



EMCDDA PAPERS

Exploring methamphetamine trends in Europe

Contents: Background and methods (p. 2) | Chemistry and pharmacology (p. 2) | International context (p. 3) | History (p. 3) | Production and precursors (p. 3) | Trafficking and availability (p. 4) | Europe as a transit territory (p. 5) | Regional patterns (p. 5) | Methamphetamine-related harms (p. 6) | Health and social responses (p. 6) | Information and monitoring gaps (p. 7) | Conclusion (p. 7) | References (p. 8)

Abstract: Concerns about the availability and use of methamphetamine in Europe have been growing for some time. Historically, the use of methamphetamine has been confined largely to the Czech Republic and Slovakia; however, recent signs of the spread of methamphetamine linked to different European countries have sparked further investigation of this topic. The methodology used is based on the triangulation of data collected using a number of investigative approaches and from multiple sources. The findings summarised in this paper include insights into the chemistry of methamphetamine and the history of its use in Europe since the 1930s. Signs of increased involvement of organised crime groups in methamphetamine markets and possible scaling-up of production are noted. In some countries, there is evidence to suggest that methamphetamine use is increasing, while new injection trends have been detected among small groups of gay men in large cities (London, Paris). Worrying reports are emerging from south-east Europe that crystal methamphetamine smoking is a limited, but emerging, problem, with the possibility of spreading among vulnerable populations.

Negative consequences for physical and mental health are associated with the use of methamphetamine, which may also involve high levels of sexual risk-taking. Evidence exists for effective health and social responses, based on cognitive behavioural and contingency management approaches. The study notes that the knowledge available in Europe on the use of methamphetamine and the associated problems remains incomplete, and highlights information and research gaps. The report concludes that, although methamphetamine use is not a major phenomenon in Europe, even at a relatively low prevalence, it is a drug that has the potential to cause significant harm.

Keywords crystal methamphetamine
methamphetamine in Europe
drug production | drug seizures
health and social responses

Recommended citation: European Monitoring Centre for Drugs and Drug Addiction (2014), *Exploring methamphetamine trends in Europe*, EMCDDA Papers, Publications Office of the European Union, Luxembourg.

Background and methods

Concerns about the availability and use of methamphetamine ⁽¹⁾ in Europe have been growing for some time. Historically, the use of methamphetamine has been confined largely to the Czech Republic and Slovakia, while elsewhere in Europe amphetamine has dominated the market for illicit amphetamines ⁽²⁾. The relatively high prevalence levels of crystal methamphetamine smoking reported in the United States and south-east Asia, however, have heightened concern and vigilance about the potential spread of this trend in European countries. During 2012 and 2013, reports of increasing methamphetamine use arising from different European countries have sparked interest in further investigation of this topic. These indications included the reported use of methamphetamine among heroin injectors in Greece, reports of increasing use of crystal methamphetamine in a number of *Länder* in Germany, evidence from drug seizures and forensic examinations of a market change from amphetamine to methamphetamine in some Nordic countries, and concerns about methamphetamine injection among groups of gay men in the United Kingdom.

In response to these disparate European developments, in July 2013, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) launched a trendspotter study on methamphetamine in Europe, which culminated in an expert meeting held in Lisbon on 19–20 September 2013. The study aimed to increase the overall understanding of methamphetamine trends in Europe, with a specific focus on production and trafficking issues, prevalence and patterns of use, health and social harms, and responses to the problem.

The trendspotter methodology is based on the triangulation of data collected using a number of investigative approaches and from multiple sources. This methamphetamine study included the following:

- a comprehensive, but non-systematic, review of the international literature on methamphetamine;
- a review of national reports from Reitox national focal points;
- an expert opinion survey conducted among four professional drug-related networks — the Reitox network of national focal points, Europol's drugs network, a network of city-level drugs monitors and a panel of national experts; and
- facilitated group discussions and presentations from 15 national experts from 11 European countries ⁽³⁾, providing

insights from law enforcement, forensic science, pill testing, treatment, research and drug monitoring perspectives.

Chemistry and pharmacology

Methamphetamine belongs to the phenethylamine chemical family, many members of which possess stimulant properties.

