System (DIMS) analysed 12,331 ecstasy tablets from individual consumers during the period 2008-2009. In addition, information was gathered on the acute subjective effects of mephedrone from interviews with 70 regular drug consumers (mainly ecstasy users) between June 2009 until December 2009.

A sharp rise of mephedrone in ecstasy tablets was detected during 2009. DIMS received 995 mephedrone tablets in 2009 (11.5% of total).

60 users indicated that they anticipated effects of ecstasy, the rest were already acquainted with mephedrone. The different reported effects are summarized in the table below. The most frequently reported emotional effects were euphoria, improved mood and craving (often reported as "redosing" after a short period) and the most frequently described somatic effects were increased energy and accelerated heartbeat. Most users experienced the overall mephedrone effects as enjoyable and were considering using the substance again if the opportunity arose.

Most frequently reported acute subjective effects by 70 drug consumers that have tried mephedrone tablets.

Emotional (n)	Somatic (n)
Increased alertness, more focused (28)	Increased energy, hyperactivity (56)
Euphoria, excitement, improved mood (63)	Dizziness (17)
Urge to talk, openness in communication (51)	Distorted vision, restless eye movements (33)
Craving for the drug (61)	Hyperthermia, warm all over (24)
Depressed, feeling down or sad (11)	Nausea, feeling sick (20)
Anxiety, panicky or nervous (19)	Accelerated heart/heartbeat, tachycardia (44)
	Loss of appetite (29)
	Bruxism, jaw clenching (26)
	Disturbed sleep-pattern (33)
	Low energy, exhaustion, lethargy (23)
<i>Overall experience: pleasant, enjoyable</i>	58
<i>Overall experience: unpleasant, undesirable</i>	12

Source: Raymond Niesink; Tibor Brunt. Journal article submitted for publication.

5) TREND – report from national early warning system (France)

The French TREND system results are based on toxicological analysis, ethnographic research and interviews with drug users.

Mephedrone was first reported by the Metz TREND site at the end of 2008. In the second half of 2009 ethnographic reports of mephedrone came in from the Parisian gay milieu, where it was being used as an alternative to other psychotropics for its ecstasy-like effects. However, up until March 2010 mephedrone was relatively unknown on the French techno scene.

April 2010 saw the first media coverage in France of the UK situation regarding mephedrone. There followed reports of increased curiosity about legal stimulants amongst party goers and members of the Parisian gay scene. This remains a localised and limited phenomenon according to reports so far.

Information was collected from 7 users presenting mephedrone powder for testing. Three users presented the powder as MDMA, two as amphetamine, one as 'MPK' and only one as mephedrone. All users were aged between 25 and 30 and all described the drug's effects as ecstasy-like or amphetamine-like. In terms of route of use, four users sniffed the drug and three swallowed. Quantities presented varied between 0,1gm and 0,25gm. The mephedrone was taken in combination with alcohol (7 cases), cannabis (7), cocaine (3) and heroin (1).

Only one user described unwanted side-effects – cramps when the mephedrone was taken along with alcohol, cannabis and cocaine.

Source: Lahaie E & Cadet-Tairou A. Mephedrone et autres nouveaux stimulants de synthese en circulation. Note d'information Sintes. June 2010

6) Outreach and internet monitoring (Slovenia)

A report from the Slovenian organisation DrogArt summarises findings on mephedrone use and users between 2008 and 2010. Sources used include: outreach work at dance events and nightclubs throughout Slovenia; an internet forum with more than 6.000 users; and internet, telephone and personal counselling. August 2008 saw the first reports of mephedrone on the internet forum. In the following months the number of reports increased. It appears consumption really started to spread at the end of 2008 and the beginning of 2009 in the population of Slovenian partygoers.

Main reasons for mephedrone use

The primary reason given for mephedrone use was the absence of MDMA and/or bad quality of cocaine and amphetamine. For some users mephedrone has become a drug of choice, because they like the effect, but many users report that they stopped using mephedrone over the time. The main reasons for ceasing the use of mephedrone are:

- people get bored of it;
- users experience more and more negative side effects;
- tolerance increases;
- user concern about signs of psychological addiction;
- worry at amount of money spent on mephedrone.

Most users use mephedrone orally (wrapped in a cigarette rolling paper) or nasally. More recently, a few anecdotal reports have been received about mephedrone injecting among IV heroin users.

Effects of mephedrone, based on user reports

All of the users that gradually increased their use, speak of a "honeymoon period". During the first few uses they report very pleasant effects with practically no unwanted side effects. With increasing the frequency of use and the amounts of the substance, users report less and less pleasant effects and more and more unwanted side effects. A lot of users report this as a main reason to stop using mephedrone. Reported negative acute effects included:

- Irritation of nasal and pharyngeal mucosa.
- Unintended, long binges that can last for days.
- Very strong craving.
- Tachicardia.
- Retrograde amnesia, especially in combination with alcohol.
- Unpleasant skin smell after use.

Negative chronic effects

- Dry mucosa, infections of genitals.
- Skin rash.
- Psychical dependency.
- Tolerance for the effects of Mephedrone and also other substances.
- Difficulties with concentration and memory.
- Poor vision.
- Numbing of the distal parts of the limbs.

Craving and psychological dependence

Many users consider craving to be the main problem with mephedrone. Even the users with a lot of experience with other substances (cocaine, methamphetamine, speed...) emphasized that they have never experience such craving with any other substances and that craving was the main reason they used more mephedrone that they planned.

