**U.S. Department of Justice**
Drug Enforcement Administration

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# DRUGS OF ABUSE

2005 EDITION

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# Drugs of Abuse

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**Drug Enforcement Administration**
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# Credits

**Donald E. Joseph**
*Editor*

**Gretchen Feussner**
*Pharmacologist*

**Katherine C. Tichacek**
**Linell Broecker**
*Associate Editors*

**Patrick A. Hurley**
*Design and Production*

**John J. Boyle**
*Photographer*

**Drugs and Chemical Evaluation Staff**
*Writing and Research*

**Special Testing Laboratory**
*Drug Identification*

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bookstore.gpo.gov
or...
orders@gpo.gov

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# FROM THE DEA


We are pleased to introduce the 2005 edition of *Drugs of Abuse*. This DEA magazine delivers clear, scientific information about drugs in a factual, straightforward way, combined with scores of precise photographs shot to scale. We believe that *Drugs of Abuse* fulfills an important educational need in our society.

Around the world and across the nation, the dedicated men and women of the DEA are working hard to investigate and arrest the traffickers of the dangerous drugs depicted in this magazine. They help keep our schools and neighborhoods safe and secure. But just as important, they are working hard to educate America's youth, their parents, and their teachers about the very real dangers of illegal drugs. *Drugs of Abuse* magazine is an important step in that direction. For additional information about drugs, we invite you to explore our web site at: www.dea.gov, where you will find a wealth of research and drug-related news.

Finally, we would like to express our appreciation to the United States National Guard (USNG) and the National Drug Intelligence Center (NDIC) for joining us as partners in the publication of this magazine.

# Contents

# The Controlled Substances Act

*The Controlled Substances Act (CSA), Title II and Title III of the Comprehensive Drug Abuse Prevention and Control Act of 1970, is the legal foundation of the U.S. Government's fight against the abuse of drugs and other substances. This law is a consolidation of numerous laws regulating the manufacture and distribution of narcotics, stimulants, depressants, hallucinogens, anabolic steroids, and chemicals used in the illicit production of controlled substances.*

## Controlling Drugs or Other Substances

### FORMAL SCHEDULING

The Controlled Substances Act (CSA) places all substances which were in some manner regulated under existing federal law into one of five schedules. This placement is based upon the substance's medical use, potential for abuse, and safety or dependence liability. The Act also provides a mechanism for substances to be controlled, or added to a schedule; decontrolled, or removed from control; and rescheduled or transferred from one schedule to another. The procedure for these actions is found in Section 201 of the Act (21 U.S.C. 811).

Proceedings to add, delete, or change the schedule of a drug or other substance may be initiated by the Drug Enforcement Administration (DEA), the Department of Health and Human Services (HHS), or by petition from any interested person: the manufacturer of a drug, a medical society or association, a pharmacy association, a public interest group concerned with drug abuse, a state or local government agency, or an individual citizen. When a petition is received by the DEA, the agency begins its own investigation of the drug.

The DEA also may begin an investigation of a drug at any time based upon information received from law enforcement laboratories, state and local law enforcement and regulatory agencies, or other sources of information.

Once the DEA has collected the necessary data, the DEA Administrator, by authority of the Attorney General, requests from HHS a scientific and medical evaluation and recommendation as to whether the drug or other substance should be controlled or removed from control. This request is sent to the Assistant Secretary of Health of HHS. HHS solicits information from the Commissioner of the Food and Drug Administration (FDA),

evaluations and recommendations from the National Institute on Drug Abuse, and on occasion from the scientific and medical community at large. The Assistant Secretary, by authority of the Secretary, compiles the information and transmits back to the DEA a medical and scientific evaluation regarding the drug or other substance, a recommendation as to whether the drug should be controlled, and in what schedule it should be placed.

The medical and scientific evaluations are binding on the DEA with respect to scientific and medical matters and form a part of the scheduling decision. The recommendation on the initial scheduling of a substance is binding only to the extent that if HHS recommends that the substance not be controlled, the DEA may not add it to the schedules.

Once the DEA has received the scientific and medical evaluation from HHS, the Administrator will evaluate all available data and make a final decision whether to propose that a drug or other substance should be removed or controlled and into which schedule it should be placed.

The threshold issue is whether the drug or other substance has potential for abuse. If a drug does not have a potential for abuse, it cannot be controlled. Although the term "potential for abuse" is not defined in the CSA, there is much discussion of the term in the legislative history of the Act. The following items are indicators that a drug or other substance has a potential for abuse:

(1 ) There is evidence that individuals are taking the drug or other substance in amounts sufficient to create a hazard to their health or to the safety of other individuals or to the community; or

(2) There is significant diversion of the drug or other substance from legitimate drug channels; or

(3) Individuals are taking the drug or other substance on their own initiative rather than on the basis of medical advice from a practitioner licensed by law to administer such drugs; or

(4) The drug is a new drug so related in its action to a drug or other substance already listed as having a potential for abuse to make it likely that the drug will have the same potential for abuse as such drugs, thus making it reasonable to assume that there may be significant diversions from legitimate channels, significant use contrary to or without medical advice, or that it has a substantial capability of creating hazards to the health of the user or to the safety of the community. Of course, evidence of actual abuse of a substance is indicative that a drug has a potential for abuse.

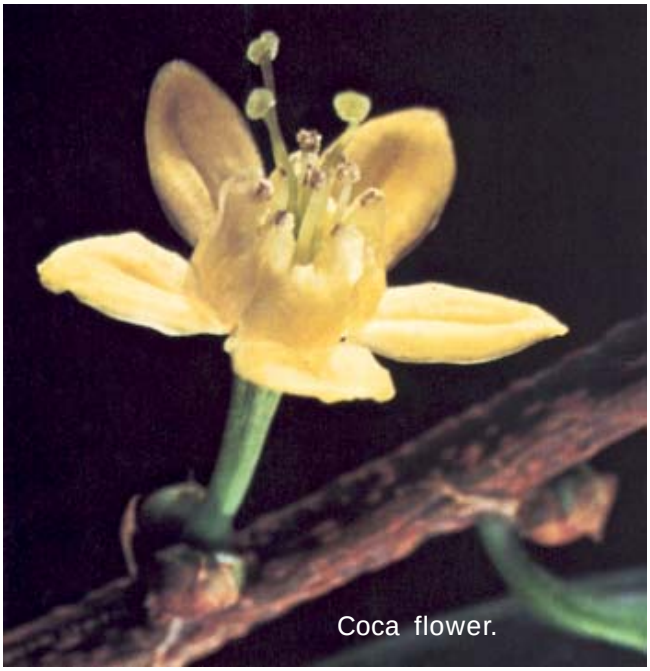
In determining into which schedule a drug or other substance should be placed, or whether a substance should be decontrolled or rescheduled, certain factors are required to be considered. Specific findings are not required for each factor. These factors are listed in Section 201 (c), [21 U.S.C. 811 (c)] of the CSA as follows:

(1) *The drug's actual or relative potential for abuse*.

(2) *Scientific evidence of the drug's pharmacological effects.* The state of knowledge with respect to the effects of a specific drug is, of course, a major consideration. For example, it is vital to know whether or not a drug has a hallucinogenic effect if it is to be controlled due to that effect. The best available knowledge of the pharmacological properties of a drug should be considered.

(3) *The state of current scientific knowledge regarding the substance.* Criteria (2) and (3) are closely related. However, (2) is primarily concerned with pharmacological effects and (3) deals with all scientific knowledge with respect to the substance.

(4) *Its history and current pattern of abuse.* To determine whether or not a drug should be controlled, it is important to know the pattern of abuse of that substance, including the socio-economic characteristics of the segments of the population involved in such abuse.



Coca flower.

(5) *The scope, duration, and significance of abuse*. In evaluating existing abuse, the DEA Administrator must know not only the pattern of abuse, but whether the abuse is widespread. In reaching a decision, the Administrator should consider the economics of regulation and enforcement attendant to such a decision. In addition, the Administrator should be aware of the social significance and impact of such a decision upon those people, especially the young, that would be affected by it.

(6) *What, if any, risk there is to the public health*. If a drug creates dangers to the public health, in addition to or because of its abuse potential, then these dangers must also be considered by the Administrator.

(7) *The drug's psychic or physiological dependence liability.* There must be an assessment of the extent to which a drug is physically addictive or psychologically habit forming, if such information is known.

(8) *Whether the substance is an immediate precursor of a substance already controlled.* The CSA allows inclusion of immediate precursors on this basis alone into the appropriate schedule and thus safeguards against possibilities of clandestine manufacture.

After considering the above listed factors, the Administrator must make specific findings concerning the drug or other substance. This will determine into which schedule the drug or other substance will be placed. These schedules are established by the CSA. They are as follows:

## Schedule I

- The drug or other substance has a high potential for abuse.
- The drug or other substance has no currently accepted medical use in treatment in the United States.
- There is a lack of accepted safety for use of the drug or other substance under medical supervision.
- Examples of Schedule I substances include heroin, lysergic acid diethylamide (LSD), marijuana, and methaqualone.

## Schedule II

- The drug or other substance has a high potential for abuse.
- The drug or other substance has a currently accepted medical use in treatment in the United States or a currently accepted medical use with severe restrictions.
- Abuse of the drug or other substance may lead to severe psychological or physical dependence.
- Examples of Schedule II substances include morphine, phencyclidine (PCP), cocaine, methadone, and methamphetamine.

## Schedule III

- The drug or other substance has less potential for abuse than the drugs or other substances in schedules I and II.
- The drug or other substance has a currently accepted medical use in treatment in the United States.
- Abuse of the drug or other substance may lead to moderate or low physical dependence or high psychological dependence.
- Anabolic steroids, codeine and hydrocodone with aspirin or Tylenol ®, and some barbiturates are examples of Schedule III substances.

## Schedule IV

- The drug or other substance has a low potential for abuse relative to the drugs or other substances in Schedule III.
- The drug or other substance has a currently accepted medical use in treatment in the United States.
- Abuse of the drug or other substance may lead to limited physical dependence or psychological dependence relative to the drugs or other substances in Schedule III.
- Examples of drugs included in schedule IV are Darvon®,Talwin®, Equanil® ,Valium ® and Xanax®.

## Schedule V

- The drug or other substance has a low potential for abuse relative to the drugs or other substances in Schedule IV.
- The drug or other substance has a currently accepted medical use in treatment in the United States.
- Abuse of the drug or other substances may lead to limited physical dependence or psychological dependence relative to the drugs or other substances in Schedule IV.
- Cough medicines with codeine are examples of Schedule V drugs.

When the DEA Administrator has determined that a drug or other substance should be controlled, decontrolled, or rescheduled, a proposal to take

Methamphetamine pipe.

action is published in the *Federal Register*. The proposal invites all interested persons to file comments with the DEA. Affected parties may also request a hearing with the DEA. If no hearing is requested, the DEA will evaluate all comments received and publish a final order in the *Federal Register*, controlling the drug as proposed or with modifications based upon the written comments filed. This order will set the effective dates for imposing the various requirements of the CSA.

If a hearing is requested, the DEA will enter into discussions with the party or parties requesting a hearing in an attempt to narrow the issue for litigation. If necessary, a hearing will then be held before an Administrative Law Judge. The judge will take evidence on factual issues and hear arguments on legal questions regarding the control of the drug. Depending on the scope and complexity of the issues, the hearing may be brief or quite extensive. The Administrative Law Judge, at the close of the hearing, prepares findings of fact and conclusions of law and a recommended decision which is submitted to the DEA Administrator. The DEA Administrator will review these documents, as well as the underlying material, and prepare his/her own findings of fact and conclusions of law (which may or may not be the same as those drafted by the Administrative Law Judge). The DEA Administrator then publishes a final order in the *Federal Register* either scheduling the drug or other substance or declining to do so.

Once the final order is published in the *Federal Register*, interested parties have 30 days to appeal to a U.S. Court of Appeals to challenge the order. Findings of fact by the Administrator are deemed conclusive if supported by "substantial evidence." The order imposing controls is not stayed during the appeal, however, unless so ordered by the Court.

### Emergency or Temporary Scheduling

The CSA was amended by the Comprehensive Crime Control Act of 1984. This Act included a provision which allows the DEA Administrator to place a substance, on a temporary basis, into Schedule I when necessary to avoid an imminent hazard to the public safety.