Methamphetamine exists in two optical isomeric forms (enantiomers), *d*-methamphetamine and *l*-methamphetamine. Both the *d*- and *l*-enantiomers are psychoactive, having stimulant effects (Kuczenski et al., 1995; Mendelson et al., 2006). The *d*-enantiomer is more potent, and its effects last longer than those of the *l*-enantiomer. At high doses, the *l*-enantiomer is reported to produce an intoxication similar to that caused by the *d*-enantiomer, but its psychoactive effects are relatively short-lived and less desired by experienced injecting methamphetamine users (Mendelson et al., 2006). Medicinal products containing methamphetamine may be used to treat attention-deficit hyperactivity disorder and exogenous obesity (Food and Drug Administration, 2013a). The *l*-enantiomer is used in non-prescription nasal decongestant products in the United States (Food and Drug Administration, 2013b). Illicit methamphetamine encountered in Europe is normally found to be a mixture of the *d*- and *l*-enantiomers in equal proportions, known in chemistry as a racemic mixture. Methamphetamine may exist in two forms: base and salt. The pure base is a clear, colourless, volatile oil, which is insoluble in water and can be readily converted into methamphetamine hydrochloride (the most prominent salt form). The hydrochloride salt form is a crystalline solid, which is soluble in water. In powder methamphetamine, granulated crystals are mixed with other ingredients such as lactose, dextrose or caffeine. Large white or translucent crystals of methamphetamine hydrochloride, suitable for smoking, can be produced from a starting material that has a high concentration of methamphetamine (base or hydrochloride). This is often called 'ice' or 'crystal meth', because of its appearance. Methamphetamine hydrochloride may also be found as an ingredient of tablets sold as 'ecstasy'.

Powder methamphetamine found on the illicit drugs market is similar to powder amphetamine in many ways, including purity and appearance, and the two are often indistinguishable, to both users and dealers.

The method by which methamphetamine is administered depends on the form of the drug available. Powder methamphetamine tends to be administered in the same way as amphetamine powder, either inhaled intra-nasally (snorted) or dissolved and injected. Although smokable in this form, it is the larger crystals that are normally smoked, often in small

⁽¹⁾ This report relates to *N*-methylamphetamine (*N*-methyl-1-phenylpropan-2-amine), referred to as methamphetamine throughout the report.

⁽²⁾ 'Amphetamines' is the term used to describe amphetamine and methamphetamine together.

⁽³⁾ Cyprus, Czech Republic, Germany, Greece, Italy, Latvia, Lithuania, Netherlands, Norway, Turkey, United Kingdom.

glass pipes, but these may also be dissolved and injected or crushed and snorted.

The purity of methamphetamine depends to a large extent on the addition of cutting agents. Powder methamphetamine is more likely to contain adulterants and tends to be of lower purity than the crystal form of the drug. Adulteration of crystal methamphetamine, though rare, has been documented outside Europe.

International context

Methamphetamine was first synthesised in 1893 in Japan as a powder and later in the crystalline form (1918/19). Since then, the drug has been used in a variety of contexts. In the 1930s and 1940s, amphetamines-based medicines were widely prescribed and used. During the Second World War, troops from Japan, the United States, the United Kingdom and Germany, among other countries, were given amphetamines to stay awake for long periods of time. The spread of non-medical use of methamphetamine in the general public of these countries in the years that followed has been largely attributed to stocks of pills left over from the war. Between 1945 and 1955, the first methamphetamine epidemics were documented in the United States (Shrem and Halkitis, 2008) and Japan (National Institute of Mental Health, cited in Ahmad, 2003). Both countries experienced second epidemic waves — the United States during the 1960s and 1970s, and Japan during the late 1980s and early 1990s, the latter coinciding with a sharp increase in methamphetamine use in China, evidenced by increases in methamphetamine-related fatalities across the country.

In the mid-1990s, a third methamphetamine epidemic occurred in the United States and Japan, and, during this period, other countries in south-east and east Asia and Oceania, particularly Australia and Thailand, showed signs of peaking methamphetamine epidemics (McKetin et al., 2008). Since 2000, both South Africa (Pluddemann et al., 2013) and North Korea have experienced a rapid upsurge in methamphetamine use (Lankov and Kim, 2013). More recently, Iran has started to document increasing methamphetamine use among injecting drug users (Mehrjerdi and Noroozi, 2013).

In the global context, methamphetamine continues to be the most seized of the amphetamines, with reported worldwide seizures of 88 tonnes in 2011, an increase of 73 % compared with the previous year (UNODC, 2013). World methamphetamine production remains concentrated in North America (Mexico, United States) and the Asia-Pacific region (China, Indonesia, Malaysia, Thailand), close to the major consumer markets. Since the mid-2000s, however, large-scale

production has spread to new world regions, including South Africa, and more recently to Iran and west Africa, which may influence methamphetamine markets in Europe.