Users mostly buy mephedrone from their dealer, even though it is more expensive and of lesser purity than if ordered over the internet. The main reason for that are that they trust their dealer more than some unknown internet vendors and that they don't want to expose their data over the internet.

Source: Pas, M. Mephedrone in Slovenia. DrogArt report. May 2010.

Summary

INDIVIDUAL HEALTH RISKS

Similarities and differences to other reference substances

Reports suggest mephedrone is on occasion being used as an alternative to other illegal stimulants. Poor availability or low quality of other stimulants, particularly cocaine, amphetamine and ecstasy/MDMA are among the reasons given by users for starting and continuing to use mephedrone (SI,UK).

Route of administration

Route of administrations used for mephedrone are reported as snorting/sniffing and swallowing. In addition to health risks, concerns were raised that school children were experimenting with and ritualising the ritual of snorting the drug, a route of administration otherwise associated with illegal substances such as amphetamine and cocaine. As such there is a potential role for mephedrone to influence new legal snorting practices amongst young people. Anecdotal reports (SI,UK) mention a small number of heroin users injecting mephedrone.

Effects of mephedrone

Mephedrone users report on their overall positive experience of taking the drug, with effects having much in common with ecstasy and cocaine. Four of the above studies/reports (SI, NL, UK internet, UK focus group with users) identify negative short term effects related to consumption – these effects are listed in the table below, alongside the number of studies mentioning the problem. Palpitations were reported by mephedrone users in all four reports.

Negative effects of mephedrone	No. Of studies
• Palpitations x 4	4
• Craving x 3	3
• Sweating x 3	3
• Blurred vision x 3	3
• Nasal irritation x 2	2
• Amnesia x 2	2
• Nausea x 2	2
• Bruxism (jaw clenching) x 2	2
• Skin rash x 2	2

PUBLIC HEALTH RISKS

Extent, frequency & patterns of use

Mephedrone consumption has been identified in a range of sub populations. In addition to psychonauts (UK), mephedrone use has been identified in clubbing and party milieu (Fr, UK, NL, SI), amongst school pupils (UK) and gay men (Fr). There is some evidence to suggest rapid spread of mephedrone use, particularly in the UK, but also among clubbers in Slovenia. Use reported in France is described as rather localised and limited, whilst in the Netherlands, the study is confined to a group of primary ecstasy users. Whilst much of the evidence is linked to recreational use amongst clubbers, the UK samples also include unemployed users and young people from deprived communities in Northern Ireland.

In terms of frequency of use – the reports suggest recreational weekend/monthly use is a common pattern for those who try and choose to continue to use mephedrone. As such it is used in a similar way to ecstasy or cocaine in party and nightlife settings. Around 15% of the internet survey respondents reported using mephedrone at least weekly. A small number of users appear to progress to daily use.

Strong cravings for the substance is reported (NL,SI,UK) – stronger than otherwise experienced stimulant users are used to (SI) and this is cited a main reason for use of more mephedrone than intended and for longer periods than planned.

Prevalence

In the absence of epidemiological data on prevalence, user self reports from convenience samples in subgroups, place lifetime use of mephedrone at around 40% amongst UK clubbers responding to the internet survey (33% last month use), (20% amongst Scottish students) and 40% amongst the Northern Irish school children attending focus groups. On the other hand French TREND reports describe use as restricted to a small, primarily Parisian milieu.

Availability and quality of substance

Relatively easy availability, legality and high substance quality are all cited as factors in mephedrone's popularity. A majority of UK clubbers responding to the internet survey report mephedrone gave a longer and better high than cocaine.

Availability of information

Media reports on mephedrone appear to have played a role in stimulating curiosity and encouraging spread to a wider user population. The media is also cited as a primary source of (often inaccurate) information about the drug. With the exception of psychonauts, there seems to be a low level of awareness of the 'content' or chemical make up of mephedrone. There are reports of confusion with methadone (UK), and the focus groups with school pupils highlighted some curiosity as to whether regular plant food contained mephedrone. Information from pill/powder testing (NL,FR) indicates a majority of these users did not realise the substances they were using were mephedrone - before testing results were provided.

Characteristics of users

Mephedrone users are reported to be primarily male (as with most illicit substances) and aged between their late teens and late twenties, although both younger and older users are identified in UK studies. The majority are recreational polydrug users, with alcohol, cannabis and often cocaine, amphetamine and ecstasy in their drug using repertoire. The evidence suggests mephedrone has some appeal for a range of recreational stimulant users: specifically, UK respondents in the clubbers survey also used cocaine/ecstasy, the Dutch respondents were using ecstasy, and the Middlesbrough users were using cannabis and amphetamine.

Conditions under which substance obtained

Where information on purchase of mephedrone is available (UK and Slovenia) it appears most common to buy the drug from a dealer or friends. Some users reported purchasing from the internet - and that this tended to be higher quality mephedrone, but for some users the risk of internet data security was a deterrent (SI).

SOCIAL RISKS

There are media and anecdotal reports of links between mephedrone and violence in Northern Ireland where sellers of the drug appear to have become caught up with the paramilitary activism and informal social control of the drug market. Reports suggest punishment beatings/ shootings have been on the increase regarding the sale and use of mephedrone. The focus group school children suggested that mephedrone was more easily accessible than cannabis at present but they purported that they were more afraid of paramilitary violence if caught with mephedrone.