This emergency scheduling authority permits the scheduling of a substance which is not currently controlled, is being abused, and is a risk to the public health while the formal rule-making procedures described in the CSA are being conducted. This emergency scheduling applies only to substances with no accepted medical use. A temporary scheduling order may be issued for one year with a possible extension of up to six months if formal scheduling procedures have been initiated. The proposal and order are published in the *Federal Register* as are the proposals and orders for formal scheduling. [21 U.S.C. 811 (h)]

### Controlled Substance Analogues

A new class of substances was created by the Anti-Drug Abuse Act of 1986. Controlled substance analogues are substances which are not controlled substances, but may be found in the illicit traffic. They are structurally or pharmacologically similar to Schedule I or II controlled substances and have no legitimate medical use. A substance which meets the definition of a controlled substance analogue and is intended for human consumption is treated under the CSA as if it were a controlled substance in Schedule I.
[21U.S.C.802(32),.21U.S.C.813]

### International Treaty Obligations

United States treaty obligations may require that a drug or other substance be controlled under the CSA, or rescheduled if existing controls are less stringent than those required by a treaty. The procedures for these scheduling actions are found in Section 201 (d) of the Act. [21 U.S.C. 811 (d)]

The United States is a party to the Single Convention on Narcotic Drugs of 1961, designed to establish effective control over international and domestic traffic in narcotics, coca leaf, cocaine, and cannabis. A second treaty, the Convention on Psychotropic Substances of 1971, which entered into force in 1976, is designed to establish comparable control over stimulants, depressants, and hallucinogens. Congress ratified this treaty in 1980.

## REGULATION

The CSA creates a closed system of distribution for those authorized to handle controlled substances. The cornerstone of this system is the registration of all those authorized by DEA to handle controlled substances. All individuals and firms that are registered are required to maintain complete and accurate inventories and records of all transactions involving controlled substances, as well as security for the storage of controlled substances.

### Registration

Any person who handles or intends to handle controlled substances must obtain a registration issued by DEA. A unique number is assigned to each legitimate handler of controlled drugs: importer, exporter, manufacturer, distributor, hospital, pharmacy, practitioner, and researcher. This number must be made available to the supplier by the customer prior to the purchase of a controlled substance. Thus, the opportunity for unauthorized transactions is greatly diminished.

## Recordkeeping

The CSA requires that complete and accurate records be kept of all quantities of controlled substances manufactured, purchased, and sold. Each substance must be inventoried every two years. Some limited exceptions to the record-keeping requirements may apply to certain categories of registrants.

From these records it is possible to trace the flow of any drug from the time it is first imported or manufactured, through the distribution level, to the pharmacy or hospital that dispensed it, and then to the actual patient who received the drug. The mere existence of this requirement is sufficient to discourage many forms of diversion. It actually serves large drug corporations as an internal check to uncover diversion, such as pilferage by employees.

There is one distinction between scheduled items for record keeping requirements. Records for Schedule I and II drugs must be kept separate from all other records of the handler; records for Schedule III, IV, and V substances must be kept in a "readily retrievable" form. The former method allows for more expeditious investigations involving the highly abusable substances in Schedules I and II.

## Distribution

The keeping of records is required for distribution of a controlled substance from one manufacturer to another, from manufacturer to distributor, and from distributor to dispenser. In the case of Schedule I and II drugs, the supplier must have a special order form from the customer. This order form (DEA Form 222) is issued by DEA only to persons who are properly registered to handle Schedules I and II. The form is preprinted with the name and address of the customer. The drugs must be shipped to this name and address. The use of this device is a special reinforcement of the registration requirement; it ensures that only authorized individuals may obtain Schedule I and II drugs.

Another benefit of the form is the special monitoring it permits. The form is issued in triplicate: the customer keeps one copy; two copies go to the supplier who, after filling the order, keeps a copy and forwards the third copy to the nearest DEA office. For drugs in Schedules III,IV, and V, no order form is necessary. The supplier in each case, however, is under an obligation to verify the authenticity of the customer. The supplier is held fully accountable for any drugs which are shipped to a purchaser who does not have a valid registration. Manufacturers must submit periodic reports of the Schedule I and II controlled substances they produce in bulk and dosage forms. They also report the manufactured quantity and form of each narcotic substance listed in Schedules III, IV, and V, as well as the quantity of synthesized psychotropic substances listed in Schedules I, II, III, and IV. Distributors of controlled substances must report the quantity and form of all their transactions of controlled drugs listed in Schedules I and II and narcotics listed in Schedule III. Both manufacturers and distributors are required to provide reports of their annual inventories of these controlled substances. This data is entered into a system called the Automated Reports and Consolidated Orders System (ARCOS). It enables the DEA to monitor the distribution of controlled substances throughout the country, and to identify retail level registrants that receive unusual quantities of controlled substances.

## Dispensing to Patients

The dispensing of a controlled substance is the delivery of the controlled substance to the ultimate user, who may be a patient or research subject. Special control mechanisms operate here as well. Schedule I drugs are those which have no currently accepted medical use in the United States; they may, therefore, be used in the United States only in research situations. They generally are supplied by only a limited number of firms to properly registered and qualified researchers. Controlled substances may be dispensed by a practitioner by direct administration, by prescription, or by dispensing from office supplies.

Because of successful marijuana eradication efforts by law enforcement, many illicit growers cultivate the cannabis plant indoors.

Records must be maintained by the practitioner of all dispensing of controlled substances from office supplies and of certain administrations. The CSA does not require the practitioner to maintain copies of prescriptions, but certain states require the use of multiple-copy prescriptions for Schedule II and other specified controlled substances.

The determination to place drugs on prescription is within the jurisdiction of the FDA. Unlike other prescription drugs, however, controlled substances are subject to additional restrictions. Schedule II prescription orders must be written and signed by the practitioner; they may not be telephoned into the pharmacy except in an emergency. In addition, a prescription for a S+chedule II drug may not be refilled; the patient must see the practitioner again in order to obtain more drugs. For Schedule III and IV drugs, the prescription order may be either written or oral (that is, by telephone to the pharmacy). In addition, the patient may (if authorized by the practitioner) have the prescription refilled up to five times and at anytime within six months from the date the prescription was issued.

Schedule V includes some prescription drugs and many narcotic preparations, including antitussives and antidiarrheals. Even here, however, the law imposes restrictions beyond those normally required for the over-the-counter sales; for example, the patient must be at least 18 years of age, must offer some form of identification, and have his or her name entered into a special log maintained by the pharmacist as part of a special record.

### Quotas

DEA limits the quantity of Schedule I and II controlled substances which may be produced in the United States in any given calendar year. By utilizing available data on sales and inventories of these controlled substances, and taking into account estimates of drug usage provided by the FDA, the DEA establishes annual aggregate production quotas for Schedule I and II controlled substances. The aggregate production quota is allocated among the various manufacturers who are registered to manufacture the specific drug. DEA also allocates the amount of bulk drug which may be procured by those companies which prepare the drug into dosage units.

### Security

DEA registrants are required by regulation to maintain certain security for the storage and distribution of controlled substances. Manufacturers and distributors of Schedule I and II substances must store controlled substances in specially constructed vaults or highly rated safes, and maintain electronic security for all storage areas. Lesser physical security requirements apply to retail level registrants such as hospitals and pharmacies. All registrants are required to make every effort to ensure that controlled substances in their possession are not diverted into the illicit market. This requires operational as well as physical security. For example, registrants are responsible for ensuring that controlled substances are distributed only to other registrants that are authorized to receive them, or to legitimate patients and consumers.

## PENALTIES

The CSA provides penalties for unlawful manufacturing, distribution, and dispensing of controlled substances. The penalties are basically determined by the schedule of the drug or other substance, and sometimes are specified by drug name, as in the case of marijuana. As the statute has been amended since its initial passage in 1970, the penalties have been altered by Congress. The following charts are an overview of the penalties for trafficking or unlawful distribution of controlled substances. This is not inclusive of the penalties provided under the CSA.

### User Accountability / Personal Use Penalties

On November 19, 1988, Congress passed the Anti-Drug Abuse Act of 1988, P. L. 100-690. Two sections of this Act represent the U.S. Government's attempt to reduce drug abuse by dealing not just with the person who sells the illegal drug, but also with the person who buys it. The first new section is titled "User Accountability" and is codified at 21 U.S.C. § 862 and various sections of Title 42, U.S.C. The second involves "personal use amounts" of illegal drugs, and is codified at 21 U.S.C. § 844a.

### User Accountability

The purpose of User Accountability is to not only make the public aware of the Federal Government's position on drug abuse, but to describe new programs intended to decrease drug abuse by holding drug abusers personally responsible for their illegal activities, and imposing civil penalties on those who violate drug laws.

It is important to remember that these penalties are in addition to the criminal penalties drug abusers are already given, and do not replace those criminal penalties.

The new User Accountability programs call for more instruction in schools, kindergarten through senior high, to educate children on the dangers of drug abuse. These programs will include participation by students, parents, teachers, local businesses and the local, state and Federal Government.

User Accountability also targets businesses interested in doing business with the Federal Government. This program requires those

businesses to maintain a drug-free workplace, principally through educating employees on the dangers of drug abuse, and by informing employees of the penalties they face if they engage in illegal drug activity on company property.

There is also a provision in the law that makes public housing projects drug-free by evicting those residents who allow their units to be used for illegal drug activity, and denies federal benefits, such as housing assistance and student loans, to individuals convicted of illegal drug activity. Depending on the offense, an individual may be prohibited from ever receiving any benefit provided by the Federal Government.

## Personal Use Amounts

This section of the 1988 Act allows the government to punish minor drug offenders without giving the offender a criminal record if the offender is in possession of only a small amount of drugs. This law is designed to impact the "user" of illicit drugs, while simultaneously saving the government the costs of a full-blown criminal investigation.

Under this section, the government has the option of imposing only a civil fine on individuals possessing only a small quantity of an illegal drug. Possession of this small quantity, identified as a "personal use amount" carries a civil fine of up to $10,000.

In determining the amount of the fine in a particular case, the drug offender's income and assets will be considered. This is accomplished through an administrative proceeding rather than a criminal trial, thus reducing the exposure of the offender to the entire criminal justice system, and reducing the costs to the offender and the government.

The value of this section is that it allows the government to punish a minor drug offender, gives the drug offender the opportunity to fully redeem himself or herself, and have all public record of the proceeding destroyed. If this was the drug offender's first offense, and the offender has paid all fines, can pass a drug test, and has not been convicted of a crime after three years, the offender can request that all proceedings be dismissed.

If the proceeding is dismissed, the drug offender can lawfully say he or she had never been prosecuted, either criminally or civilly, for a drug offense.

Congress has imposed two limitations on this section's use. It may not be used if (1) the drug offender has been previously convicted of a Federal or state drug offense; or (2) the offender has already been fined twice under this section.

The cash profits (below) from illicit drug sales (left) help fund a wide variety of drug-related activities and violent crimes.

