

## **Methamphetamine**

Methamphetamine is an addictive stimulant drug that strongly activates certain systems in the brain. Methamphetamine is closely related chemically to amphetamine, but the central nervous system effects of methamphetamine are greater. Both drugs have some limited therapeutic uses, primarily in the treatment of obesity.

Methamphetamine is made in illegal laboratories and has a high potential for abuse and addiction. Street methamphetamine is referred to by many names, such as "speed," "meth," and "chalk." Methamphetamine hydrochloride, clear chunky crystals resembling ice, which can be inhaled by smoking, is referred to as "ice," "crystal," "glass," and "tina."

### **Health Hazards** —————

Methamphetamine releases high levels of the neurotransmitter dopamine, which stimulates brain cells, enhancing mood and body movement. It also appears to have a neurotoxic effect, damaging brain cells that contain dopamine and serotonin, another neurotransmitter. Over time, methamphetamine appears to cause reduced levels of dopamine, which can result in symptoms like those of Parkinson's disease, a severe movement disorder.

Methamphetamine is taken orally or intranasally (snorting the powder), by intravenous injection, and by smoking. Immediately after smoking or intravenous injection, the methamphetamine user experiences an intense sensation, called a "rush" or "flash," that lasts only a few minutes and is described as extremely pleasurable. Oral or intranasal use produces euphoria—a high, but not a rush. Users may become addicted quickly, and use it with increasing frequency and in increasing doses.

Animal research going back more than 20 years shows that high doses of methamphetamine damage neuron cell endings. Dopamine- and serotonin-containing neurons do not die after methamphetamine use, but their nerve endings ("terminals") are cut back, and regrowth appears to be limited.

The central nervous system (CNS) actions that result from taking even small amounts of methamphetamine include increased wakefulness, increased physical activity, decreased appetite, increased respiration, hyperthermia, and euphoria. Other CNS effects include irritability, insomnia, confusion, tremors, convulsions, anxiety, paranoia, and aggressiveness. Hyperthermia and convulsions can result in death.

Methamphetamine causes increased heart rate and blood pressure and can cause irreversible damage to blood vessels in the brain, producing strokes. Other effects of methamphetamine include respiratory problems, irregular heartbeat, and extreme anorexia. Its use can result in cardiovascular collapse and death.

## **Extent of Use** —————

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

MTF assesses the extent of drug use among adolescents (8th-, 10th-, and 12th-graders) and young adults across the country. Recent data from the survey indicate the following:

- In 2003, 6.2 percent of high school seniors had reported lifetime\*\* use of methamphetamine, statistically unchanged from 6.9 percent in 2001. Lifetime use was measured at 5.2 percent of 10th grade students and 3.9 percent of 8th-graders.
- Annual\*\* use remained stable at 3.3 percent in 2003 among 10th-graders and at 3.2 percent among seniors.

### **Community Epidemiology Work Group (CEWG)\*\*\***

Results reported at the most recent CEWG meeting indicate that methamphetamine abuse and production continue at high levels in Hawaii, west coast areas, and some southwestern areas of the United States—but methamphetamine abuse

also is continuing to spread eastward to urban, suburban, and rural areas at a pace unrivaled by any other drug in recent times.

The percentage of adult male arrestees testing methamphetamine-positive increased in 10 CEWG areas between 2001 and 2003. The percentages were highest in Honolulu (43.8 percent), San Diego (36.7), Phoenix (38.5), Los Angeles (14.8), and Seattle (10.9). More than 54 percent of adult female arrestees in Honolulu tested positive for methamphetamine in 2002, as did nearly 42 percent of those in Phoenix and more than 47 percent in San Diego.

Several other items of significance were reported, as follows:

- In 2002, 46 percent of the 15,676 methamphetamine lab incidents were reported in 9 sites located in middle America: Missouri (2,788), Iowa (862), Kansas (763), Oklahoma (595), Tennessee (560), Illinois (551), Arkansas (398), Kentucky (372), and Nebraska (272).
- In the first 6 months of 2003, more than 56 percent of substance abuse treatment admissions in Hawaii were for primary methamphetamine abuse. San Diego followed, with nearly 51 percent.
- Some MDMA (ecstasy) and cocaine users are switching to methamphetamine, ignorant of its severe toxicity.

- In many gay clubs found throughout New York City and elsewhere, methamphetamine is often used in an injectable form, placing users and their partners at risk for transmission of HIV, hepatitis C, and other STDs.

***National Survey on Drug Use and Health (NSDUH)\*\*\*\****

According to the 2002 NSDUH, 12.4 million Americans age 12 and older had tried methamphetamine at least once in their lifetimes (5.3 percent of the population), with the majority of past-year users between 18 and 34 years of age.

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\* These data are from the 2003 Monitoring the Future Survey, funded by the National Institute on Drug Abuse, National Institutes of Health, DHHS, and conducted by the University of Michigan's Institute for Social Research. The survey has tracked 12th-graders' illicit drug use and related attitudes since 1975; in 1991, 8th- and 10th-graders were added to the study. The latest data are online at [www.drugabuse.gov](http://www.drugabuse.gov).

\*\* "Lifetime" refers to use at least once during a respondent's lifetime. "Annual" refers to use at least once during the year preceding an individual's response to the survey. "30-day" refers to use at least once during the 30 days preceding an individual's response to the survey.

\*\*\* CEWG is a NIDA-sponsored network of researchers from 21 major U.S. metropolitan areas and selected foreign countries who meet semiannually to discuss the latest epidemiology of drug abuse. CEWG's most recent reports are available at <http://www.drugabuse.gov/about/organization/cewg/pubs.html>.

\*\*\*\* NSDUH (formerly known as the National Household Survey on Drug Abuse) is an annual survey conducted by the Substance Abuse and Mental Health Services Administration. Findings from the latest survey are available at [www.samhsa.gov](http://www.samhsa.gov).

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