THE METH PROJECT

Methamphetamine Facts

What is methamphetamine?[1]

Methamphetamine is a powerfully addictive stimulant that dramatically affects many areas of the central nervous system. It can be easily made in illegal, clandestine laboratories from relatively inexpensive over-the-counter ingredients and can be purchased at a relatively low cost. These factors make methamphetamine a drug with a high potential for widespread abuse.

The drug was developed early in this century from its parent drug, amphetamine, and was used originally in nasal decongestants and bronchial inhalers. Methamphetamine's chemical structure is similar to that of amphetamine, but it has more pronounced effects on the central nervous system.

Common terms for methamphetamine:

Methamphetamine is sometimes referred to as "speed," "meth," and "chalk." In its smoked form it is often referred to as "ice," "crystal," "glass," "crank" and "tina."

Methamphetamine ingredients:[2]

Many common household products—most notably over-the-counter medicines containing pseudoephedrine and ephedrine—are used to make methamphetamine. Ingredients commonly used in methamphetamine production include:

- Acetone
- Anhydrous ammonia (fertilizer)
- Hydrochloric acid (pool supply)
- Iodine (flakes or crystal)
- Lithium (batteries)
- Pseudoephedrine (cold medications)
- Red phosphorus (matches or road flares)
- Sodium hydroxide (lye)
- Sulfuric acid (drain cleaner)
- Toluene (brake cleaner)

How is methamphetamine used?

Methamphetamine can be smoked, snorted, orally ingested, or injected. The drug alters moods in different ways, depending on how it is taken. Immediately after smoking the drug or injecting it intravenously, the user experiences an intense rush or "flash" that lasts only a few minutes and is described as extremely pleasurable. Snorting or oral ingestion produces euphoria - a high but not an intense rush. Snorting produces effects within 3 to 5 minutes, and oral ingestion produces effects within 15 to 20 minutes.

As with similar stimulants, methamphetamine most often is used in a "binge and crash" pattern. Because tolerance for methamphetamine occurs within minutes—meaning that the pleasurable

effects disappear even before the drug concentration in the blood falls significantly—users try to maintain the high by binging on the drug.

What does methamphetamine do?
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 as well as 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.

The effects of methamphetamine can last from 6 to 24 hours. After the initial "rush," there is typically a state of high agitation that in some individuals can lead to violent behavior. Users may become addicted quickly, and use it with increasing frequency and in increasing doses.

Health hazards:
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.

Fetal exposure to methamphetamine also is a significant problem in the United States. At present, research indicates that methamphetamine abuse during pregnancy may result in prenatal complications, increased rates of premature delivery, and altered neonatal behavioral patterns, such as abnormal reflexes and extreme irritability. Methamphetamine abuse during pregnancy may be linked also to congenital deformities.

Short-term effects of methamphetamine:
As a powerful stimulant, methamphetamine, even in small doses, can increase wakefulness and physical activity and decrease appetite. A brief, intense sensation, or rush, is reported by those who smoke or inject methamphetamine. Oral ingestion or snorting produces a long-lasting high instead of a rush, which reportedly can continue for as long as half a day. Both the rush and the high are believed to result from the release of very high levels of the neurotransmitter dopamine into areas of the brain that regulate feelings of pleasure.

High doses can elevate body temperature to dangerous, sometimes lethal, levels, as well as cause convulsions.

Long-term effects of methamphetamine:
Long-term methamphetamine abuse results in many damaging effects, including addiction. In addition to being addicted to methamphetamine, chronic methamphetamine abusers exhibit symptoms that can include violent behavior, anxiety, confusion, and insomnia. They also can display a number of psychotic features, including paranoia, auditory hallucinations, mood

disturbances, and delusions (for example, the sensation of insects creeping on the skin, which is called "formication"). The paranoia can result in homicidal as well as suicidal thoughts.

With chronic use, tolerance for methamphetamine can develop. In an effort to intensify the desired effects, users may take higher doses of the drug, take it more frequently, or change their method of drug intake. In some cases, abusers forego food and sleep while indulging in a form of binging known as a "run," injecting as much as a gram of the drug every 2 to 3 hours over several days until the user runs out of the drug or is too disoriented to continue. Chronic abuse can lead to psychotic behavior, characterized by intense paranoia, visual and auditory hallucinations, and out-of-control rages that can be coupled with extremely violent behavior.

