



## 3,4-METHYLENEDIOXYMETHAMPHETAMINE (Street Names: MDMA, Ecstasy, Molly, XTC, E, X, Beans, Adams)

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### Introduction:

3,4-Methylenedioxyamphetamine (MDMA) is a synthetic drug possessing both stimulant and mild hallucinogenic properties. On the street it is known as Ecstasy, Molly, XTC, E, X, Beans, and Adams. Adolescents and young adults use it to promote euphoria, feelings of closeness, empathy, sexuality, and to reduce inhibitions. It is considered a "party drug" and obtained at music festivals or nightclubs. However, its abuse has expanded to include other settings, such as a college campus.

### Licit Uses:

There is no accepted medical use for MDMA in the United States.

### Chemistry and Pharmacology:

MDMA, a ring substituted derivative of phenethylamine, has a pharmacological profile similar to the combined effects of amphetamine and mescaline. MDMA increases motor activity, alertness, heart rate, and blood pressure. It also induces perceptual changes, including enhancement of tactile sensations. Other effects include: euphoria, increased energy, increased (sexual) sensual arousal, increased "need" to be touched (i.e., hugged) and increased need for stimulation.

Abuse of MDMA can cause psychological and physical damage. Psychological effects associated with MDMA use include confusion, anxiety, depression, and paranoia. These effects may last weeks after ingestions. High doses of MDMA can interfere with the ability to regulate body temperature, resulting in a sharp increase in body temperature (hyperthermia), leading to liver, kidney, and cardiovascular failure, and possibly death. Other effects include tremors, involuntary teeth clenching, muscle cramps, and blurred vision.

Studies suggest chronic use of MDMA can produce brain damage in humans. Brain imaging techniques have revealed a reduction in serotonin nerve terminals and transporters in former MDMA abusers. Clinical studies suggest that MDMA may increase the risk of long-term, perhaps permanent, problems with memory and learning.

### Illicit Uses:

MDMA is mainly ingested orally in tablets (50-150 mg). Other methods of abuse are crushing and snorting or injecting. MDMA abusers usually take MDMA by "stacking" – taking two or more tablets at once; or by "piggy-backing" – taking a series of tablets over a short period of time. One trend among young adults is "candy flipping," the co-abuse of MDMA and LSD. The onset of action after oral ingestion usually occurs within 30 to 45 minutes and lasts four to six hours, longer durations have been reported.

### User Population:

Users are often adolescents and young adults. The Monitoring the Future (MTF) study revealed that past year use of ecstasy increased slightly for 8<sup>th</sup> graders and continued to decrease for 10<sup>th</sup>, and 12<sup>th</sup> graders. For 8<sup>th</sup> graders, ecstasy use decreased from 1.0% in 2016 to 0.9% in 2017 but increased to 1.1% in 2018. The past year prevalence of ecstasy use decreased from 1.8% to 1.7% to 1.4% for 10<sup>th</sup> graders and decreased from 2.7% to 2.6% to 2.2% for 12<sup>th</sup> grade students. According the National Survey on Drug Use and Health (NSDUH), the number of lifetime users continued to increase to 19.9 million in 2018 from 19.2 million in 2017 and 18.5 million in 2016 among persons aged 12 years and older.

### Illicit Distribution:

Seized MDMA in the U.S. is primarily manufactured in clandestine laboratories in the Netherlands and Belgium. MDMA destined to the U.S. from the Netherlands is transferred through Germany and Poland and smuggled into the U.S. via body carriers, by air/sea cargo, luggage, and by express mail. A small number of MDMA clandestine laboratories have been identified operating in the U.S.

MDMA is mainly distributed in tablet form. While ecstasy tablets may contain MDMA alone, many so-called ecstasy tablets may contain other substances (e.g., MDA, methamphetamine, ketamine, caffeine, amphetamine, cathinones (i.e., bath salts), synthetic cannabinoids, and/or opioids (i.e., fentanyl or fentanyl-related substances), either alone or in combination with MDMA. MDMA tablets are often sold with logos, creating brand names for users to seek out. MDMA is also distributed in capsules, powder, and liquid forms.

MDMA is available in every region of the country, principally in large metropolitan areas. Los Angeles, CA; Miami, FL; and New York, NY are the primary market areas for MDMA smuggled into the U.S. from Western European source countries. International traffickers use south Florida as a base of operations for the importation and distribution of MDMA.

According to the National Forensic Laboratory Information System (NFLIS), 5,818 exhibits were identified as MDMA in 2017, and preliminary estimates indicate 6,200 exhibits for 2018.

### Control Status:

MDMA is controlled in schedule I of the federal Controlled Substances Act.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section; Fax 571-362-4044, Telephone 571-362-3249, or Email [DPE@usdoj.gov](mailto:DPE@usdoj.gov).