History

From the 1930s onwards, Europe saw extensive prescribing of amphetamines for a range of medical reasons, including weight loss, treatment of fatigue, depression and narcolepsy, chronic alcoholism, cerebral arteriosclerosis and hay fever. It was the recognition of the stimulant properties of these medicines that made their non-medical use attractive, for example among students. One of the earliest sources of epidemiological data comes from Sweden, where a 1938 survey reported that between 70 % and 80 % of students had ever used amphetamines pills. As mentioned above, stockpiles left over after the Second World War leaked onto the market in certain countries, and the 1960s saw another wave of amphetamines use in Europe. In the 1970s, countries began to outlaw unauthorised manufacture and sale of amphetamines, as amphetamine and methamphetamine became Schedule II drugs under the 1971 United Nations Convention on Psychotropic Substances. From the 1970s on, methamphetamine was eclipsed by amphetamine in most European countries, although increasingly it was overshadowed by heroin, which tended to dominate high-risk forms of use from the 1980s onwards.

In the 1970s and later, methamphetamine use was largely restricted to what is now the Czech Republic, though it appeared sporadically in the Swedish amphetamines market, and in recreational settings in some countries (e.g. the German dance scene). From around 2000, methamphetamine spread into the drug scenes in the Czech Republic and Slovakia, where it is now used by a high proportion of these countries' high-risk drug users.

Production and precursors

The scale of methamphetamine production in Europe appears to be limited when compared with the overall global figures (EMCDDA and Europol, 2013). In 2011, the United Nations Office on Drugs and Crime received 350 reports of dismantled methamphetamine production sites from European countries, most of these (328) reported by the Czech Republic. Europol has identified two main producer regions: one in central Europe, focused around the Czech Republic and neighbouring countries, Slovakia and Germany, and the other in the Baltic States, centred on Lithuania. Production in the Czech Republic is mainly in small-scale so-called kitchen laboratories, with the output destined primarily for distribution

within the country. Here, methamphetamine powder is known as 'pervitin', the name of an obsolete pharmaceutical product containing methamphetamine, which was made in the region. In the last two years, however, there have been more laboratories recorded with higher production capacity, and new players (Vietnamese organised crime groups) have become increasingly involved in the production of methamphetamine for export. Production in Lithuania tends to take place in medium-sized laboratories, which produce the drug 'on demand', for export to Nordic countries and the United Kingdom (EMCDDA and Europol, 2009). Six methamphetamine laboratories have been dismantled in Lithuania since 1997. Recent data on dismantled production sites indicate that methamphetamine has also been produced on a small scale in other parts of Europe, including Belgium, Bulgaria, Greece, Hungary, the Netherlands, Poland, Serbia and the United Kingdom.

In Europe, methamphetamine is produced using five main methods. Three of them (lithium/ammonia, hydrophosphorous acid/iodine, hydriodic acid/red phosphorus) are simple one-step chemical reactions using ephedrine or pseudoephedrine as the starting material. In the remaining two methods (the Leuckart method and the reductive amination method), 1-phenyl-2-propanone (benzyl methyl ketone, BMK) is used as a precursor. Methods based on ephedrine and pseudoephedrine are mainly used in Central Europe (Czech Republic, Germany, Poland, Slovakia), whereas production of methamphetamine from BMK is characteristic for Lithuania. Laboratories using both approaches have been identified in the Netherlands. Historically, methamphetamine precursors such as BMK were produced outside Europe, for example in China and Russia. In recent years, however, BMK has been increasingly produced within Europe, from pre-precursors including APAAN (alpha-phenylacetonitrile), a substance not covered by international precursor controls⁽⁴⁾. In addition, pseudoephedrine is extracted from over-the-counter pharmaceutical products available in a number of countries. Following the introduction of restrictions on the sale of medicines containing pseudoephedrine in the Czech Republic in 2009, an increase in imports of these medicines from neighbouring countries has been reported, mainly from Poland. A new production method has been reported from Serbia, where ephedrine and pseudoephedrine are produced from L-PAC (phenylacetyl carbinol). Use of this new pre-precursor may influence production methods in other countries, where ephedrine and pseudoephedrine are currently used as starting materials.

