

Topic Page: [Amphetamines](#)

Definition: **amphetamine** from *Philip's Encyclopedia*

Drug that stimulates the central nervous system. These drugs (also known as 'pep pills' or 'speed') can lead to drug abuse and dependence. They can induce a temporary sense of well-being, often followed by fatigue and depression. An example is the synthetic drug methamphetamine, a methyl derivative of amphetamine. See *also* addiction



Image from:

[Amphetamines have long been prescribed as an aid... in *Encyclopedia of Obesity*](#)

Summary Article: **Amphetamines**

From *Encyclopedia of Global Health*

Amphetamines are central nervous system stimulants used medically to treat narcolepsy and attention deficit hyperactivity disorder (ADHD) that are also used illegally for recreational and performance-enhancing purposes. The term *amphetamine* refers to a class of drugs that includes amphetamine itself as well as the compounds dextroamphetamine (known commercially as Dexedrine®), methamphetamine, and MDMA. Methamphetamine in its various forms is commonly referred to as “speed,” “crystal meth,” “ice,” or “Tina,” while MDMA is frequently called “ecstasy,” “E,” or “X.” The illicit usage of all amphetamines has emerged in recent years as an important public health problem.

In the United States, amphetamine, dextroamphetamine, and methamphetamine are classified as Drug Enforcement Administration (DEA) Schedule II drugs, which means that they have high potential for abuse, but can be made available in some medically necessary circumstances. MDMA is a Schedule I drug, implying that it also has a high potential for abuse, but has no currently accepted medical use.

The sensation acquired after using any of the various amphetamines varies with the route of administration. In general, injection produces the most immediate effects. Inhalation by smoking produces a slower “high,” and the ingestion of pills provides the most delayed physiological changes. A “rush” of euphoria, an intensely pleasurable feeling attained soon after taking an amphetamine, is unique to injection and inhalation.

Pharmacologically, amphetamines act by altering the transmission of central nervous system monoamine neurotransmitters, particularly norepinephrine, dopamine, and serotonin. The various amphetamines exert slightly different psychological changes, but in general, all act as potent stimulants, causing euphoria, enhancing alertness, improving attention, and increasing libido if taken in substantial doses. The abuse of amphetamines for recreational and performance-enhancing purposes is related to these effects.

Physiologically, amphetamines cause increased heart rate, blood pressure, respiratory rate, and temperature, and, in excess, can lead to cardiac arrhythmia, hyperthermia, stomach cramping, nystagmus (rapid beating) of the eyes, tremors, stereotyped behaviors, anxiety, aggression, paranoia, and insomnia. Cardiac abnormalities and stroke occur rarely but are often fatal. “Coming down” off amphetamines causes the opposite effects, most notably fatigue, difficulty concentrating, and mood depression.

MEDICAL USAGE

Amphetamines, specifically dextroamphetamine (Dexedrine®), the purified isomer D-amphetamine, is indicated for the treatment of attention deficit hyperactivity disorder (ADHD) in children. At prescribed doses, it promotes impulse control and concentration while decreasing irritability. Adderall®, another ADHD medication, is a mixture of four amphetamine salts with similar beneficial effects. Prominent side effects among children taking amphetamines for ADHD include appetite suppression and insomnia, the latter of which can be prevented by taking the medication early in the day.

Amphetamines are also standard in the treatment of narcolepsy, a disorder marked by frequent and often unexpected bouts of sleeping throughout the day. They are also occasionally used as “augmentation” agents in the treatment of depression when coupled with another antidepressant medication, such as a selective serotonin reuptake inhibitor (SSRI). In some countries, amphetamines are also approved for weight loss, but in the United States, this practice has been eliminated because of concerns about the safety of this practice.

In general, the legitimate medical usage of amphetamines does not promote addiction among those to whom the medication has been prescribed. However, the increasing rate of prescription among children and adolescents has led to increased availability of amphetamines and concern about the practice of sharing these medications with others for illegitimate purposes.

PRODUCTION

Methamphetamine is readily produced using common household products and over-the-counter medicines, most notably ephedrine or pseudoephedrine. These compounds, once easily obtained in large quantities by purchasing cough and cold remedies, have been the subject of new legislation that restricts their purchase in many jurisdictions. Although synthesizing methamphetamine is a relatively simple process, most methods of production involve flammable chemicals, such as phosphine gas. Significant morbidity and mortality has resulted from fires caused by inexperienced chemists working with such compounds in clandestine laboratories.