**U.S. Department of Justice**
Drug Enforcement Administration

# Federal Trafficking Penalties

| Drug Schedule | Quantity | 1st Offense | 2nd Offense | Quantity | 1st Offense | 2nd Offense |
|---|---|---|---|---|---|---|
| Methamphetamine Schedule II | 5-49 gms pure or 50-499 gms mixture | Not less than 5 yrs and not more than 40 yrs. If death or serious injury, not less than 20 or more than life. Fine of not more than $2 million if an individual, $5 million if other than an individual. | Not less than 10 yrs and not more than life. If death or serious injury, not less than life or more than life. Fine of not more than $4 million if an individual, $10 million if other than an individual. | 50 gms or more pure or 500 gms or more mixture | Not less than 10 yrs and not more than life. If death or serious injury, not less than 20 or more than life. Fine of not more than $4 million if an individual, $10 million if other than an individual. | Not less than 20 yrs and not more than life. If death or serious injury, not less than life. Fine of not more than $8 million if an individual, $20 million if other than an individual. |
| Heroin Schedule I | 100-999 gms mixture | | | 1 kg or more mixture | | |
| Cocaine Schedule II | 500-4,999 gms mixture | | | 5 gms or more mixture | | |
| Cocaine Base Schedule II | 5-49 gms mixture | | | 50 gms or more mixture | | |
| PCP Schedule II | 10-99 gms pure or 100-999 gms mixture | | | 100 gms or more pure or 1 kg or more mixture | | |
| LSD Schedule I | 1-9 gms mixture | | | 10 gms or more mixture | **3rd Offense or More** | |
| Fentanyl Schedule II | 40-399 gms mixture | | | 400 gms or more mixture | Life Imprisonment | |
| Fentanyl Analogue Schedule I | 10-99 gms mixture | | | 100 gms or more mixture | | |
| Others Schedules I & II *(Includes 1 gm or more fluntrazepam and gamma hydroxybutric acid)* | Any | Not more than 20 yrs. If death or serious injury, not less than 20 yrs, not more than life. Fine of $1 million if an individual, $5 million if other than an individual. | Not more than 30 yrs. If death or serious injury, life. Fine of $2 million if an individual, $10 million if other than an individual. | | | |
| | | **1st Offense** | | **2nd Offense** | | |
| Others Schedules III *(Includes 30 mgs - 999 mgs fluntrazepam)* | Any | Not more than 5 yrs. Fine not more than $250,000 if an individual, $1 million if other than an individual. | | Not more than 10 yrs. Fine not more than $500,000 if an individual, $2 million if other than an individual. | | |
| Others* Schedules IV *(Includes less than 30 mgs fluntrazepam)* | Any | Not more than 3 yrs. Fine not more than $250,000 if an individual, $1 million if other than an individual. | | Not more than 6 yrs. Fine not more than $500,000 if an individual, $2 million if other than an individual. | | |
| All Schedules V | Any | Not more than 1 yr. Fine not more than $100,000 if an individual, $250,000 if other than an individual. | | Not more than 2 yrs. Fine not more than $200,000 if an individual, $500,000 if other than an individual. | | |

*Although flunitrazepam is a Schedule IV controlled substance, quantities of 30 or more milligrams of flunitrazepam are subject to greater statutory maximum penalties than the above-referenced penalties for Schedule IV controlled substances. See 21 U.S.C. §841(b)(1)(C) and (D).

**U.S. Department of Justice**
Drug Enforcement Administration

# Federal Trafficking Penalties - Marijuana*

| | Quantity | 1st Offense | 2nd Offense | 3rd Offense |
|---|---|---|---|---|
| **Marijuana** | | | | |
| | 1,000 kgs or more mixture; or 1,000 or more plants | Not less than 10 years, not more than life.<br>If death or serious injury, not less than 20 years, not more than life.<br>Fine not more than $4 million individual, $10 million other than individual. | Not less than 20 years, not more than life.<br>If death or serious injury, then life.<br>Fine not more than $8 million individual, $20 million other than individual. | Life imprisonment without release. |
| **Marijuana** | | | | |
| | 100 kgs to 999 kgs mixture; or 100-999 plants | Not less than 5 years, not more than 40 years.<br>If death or serious injury, not less than 20 years, not more than life.<br>Fine not more than $2 million individual, $5 million other than individual. | Not less than 10 years, not more than life.<br>If death or serious injury, then life.<br>Fine not more than $4 million individual, $10 million other than individual. | |

| | | 1st Offense | 2nd Offense |
|---|---|---|---|
| **Marijuana**<br>**Hashish**<br>**Hashish Oil** | 50 to 99 kgs mixture<br>50 to 99 plants<br>More than 10 kgs<br>More than 1 kg | Not more than 20 years.<br>If death or serious injury, not less than 20 years, not more than life.<br>Fine $1 million individual, $5 million other than individual. | Not more than 30 years.<br>If death or serious injury, then life.<br>Fine $2 million individual, $10 million other than individual. |
| **Marijuana**<br>**Hashish**<br>**Hashish Oil** | Less than 50 kgs mixture<br>1 to 49plants<br>10 kgs or less<br>1 kg or less | Not more than 5 years.<br>Fine not more than $250,000, $1 million other than individual. | Not more than 10 years.<br>Fine $500,000 individual, $2 million other than individual. |

*Includes Hashish and Hashish Oil

(Marijuana is a Schedule I Controlled Substance)

**U.S. Department of Justice**
Drug Enforcement Administration

# Regulatory Requirements
## *Controlled Substances*

| | Schedule I | Schedule II | Schedule III | Schedule IV | Schedule V |
|---|---|---|---|---|---|
| **Registration** | | | | | |
| | Required | Required | Required | Required | Required |
| **Recordkeeping** | | | | | |
| | Separate | Separate | Readily retrievable | Readily retrievable | Readily retrievable |
| **Distribution Restrictions** | | | | | |
| | Orderforms | Order forms | Records required | Records required | Records required |
| **Dispensing Limits** | | | | | |
| | Research use only | Rx: written; no refills | Rx: written or oral; refills Note 1 | Rx: written or oral; refills Note 1 | OTC (Rx drugs limited to M.D.'s order) |
| **Manufacturing** Security | | | | | |
| | Vault/safe | Vault/safe | Secure storage area | Secure storage area | Secure storage area |
| **Manufacturing** Quotas | | | | | |
| | Yes | Yes | NO but some drugs limited by Schedule II | NO but some drugs limited by Schedule II | NO but some drugs limited by Schedule II |
| **Import/Export** Narcotic | | | | | |
| | Permit | Permit | Permit | Permit | Permit to import; declaration to export |
| **Import/Export** Non-Narcotic | | | | | |
| | Permit | Permit | Note 2 | Declaration | Declaration |
| **Reports to DEA by Manufacturer/Distributor** Narcotic | | | | | |
| | Yes | Yes | Yes | Manufacturer only | Manufacturer only |
| **Reports to DEA by Manufacturer/Distributor** Non--Narcotic | | | | | |
| | Yes | Yes | Note 3 | Note 3 | No |

*Note 1-With medical authorization, up to 5 in 6 months.*
*Note 2-Permit for some drugs, declaration for others.*
*Note 3-Manufacturer reports required for specific drugs.*

# U.S. Chemical Control

The Controlled Substances Act (CSA) is the principal federal law directed at combating the illicit manufacture and distribution of controlled drugs in the United States. Since its passage in 1970, the CSA has been amended on a number of occasions. The most recent change in the scope of the CSA is the implementation of amendments and regulations regarding chemicals and equipment used in the illicit production of controlled substances. The clandestine production of drugs is dependent on the availability of chemicals necessary to accomplish the illicit activity. Most of the drugs in the illicit traffic, with the exception of marijuana, require chemicals to be produced. For example, although cocaine is produced naturally in the coca plant, large amounts of chemicals are needed to successfully extract the drug and process it for the illicit market.

The controls placed on chemicals are substantially less than those imposed on controlled drugs because most of the chemicals have legitimate industrial applications. For this reason, the term "regulated" more appropriately describes chemicals covered under the CSA as compared to the term "controlled" that is used for drugs. Several items that are regulated as chemicals under the CSA are also non-controlled ingredients in drug products lawfully marketed under the Federal Food, Drug and Cosmetic Act and are, therefore, widely available to the general public. Examples of these products include over-the-counter (OTC) medications containing ephedrine and pseudoephedrine.

DEA chemical control was initiated in the United States with the passage of the Chemical Diversion and Trafficking Act of 1988 (CDTA) that became effective on August 1, 1989. The initial legislation was drafted in 1985. The CDTA regulated 12 precursor chemicals, eight essential chemicals, tableting machines, and encapsulating machines by imposing record keeping and import/export reporting requirements on transactions involving these materials. U.S. companies were the main source of tons of chemicals used in the production of cocaine in the Andean countries of South America prior to 1985. The principal chemicals used in the production of cocaine at that time included acetone, methyl ethyl ketone, methyl isobutyl ketone, ethyl ether, potassium permanganate, hydrochloric acid and sulfuric acid. Soon after the CDTA became effective, the quantity of many of these chemicals exported from the United States declined significantly.

Cocaine traffickers reacted to the reduction in the availability of U.S. chemicals for illicit production by developing new sources of supply in other parts of the world. The U.S. Government, with the leadership and assistance of the DEA, responded by eliciting the support of the international community for worldwide chemical control. The international community responded by incorporating Article 12 into the U.N. Convention Against Illicit Drug Traffic of 1988. Article 12 established chemical controls on a list of 22 chemicals used in the production of heroin, cocaine, LSD, PCP, amphetamine, methamphetamine, MDMA and related drugs, and numerous other clandestinely produced drugs. Moreover, the DEA has sponsored a number of international meetings and training seminars to educate other nations in the benefits of chemical

control as a tool to fight drug trafficking. DEA efforts have resulted in chemical control legislation and active programs to prevent the diversion of chemicals used in the clandestine production of drugs in many nations.

The CDTA also had an initial impact on the number of clandestine methamphetamine laboratories in the United States. In the first three years after the law was passed, the number of clandestine laboratories seized by the DEA declined by 61 percent. In addition, injuries attributed to illicitly manufactured controlled substances that were reported to the Drug Abuse Warning Network (DAWN) declined by almost 60 percent during the same time period.

The provisions of the CDTA regarding bulk ephedrine and pseudoephedrine caused methamphetamine traffickers to look for other sources of the precursors. The traffickers noted that the CDTA contained an exemption for over-the-counter (OTC) products that contained regulated chemicals. They took advantage of this loophole by turning to single entity OTC ephedrine tablets and capsules whose single active ingredient was ephedrine as a source of precursor material for the illicit production of methamphetamine.

Federal legislation was passed in 1993 in response to the methamphetamine traffickers' switch to OTC ephedrine products. The legislation was the Domestic Chemical Diversion and Control Act of 1993 (DCDCA) that became effective on April 16, 1994. The DCDCA eliminated the CDTA terminology of "precursors" and "essential" for chemicals regulated under that act and replaced them with the terms "List I" and "List II" chemicals. The DCDCA also removed the exemption for OTC single entity ephedrine tablets thus closing the loophole left by the CDTA. In addition, it gave the DEA the authority to remove the exemption for any other drugs containing listed chemicals if it was shown that they were being diverted for the illicit production of controlled substances. The DCDCA required that all manufacturers, distributors, importers, and exporters of List I chemicals be registered with the DEA and that bulk manufacturers of List I and List II chemicals report on the total quantity of listed chemicals produced during the year. Record keeping and reporting requirements for transactions in single-entity ephedrine products were also imposed by the DCDCA.

Methamphetamine traffickers quickly reacted to the provisions of the DCDCA by switching to single-entity pseudoephedrine products and combination products of ephedrine. The Comprehensive Methamphetamine Control Act of 1996 (MCA) was then passed to counter the traffickers' response to the DCDCA. The MCA expanded regulatory controls on all lawfully marketed drug products containing ephedrine, pseudoephedrine, and phenylpropanolamine, and it increased penalties for the trafficking and manufacturing of methamphetamine and listed chemicals. The MCA also made it unlawful for any person to distribute a "laboratory supply" to a person who uses, or attempts to use, that "laboratory supply" to manufacture a controlled drug or listed chemicals with reckless disregard for the illegal uses to which such "laboratory supply" will be put. The Special Surveillance List was published by the Attorney General and consisted of all listed chemicals, all mixtures, and all OTC products and dietary supplements that contain listed chemicals, 28 other chemicals frequently used in the clandestine production of controlled drugs, or listed chemicals and 4 pieces of laboratory equipment commonly found at clandestine drug laboratories. Individuals who violate the "laboratory supply" provision of the MCA are subject to a maximum civil fine of $25,000. Businesses that violate the provision are subject to a maximum civil fine of $250,000.

Ready access to chemical supplies is critical to drug traffickers while they continuously look for loopholes in legislation and new methods of clandestine production routes in order to continue their illegal activity. The DEA has embraced chemical control as an important tool in reducing the availability of clandestinely produced drugs and is committed to depriving drug traffickers of the chemicals needed to manufacture illicit drugs. Currently, List I and List II of the CSA contain 38 chemicals.