There is a need for continued vigilance with regard to changes in production, particularly the possibility of a switch to methamphetamine production in countries such as Bulgaria or Poland, where, historically, amphetamine has been produced. There are a number of reasons why this might occur. As methamphetamine production requires only basic equipment and rudimentary knowledge, the laboratories can be set up and taken down quickly in order to avoid detection, and a range of precursors and pre-precursors can be used (including readily available over-the-counter medicinal products).

Trafficking and availability

Insights into patterns and trends in illicit drug markets are provided by seizures data. Between 2006 and 2011, the number of methamphetamine seizures reported to the EMCDDA nearly tripled, while the quantities of seized methamphetamine increased sixfold. In 2011, almost 9 500 seizures, adding up to one tonne of the drug, were reported to the EMCDDA by 22 countries. The largest quantities of methamphetamine were seized in Turkey, followed by Norway, Lithuania, Sweden and Latvia. In recent years, the highest number of seizures has been reported by Sweden and Norway. Turkey first reported seizing methamphetamine in 2009, following the emergence of Iran as a producer country and the use of Turkey as a transit country for export of the drug to the Asia-Pacific region.

Methamphetamine produced in Lithuania is reportedly trafficked to Norway and Sweden, where it appears to have displaced amphetamine (EMCDDA, 2013a). Another intra-European trafficking route is located in Central Europe, where Vietnamese organised crime groups are reported to be increasingly involved in both the production and trafficking of methamphetamine. In a relatively new development, methamphetamine is being produced in the Czech Republic, and then exported to German markets in Bavaria and Saxony, as well as Austria and Scandinavian countries. Methamphetamine seizures in both the Czech Republic and Germany have been on the rise in recent years. Germany has seen an almost 10-fold increase between 2008 and 2012 in reported cases, and an almost 20-fold increase in quantities seized (in 2012, Germany reported 3 512 seizures amounting to 75.2 kg of methamphetamine). The increased number of seizures of methamphetamine in Germany have not been matched by signs of increased production of the drug in the country. The methamphetamine laboratories uncovered in Germany continue to be small-scale and remain in the range of 10–15 a year. Despite growing demand for methamphetamine in Germany, there are no signs of increased domestic production, with a stable low number of small-scale laboratories (between 10 and 15) dismantled

⁽⁴⁾ Since 2010, facilities converting APAAN to BMK have been dismantled in Belgium, Germany, the Netherlands and Poland. In all cases, the pre-precursor was shipped from China. As BMK is a precursor for both methamphetamine and amphetamine, the final substance to be produced is not known (EMCDDA, 2013b).

each year. A sizeable increase in the amount of methamphetamine seized was also reported by Greece: from around 1 kg in 2012 to over 14 kg in the first seven months of 2013. There continues to be great variation in national reports on methamphetamine price and purity.

Europe as a transit territory

Since the late 2000s, Europe has been used as a transit zone for methamphetamine produced outside Europe and destined for Asia-Pacific countries such as Australia, Indonesia, Japan, Malaysia and Thailand. In 2011, a joint operation between Bulgarian, Romanian and Turkish authorities resulted in the seizure of 55 kg of methamphetamine due to be smuggled to Japan. This new trend in trafficking appears to be linked to the recent emergence of new production sites located in West Africa (Gambia, Nigeria) and Iran, and some European countries (Belgium, France, United Kingdom) have reported increases in the numbers of seizures of the drug en route from Africa to Asia-Pacific countries. There is no information to suggest that methamphetamine produced in West Africa is destined for the European market. There is, however, evidence to suggest that some of the methamphetamine produced in Iran and trafficked through Turkey along well-established heroin routes is destined for the European market. In 2011 and 2012, Turkish law enforcement authorities identified attempts to deliver relatively small amounts of methamphetamine from Iran to Belgium and the United Kingdom. Other countries affected by the organised trafficking of methamphetamine from Turkey via land routes include Bulgaria, Greece and Romania. In addition, there have been some indications of possible small-scale methamphetamine production in Turkey (Ekici and Ozbay, 2013).

Regional patterns

In the context of the market for illicit stimulants in Europe, methamphetamine is a minor player. Of the estimated 1.7 million (1.3 %) young Europeans (aged 15–34) who have used amphetamines in the last year, the majority will have used amphetamine. Evidence from a pan-European multi-city wastewater analysis confirms the existence of regional patterns in the use of amphetamines, identifying higher concentrations of amphetamine in wastewater from cities in the Netherlands and Belgium, whereas methamphetamine levels were highest in Czech and Norwegian cities. Apart from the Czech Republic and Slovakia, very few countries have identified significant numbers of problem methamphetamine users. However, it is possible that, in some countries, problem amphetamine users are also interchangeably and sometimes unknowingly using methamphetamine (northern European

countries), and that primary opioid users are using methamphetamine as a secondary substance (e.g. Greece). A picture emerges of a number of distinct regional trends in methamphetamine use within Europe, each with its own characteristics and patterns of use, and these are summarised below.

