

Cocaine

(Street Names: Coke, Snow, Crack, Rock)

Introduction:

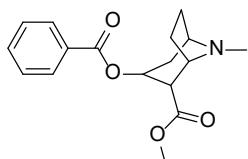
Cocaine abuse has a long, deeply rooted history in United States drug culture, both urban and rural. It is an intense and euphoric drug with strong addictive potential. With the advent of the free-base form of cocaine ("crack") and its easy availability on the street, cocaine continues to burden both law enforcement and health care systems in the United States.

Licit Uses:

Cocaine hydrochloride (4% and 10%) solution is used primarily as a topical local anesthetic for the upper respiratory tract. The vasoconstrictor and local anesthetic properties of cocaine cause anesthesia and mucosal shrinkage. It constricts blood vessels and reduces blood flow and is used to reduce the bleeding of the mucous membranes in the mouth, throat, and nasal cavities. However, better products have been developed for these purposes and cocaine is rarely used medically in the United States.

Chemistry:

Cocaine is the principal alkaloid in the leaves of *Erythroxylon coca*, a shrub indigenous to the Andean region of South America. Cocaine is an ester of benzoic acid and methylecgonine. Ecgonine, an amino alcohol, is structurally similar to atropine and other local anesthetics. Cocaine has a molecular weight of 303.35 g/mol with a molecular formula of C₁₇H₂₁NO₄.



Pharmacology:

Cocaine is a local anesthetic and a strong central nervous system stimulant which produces intense euphoria. Inhalation of the vapors of cocaine base ("crack"), known as "basing" or "free basing," became a popular practice in the 1980s because of its rapid onset of action (7-10 seconds), ease of repeat administration, and an unwarranted belief by users that smoking cocaine was less harmful and less likely to produce addiction than injecting powder cocaine. Smoking cocaine base produces an immediate and intense "rush" with an equally intense "high" or euphoria lasting from 2 to 20 minutes. Tolerance develops due to the euphoric effects of cocaine. Physiological effects of cocaine include constricted peripheral blood vessels, dilated pupils, increased blood pressure and heart rate. Cocaine also produces restlessness, irritability, and anxiety in some users. High doses of cocaine or prolonged use can cause paranoia.

Illicit Uses:

Cocaine can be packaged as a white crystalline powder ("snow"), or in paste or rock form (cocaine base). Cocaine can be sprinkled on marijuana or tobacco and smoked. It is also taken in combination with opioids, like heroin, a practice commonly referred to as "speedballing". Injecting, snorting, and smoking are the most common routes of administration among abusers. Because all mucous membranes readily absorb cocaine, smugglers who transport the drug by ingesting or swallowing cocaine-packed balloons have died from the rapid absorption of cocaine through the bowel mucosa when the balloons inadvertently ruptured during transit.

The widespread abuse of street cocaine of high purity has led to many adverse health consequences such as cardiac arrhythmias, ischemic

heart conditions, sudden cardiac arrest, convulsions, strokes, and death. The availability of "crack" cocaine driven by both user demand and drug traffickers' revolution led to an increase in inhalation as the preferred route of administration for many abusers. To avoid the discomfort associated with post-euphoric "crash", free-base smokers continue to smoke often in marathon binges, until they become exhausted or run out of cocaine supply. The long-term use of inhaled cocaine has led to a unique respiratory syndrome in some abusers, and the chronic snorting of cocaine has led to the erosion of the upper nasal cavity.

The Drug Abuse Warning Network (DAWN) reported that an estimated 354,512 emergency department visits were associated with cocaine in 2023. America's Poison Centers reported 5,871 exposures (1,289 single substance exposures) and 29 deaths related to cocaine in 2023. In comparison, for 2018, there were 5,778 exposures, 1,358 single substance exposures, and 28 deaths. According to data from the National Center for Health Statistics of the Centers for Disease Control and Prevention (CDC), the age-adjusted rate of drug overdose deaths involving cocaine in the United States increased by 4.9% from 2022 to 2023. CDC data also showed that the rate of drug overdose deaths involving both cocaine and opioids in 2021 (5.9 deaths per 100,000 standard population) was 7.4 times the rate in 2011 (0.8 deaths per 100,000 standard population). In addition, 78.6% of drug overdose deaths involving cocaine also involved an opioid in 2021.

User Population:

Recent findings indicate that cocaine use may be re-emerging as a public health concern in the United States. According to the 2023 National Survey on Drug Use and Health (NSDUH) data, approximately 42.28 million people, aged 12 and older, used cocaine for non-medical reasons in their lifetime, which remains steady from approximately 42.23 million in 2022. In the past year, approximately 5.01 million people, aged 12 or older used cocaine which was slightly less than those used in 2022, approximately 5.27 million people.

The 2024 Monitoring the Future study found no significant change in the past-year cocaine use (including "crack") among 8th and 10th graders, and there was a slight increase among 12th graders. The survey also noted no significant shift in overall use among study participants. Cocaine abuse occurs in both genders and among various ethnic groups of the United States.

Illicit Distribution:

Cocaine availability and use in the United States increased between 2022 and 2023, a rise attributed to elevated coca cultivation and potential pure cocaine production in Colombia. Colombia remains the primary source of cocaine in the United States as approximately 88% of the seized cocaine samples can be traced back to Colombia.

The Drug Enforcement Administration's National Forensic Laboratory Information System (NFLIS) Drug database collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state, and local forensic drug laboratories. NFLIS-Drug received a total of 152,431 reports in 2020, 163,942 in 2021, 163,875 in 2022, 170,640 in 2023, and 158,796 in 2024 (reports still pending). In total, there have been over 7.3 million reports since 1997.

Control Status:

Cocaine is a schedule II controlled substance under the Controlled Substances Act.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section; Fax 571-362-4250, Telephone 571-362-3249, or Email: DPE@dea.gov.