# Listed Chemicals regulated under the Controlled Substances Act

**See 21 C.F.R. §§ 1309, 1310 and 1313 for details**

Reagent = ■
Precursor = ▲
Solvent = ●

**October 31, 2001**

**CONTROLLED SUBSTANCE PRODUCED**

| | | Amphetamine | Cocaine | N,N-Dimethylamphetamine | Ethylamphetamine | Fentanyl & analogues | GHB | Heroin | LSD | MDA | MDE | MDMA | Methamphetamine | Methaqulone | Methcathinone | 4-Methylaminorex | Phencyclidine (PCP) | Phenyl-2-propanone | THRESHOLDS DOMESTIC | THRESHOLDS IMPORTS & EXPORTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LIST I | 1. N-Acetylanthranilic acid [2] | | | | | | | | | | | ▲ | | | | | | | 40 | 40 |
| | 2. Anthranilic acid [2] | | | | | | | | | | | ▲ | | | | | | | 30 | 30 |
| | 3. Benzaldehyde | ▲ | | | | | | | | | | | | | | | | ▲ | 4 | 4 |
| | 4. Benzyl cyanide | | | | | | | | | | | | | | | | | ▲ | 1 | 1 |
| | 5. Ephedrine [3&7] | | | | | | | | | | ▲ | | ▲ | | | | | | 0 | 0 |
| | 6. Ergonovine [1] | | | | | | | ▲ | | | | | | | | | | | 0.010 | 0.010 |
| | 7. Ergotamine [1] | | | | | | | ▲ | | | | | | | | | | | 0.020 | 0.020 |
| | 8. Ethylamine [1] | | | | ▲ | | | | | ▲ | | | | | | | | | 1 | 1 |
| | 9. gamma-Butyrolactone (GBL) | | | | | ▲ | | | | | | | | | | | | | 0 | 0 |
| | 10. Hydriodic acid | | | | | | | | | | ■ | | | | | | | | 1.7 | 1.7 |
| | 11. Hypophosphorous acid [1] | ■ | | | | | | | | | ■ | | | | | | | | 0 | 0 |
| | 12. Isosafrole | | | | | | | | ▲ | ▲ | ▲ | | | | | | | | 4 | 4 |
| | 13. Methylamine [1] | | | | | | | | | | ▲ | ▲ | | | | | | | 1 | 1 |
| | 14. 3,4-Methylenedioxyphenyl-2-propanone | | | | | | | | ▲ | ▲ | ▲ | | | | | | | | 4 | 4 |
| | 15. N-Methylephedrine [3] | | | ▲ | | | | | | | | | | | | | | | 1 | 1 |
| | 16. N-Methylpseudoephedrine [3] | | | ▲ | | | | | | | | | | | | | | | 1 | 1 |
| | 17. Nitroethane | ▲ | | | | | | | ▲ | | | | | | | | | ▲ | 2.5 | 2.5 |
| | 18. Norpseudoephedrine [3] | ▲ | | | | | | | | | | | | | ▲ | | | | 2.5 | 2.5 |
| | 19. Phenylacetic acid [2] | | | | | | | | | | | | | | | | | ▲ | 1 | 1 |
| | 20. Phenylpropanolamine [3&7] | ▲ | | | | | | | | | | | | | ▲ | | | | 2.5 | 2.5 |
| | 21. Phosphorus (Red) | ■ | | | | | | | | | ■ | | | | | | | | 0 | 0 |
| | 22. Phosphorus (white or yellow) | ■ | | | | | | | | | ■ | | | | | | | | 0 | 0 |
| | 23. Piperidine [1] | | | | | | | | | | | | | | | ▲ | | | 0.500 | 0.500 |
| | 24. Piperonal | | | | | | | | ▲ | ▲ | ▲ | | | | | | | | 4 | 4 |
| | 25. Propionic anhydride | | | | ▲ | | | | | | | | | | | | | | 0.001 | 0.001 |
| | 26. Pseudoephedrine [3&7] | | | | | | | | | | | ▲ | | ▲ | | | | | 1 | 1 |
| | 27. Safrole | | | | | | | | ▲ | ▲ | ▲ | | | | | | | | 4 | 4 |
| LIST II | 28. Acetic anhydride | | | | | | ▲ | | | | | | ▲ | | | | | ▲ | 1,023 | 1,023 |
| | 29. Acetone | | ● | | | | ● | ● | ● | ● | ● | ● | | | | | | | 150 | 1,500 |
| | 30. Benzyl chloride | | | | | | | | | | | ▲ | | | | | | | 1 | 4 |
| | 31. Ethyl ether | ● | ● | | | ● | | ● | ● | ● | ● | ● | ● | ● | | ● | | ● | 135.8 | 1,364 |
| | 32. Hydrochloric acid [5&6] | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | | N/C | 222.3 |
| | 32a. Hydrogen chloride gas [5&6] | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | | 0 | 27 |
| | 33. Iodine | ■ | | | | | | | | | | ■ | | | | | | | 0.4 | N/C |
| | 34. Methyl ethyl ketone (2-Butanone) | | ● | | | | ● | | ● | ● | | ● | | | | | | | 145 | 1,455 |
| | 35. Methyl isobutyl ketone [4] | | ● | | | | ● | | ● | ● | | ● | | | | | | | N/C | 1,523 |
| | 36. Potassium permanganate | | ■ | | | | | | | | | | | | | | | | 55 | 500 |
| | 37. Sulfuric acid [5&6] | ■ | ■ | | | | | | ■ | ■ | ■ | ■ | | | | | | ■ | N/C | 347 |
| | 38. Toluene | | ● | | | ● | | | | | | | ● | | | ● | | ● | 159 | 1,591 |

[1] and its salts
[2] and its salts and esters
[3] and its salts, optical isomers, and salts of optical isomers
[4] Exports only, to all Western Hemisphere except Canada
[5] Exports to all South American countries & Panama - Domestic for HCl gas
[6] Threshold for HCl acid and sulfuric acid is 50 gallons, the equivalent weight in kilograms is shown
[7] For pseudoephedrine, phenylpropanolamine and combination ephedrine drug products, see 21 USC §§ 802(39)(A)(iv), 802(45) and Historical and Statutory Notes following 21 USC § 802

on Public Law 104-237 § 401(f)

N/C = Not Controlled

**KILOGRAMS**

# Introduction to Drug Classes

Confiscated cocaine packaged in multi-kilogram bricks.

The Controlled Substances Act (CSA) regulates five classes of drugs: narcotics, depressants, stimulants, hallucinogens, and anabolic steroids. Each class has distinguishing properties, and drugs within each class often produce similar effects. However, all controlled substances, regardless of class, share a number of common features. It is the purpose of this introduction to familiarize the reader with some of these shared features and to give definition to terms frequently associated with these drugs.

All controlled substances have abuse potential or are immediate precursors to substances with abuse potential. With the exception of anabolic steroids, controlled substances are abused to alter mood, thought, and feeling through their actions on the central nervous system (brain and spinal cord). Some of these drugs alleviate pain, anxiety, or depression. Some induce sleep and others energize. Though therapeutically useful, the "feel good" effects of these drugs contribute to their abuse. The extent to which a substance is reliably capable of producing intensely pleasurable feelings (euphoria) increases the likelihood of that substance being abused.

When drugs are used in a manner or amount inconsistent with the medical or social patterns of a culture, it is called drug abuse. In legal terms, the non-sanctioned use of substances controlled in Schedules I through V of the CSA is considered drug abuse. While legal pharmaceuticals placed under control in the CSA are prescribed and used by patients for medical treatment, the use of these same pharmaceuticals outside the scope of sound medical practice is drug abuse.

In addition to having abuse potential, most controlled substances are capable of producing dependence, either physical or psychological. Physical dependence refers to the changes that have occurred in the body after repeated use of a drug that necessitates the continued administration of the drug to prevent a withdrawal syndrome. This withdrawal syndrome can range from mildly unpleasant to life-threatening and is dependent on a number of factors. The type of withdrawal experienced is related to: the drug being used; the dose and route of administration; concurrent use of other drugs; frequency and duration of drug use; and the age, sex, health, and genetic makeup of the user. Psychological dependence refers to the perceived "need" or "craving" for a drug. Individuals who are psychologically dependent on a particular substance often feel that they cannot function without continued use of that substance. While physical dependence disappears within days or weeks after drug use stops, psychological dependence can last much longer and is one of the

primary reasons for relapse (initiation of drug use after a period of abstinence).

Contrary to common belief, physical dependence is not addiction. While addicts are usually physically dependent on the drug they are abusing, physical dependence can exist without addiction. For example, patients who take narcotics for chronic pain management or benzodiazepines to treat anxiety are likely to be physically dependent on that medication. Addiction is defined as compulsive drug-seeking behavior where acquiring and using a drug becomes the most important activity in the user's life. This definition implies a loss of control regarding drug use, and the addict will continue to use a drug despite serious medical and/or social consequences. The National Institute on Drug Abuse (NIDA) estimates that about five million Americans suffer from drug addiction.

Individuals that abuse drugs often have a preferred drug that they use, but may substitute other drugs that produce similar effects (often found in the same drug class) when they have difficulty obtaining their drug of choice. Drugs within a class are often compared with each other with terms like potency and efficacy. Potency refers to the amount of a drug that must be taken to produce a certain effect, while efficacy refers to whether or not a drug is capable of producing a given effect regardless of dose. Both the strength and the ability of a substance to produce certain effects play a role in whether that drug is selected by the drug abuser.

It is important to keep in mind that the effects produced by any drug can vary significantly and is largely dependent on the dose and route of administration. Concurrent use of other drugs can enhance or block an effect and substance abusers often take more than one drug to boost the desired effects or counter unwanted side effects. The risks associated with drug abuse cannot be accurately predicted because each user has his/her own unique sensitivity to a drug. There are a number of theories that attempt to explain these differences, and it is clear that a genetic component may predispose an individual to certain toxicities or even addictive behavior.

Youths are especially vulnerable to drug abuse. According to NIDA, young Americans engaged in extraordinary levels of illicit drug use in the last third of the twentieth century. Today, the majority of young people (about 53 percent) have used an illicit drug by the time they leave high school and about 25 percent of all seniors are current (within the past month) users. The behaviors associated with teen and preteen drug use often result in tragic consequences with untold harm to others, themselves, and their families. For example, an analysis of data from the National Household Survey on Drug Abuse indicates that youngsters between the ages of 12 and 17 who have smoked marijuana within the past year are more than twice as likely to cut class, steal, commit assault, and destroy property than are those who did not smoke marijuana. The more frequently a youth smokes marijuana, the more likely he or she is to engage in these antisocial behaviors.

In the sections that follow, each of the five classes of drugs is reviewed and various drugs within each class are profiled. Although marijuana is classified in the CSA as a hallucinogen, a separate section is dedicated to that topic. There are also a number of substances that are abused but not regulated under the CSA. Alcohol and tobacco, for example, are specifically exempt from control by the CSA. In addition, a whole group of substances called inhalants are commonly available and widely abused by children. Control of these substances under the CSA would not only impede legitimate commerce, but would likely have little effect on the abuse of these substances by youngsters. An energetic campaign aimed at educating both adults and youth about inhalants is more likely to prevent their abuse. To that end, a section is dedicated to providing information on inhalants.

# Narcotics

The term "narcotic," derived from the Greek word for stupor, originally referred to a variety of substances that dulled the senses and relieved pain. Today, the term is used in a number of ways. Some individuals define narcotics as those substances that bind at opiate receptors (cellular membrane proteins activated by substances like heroin or morphine), while others refer to any illicit substance as a narcotic. In a legal context, narcotic refers to opium, opium derivatives, and their semi-synthetic substitutes. Cocaine and coca leaves, which are also classified as "narcotics" in the Controlled Substances Act (CSA), neither bind at opiate receptors, nor produce morphine-like effects and are discussed in the section on stimulants. For the purposes of this discussion, the term narcotic refers to drugs that produce morphine-like effects.

Narcotics are used therapeutically to treat pain, suppress cough, alleviate diarrhea, and induce anesthesia. Narcotics are administered in a variety of ways. Some are taken orally, transdermally (skin patches), intranasally, or injected. They are also available in suppositories, and more recently in "troches," a form of narcotics that can be sucked like candy. As drugs of abuse, they are often smoked, sniffed, or injected. Drug effects depend heavily on the dose, route of administration, and previous exposure to the drug. Aside from their medical use, narcotics produce a general sense of well-being by reducing tension, anxiety, and aggression. These effects are helpful in a therapeutic setting but contribute to their abuse.