For the Czech Republic and Slovakia, the use of domestically produced methamphetamine, locally known as pervitin, is well documented, and trends in use in the general population appear to be stable or declining. The most recent results from surveys on drug use show last-year prevalence for young people (aged 15–34) to be 1 % in the Czech Republic in 2011, with lifetime prevalence for the same group at 3 % in Slovakia in 2010. Lifetime prevalence for school students aged 15–16 years was reported at 2 % in the Czech Republic in 2011, down from a peak of 5.5 % in 1999, and at 3 % in Slovakia in 2010, down from just under 5 % in 2006. In these countries, methamphetamine is the drug most often reported by those seeking treatment for problems related to drug use, and it is worrying that both countries have reported an increase in the numbers entering treatment for methamphetamine-related problems in recent years. Only the Czech Republic has sufficient data to chart the longer-term trend in the numbers using methamphetamine in a high-risk fashion, which increased from 21 800 in 2002 to 30 700 in 2012.

Reports of increased use of crystal methamphetamine in Germany appear to be directly linked with the involvement of organised crime groups in the Czech Republic and sale in the border areas. Although large crystals have been seized in Germany, this form of the drug is used in similar ways to powder methamphetamine, and smoking is not a documented problem. The main users of the drug are young adults, who primarily sniff the drug. However, recent increases have been reported in the numbers entering treatment for methamphetamine problems and in deaths related to the drug in some German *Länder*.

In the north of Europe, methamphetamine use is highly interlinked with the older, more established amphetamine market, with signs of a shift towards increased supply and use of methamphetamine. As methamphetamine has accounted for more than half of the number of seizures of amphetamines in Norway in recent years, it is likely that a high proportion of the country's amphetamines users are using methamphetamine. The two drugs may be sold interchangeably, and it is difficult for users to distinguish the effects (Norwegian national focal point, 2012). A long-running Latvian cohort study of problem drug users has also observed an upward trend in the use of this drug (Centre of Health Economics, 2011), with an increase in reports of primary amphetamines users (mainly methamphetamine) from 42 % in 2007 to 53 % in 2010. The most recent data, however, indicate that the rise of methamphetamine has stalled, at least in

Norway. In addition, the number entering treatment in Norway for problems related to amphetamines has declined from 1 110 in 2010 to 710 in 2012.

In a number of countries in southern Europe, evidence of a fledgling trend in crystal methamphetamine smoking has been observed. Use of methamphetamine in crystal form, locally known as 'sisa' or 'shisha', has been reported from Greece since 2010, both by low-threshold and treatment services. The drug appears to be primarily smoked in glass pipes, though it can also be injected. According to the reports from methamphetamine users in Athens, the drug is mainly used by young drug users, groups of immigrants and heroin users. There are particular concerns that the economic crisis might affect and facilitate the spread of crystal methamphetamine smoking among vulnerable populations. Recently, new reports of crystal methamphetamine smoking (and related deaths) have also been received from Turkey and Cyprus.

There is some documentation on the use of methamphetamine by specific groups within the population, such as clubbers and gay men in Europe. Of recent concern are reports of the use of methamphetamine, including injection of the drug, among some groups of gay men, mainly in London — although also reported in Paris — in the context of so-called 'slamming' or 'chem-sex' parties. These parties can last several days and involve multiple sexual partners and the use of a cocktail of drugs, with injecting equipment often being shared and condoms not used (Kirby and Thornber-Dunwell, 2013). In this milieu, methamphetamine is generally used alongside mephedrone, gamma-hydroxybutyrate (GHB) and sildenafil. Although the extent of this type of drug use remains unclear, specialist lesbian, gay, bisexual and transgender drug services in London have reported increasing demand for treatment linked to problems associated with methamphetamine use by gay men.

| Methamphetamine-related harms

Most research on the health consequences of amphetamines use has been conducted in Australia and the United States, where crystal methamphetamine smoking is a major problem. Although the findings of these research efforts may sometimes be more specific to drug use patterns that are uncommon in Europe, in many instances they are applicable to users of powder amphetamines, including injectors.

