

**MDMA**  
**Brief Report**  
**February 2001**

**Congressional Directive**

Section 3663 of the Ecstasy Anti-Proliferation Act of 2000<sup>1</sup> directs the Commission to amend the guidelines for drug offenses involving 3,4-methylenedioxy methamphetamine, 3,4-methylenedioxy amphetamine, 3,4-methylenedioxy-N-ethylamphetamine, paramethoxymethamphetamine (PMA), or any “other controlled substance, as determined by the Commission in consultation with the Attorney General, that is marketed as Ecstasy and that has either a chemical structure substantially similar to that of 3,4-methylenedioxy methamphetamine or an effect on the central nervous system substantially similar to or greater than that of 3,4-methylenedioxy methamphetamine.” The Commission is required to provide increased penalties to reflect the seriousness of these offenses and the need to deter them, as well as take any other action necessary to carry out this section. Additionally, the Commission is to ensure that the guidelines for these offenses reflect the (1) need for aggressive law enforcement action and (2) dangers associated with unlawful activity including, the rapidly growing incidence of ecstasy abuse and the threat to public safety because of such abuse, the young age at which children are beginning to use ecstasy, the fact that ecstasy is frequently marketed to youth, the large number of doses per gram of the controlled substance, and any other factors the Commission deems appropriate.

Section 3663 also contains a Sense of the Congress that (1) the base offense levels for ecstasy are too low, particularly for high-level traffickers, and should be increased, such that they are comparable to penalties for other drugs of abuse; and (2) ecstasy importation has surged in the past few years, the traffickers are targeting youth, and ecstasy use among youth is increasing even though other drug use by this population appears to be leveling off, so the base offense levels for importing and trafficking ecstasy should be increased.

Additionally, section 3663 requires the Commission not later than 60 days after amendments are promulgated in response to the above directive to prepare a report describing factors and information considered by the Commission in promulgating such amendments, and to submit such report to listed congressional committees.

**Background**

The German company E. Merck received a patent for the drug MDMA (3,4-methylenedioxymethamphetamine) in 1914.<sup>2</sup> This drug is generally found in pill form weighing approximately 300 mg, with MDMA accounting for approximately 75 to 125 mg of this weight. It

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<sup>1</sup>Pub. L. No. 106-310, title XXXVI, 114 STAT. 1101, 1242 (2000).

<sup>2</sup>Time Magazine, Ecstasy/Happiness is...a pill?/The Science, June 5, 2000 Vol. 155 no. 23.

has a chemical structure similar to methamphetamine and the hallucinogen mescaline.<sup>3</sup> Effects include an enhanced sense of pleasure and self confidence, increased energy, feelings of peacefulness, acceptance, empathy, closeness with others, and a desire to be touched.<sup>4</sup> An internet user site describes a variety of positive effects (mood lift, increased energy, increased willingness to communicate, feelings of belonging, increased awareness of senses, urge to hug, and a spiritual-like experience) and negative effects (increased heart rate and blood pressure, restlessness, jaw clenching, changes in body temperature regulation, increased body temperature, muscle tension, next day hangover, a “strong urge to repeat [use] though not physically addictive[,]” but is generally dismissive of the neurotoxic effects (discussed later).<sup>5</sup>

Popular use of the drug surfaced in the 1970's as a therapeutic tool given to patients by some psychiatrists, but by the end of the decade the drug could be found in gay discos in New York, Chicago, and Dallas. During this period, possession and use of the drug was legal. It was not until 1985 that Texas Senator Lloyd Bentson succeeded in having the Drug Enforcement Administration classify MDMA as a Schedule I drug “subject to criminal penalties similar to those for cocaine and heroin”<sup>6</sup> During the 1990's its use escalated, spreading to college students and young adults participating in all-night rave parties.

## Prevalence

Several leading indicators used to monitor drug use in the United States indicate increasing use of MDMA and an expansion of use beyond what had been the primary user group (i.e., persons in their late teens and early twenties attending rave parties). The Monitoring the Future (class of 2000) study reported that 11.0 percent of 12th graders reported at least one experience in their lifetime using MDMA, up from 6.1 percent in 1996. This prevalence rate is substantially lower than for marijuana (48.8%), slightly less than for amphetamine (15.6%), but greater than cocaine (8.6%) or crack (3.9%).<sup>7</sup> The Community Epidemiology Working Group reports 1,135 DAWN emergency room mentions related to MDMA in 1998 compared to 626 in 1997 and finds that indicators for MDMA are “spreading from raves and dance parties to high schools, colleges, and

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<sup>3</sup>NIDA Notes, *Facts About MDMA (Ecstasy)*, National Institute on Drug Abuse, NIH Publication Number 99-3478 (November 1999).

<sup>4</sup>NIDA Notes, *Facts About MDMA (Ecstasy)*, National Institute on Drug Abuse, NIH Publication Number 99-3478, p. 15 (November 1999).