Narcotic use is associated with a variety of unwanted effects including drowsiness, inability to concentrate, apathy, lessened physical activity, constriction of the pupils, dilation of the subcutaneous blood vessels causing flushing of the face and neck, constipation, nausea, vomiting, and most significantly, respiratory depression. As the dose is increased, the subjective, analgesic (pain relief), and toxic effect become more pronounced. Except in cases of acute intoxication, there is no loss of motor coordination or slurred speech as occurs with many depressants.

Among the hazards of illicit drug use is the ever-increasing risk of infection, disease, and overdose. Medical complications common among narcotic abusers arise primarily from adulterants found in street drugs and in the non-sterile practices of injecting. Skin, lung, and brain

abscesses, endocarditis (inflammation of the lining of the heart), hepatitis, and AIDS are commonly found among narcotic abusers. While pharmaceutical products have a known concentration and purity, clandestinely produced street drugs have unknown compositions. Since there is no simple way to determine the purity of a drug that is sold on the street, the effects of illicit narcotic use are unpredictable and can be fatal. Physical signs of narcotic overdose include constricted (pinpoint) pupils, cold clammy skin, confusion, convulsions, severe drowsiness, and respiratory depression (slow or troubled breathing). Most narcotic deaths are a result of respiratory depression.

Doctor's hypodermic syringe kit, circa 1900.

With repeated use of narcotics, tolerance and dependence develop. The development of tolerance is characterized by a shortened duration and a decreased intensity of analgesia, euphoria, and sedation, which creates the need to consume progressively larger doses to attain the desired effect. Tolerant users can consume doses far in excess of the dose they initially started with.

Chronic narcotic use is associated with physical dependence and a withdrawal or abstinence syndrome when drug use is discontinued. In general, shorter acting narcotics tend to produce shorter, more intense withdrawal symptoms, while longer acting narcotics produce a withdrawal syndrome that is protracted but less severe. Although unpleasant, withdrawal from narcotics is rarely life threatening. The withdrawal symptoms associated with heroin/morphine addiction are usually experienced shortly before the time of the next scheduled dose. Early symptoms include watery eyes, runny nose, yawning, and sweating. Restlessness, irritability, loss of appetite, nausea, tremors, and drug craving appear as the syndrome progresses. Severe depression and vomiting are common. The heart rate and blood pressure are elevated. Chills, alternating with flushing and excessive sweating, are also characteristic symptoms. Pains in the bones and muscles of the back and extremities occur, as do muscle spasms. At any point during this process, a suitable narcotic can be administered to dramatically reverse the withdrawal symptoms. Without intervention, the syndrome will run its course, and most of the overt physical symptoms will disappear within 7 to 10 days.

The psychological dependence associated with narcotic addiction is complex and protracted. Long after the physical need for the drug has passed, the addict may continue to think and talk about the use of drugs and feel strange or overwhelmed coping with daily activities without being under the influence of drugs. There is a high probability that relapse will occur after narcotic withdrawal when neither the physical environment, nor the behavioral motivators that contributed to the abuse have been altered.

There are two major patterns of narcotic abuse or dependence seen in the United States. One involves individuals whose drug use was initiated within the context of medical treatment who escalate their dose by obtaining the drug through fraudulent prescriptions and "doctor shopping" or branching out to illicit drugs. The other pattern of abuse is initiated outside the therapeutic setting with experimental or recreational use of narcotics. The majority of individuals in this category may abuse narcotics sporadically for months or even years. Although they

may not become addicts, the social, medical, and legal consequences of their behavior are very serious. Some experimental users will escalate their narcotic use and will eventually become dependent, both physically and psychologically. The younger an individual is when drug use is initiated, the more likely the drug use will progress to dependence and addiction.

## Narcotics of Natural Origin

The poppy plant, *Papaver somniferum*, is the source for non-synthetic narcotics. It was grown in the Mediterranean region as early as 5000 B.C., and has since been cultivated in a number of countries throughout the world. The milky fluid that seeps from incisions in the unripe seed pod of this poppy has, since ancient times, been scraped by hand and air-dried to produce what is known as opium. A more modern method of harvesting is by the industrial poppy straw process of extracting alkaloids from the mature dried plant. The extract may be in liquid, solid, or powder form, although most poppy straw concentrate available commercially is a fine brownish powder. More than 500 tons of opium or equivalents in poppy straw concentrate are legally imported into the United States annually for legitimate medical use.

### Opium

There were no legal restrictions on the importation or use of opium until the early 1900s. In the United States, the unrestricted availability of opium, the influx of opium-smoking immigrants from East Asia, and the invention of the hypodermic needle contributed to the more severe variety of compulsive drug abuse seen at the turn of the 20th century. In those days, medicines often contained opium without any warning label. Today, there are state, federal, and international laws governing the production and distribution of narcotic substances.

Although opium is used in the form of paregoric to treat diarrhea, most opium imported into the United States is broken down into its alkaloid constituents. These alkaloids are divided into two distinct chemical classes, phenanthrenes and isoquinolines. The principal phenanthrenes are morphine, codeine, and thebaine, while the isoquinolines have no significant central nervous system effects and are not regulated under the CSA.

### Morphine

Morphine is the principal constituent of opium and ranges in concentration from 4 to 21 percent. Commercial opium is standardized to contain 10-percent morphine. In the United States, a small percentage of the morphine obtained from opium is used directly (about 20 tons); the remaining is converted to codeine and other derivatives (about 110 tons). Morphine is one of the most effective drugs known for the relief of severe pain and remains the standard against which new analgesics are measured. Like most narcotics, the use of morphine has increased significantly in recent years. Since 1998, there has been about a two-fold increase in the use of morphine products in the United States.

Morphine is marketed under generic and brand name products including MS-Contin®, Oramorph SR®, MSIR®, Roxanol®, Kadian®, and RMS®. Morphine is used parenterally (by injection) for preoperative sedation, as a supplement to anesthesia, and for analgesia. It is the drug of choice for relieving the pain of myocardial infarction and for its cardiovascular effects in the treatment of acute pulmonary edema. Traditionally, morphine was almost exclusively used by injection. Today, morphine is marketed in a variety of forms, including oral solutions, immediate and sustained-release tablets and capsules, suppositories, and injectable preparations. In addition, the availability of high-concentration morphine preparations (i.e., 20-mg/ml oral solutions, 25-mg/ml injectable solutions, and 200-mg sustained-release tablets) partially reflects

the use of this substance for chronic pain management in opiate-tolerant patients.


Opiate-based syrups were once popular for treating children with teething and dysentary.

### Codeine

Codeine is the most widely used, naturally occurring narcotic in medical treatment in the world. This alkaloid is found in opium in concentrations ranging from 0.7 to 2.5 percent. However, most codeine used in the United States is produced from morphine. Codeine is also the starting material for the production of two other narcotics, dihydrocodeine and hydrocodone. Codeine is medically prescribed for the relief of moderate pain and cough suppression. Compared to morphine, codeine produces less analgesia, sedation, and respiratory depression, and is usually taken orally. It is made into tablets either alone (Schedule II) or in combination with aspirin or acetaminophen (i.e., Tylenol with Codeine®, Schedule III). As a cough suppressant, codeine is found in a number of liquid preparations (these products are in Schedule V). Codeine is also used to a lesser extent as an injectable solution for the treatment of pain. Codeine products are diverted from legitimate sources and are encountered on the illicit market.

### Thebaine

Thebaine, a minor constituent of opium, is controlled in Schedule II of the CSA as well as under international law. Although chemically similar to both morphine and codeine, thebaine produces stimulatory rather than depressant effects. Thebaine is not used therapeutically, but is converted into a variety of substances including oxycodone, oxymorphone, nalbuphine, naloxone, naltrexone, and buprenorphine. The United States ranks first in the world in thebaine utilization.

## Semi-Synthethic Narcotics

The following narcotics are among the more significant substances that have been derived from morphine, codeine, or thebaine contained in opium.

### Heroin

First synthesized from morphine in 1874, heroin was not extensively used in medicine until the early 1900s. Commercial production of the new pain remedy was first started in 1898. It initially received widespread acceptance from the medical profession, and physicians remained unaware of its addiction potential for years. The first comprehensive control of heroin occurred with the Harrison Narcotic Act of 1914. Today, heroin is an illicit substance having no medical utility in the United States. It is in Schedule I of the CSA.

Four foreign source areas produce the heroin available in the United States: South America

(Colombia), Mexico, Southeast Asia (principally Burma), and Southwest Asia (principally Afghanistan). However, South America and Mexico supply most of the illicit heroin marketed in the United States. South American heroin is a high-purity powder primarily distributed to metropolitan areas on the East Coast. Heroin powder may vary in color from white to dark brown because of impurities left from the manufacturing process or the presence of additives. Mexican heroin, known as "black tar," is primarily available in the western United States. The color and consistency of black tar heroin result from the crude processing methods used to illicitly manufacture heroin in Mexico. Black tar heroin may be sticky like roofing tar or hard like coal, and its color may vary from dark brown to black.

After the opium poppy pod has been scored, the liquid opium oozes out and dries on the pod. It is collected and scraped into a ball shape.

Pure heroin is rarely sold on the street; and the retail purity of heroin for major metropolitan areas nationally averaged about 40.7 percent recently. A "bag" (slang for a small unit of heroin sold on the street) currently contains about 30 to 50 milligrams of powder, only a portion of which is heroin. The remainder could be sugar, starch, acetaminophen, procaine, benzocaine, or quinine, or any of numerous cutting agents for heroin. Traditionally, the purity of heroin in a bag ranged from 1 to 10 percent. More recently, heroin purity has ranged from about 10 to 70 percent. Black tar heroin is often sold in chunks weighing about an ounce. Its purity is generally less than South American heroin and it is most frequently smoked, or dissolved, diluted, and injected. than South American heroin and it is most frequently In the past, heroin in the United States was almost always injected, because this is the most practical and efficient way to administer low-purity heroin. However, the recent availability of higher purity heroin at relatively low cost has meant that a larger percentage of today's users are either snorting or smoking heroin, instead of injecting it. This trend was first captured in the 1999 National Household Survey on Drug Abuse, which revealed that 60 to 70 percent of people who used heroin for the first time from 1996 to 1998 never injected it. This trend has continued. Snorting or smoking heroin is more appealing to new users because it eliminates both the fear of acquiring syringe-borne diseases, such as HIV and hepatitis, as well as eliminating the social stigma attached to intravenous heroin use. Many new users of heroin mistakenly believe that smoking or snorting heroin is a safe technique for avoiding addiction. However, both the smoking and the snorting of heroin are directly linked to high incidences of dependence and addiction.

According to the 2003 National Survey on Drug Use and Health, during the latter half of the 1990s, heroin initiation rates rose to a level not reached since the 1970s. In 1974, there were an estimated 246,000 heroin initiates. Between 1988 and 1994, the annual number of new users ranged from 28,000 to 80,000. Between 1995 and 2001, the number of new heroin users was consistently greater than 100,000. Overall, approximately 3.7 million Americans reported using heroin at least once in their lifetime.

## Hydromorphone

Hydromorphone (Dilaudid®) is marketed in tablets (2, 4, and 8 mg), suppositories, oral solutions, and injectable formulations. All products are in Schedule II of the CSA. Its analgesic potency is from two to eight times that of morphine, but it is shorter acting and produces more sedation than morphine. Much sought after by narcotic addicts, hydromorphone is usually obtained by the abuser through fraudulent prescriptions or theft. The tablets are often dissolved and injected as a substitute for heroin.

## Oxycodone

Oxycodone is synthesized from thebaine. Like morphine and hydromorphone, oxycodone is used as an analgesic. It is effective orally and is marketed alone in 10, 20, 40, 80, and 160 mg controlled-release tablets (OxyContin®), or 5 mg immediate-release capsules (OxyIR®), or in combination products with aspirin (Percodan®) or acetaminophen (Percocet®) for the relief of pain. All oxycodone products are in Schedule II. Oxycodone is abused orally, or the tablets are crushed and sniffed or dissolved in water and injected. The use of oxycodone has increased significantly. In 1993, about 3.5 tons of oxycodone were manufactured for sale in the United States. In 2003, about 41 tons were manufactured.