Illicit use of amphetamines is associated with a range of negative consequences (Darke et al., 2008), including psychosis, cardiovascular and cerebrovascular problems, dependence, psychological and psychiatric problems, infectious diseases and death. The most serious

psychopathological harms associated with the use of amphetamines include psychosis, depression, suicidal behaviour, anxiety and violent behaviour (Darke et al., 2008). High levels of co-morbidity is a recognised problem among users seeking treatment.

The evidence from this data collection illustrates that a number of these problems have been identified in European studies of drug users. Expert reports of methamphetamine users in Athens, for example, emphasise problems associated with violence, psychosis, poor physical health and emaciation. In addition, in the Czech Republic, although the overall number of overdose deaths linked with methamphetamine is reported to be low, there are relatively high levels of accidents and suicides reported for high-risk users of this drug compared with the general population.

High levels of sexual risk-taking among users of amphetamines (both injectors and non-injectors) may contribute to an increased risk of contracting human immunodeficiency virus (HIV) and other sexually transmitted infections (Degenhardt et al., 2008). This is a public health concern for gay men participating in slamming parties, with experts reporting poor adherence to HIV medication and increased rates of hepatitis C virus reinfection among this group. Although the injection of drugs is generally on the decline across Europe, it is particularly worrying that this new phenomenon known as slamming is going against the trend.

| Health and social responses

Outside the Czech Republic and Slovakia, much of Europe's drug treatment provision has been developed in response to heroin use and related problems. As with research on harms, studies examining the health and social responses to problems linked with methamphetamine use come primarily from Australia and the United States. The available evidence supports the efficacy of two psychosocial or behavioural treatment approaches for methamphetamine dependence: cognitive behavioural approaches and contingency management. Cognitive behavioural approaches, in conjunction with pharmacotherapy or as a standalone intervention, have been shown to increase treatment attendance and to reduce methamphetamine use and risky sexual behaviour (Lee and Rawson, 2008; McElhiney et al., 2009; Reback and Shoptaw, 2011). Similarly, contingency management has been associated with better retention in treatment, lower rates of methamphetamine use and longer periods of sustained abstinence over the course of their treatment experience (Roll et al., 2013).

Although a number of efficacy trials of potential methamphetamine pharmacotherapies (e.g. bupropion,

modafinil) have been carried out, all candidate drugs have been no more effective than a placebo. Consequently, there are no approved medications for treating methamphetamine dependence, and pharmacotherapy is recommended as an adjunct to psychosocial interventions rather than being a primary component of treatment (Brackins et al., 2011; Karila et al., 2010).

Distributing gelatine capsules to injecting methamphetamine users, for oral administration of the drug in order to reduce injecting-related harm, has been tested in the Czech Republic (Mravcik et al., 2011). Other interventions that have been implemented in order to reduce the risks associated with injection include the provision of smoking equipment or safer-smoking kits through needle and syringe programmes. Health promotion initiatives targeted towards methamphetamine users tend to focus on general safety issues and self-care, including mental health, physical and sexual health.

Information and monitoring gaps

The knowledge available in Europe on the use of methamphetamine and the associated problems remains incomplete, and a number of information and research gaps can be identified. Reports of drug seizures continue to offer the only standardised, comparable dataset on methamphetamine at EU level. Other epidemiological measures are not collected systematically or are often aggregated, with methamphetamine and amphetamine being placed together as 'amphetamines' in population surveys and data on treatment entrants. It is hoped that a new protocol for collecting information on treatment entrants, which is to be introduced in 2014, will help to address this problem. The collection of data on the prevalence of drug use in the general population remains in the hands of national decision-makers, and very few countries choose to collect prevalence data on methamphetamine use. There is also the additional challenge that, in some countries, users of the drug will not be aware whether they are using amphetamine or methamphetamine. Concerns have also been raised with regard to major gaps in our knowledge regarding methamphetamine-related

morbidity, an area that would greatly benefit from targeted cohort studies.

Gaps also exist in the information available on the market for methamphetamine in Europe, especially on the production and supply of the drug. Among the information needs that can be identified is one for strengthened forensic data. For example, improved chemical profiling, which provides information on the enantiomers present, can help to identify the method that was used to produce the drug. Also needed in Europe is more data on production laboratories, including the types of facility, their size and their capacity, in addition to improved data on the price and purity of methamphetamine. Finally, the value of intelligence-gathering on organised crime groups is recognised, in particular the insight that this may provide on the dynamics, supply chains and key players involved in the various methamphetamine markets.