Much of the methamphetamine supply in the United States originates from large-scale producers located in Mexico and California. However, there has been a surge of small-scale laboratories in recent years, particularly in the Midwest, that have become an important source of the drug. These laboratories may elude detection by law enforcement officials because they are often mobile, existing, for example, in large vans or pickup trucks. These operations have been found in such diverse locations as mobile homes and motel rooms, exposing the general public to the danger associated with methamphetamine production.

In 2006 the United Nations Office on Drugs and Crime reported that global production of amphetamine-like stimulants, including methamphetamine, was estimated at 480 metric tons. This was a higher value than calculated for the previous year but was less than that for 2000, showing an overall decrease since the beginning of the 21st century. Nations in north America, central America, western, central and eastern Europe, and east and southeast Asia represent the most important contributors to the global methamphetamine market. In particular, the largest producers of methamphetamine worldwide are located in Burma, China, and the Philippines.

SOCIETAL AND GLOBAL IMPACT

The illicit use of amphetamines, most notably methamphetamine and MDMA, is of increasing concern in

north America. In 2002, 1.4 percent of people aged 15–64 used methamphetamine or another amphetamine-type stimulant. Domestic methamphetamine production operations are an important public health issue not only because they provide a readily available supply of methamphetamine, but also because of laboratory fires.

Worldwide, abuse of amphetamines rivals that of cannabis, the most commonly used drug internationally. The majority of amphetamine users live in Asia, with the highest prevalence of abuse found in Thailand. These high rates are concerning for several reasons. Because of their energy-increasing and inhibition-lowering effects, the use of amphetamines can be associated with risky sexual behaviors and transmission of sexually transmitted diseases including human immunodeficiency virus (HIV). Injection of the amphetamines intravenously also provides a route for direct inoculation of HIV and other blood-borne diseases, including the hepatitis B and C viruses. Additionally, injection using nonsterile needles places the user at risk for bacterial infections such as sepsis, bone and joint infection, pneumonia, and abscesses of the skin and other organs.

Treatment for amphetamine abuse is reviewed elsewhere in this encyclopedia (see, e.g., Methamphetamine Abuse). Modalities targeting individual drug users as well as public health interventions are important in reducing the prevalence of illegal amphetamine use, and will ultimately prove invaluable in decreasing the harms associated with abuse.

SEE ALSO:

AIDS; Club Drugs; Drug Abuse; Methamphetamine Abuse.

BIBLIOGRAPHY

- Drug and Alcohol Services Information System, “Trends in Methamphetamine/Amphetamine Admissions to Treatment: 1993-2003,” www.oas.samhsa.gov (cited October 2006).
- Merck Manual Home Edition, “Amphetamines: Drug Use and Abuse,” www.merck.com/mmhe (cited October 2006).
- National Institute on Drug Abuse, “NIDA Research Report—Methamphetamine Abuse and Addiction,” www.drugabuse.gov (cited October 2006).

Scott E. Hadland
Washington University School of Medicine

APA

Chicago

Harvard

MLA

Hadland, S. E. (2008). Amphetamines. In Y. Zhang, *Encyclopedia of global health*. Thousand Oaks, CA: Sage Publications. Retrieved from <https://search.credoreference.com/content/topic/amphetamine>

APA

Hadland, S. E. (2008). Amphetamines. In Y. Zhang, *Encyclopedia of global health*. Thousand Oaks, CA: Sage Publications. Retrieved from <https://search.credoreference.com/content/topic/amphetamine>

Chicago

Hadland, Scott E. "Amphetamines." In *Encyclopedia of Global Health*, by Yawei Zhang. Sage Publications, 2008. <https://search.credoreference.com/content/topic/amphetamine>

Harvard

Hadland, S.E. (2008). Amphetamines. In Y. Zhang, *Encyclopedia of global health*. [Online]. Thousand Oaks: Sage Publications. Available from: <https://search.credoreference.com/content/topic/amphetamine> [Accessed 18 September 2019].

MLA

Hadland, Scott E. "Amphetamines." *Encyclopedia of Global Health*, Yawei Zhang, Sage Publications, 1st edition, 2008. *Credo Reference*, <https://search.credoreference.com/content/topic/amphetamine>. Accessed 18 Sep. 2019.