

## 3,4-METHYLENEDIOXYMETHAMPHETAMINE

(Street Names: MDMA, Ecstasy, Molly, XTC, E, X, Beans, Adams)

### Introduction:

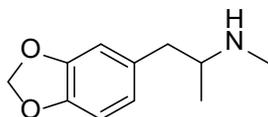
3,4-Methylenedioxyamphetamine (MDMA) is a synthetic drug possessing both stimulant and mild hallucinogenic properties. Adolescents and young adults use it to promote euphoria, feelings of closeness, empathy, sexuality, and to reduce inhibitions. It is considered a "party drug" and obtained at music festivals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

### Licit Uses:

MDMA has no accepted medical use in the United States.

### Chemistry:

MDMA, a ring-substituted derivative of phenethylamine, has a pharmacological profile similar to the combined effects of amphetamine and mescaline. The structure for MDMA is shown below:



### Pharmacology:

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 that 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. 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 4 to 6 hours; longer durations have been reported.

### User Population:

Users are often adolescents and young adults. The 2024 Monitoring the Future study revealed that previous year use of ecstasy remained to trend down for all three grades and, now less than 1% use, the 10th grade demonstrated a statistically significant decrease. According to the 2023 National Survey on Drug Use and Health Annual Report, among people aged 12 or older in the United States, approximately 22.3 million people (7.9%) have used MDMA (ecstasy) in their lifetime, and 2.2 million people (0.8%) have used it in the past 12 months.

### Illicit Distribution:

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 United States from Western European source countries. International traffickers use south Florida as a base of operations for the importation and distribution of MDMA.

The Drug Enforcement Administration's National Forensic Laboratory Information System (NFLIS) Drug database collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state, and local forensic drug laboratories. NFLIS-Drug received 6,273 reports of MDMA in 2020; 4,696 in 2021; 3,304 in 2022; 4,072 in 2023; and 4,662 in 2024 (reports still pending). In total, NFLIS-Drug received over 260,000 reports of MDMA since its first report in 1997.

### Control Status:

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