Conclusion

Although methamphetamine use is not a major phenomenon in Europe, it is evident from this investigation that, even at a relatively low prevalence, it is a drug that has the potential to cause significant harm. Both the Czech Republic and Slovakia report longer-term entrenched patterns of methamphetamine use and recent increases in treatment demand that are as yet unexplained. Evidence from northern Europe shows a more static situation, with methamphetamine interlinked with amphetamine, and feeding an existing market. In addition, there are signs of increased involvement of organised crime groups in methamphetamine markets and possible scaling-up of production. In some countries, such as Germany and Latvia, methamphetamine use is reportedly increasing. New injection trends have been detected among small groups of gay men in large cities (London, Paris), a phenomenon that requires close monitoring. Finally, there are particularly worrying signs from Greece, and to a lesser extent Cyprus and Turkey, where, for the first time in Europe, crystal methamphetamine smoking is identified as an emerging threat, with the possibility of spreading among vulnerable populations.

References

- | Ahmad, K. (2003), 'Asia grapples with spreading amphetamine abuse', *The Lancet* 361, pp. 1878–9.
- | Brackins, T., Brahm, N. and Kissack, J. (2011), 'Treatments for methamphetamine abuse: a literature review for the clinician', *Journal of Pharmacy Practice* 24, pp. 541–50.
- | Centre of Health Economics (2011), *2011 National Report (2010 data) to the EMCDDA by the Reitox national focal point. Latvia: new developments, trends and in-depth information on selected issues*, Centre of Health Economics, Riga (available online at: <http://www.emcdda.europa.eu/html.cfm/index191648EN.html>).
- | Darke, S., Kaye, S., McKetin, R. and Duflou, J. (2008), 'Major physical and psychological harms of methamphetamine use', *Drug and Alcohol Review* 27, pp. 253–62.
- | Degenhardt, L., Roxburgh, A., Black, E., Bruno, R., Campbell, G. et al. (2008), 'The epidemiology of methamphetamine use and harm in Australia', *Drug and Alcohol Review* 27, pp. 243–52.
- | Ekici, B. and Ozbay, S. (2013), 'Iranian methamphetamine and Turkey: an emerging transnational threat', *Trends in Organized Crime* 6, pp. 286–305.
- | EMCDDA (European Monitoring Centre for Drugs and Drug Addiction) (2013a), *European drug report: trends and developments*, Publications Office of the European Union, Luxembourg.
- | EMCDDA (2013b), *Synthetic drug production in Europe* (available online at: <http://www.emcdda.europa.eu/topics/pods/synthetic-drug-production>).
- | EMCDDA and Europol (2009), *Methamphetamine: a European Union perspective in the global context*, Publications Office of the European Union, Luxembourg.
- | EMCDDA and Europol (2013), *EU drug markets report: a strategic analysis*, Publications Office of the European Union, Luxembourg.
- | Food and Drug Administration (2013a), *Desoxyn* (available online at: http://www.accessdata.fda.gov/drugsatfda_docs/label/2013/005378s0281bl.pdf).
- | Food and Drug Administration (2013b), *Code of Federal Regulations Title 21, Part 1308 — Schedules of controlled substances: Excluded nonnarcotic substances* (available at: <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcr/CFRSearch.cfm?fr=1308.22>).
- | Karila, L., Weinstein, A., Aubin, H. J., Benyamina, A., Reynaud, M. and Batki, S. L. (2010), 'Pharmacological approaches to methamphetamine dependence: a focused review', *British Journal of Clinical Pharmacology* 69, pp. 578–92.
- | Kirby, T. and Thornber-Dunwell, M. (2013), 'High-risk drug practices tighten grip on London gay scene', *The Lancet* 381, pp. 101–2.
- | Kuczenski, R., Segal, D. S., Cho, A. K. and Melega, W. (1995), 'Hippocampus norepinephrine, caudate dopamine and serotonin, and behavioral responses to the stereoisomers of amphetamine and methamphetamine', *Journal of Neuroscience* 15, pp. 1308–17.
- | Lankov, A. and Kim, S. (2013), 'A new face of North Korean drug use: upsurge in methamphetamine abuse across the northern areas of North Korea', *North Korean Review* 9, pp. 45–60.
- | Lee, N. K. and Rawson, R. A. (2008), 'A systematic review of cognitive and behavioural therapies for methamphetamine dependence', *Drug and Alcohol Review* 27, pp. 309–17.
- | McElhiney, M. C., Rabkin, J. G., Rabkin, R. and Nunes, E. V. (2009), 'Provigil (modafinil) plus cognitive behavioral therapy for methamphetamine use in HIV+ gay men: a pilot study', *American Journal of Drug and Alcohol Abuse* 35, pp. 34–7.
- | McKetin, R., Kozel, N., Douglas, J., et al. (2008), 'The rise of methamphetamine in Southeast and East Asia', *Drug and Alcohol Review* 27, pp. 220–8.
- | Mehrjerdi, Z. and Noroozi, A. (2013), 'An emerging trend of methamphetamine injection in Iran: a critical target for research on blood-borne infection diseases', *Hepatitis Monthly* 13, p. e8154.
- | Mendelson, J., Uemura, N., Harris, D., et al. (2006), 'Human pharmacology of the methamphetamine stereoisomers', *Clinical Pharmacology and Therapeutics* 80, pp. 403–20.