Historically, oxycodone products have been popular drugs of abuse among the narcotic abusing population. In recent years, concern has grown among federal, state, and local officials about the dramatic increase in the illicit availability and abuse of OxyContin® products. These products contain large amounts of oxycodone (10 to 160 mg) in a formulation intended for slow release over about a 12-hour period.


Abusers have learned that this slow-release mechanism can be easily circumvented by crushing the tablet and swallowing, snorting, or injecting the drug product for a more rapid and intense high. The criminal activity associated with illicitly obtaining and distributing this drug, as well as serious consequences of illicit use, including addiction and fatal overdose deaths, are of epidemic proportions in some areas of the United States. In September 2004 the FDA approved the use of Palladone® (hydromorphone hydrochloride) for the management of persistent pain. This extended-release formulation could have the same risk of abuse as OxyContin®.


Samples of Oxycontin tablets.

## Hydrocodone

Hydrocodone is structurally related to codeine but more closely related to morphine in its pharmacological profile. As a drug of abuse, it is equivalent to morphine with respect to subjective effects, opiate signs and symptoms, and "liking" scores. Hydrocodone is an effective cough suppressant and analgesic. It is most frequently prescribed in combination with acetaminophen (i.e., Vicoden®, Lortab®) but is also marketed in products with aspirin (Lortab ASA®), ibuprofen (Vicoprofen®) and antihistamines (Hycomine®). All products currently marketed in the US are either Schedule III combination products primarily intended for pain management or Schedule V antitussive medications often marketed in liquid formulations. The Schedule III products are currently under review at the Federal level to determine if an increase in regulatory control is warranted.

Hydrocodone products are the most frequently prescribed pharmaceutical opiates in the United States with over 111 million prescriptions dispensed in 2003. Despite their obvious utility in medical practice, hydrocodone products are among the most popular pharmaceutical drugs associated with drug diversion, trafficking, abuse, and addiction. In every geographical area in the country, the DEA has listed this drug as one of the most commonly diverted. Hydrocodone is the most frequently encountered opiate pharmaceutical in submissions of drug evidence to federal, state, and local forensic laboratories. Law enforcement has documented the diversion of millions of dosage units of hydrocodone by theft, doctor shopping, fraudulent prescriptions, bogus "call-in" prescriptions, and diversion by registrants and Internet fraud.

Hydrocodone products are associated with significant drug abuse. Hydrocodone was ranked 6th among all controlled substances in the 2002 Drug Abuse Warning Network (DAWN) emergency department (ED) data. Poison control data, DAWN medical examiner (ME) data, and other ME data indicate that hydrocodone deaths are numerous, widespread, and increasing in number. In addition, the hydrocodone acetaminophen combinations (accounting for about 80 % of all hydrocodone prescriptions) carry significant public health risk when taken in excess.

## Synthetic Narcotics

In contrast to the pharmaceutical products derived from opium, synthetic narcotics are produced entirely within the laboratory. The continuing search for products that retain the analgesic properties of morphine without the consequent dangers of tolerance and dependence has yet to yield a product that is not susceptible to abuse. A number of clandestinely produced drugs, as well as drugs that have accepted medical uses, fall within this category.

### Meperidine

Introduced as an analgesic in the 1930s, meperidine produces effects that are similar, but not identical, to morphine (shorter duration of action and reduced antitussive and antidiarrheal actions). Currently it is used for pre-anesthesia and the relief of moderate to severe pain, particularly in obstetrics and post-operative situations. Meperidine is available in tablets, syrups, and injectable forms under generic and brand name (Demerol®, Mepergan®, etc.) Schedule II preparations. Several analogues of meperidine have been clandestinely produced. During the clandestine synthesis of the analogue MPPP, a neurotoxic by-product (MPTP) was produced. A number of individuals who consumed the MPPP-MPTP preparation developed an irreversible Parkinsonian-like syndrome. It was later found that MPTP destroys the same neurons as those damaged in Parkinsons Disease.

## Narcotics Treatment Drugs

### Methadone

German scientists synthesized methadone during World War II because of a shortage of morphine. Although chemically unlike morphine or heroin, methadone produces many of the same effects. It was introduced into the United States in 1947 as an analgesic (Dolophine®). Today, methadone is primarily used for the treatment of narcotic addiction, although a growing number of prescriptions are being written for chronic pain management. It is available in oral solutions, tablets, and injectable Schedule II formulations.

Methadone's effects can last up to 24 hours, thereby permitting once-a-day oral administration in heroin detoxification and maintenance programs. High-dose methadone can block the effects of heroin, thereby discouraging the continued use of heroin by addicts in treatment. Chronic administration of methadone results in the development of tolerance and dependence. The withdrawal syndrome develops more slowly and is less severe, but more prolonged than that associated with heroin withdrawal. Ironically, methadone used to control narcotic addiction is encountered on the illicit market. Recent increases in the use of methadone for pain management have been associated with increasing numbers of overdose deaths.

Methadone 40mg

### LAAM

Closely related to methadone, the synthetic compound levo alphacetylmethadol, or LAAM (ORLMM®), has an even longer duration of action (from 48 to 72 hours) than methadone, permitting a reduction in frequency of use. In 1994, it was

approved as a Schedule II treatment drug for narcotic addiction. Both methadone and LAAM have high abuse potential. Their acceptability as narcotic treatment drugs is predicated upon their ability to substitute for heroin, the long duration of action, and their mode of oral administration. Recent data regarding cardiovascular toxicity of LAAM has limited the use of this drug as a first-line therapy for addiction treatment.

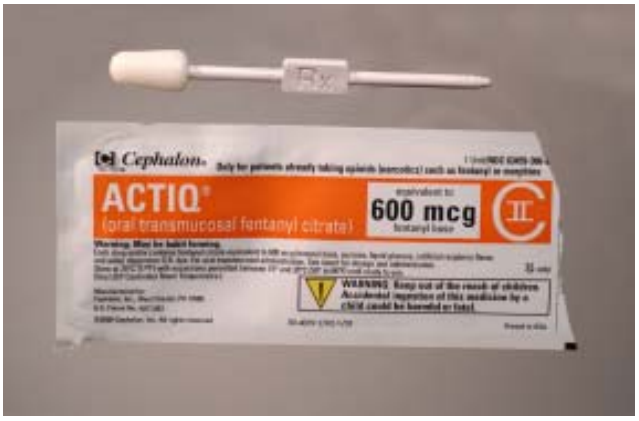
## Buprenorphine

This drug is a semi-synthetic narcotic derived from thebaine. Buprenorphine was initially marketed in the United States as an analgesic (Buprenex®). In 2002, two new products (Suboxone® and Subutex®) were approved for the treatment of narcotic addiction. Like methadone and LAAM, buprenorphine is potent (30 to 50 times the analgesic potency of morphine), has a long duration of action, and does not need to be injected. Unlike the other treatment drugs, buprenorphine produces far less respiratory depression and is thought to be safer in overdose. All buprenorphine products are currently in Schedule III of the CSA.

## Dextropropoxyphene

A close relative of methadone, dextropropoxyphene was first marketed in 1957 under the trade name of Darvon®. Oral analgesic potency is one-half to one-third that of codeine, with 65 mg approximately equivalent to about 600 mg of aspirin. Dextropropoxyphene is prescribed for relief of mild to moderate pain. Bulk dextropropoxyphene is in Schedule II, while preparations containing it are in Schedule IV. More than 150 tons of dextropropoxyphene are produced in the United States annually, and more than 25 million prescriptions are written for the products. This narcotic is associated with a number of toxic side effects and is among the top 10 drugs reported by medical examiners in drug abuse deaths.

## Fentanyl




Fentanyl 600mcg

First synthesized in Belgium in the late 1950s, fentanyl, with an analgesic potency of about 80 times that of morphine, was introduced into medical practice in the 1960s as an intravenous anesthetic under the trade name of Sublimaze®. Thereafter, two other fentanyl analogues were introduced: alfentanil (Alfenta®), an ultra-short (5-10 minutes) acting analgesic, and sufentanil (Sufenta®), an exceptionally potent analgesic (5 to 10 times more potent than fentanyl) for use in heart surgery. Today, fentanyls are extensively used for anesthesia and analgesia. Duragesic®, for example, is a fentanyl transdermal patch used in chronic pain management, and Actiq® is a solid formulation of fentanyl citrate on a stick that dissolves slowly in the mouth for transmucosal absorption. Actiq® is intended for opiate-tolerant individuals and is effective in treating breakthrough pain in cancer patients. Carfentanil (Wildnil®) is an analogue of fentanyl with an analgesic potency 10,000 times that of morphine and is used in veterinary practice to immobilize certain large animals.

Illicit use of pharmaceutical fentanyl's first appeared in the mid-1970s in the medical community and continues to be a problem in the United States. To date, over 12 different analogues of fentanyl have been produced clandestinely and identified in the U.S. drug traffic. The biological effects of the fentanyls are indistinguishable from those of heroin, with the exception that the fentanyls may be

hundreds of times more potent. Fentanyls are most commonly used by intravenous administration, but like heroin, they may also be smoked or snorted.

## Pentazocine

The effort to find an effective analgesic with less dependence-producing consequences led to the development of pentazocine (Talwin®). Introduced as an analgesic in 1967, it was frequently encountered in the illicit trade, usually in combination with tripelennamine and placed into Schedule IV of the CSA in 1979. An attempt at reducing the abuse of this drug was made with the introduction of Talwin Nx®. This product contains a quantity of antagonist (naloxone) sufficient to counteract the morphine-like effects of pentazocine if the tablets are dissolved and injected.

## Butorphanol

While butorphanol can be made from thebaine, it is usually manufactured synthetically. It was initially available in injectable formulations for human (Stadol®) and veterinary (Torbugesic® and Torbutrol®) use. More recently, a nasal spray (Stadol NS®) became available, and significant diversion and abuse of this product led to the 1997 control of butorphanol in Schedule IV of the CSA. Butorphanol is a clear example of a drug gaining favor as a drug of abuse only after it became available in a form that facilitated greater ease of administration (nasal spray vs. injection).

# Narcotics Identification

**Trade Name: Demerol**
Controlled Ingredient: meperidine hydrochloride, 100 mg

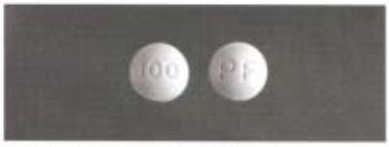
**Trade Name: Demerol**
Controlled Ingredient: meperidine hydrochloride, 50 mg

**Trade Name: Dilaudid**
Controlled Ingredient: hydromorphone hydrochloride, 2 mg

**Trade Name: Dilaudid**
Controlled Ingredient: hydromorphone hydrochloride, 4 mg

**Trade Name: Dolophine**
Controlled Ingredient: methadone hydrochloride, 10 mg

**Trade Name: Generic Product**
Controlled Ingredient: hydromorphone hydrochloride, 2mg



**Trade Name: MS Contin**
Controlled Ingredient: morphine sulfate, 100 mg

**Trade Name: MS Contin**
Controlled Ingredient: morphine sulfate, 15 mg

**Trade Name: MS Contin**
Controlled Ingredient: morphine sulfate, 30 mg

**Trade Name: Oramorph SR**
Controlled Ingredient: morphine sulfate, 30 mg

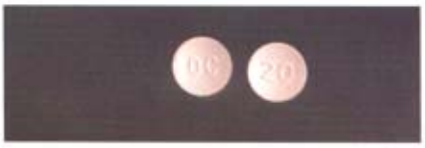
**Trade Name: Oramorph SR**
Controlled Ingredient: morphine sulfate, 100 mg

**Trade Name: Oramorph SR**
Controlled Ingredient: morphine sulfate, 60 mg

# Narcotics Identification

**Trade Name: OxyContin**
Controlled Ingredient: oxycodone hydrochloride, 40mg

**Trade Name: OxyContin**
Controlled Ingredient: oxycodone hydrochloride, 160 mg



**Trade Name: OxyContin**
Controlled Ingredient: oxycodone hydrochloride, 20 mg

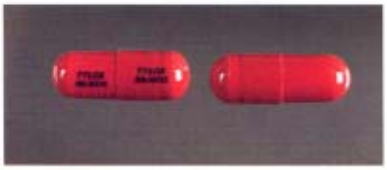
**Trade Name: OxyContin**
Controlled Ingredient: oxycodone hydrochloride, 80 mg