Withdrawal:
Although there are no physical manifestations of a withdrawal syndrome when methamphetamine use is stopped, there are several symptoms that occur when a chronic user stops taking the drug. These include depression, anxiety, fatigue, paranoia, aggression, and an intense craving for the drug.

How methamphetamine is different than other stimulants, such as cocaine:

Methamphetamine	**Cocaine**
Man-made	Plant-derived
Smoking produces a high that can last 8-24 hours	Smoking produces a high that lasts 20-30 minutes
50% of the drug is removed from the body in 12 hours	50% of the drug is removed from the body in 1 hour
Limited Medical use	Used as a local anesthetic in some surgical procedures

Methamphetamine is classified as a psychostimulant, as are other drugs of abuse such as amphetamine and cocaine. Methamphetamine is structurally similar to amphetamine and the neurotransmitter dopamine, but it is quite different from cocaine. Although these stimulants have similar behavioral and physiological effects, there are some major differences in the basic mechanisms of how they work at the level of the nerve cell.

In contrast to cocaine, which is quickly removed and almost completely metabolized in the body, methamphetamine has a much longer duration of action and a larger percentage of the drug remains unchanged in the body. This results in methamphetamine being present in the brain longer, which ultimately leads to prolonged stimulant effects.

Treatment:
At this time the most effective treatments for methamphetamine addiction are cognitive behavioral interventions. These approaches are designed to help modify the patient's thinking, expectancies, and behaviors and to increase skills in coping with various life stressors.

There are currently no particular pharmacological treatments for dependence on amphetamine or amphetamine-like drugs such as methamphetamine. The current pharmacological approach is borrowed from experience with treatment of cocaine dependence. Unfortunately, this approach

has not met with much success since no single agent has proven efficacious in controlled clinical studies.

Brief history of methamphetamine use:[3]

- Amphetamines discovered in late 1800s.
- Medical applications of amphetamines not recognized until 1930s, Benzedrine was marketed to counter low blood pressure.
- Gained popularity in the 1950s-60s when pharmaceutical companies promoted hunger-suppressing and mood-elevating qualities of diet pills Dexedrine and Benzedrine.
- Because of rapid development of tolerance, usage increased dramatically during the "speed" craze of the 60s.
- Increase in negative side effects helped motivate passage of Controlled Substance Act of 1970 which made it more difficult to buy amphetamines legally.
- Illegal street market expanded to fill this need.
- "Speed" and "crank" illegally manufactured and distributed by outlaw biker gangs who maintained control of market into the early 1980s.
- Methamphetamine became the preferred product type due to its relative ease of manufacture versus other amphetamine types.

Manufacturing/distribution:[4]

- Most street methamphetamine is made in "superlabs" outside of the country (primarily Mexico), smuggled into the US in finished form.
    - Primary ingredient, pseudoephedrine, is purchased in bulk by Mexican cartels from rogue manufacturers in the Netherlands, Switzerland and Eastern Europe.
    - Finished methamphetamine products are distributed throughout the U.S, primarily by Mexican nationals. DEA estimates this marketing system supplies 85% of the illegal methamphetamine business in this country.

- 15% of methamphetamine production is accounted for by "mom and pop" labs found all over the country with primary concentration in West, Pacific Northwest, and Midwest in rural areas.
    - Small, portable labs that can be easily moved and established in small spaces such as trailers, motel rooms, barns and basements.
    - Output of methamphetamine produced by these labs is relatively small, and believed to be used primarily by the "cookers" and a small circle of friends and family.
    - Labs are numerous, proliferating, and pose a dangerous threat in terms of violence, toxicity, severe environmental and property damage, public safety and an overwhelming burden on law enforcement and local government resources.

###

1 Information on pages 1-3 (except "Ingredients" section), and page 4 (through "Treatment" section) cited from the National Institute on Drug Abuse, www.nida.nih.gov.

2 Information from "Ingredients" section cited from ‹‹Methamphetamine Laboratory Identification and Hazards Fast Facts,›› National Drug Intelligence Center, U.S. Department of Justice.

3 Information cited from the Partnership for Drug Free America Methamphetamine, Key Learning Presentation, February 2005. Source: Darryl S. Inaba, "Uppers, Downers, All Arounders," 1989, 1993.

4 Information cited from the Partnership for Drug Free America Methamphetamine, Key Learning Presentation, February 2005. Source: DEA, Drug Trafficking in the US/ONDCP Drug Facts.