- | Mravcik, V., Skarupova, K., Orlikova, B., Zabransky, T., Karachaliou, K. and Schulte, B. (2011), 'Use of gelatine capsules for application of methamphetamine: a new harm reduction approach', *International Journal of Drug Policy* 22, pp. 172–3.
- | Norwegian national focal point (2012), *The drug situation in Norway 2012: Annual report to the European Monitoring Centre for Drugs and Drug Addiction* (available online at: <http://www.emcdda.europa.eu/html.cfm/index214043EN.html>).
- | Pluddemann, A., Dada, S. and Parry, C. (2013), 'Decline in adolescent treatment admissions for methamphetamine use in Cape Town', *South African Medical Journal* 103, pp. 478–80.
- | Reback, C. J. and Shoptaw, S. (2011), 'Development of an evidence-based, gay-specific cognitive behavioral therapy intervention for methamphetamine-abusing gay and bisexual men', *Addictive Behaviors* (available online at: <http://dx.doi.org/10.1016/j.addbeh.2011.11.029>).
- | Roll, J. M., Chudzynski, J., Cameron, J. M., Howell, D. N. and McPherson, S. (2013), 'Duration effects in contingency management treatment of methamphetamine disorders', *Addictive Behaviors* 38, pp. 2455–62.
- | Shrem, M. T. and Halkitis, P. N. (2008), 'Methamphetamine abuse in the United States: contextual, psychological and sociological considerations', *Journal of Health Psychology* 13, pp. 669–79.
- | UNODC (United Nations Office on Drugs and Crime) (2013), *World drug report 2013*, United Nations, Vienna.

Acknowledgements

Authors: Jane Mounteney, Teodora Groshkova, Danica Thanki, Andrew Cunningham, Marta Rychert

This report is based on contributions to an expert meeting held in Lisbon on 19–20 September 2013 from Eleni Bakouri, Nerijus Banys, Jørgen Gustav Bramness, Bretislav Brejcha, Daniel Dudek, Lisa Jakob, Bernhard Kreuzer, Katherine Konaris, August de Loor, Viktor Mravcik, Salim Özbay, Malcolm Reid, David Stuart and Marcis Trapencieris.

Reitox national focal points, members of the Europol network and city drug monitor network

EMCDDA team: Chloé Carpentier, Andrew Cunningham, Michael Evans-Brown, Ana Gallegos, Paul Griffiths, Teodora Groshkova, Laurent Laniel, Jane Mounteney, Roumen Sedefov, Danica Thanki

Related publications

EMCDDA

| Problem amphetamine and methamphetamine use in Europe, 2010

EMCDDA and Europol

| Methamphetamine: a European Union perspective in the global context, 2009

These and all other EMCDDA publications are available from emcdda.europa.eu/publications

Legal notice: The contents of this publication do not necessarily reflect the official opinions of the EMCDDA's partners, the EU Member States or any institution or agency of the European Union. More information on the European Union is available on the Internet (www.europa.eu).

Luxembourg: Publications Office of the European Union
doi: 10.2810/24048 | ISBN 978-92-9168-679-7

© European Monitoring Centre for Drugs and Drug Addiction, 2014
Reproduction is authorised provided the source is acknowledged.

This publication is available only in electronic format.

EMCDDA, Praça Europa 1, Cais do Sodré, 1249-289 Lisbon, Portugal
Tel. (351) 211 21 02 00 | info@emcdda.europa.eu
emcdda.europa.eu | twitter.com/emcdda | facebook.com/emcdda