**Trade Name: OxyContin**
Controlled Ingredient:
oxycodone hydrochloride, 10mg

**Trade Name: Percocet**
Controlled Ingredient: oxycodone hydrochloride, 5 mg
Other Ingredients: Acetominophen, 325 mg

**Trade Name: Percodan-Demi**
Controlled Ingredient: oxycodone hydrochloride 2.25 mg and
oxycodone terephthalate 0.19 mg
Other Ingredients: aspirin, 325 mg

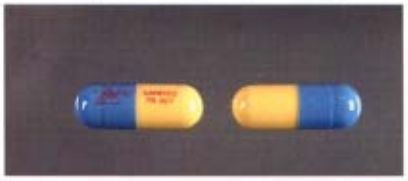
**Trade Name: Percodan**
Controlled Ingredient: oxycodone hydrochloride 4.5 mg and
oxycodone terephthalate 0.38 mg
Other Ingredients: aspirin, 325 mg



**Trade Name: Tylox**
Controlled Ingredient: oxycodone hydrochloride 4.5 mg and
oxycodone terephthalate .38 mg
Other Ingredients: Acetominophen, 500 mg

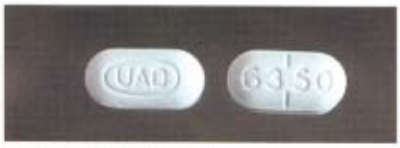
## Schedule III

**Trade Name: Aspirin with Codeine No. 4**
Controlled Ingredient: codeine phosphate, 60 mg
Other Ingredients: aspirin, 325 mg

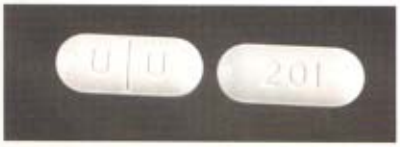


**Trade Name: Fiorinal with Codeine**
Controlled Ingredient: codeine phosphate 30 mg and butalbitol , 50mg
Other Ingredients: aspirin,
325 mg; caffeine, 40mg

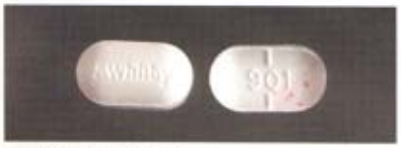
# Narcotics Identification




**Trade Name: Lorcet**
Controlled Ingredient:
hydrocodone
bitartrate, 10 mg
Other Ingredients: acetaminophen, 650 mg




**Trade Name: Lorcet Plus**
Controlled Ingredient: hydrocodone
bitartrate, 7.5 mg
Other Ingredients: acetaminophen, 650 mg



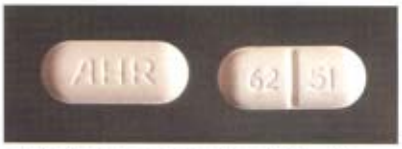

**Trade Name: Lortab**
Controlled Ingredient: hydrocodone
bitartrate, 2.5 mg
Other Ingredients: acetaminophen, 500 mg


**Trade Name: Lortab**
Controlled Ingredient: hydrocodone
bitartrate, 7.5 mg
Other Ingredients: acetominophen, 500 mg


**Trade Name: Phenaphen with Codeine No. 3**
Controlled Ingredient: codeine
phosphate, 30 mg
Other Ingredients: acetominophen, 325 mg

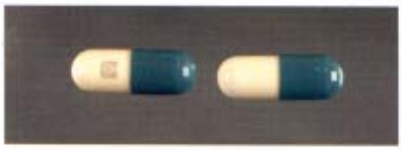

**Trade Name: Phenaphen with Codeine No. 4**
Controlled Ingredient: codeine
phosphate, 60 mg
Other Ingredients: acetaminophen, 325 mg


**Trade Name: Phenaphen with Codeine No. 2**
Controlled Ingredient: codeine
phosphate, 15 mg
Other Ingredients: acetaminophen, 325 mg




**Trade Name: Phenaphen-650 with Codeine**
Controlled Ingredient: codeine
phosphate, 30 mg
Other Ingredients: acetaminophen, 650 mg


**Trade Name: Synalgos**
Controlled Ingredient:
dihydrocodeine, 16 mg
Other Ingredients: aspirin, 356.4 mg;
caffeine, 30 mg



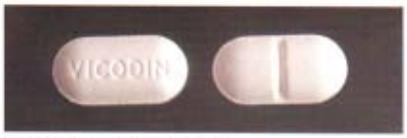
**Trade Name: Tussionex**
Controlled Ingredient: hydrocodone,
5 mg
Other Ingredients: phenyltoloxamine, 10 mg

# Narcotics Identification

**Trade Name: Tylenol with Codeine No. 2**
Controlled Ingredient: codeine phosphate, 15 mg
Other Ingredients: acetominophen, 300 mg

**Trade Name: Tylenol with Codeine No. 4**
Controlled Ingredient: codeine phosphate, 30 mg
Other Ingredients: acetominophen, 300 mg

**Trade Name: Tylenol with Codeine No. 3**
Controlled Ingredient: codeine phosphate, 60 mg
Other Ingredients: acetominophen, 300 mg




**Trade Name: Vicodin**
Controlled Ingredient: hydrocodone bitartrate, 5 mg
Other Ingredients: acetominophen, 500 mg


**Trade Name: Vicodin ES**
Controlled Ingredient: hydrocodone bitartrate, 7.5 mg
Other Ingredients: acetominophen, 750 mg

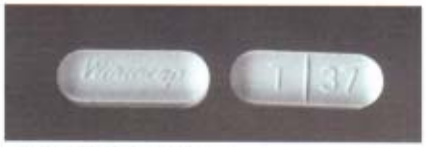
## Schedule IV


**Trade Name: Darvocet-N 100**
Controlled Ingredient: propoxyphene napsylate, 100 mg
Other Ingredients: acetominophen, 650 mg

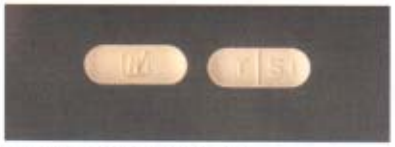
**Trade Name: Darvon**
Controlled Ingredient: propoxyphene hydrochloride, 65 mg

**Trade Name: Darvon Compound-65**
Controlled Ingredient: propoxyphene hydrochloride, 65 mg
Other Ingredients: aspirin, 389 mg; caffeine, 32.4 mg

**Trade Name: Darvon-N**
Controlled Ingredient: propoxyphene napsylate, 100 mg



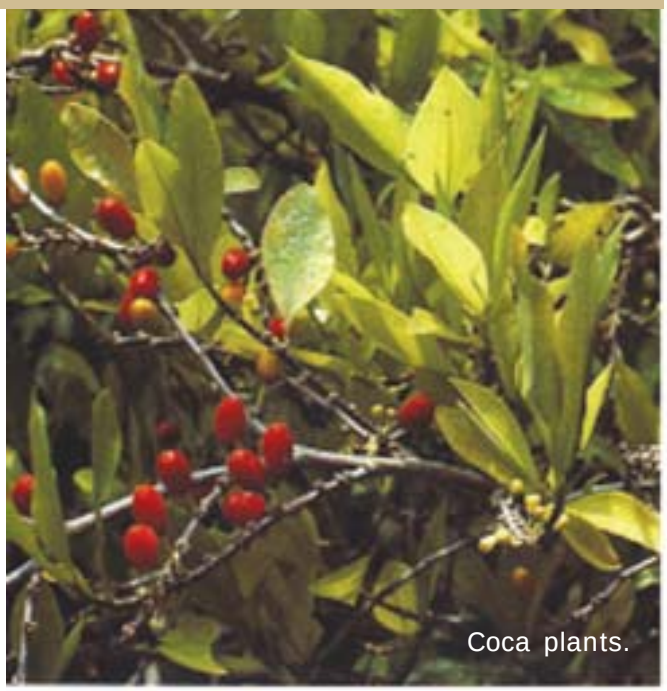

**Trade Name: Talacen**
Controlled Ingredient: pentazocine hydrochloride, 50 mg
Other Ingredients: acetaminophen, 650 mg



**Trade Name: Talwin Nx**
Controlled Ingredient: pentazocine hydrochloride, 50 mg
Other Ingredients: naloxone hydrochloride, 0.5 mg


**Trade Name: Wygesic**
Controlled Ingredient: propoxyphene hydrochloride, 65 mg
Other Ingredients: acetaminophen, 650 mg

# Stimulants


Coca plants.

Stimulants, sometimes referred to as "uppers," reverse the effects of fatigue on both mental and physical tasks. Two commonly used stimulants are nicotine, which is found in tobacco products, and caffeine, an active ingredient in coffee, tea, some soft drinks, and many non-prescription medicines. Used in moderation, these substances tend to relieve malaise and increase alertness. Although the use of these products has been an accepted part of U.S. culture, the recognition of their adverse effects has resulted in a proliferation of caffeine-free products and efforts to discourage cigarette smoking.

A number of stimulants, however, are under the regulatory control of the CSA. Some of these controlled substances are available by prescription for legitimate medical use in the treatment of obesity, narcolepsy, and attention deficit disorders. As drugs of abuse, stimulants are frequently taken to produce a sense of exhilaration, enhance self esteem, improve mental and physical performance, increase activity, reduce appetite, produce prolonged wakefulness, and to "get high." They are among the most potent agents of reward and reinforcement that underlie the problem of dependence.

Stimulants are diverted from legitimate channels and clandestinely manufactured exclusively for the illicit market. They are taken orally, sniffed, smoked, and injected. Smoking, snorting, or injecting stimulants produce a sudden sensation known as a "rush" or a "flash." Abuse is often associated with a pattern of binge use--sporadically consuming large doses of stimulants over a short period of time. Heavy users may inject themselves every few hours, continuing until they have depleted their drug supply or reached a point of delirium, psychosis, and physical exhaustion. During this period of heavy use, all other interests become secondary to recreating the initial euphoric rush. Tolerance can develop rapidly, and both physical and psychological dependence occur. Abrupt cessation, even after a brief two- or three-day binge, is commonly followed by depression, anxiety, drug craving, and extreme fatigue known as a "crash."

Therapeutic levels of stimulants can produce exhilaration, extended wakefulness, and loss of appetite. These effects are greatly intensified when large doses of stimulants are taken. Physical side

effects, including dizziness, tremor, headache, flushed skin, chest pain with palpitations, excessive sweating, vomiting, and abdominal cramps, may occur as a result of taking too large a dose at one time or taking large doses over an extended period of time. Psychological effects include agitation, hostility, panic, aggression, and suicidal or homicidal tendencies. Paranoia, sometimes accompanied by both auditory and visual hallucinations, may also occur. Overdose is often associated with high fever, convulsions, and cardiovascular collapse. Because accidental death is partially due to the effects of stimulants on the body's cardiovascular and temperature-regulating systems, physical exertion increases the hazards of stimulant use.

## Cocaine

Cocaine, the most potent stimulant of natural origin, is extracted from the leaves of the coca plant *(Erythroxylum coca)*, which is indigenous to the Andean highlands of South America. Natives in this region chew or brew coca leaves into a tea for refreshment and to relieve fatigue, similar to the customs of chewing tobacco and drinking tea or coffee.

Pure cocaine was first isolated in the 1880s and used as a local anesthetic in eye surgery. It was particularly useful in surgery of the nose and throat because of its ability to provide anesthesia, as well as to constrict blood vessels and limit bleeding. Many of its therapeutic applications are now obsolete due to the development of safer drugs.

