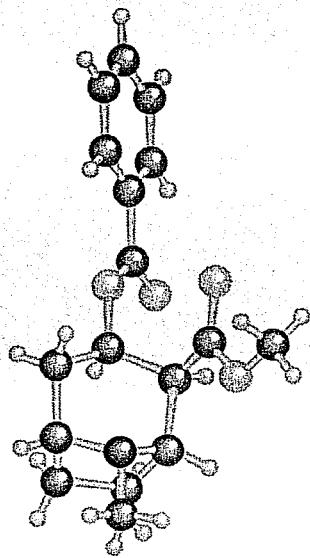


New Jersey  
Alcohol/Drug Resource  
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Fact Sheet No. 12 (2)



COCAINE HYDROCHLORIDE  
(CHLORIDE ION OMITTED)

The New Jersey Alcohol/Drug Resource Center and Clearinghouse serves institutions of higher education, state agencies, communities, and school districts throughout the state of New Jersey by providing technical assistance, training, and resources in alcohol and other drug abuse education and prevention.

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THE STATE UNIVERSITY OF NEW JERSEY  
**RUTGERS**

# FACTS ON:

## COCAINE AND CRACK

John Brick, Ph.D., F.A.P.A.

Cocaine is one of the most addicting drugs on earth. Cocaine hydrochloride is a powerful, but short-acting, central nervous system stimulant that goes by many street names including coke, C, snow, blow, toot, nose candy, and the lady. Cocaine is derived from the coca plant, a short (3-6 feet) bush or shrub that grows easily in the Andes mountains and other regions of South America as well as in Indonesia. The waxy elliptical leaves from the plant are soaked in kerosene and sulfuric acid to form a coca paste (cocaine sulfate). The addition of hydrochloric acid forms powdery flakes or rocks of pure cocaine hydrochloride.

When cocaine is structurally altered by removing its chemical base, crack is formed. All of the consequences of cocaine use also apply to crack use. This very addictive, smokable, "freebase" form has many names including base, rock, Roxanne, gravel, and fry daddies, depending upon the chemical method used to make it. "Pasta" or "bazooko" are forms of freebase that come from an intermediate step in cocaine manufacture.

Generally, these forms of cocaine contain toxic solvents such as kerosene or gasoline. "Baseballing" is another method used to convert cocaine hydrochloride to freebase cocaine. It produces a very pure form of the drug, but the conversion process is dangerous and involves the use of highly flammable chemicals such as ether. The "dirty basing" method adds fewer toxic chemicals but does not remove the impurities that are in the cocaine.

In some regions of South America people have been chewing coca leaves for their psychoactive effects for thousands of years, and its use is an intricate part of their culture. In Europe during the turn of the century it was recommended for travelers, hikers, and soldiers because it suppressed appetite and was a mild stimulant. In America cocaine was used in soft drinks (Coca Cola) and wines for many years, but in 1914 its use was stopped by the Pure Food and Drug Act and the Harrison Narcotic Act. Today's cocaine is more potent and has a much greater potential for abuse, addiction, and toxicity. The abuse of cocaine has increased dramatically in the last fifteen years. Among high

school seniors and college-aged students responding to a large-scale national survey, about 10-15% have used cocaine at least once and about 1 out of 20 young adults use cocaine monthly. There is evidence that, in the last few years, the perception of cocaine as harmful is increasing among young adults and its use is decreasing. Crack use, although low (1% of young adults report use in the last month), is increasing.

Cocaine is highly addictive. The addiction to cocaine is not difficult to understand: it is a potent mood elevator that produces unparalleled euphoria, exhilaration, feelings of well-being and confidence. It increases alertness and decreases tension, self-doubt, and appetite. Cocaine produces these effects by acting directly on pleasure centers in the brain. Physically, cocaine relieves fatigue, increases heart rate, respiration, temperature, and blood pressure. It causes pupil dilation, and is a local anesthetic. In comparison to other stimulants, the cocaine high is short — about 30 minutes or so for the maximum effects. The high from crack is even shorter—about 5 to 10 minutes. As the drug wears off the euphoria is followed by a physiological and psychological depression called a "crash." Crack smokers as well as intravenous cocaine "shooters" consistently report that after the "rush," there is an intense craving for more drug. Massive doses of cocaine can result in respiratory paralysis, heart attacks, convulsions, and death.

Pregnant women should avoid all psychoactive drugs including cocaine. In the fetus, as in the adult user, cocaine constricts blood vessels. In fetal animal studies, the restriction of the blood and oxygen supply by cocaine has been linked to eye and bone defects. In human studies, cocaine use during pregnancy is associated with premature separation of the placenta from the uterus, premature birth, still births, and morphological abnormalities. Behaviorally, cocaine-addicted babies are irritable and jittery. Long-term effects in these babies as they grow are still not well understood.

Laws against driving under the influence of alcohol usually include other drugs (e.g., cocaine). There are no controlled studies on the effects of cocaine on driving performance. At this point in time, a causative relationship

between acute cocaine intoxication and risk for driving accidents is not established.

Cocaine is taken different ways. Probably the most common route is absorption into the blood through the membranes in the nose. Powdered cocaine is "snorted" through a straw or rolled dollar bill into the nose. The insufflated drug is quickly absorbed, and the "high" begins within a few minutes. Repeated intranasal administration is often associated with tissue injury (e.g., perforation of the cartilage that separates the nasal airways). Cocaine is highly water soluble and can be easily injected. When injected intravenously, the drug gets to the brain in about 15 seconds and the "rush" begins. Crack is smoked in a pipe and immediately absorbed into the blood supply through the lungs. The "rush" from smoking crack is very rapid since the drug gets to the brain in about 5 seconds.

Pharmacologically, cocaine potentiates the activity of at least two of the brain's chemical "messengers", called *neurotransmitters*: dopamine and norepinephrine. These and other neurotransmitters are manufactured in the brain and enable brain cells to communicate with each other about what is happening inside and outside of the body. Research from other fields shows that increases in the functional activity of these neurotransmitters is associated with mental illnesses such as schizophrenia (dopamine) and anxiety (norepinephrine). Large decreases in the functional activity of these neural systems is associated with impaired motor behavior such as Parkinson's disease (dopamine) and psy-

chological depression (norepinephrine). Crack has a similar action to cocaine, and because chemically it is a freebase, it has a greater effect on more brain cells.

Repeated use of cocaine results in personality changes. Abusers become short-tempered and suspicious, and have difficulty concentrating. Cocaine abusers often suffer from anhedonia—they lose the ability to enjoy the things that they enjoyed prior to drug use. Frequent, high doses of cocaine can result in cocaine psychosis. The drug-induced psychotic has delusions, paranoia, and may react violently against real or imagined persecution, similar to some forms of schizophrenia. Visual, tactile ("coke bugs"), and auditory hallucinations may last days, weeks, or months. Also, like psychotic patients, the cocaine abuser has little insight into his/her problem.

Some people use cocaine once or twice out of curiosity or some other reason and never use the drug again. Others seek treatment when their pattern of abuse and dependence leads to legal, financial, vocational, medical, psychological, or other problems. There is no single treatment for cocaine addiction, but pharmacological approaches have shown some promise. For example, dopamine agonists such as bromocriptine or tricyclic antidepressants such as desipramine, seem to be helpful in overcoming withdrawal and clonidine, an alpha-2 agonist, may be helpful in reducing craving for cocaine. However, as with other drug addictions, overcoming the denial of the problem and entering into treatment are the first steps towards recovery.

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