



system failure reported in some fatal cases at raves. MDMA use may also lead to heart attacks, strokes, and seizures in some users.

MDMA is neurotoxic. Chronic use of MDMA was found, first in laboratory animals and more recently in humans, to produce long-lasting, perhaps permanent, damage to the neurons that release serotonin, and consequent memory impairment.

## **Health Hazards**

Beliefs about MDMA are reminiscent of the claims made about LSD in the 1950s and 1960s, which proved to be untrue. According to its proponents, MDMA can make people trust each other and can break down barriers between therapists and patients, lovers, and family members.

Many of the risks users face with MDMA use are similar to those found with the use of amphetamines and cocaine. They are:

- Psychological difficulties, including confusion, depression, sleep problems, drug craving, severe anxiety, and paranoia - during and sometimes weeks after taking MDMA (even psychotic episodes have been reported).
- Physical symptoms such as muscle tension, involuntary teeth clenching, nausea, blurred vision, rapid eye movement, faintness, and chills or sweating.
- Increases in heart rate and blood pressure, a special risk for people with circulatory or heart disease.

Recent research findings also link MDMA use to long-term damage to those parts of the brain critical to thought and memory. It is thought that the drug causes damage to the neurons that use the chemical serotonin to communicate with other neurons. In monkeys, exposure to MDMA for 4 days caused brain damage that was evident 6 to 7 years later. This study provides further evidence that people who take MDMA may be risking permanent brain damage.

Also, there is evidence that people who develop a rash that looks like acne after using MDMA may be risking severe side effects, including liver damage, if they continue to use the drug.

MDA, the parent drug of MDMA, is an amphetamine-like drug that has also been abused and is similar in chemical structure to MDMA. Research shows that MDA destroys serotonin-producing neurons in the brain, which play a direct role in regulating aggression, mood, sexual activity, sleep, and sensitivity to pain. It is probably this action on the

serotonin system that gives MDA its purported properties of heightened sexual experience, tranquillity, and conviviality.

MDMA also is related in its structure and effects to methamphetamine, which has been shown to cause degeneration of neurons containing the neurotransmitter dopamine. Damage to these neurons is the underlying cause of the motor disturbances seen in Parkinson's disease. Symptoms of this disease begin with lack of coordination and tremors and can eventually result in a form of paralysis.

### **Extent of Use**

Community Epidemiology Work Group (CEWG)\*

MDMA is used most often by young adults and adolescents at clubs, raves (large, all-night dance parties), and rock concerts.

Its abuse is increasingly reported in the 20 metropolitan areas included in the CEWG.

In Kings County, Washington, a recently completed survey of young men who have sex with men showed that MDMA was among the frequently used drugs (20 percent of the sample).

In Boston, a 1996-97 survey of public schools in Boston found that about 14 percent of male and 7 percent of female 12th graders had used MDMA during their lifetime. Increased use of MDMA among youth was also reported in Seattle.

Information about MDMA from other CEWG areas include the following:

- In Atlanta, MDMA is reported as a popular stimulant.
- In Chicago, it's use is common in the rave and club scenes, especially in the North Side.
- In Miami, large-scale sales of drugs such as MDMA are occurring at raves.
- In New Jersey, it is available across the state, particularly in college towns.

National Household Survey on Drug Abuse (NHSDA)\*\*

Each year, NHSDA reports on the nature and extent of drug use among the American household population aged 12 and older. The 1998 survey found that an estimated 1.5 percent (3.4 million) of Americans at least 12 years old had used MDMA at least once during

their lifetime. By age group, the heaviest use (5 percent or 1.4 million people) was reported for those between 18 and 25 years old.

#### Monitoring the Future Study (MTF)\*\*\*

In 1996, MTF began to collect data on MDMA use among students. Rates of use remained relatively stable from 1996 to 1999 for students in the 8th-grade. While usage among 10th- and 12th-graders has increased.

The number of 12th-graders that had used MDMA in their lifetime increased from 5.8 percent in 1998 to 8.0 percent in 1999. Use in the past year also increased from 3.6 percent in 1998 to 5.6 percent in 1999. In addition, 12th-graders use of MDMA in the past month also increased from 1.5 percent in 1998 to 2.5 percent in 1999.

On the other hand, the largest change for 10th-graders occurred in past year use, which increased from 3.3 percent in 1998 to 4.4 percent in 1999.

#### Ecstasy Use by Students, 1999: Monitoring the Future Study

	8th-Graders	10th-Graders	12th-Graders
Ever Used	2.7%	6.0%	8.0%
Used in Past Year	1.7	4.4	5.6
Used in Past Month	0.8	1.8	2.5