<sup>5</sup>[http://www.erowid.org/chemicals/mdma/mdma\\_effects.shtml](http://www.erowid.org/chemicals/mdma/mdma_effects.shtml). This site has generally favorable attitudes toward substance use and provides information, with a mix of science, pseudo-science and lore, on pharmacology, routes of administration, dosages, and effects of use on a wide range of illicit intoxicants.

<sup>6</sup>New York Magazine, *Ecstasy It's Not Just for Club Kids Anymore*, cover story, p. 26 (July 24, 2000).

<sup>7</sup>The Monitoring the Future study is a long term, government funded annual survey of students conducted by the University of Michigan. This data is one of several barometers on self reported drug use and attitudes toward drug use in the United States.

other social settings.”<sup>8</sup>

The Partnership for a Drug Free America recently released results from their national survey of teenagers, which showed that MDMA use doubled since 1995 to 10.0 percent of teens. Also, 32 percent of teens reported having close friends who had used the drug (up from 26% in 1999 and 24% in 1998).<sup>9</sup> Having close friends who use intoxicants has historically been correlated with increased risk of drug use. Additionally, DEA regards Ecstasy as “the fastest-growing abused drug in the United States.”<sup>10</sup> As measured by number of cases, Commission data is consistent with this increasing federal concern (*see* Attached response to request for information from Congressmen McCollum and Scott).

## Health Hazards

A range of physical and emotional hazards are associated with MDMA use. Physical “problems are similar to those experienced by amphetamine and cocaine users...[and] can include muscle tension, involuntary teeth clenching, nausea, blurred vision, faintness, and chills or sweating” (p 15). Unwanted psychological effects include “confusion, depression, sleep problems, anxiety, and paranoia during, and sometimes weeks after, taking the drug” (p 15). Fatalities associated with MDMA use are generally associated with dehydration, hyperthermia, heart or kidney failure arising from the disruption in the body’s ability to thermally regulate itself and the frequent use of the drug in dance club settings in which the user dances for an extended period of time in hot and crowded conditions.<sup>11</sup> Also of great concern is the long term effects of MDMA on serotonin sites within the brain. Serotonin is a neurotransmitter in the brain thought to be important in memory and other functions.

The following is a summary of a NIDA Notes<sup>12</sup> report on recent research involving positron emission tomography (PET) brain scans of 14 MDMA users. Brain scan comparisons of MDMA users with non-users indicated that users had a significantly reduced number of serotonin transporters throughout the brain and that the magnitude of the loss was associated with greater use of the drug. They also report on a study involving baboons who experienced similar PET scan

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<sup>8</sup>Community Epidemiology Work Group, *Advance Report*, p.3 (June 2000). This group, sponsored by the National Institute on Drug Abuse, is tasked with monitoring trends in drug use by combining data reported by various sources and anecdotal findings in selected U.S. cities. The most recent *Advance Report* (December, 2000) supports the June report and finds that MDMA is becoming more readily available. The Drug Abuse Warning Network (DAWN) is a long term NIDA funded effort to monitor, in selected cities, hospital emergency department cases involving a drug of abuse or medical examiner reports involving drugs.

<sup>9</sup>Partnership for a Drug Free America, (November 2000).

<sup>10</sup>As reported by MSNBC covering a three day DEA conference on the drug. (August 1, 2000). [WWW.MSNBC.com/news/440188/asp](http://WWW.MSNBC.com/news/440188/asp).

<sup>11</sup>NIDA Notes, *Facts About MDMA (Ecstasy)*, National Institute on Drug Abuse, NIH Publication Number 99-3478 (November 1999).

<sup>12</sup>NIDA Notes, *Facts About MDMA (Ecstasy)*, National Institute on Drug Abuse, NIH Publication Number 99-3478 (November 1999).

findings and who, upon autopsy, demonstrated actual loss of serotonin nerve endings. Recognizing that this brain damage may not be meaningful, the same Hopkins’ researchers compared the performance of human users and non-users on standardized memory tests. Users had “significant impairments in visual and verbal memory” (p 11). These deficits were also dose related; that is, greater impairment was associated with greater use. Other studies are cited that indicate that use may negatively impact the ability to sustain attention and to reason. Whether loss of these serotonin sites and the corresponding impairment are permanent is unknown at this time. However, one study involving squirrel monkeys indicates that some damage to serotonin sites persists at least seven years after exposure to the drug.<sup>13</sup>

**Trafficking pattern**

According to DEA congressional testimony,<sup>14</sup> 90 percent of the world’s MDMA supply is manufactured in the Netherlands and Belgium. Trafficking into the United States is controlled by Western European based traffickers, primarily Israeli and Russian organized crime syndicates. The cost to produce a pill is \$.50 to \$1.00 and is sold at wholesale prices of \$1.00 to \$2.00. After reaching the United States, the first level of distributor charges \$6.00 to \$8.00 per pill. The final retail price to the user is between \$25.00 and \$40.00 per pill. Additionally, at a briefing of Commission staff involved with this policy work, DEA representatives described the relationship between number of pills handled (at a single point in time) and functional role in the distribution network as that listed in the table below:

Importers	50,000 to 100,000 pills
Upper-middle-level distributors	5,000 to 10,000 pills
Local distributors	500 to 1,000 pills
Hand-to-hand dealers at a rave	50 to 100 pills

At the briefing, DEA representatives indicated that smuggling methods include: strapping packages of the drug onto the person - capacity of carrying 10,000 to 20,000 pills; carrying pills in special suitcases with false bottoms - capacity of carrying 20,000 to 50,000 pills; and use of large containers - capacity of holding 100,000 to 1,000,000 pills.

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<sup>13</sup>Hatzidimitriou, G, McCann, U.D., Ricaurte, G.A. Altered Serotonin innervation patterns in the forebrain of monkeys treated with (+/-)3,4 methylenedioxymethamphetamine seven years previously: factors influencing abnormal recovery. *Journal of Neuroscience* 1999 Jun 15; 19(12):pp5096-5107.

<sup>14</sup>*The Threat Posed by the Illegal Importation, Trafficking, and Use of Ecstasy and Other “Club Drugs”*: Hearing Before the House Subcomm. on Crime of the Committee on the Judiciary, 106<sup>th</sup> Cong. (June 15, 2000) (statement of Lewis Rice, Jr., Special Agent in Charge of the New York Field Office. <http://www.usdoj.gov/dea/pubs/cngrest/ct061500.html>.

## Penalties

Penalties for Ecstasy are determined using the Drug Equivalency Tables in §2D1.1. Currently, 1 gram of MDMA is equivalent to 35 grams of marijuana.<sup>15</sup> The Ecstasy Anti-Proliferation Act of 2000 reports the sense of Congress that penalties for offenses relating to manufacture, importation, exportation of, or trafficking in MDMA are too low and should be increased comparable to other drugs of abuse.<sup>16</sup>

In 1999, 117 persons were sentenced under 2D1.1 for trafficking in MDMA. The average sentence imposed was 26 months. Using the Commission's prison impact model, these cases can be re-sentenced to estimate the impact to sentences and to the prison system of proposed amendments to MDMA penalties. Under each of the alternatives presented, almost all cases are expected to be affected. However, the magnitude of the effect varies substantially both in terms of the increase in sentence length and in the impact on prison beds. Below is a table presenting the findings.

The estimated prison bed impact likely understates the actual impact because it is based upon the cohort sentenced during 1999.<sup>17</sup> MDMA cases have been increasing, with recent patterns in prevalence and publicity following a similar pattern seen in methamphetamine during the past five or so years. There has been substantial alarm at increasing use, patterns of use, and changing user profile. Also, the popular press prominently covered these changes, and Congress instructed the Commission to amend penalties and, ultimately dissatisfied with the Commission's action, reduced the quantities needed to trigger mandatory minimum penalties. During this period, the number of federal methamphetamine cases increased from 1,001 cases in 1994 to 2,847 cases in 1999. Except for mandatory minimum penalties, the pattern MDMA is following is very similar. Consequently, it is anticipated that the number of federal cases will increase – particularly if penalties are raised.

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<sup>15</sup>For comparison purposes, the marijuana equivalency of : methamphetamine mixture is 2,000 grams; heroin is 1,000 grams; cocaine is 200 grams; and, mescaline is 10 grams.

<sup>16</sup>In addition to MDMA, Congress instructed the Commission also to look at penalties related to 3,4-methylenedioxy amphetamine (MDA), 3,4-methylenedioxy-N-ethylamphetamine (MDEA), paramethoxymethamphetamine (PMA), and any other controlled substance with a chemical structure substantially similar or an effect on the central nervous system substantially similar to or greater than MDMA.

<sup>17</sup>The results from the Commission's prison impact model is dependant upon the size of the sentencing cohort used in the estimate. In situations in which the number of cases is substantially changing over time, the estimate will over (or under as the case may be) represent the true impact.

### Impact Analysis to MDMA Cases Under Various Scenarios

	50 grams=5 years (meth-mix)	100 grams=5 years (heroin)	200 grams=5 years	500 grams=5 years (powder cocaine)
Number and percent of cases affected	109 cases 93.2%	107 cases 91.4%	107 cases 91.4%	105 cases 89.7%
Current average sentence	26 months	26 months	26 months	25 months
Estimated average sentence	80 months	70 months	60 months	48 months
Additional beds five years after	264	228	185	124
Total additional beds required	423	342	267	173