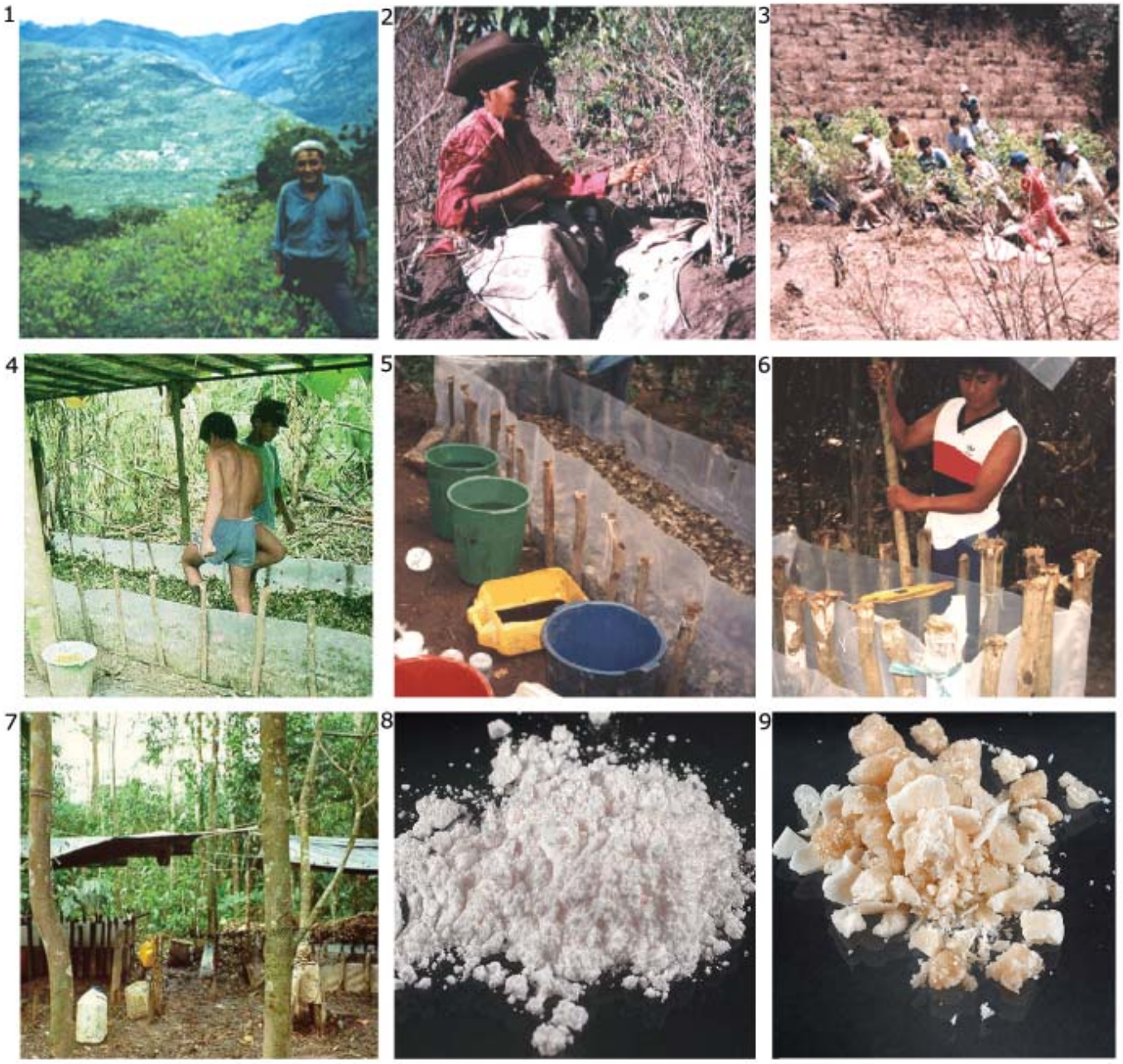
Illicit cocaine is usually distributed as a white crystalline powder or as an off-white chunky material. The powder, usually cocaine hydrochloride, is often diluted with a variety of substances, the most common being sugars such as lactose, inositol, and mannitol, and local anesthetics such as lidocaine. The adulteration increases the volume and thus multiplies profits. Cocaine hydrochloride is generally snorted or dissolved in water and injected. It is rarely smoked because it is heat labile (destroyed by high temperatures).

Paraphernalia used for smoking crack cocaine.

"Crack," the chunk or "rock" form of cocaine, is a ready-to-use freebase. On the illicit market, it is sold in small, inexpensive dosage units that are smoked. Smoking delivers large quantities of cocaine to the lungs, producing effects comparable to intravenous injection. Drug effects are felt almost immediately, are very intense, and are quickly over. Once introduced in the mid-1980s, crack abuse spread rapidly and made the cocaine experience available to anyone with $10 and access to a dealer. In addition to other toxicities associated with cocaine abuse, cocaine smokers suffer from acute respiratory problems including cough, shortness of breath, and severe chest pains with lung trauma and bleeding. It is noteworthy that the emergence of crack was accompanied by a dramatic increase in drug abuse problems and drug-related violence.

The intensity of the psychological effects of cocaine, as with most psychoactive drugs, depends on the dose and rate of entry to the brain. Cocaine reaches the brain through the snorting method in three to five minutes. Intravenous injection of cocaine produces a rush in 15 to 30 seconds, and smoking produces an almost immediate intense experience. The euphoric effects of cocaine are almost indistinguishable from those of amphetamine, although they do not last as long. These intense effects can be followed by a dysphoric crash. To avoid the fatigue and the depression of coming down, frequent repeated doses are taken. Excessive doses of cocaine may lead to seizures and death from respiratory failure,

# **Cocaine:** Cultivation to Product




1. Coca farmers, known as “campesinos,” cultivate plants throughout the Andean region of South America.
2. Depending on the method and variety of coca used, coca plants may take up to two years to mature fully.
3. Once harvested, coca leaves are sometimes allowed to dry in the sun to keep the leaves from rotting.
4. Cocaine base processors stomp the coca leaves to macerate the leaves and help extract desired alkaloids.
5. The solution is transferred by bucket to a second plastic lined pit, where lime or cement is added.
6. Gasoline is then added to the basic solution and mixed.
7. Cocaine hydrochloride (HCl) is produced through further refining and processing the cocaine base.
8. Cocaine HCl is the final product exported from South America.
9. Crack cocaine is made in the U.S. from several basic household products and cocaine HCl.

stroke, or heart failure. There is no specific antidote for cocaine overdose.

Cocaine is the second most commonly used illicit drug (following marijuana) in the United States. According to the 2003 National Survey on Drug Use and Health, more than 34 million Americans (14.7%) age 12 or older had used cocaine at least once in their lifetime. There are no drugs approved for replacement-pharmacotherapy (drugs taken on a chronic basis as a substitute for the abused drug, like methadone for heroin addiction). Cocaine addiction treatment relies heavily on psychotherapy and drugs like antidepressants to relieve some of the effects of cocaine abuse.

## Amphetamines

Amphetamine, dextroamphetamine, methamphetamine, and their various salts, are collectively referred to as amphetamines. In fact, their chemical properties and actions are so similar that even experienced users have difficulty knowing which drug they have taken.

Amphetamine was first marketed in the 1930s as Benzedrine® in an over-the-counter inhaler to treat nasal congestion. By 1937, amphetamine was available by prescription in tablet form and was used in the treatment of the sleeping disorder, narcolepsy, and the behavioral syndrome called minimal brain dysfunction, which today is called attention deficit hyperactivity disorder (ADHD). During World War II, amphetamine was widely used to keep the fighting men going and both dextroamphetamine (Dexedrine®) and methamphetamine (Methedrine®) were readily available.

As use of amphetamines spread, so did their abuse. In the 1960s, amphetamines became a perceived remedy for helping truckers to complete their long routes without falling asleep, for weight control, for helping athletes to perform better and train longer, and for treating mild depression. Intravenous amphetamines, primarily methamphetamine, were abused by a subculture known as "speed freaks." With experience, it became evident that the dangers of abuse of these drugs outweighed most of their therapeutic uses.

Increased control measures were initiated in 1965 with amendments to the federal food and drug laws to curb the black market in amphetamines. Many pharmaceutical amphetamine products were removed from the market including all injectable formulations, and doctors prescribed those that remained less freely. Recent increases in medical use of these drugs can be attributed to their use in the treatment of ADHD. Amphetamine products presently marketed include generic and brand name amphetamine (Adderall®, Dexedrine®, Dextrostat®) and brand name methamphetamine (Desoxyn®). Amphetamines are all controlled in Schedule II of the CSA.

DEA Special Agents and chemists conduct a raid on a clandestine methamphetamine lab.

To meet the ever-increasing black market demand for amphetamines, clandestine laboratory production has mushroomed. Today, most amphetamines distributed to the black market are produced in clandestine laboratories. Methamphetamine laboratories are, by far, the most frequently encountered clandestine laboratories in the United States. The ease of clandestine synthesis, combined with tremendous profits, has resulted in significant availability of illicit methamphetamine, especially on the West Coast, where abuse of this drug has increased dramatically in recent years. Large amounts of on the illicit

methamphetamine are also illicitly smuggled into the United States from Mexico.

Amphetamines are generally taken orally or injected. However, the addition of "ice," the slang name for crystallized methamphetamine hydrochloride, has promoted smoking as another mode of administration. Just as "crack" is smokable cocaine, "ice" is smokable methamphetamine. Methamphetamine, in all its forms, is highly addictive and toxic.

The effects of amphetamines, especially methamphetamine, are similar to cocaine, but their onset is slower and their duration is longer. In contrast to cocaine, which is quickly removed from the brain and is almost completely metabolized, methamphetamine remains in the central nervous system longer, and a larger percentage of the drug remains unchanged in the body, producing prolonged stimulant effects. Chronic abuse produces a psychosis that resembles schizophrenia and is characterized by paranoia, picking at the skin, preoccupation with one's own thoughts, and auditory and visual hallucinations. These psychotic symptoms can persist for months and even years after use of these drugs has ceased and may be related to their neurotoxic effects. Violent and erratic behavior is frequently seen among chronic abusers of amphetamines, especially methamphetamine.

### Methcathinone

Methcathinone, known on the streets as "Cat," is a structural analogue of methamphetamine and cathinone. Clandestinely manufactured, methcathinone is almost exclusively sold in the stable and highly water soluble hydrochloride salt form. It is most commonly snorted, although it can be taken orally by mixing it with a beverage or diluted in water and injected intravenously. Methcathinone has an abuse potential equivalent to methamphetamine and produces amphetamine-like effects. It was placed in Schedule I of the CSA in 1993.

### Methylphenidate

Methylphenidate, a Schedule II substance, has a high potential for abuse and produces many of the same effects as cocaine and the amphetamines. The abuse of this substance has been documented among narcotic addicts who dissolve the tablets in water and inject the mixture. Complications arising from this practice are common due to the insoluble fillers used in the tablets. When injected, these materials block small blood vessels, causing serious damage to the lungs and retina of the eye. Binge use, psychotic episodes, cardiovascular complications, and severe psychological addiction have all been associated with methylphenidate abuse.

Methylphenidate is used legitimately in the treatment of excessive daytime sleepiness associated with narcolepsy, as is the newly marketed Schedule IV stimulant, modafinil (Provigil®). However, the primary legitimate medical use of methylphenidate (Ritalin®, Methylin®, Concerta®) is to treat attention deficit hyperactivity disorder (ADHD) in children. The increased use of this substance for the treatment of ADHD has paralleled an increase in its abuse among adolescents and young adults who crush these tablets and snort the powder to get high. Abusers have little difficulty obtaining methylphenidate from classmates or friends who have been prescribed it.

### Anorectic Drugs

A number of drugs have been developed and marketed to replace amphetamines as appetite suppressants. These anorectic drugs include benzphetamine (Didrex®), diethylproprion (Tenuate®, Tepanil®), mazindol (Sanorex®, Mazanor®), phendimetrazine (Bontril®, Prelu-27®), and phentermine (Lonamin®, Fastin®, Adipex®). These substances are in Schedule III or IV of the CSA and produce some amphetamine-like effects. Of these diet pills, phentermine is the most widely prescribed and most frequently encountered

market. Two Schedule IV anorectics often used in combination with phentermine, fenfluramine and dexfenfluramine, were removed from the U.S. market because they were associated heart valve problems.

## Khat

For centuries, khat, the fresh young leaves of the *Catha edulis* shrub, has been consumed where the plant is cultivated, primarily East Africa and the Arabian Peninsula. There, chewing khat predates the use of coffee and is used in a similar social context. Chewed in moderation, khat alleviates fatigue and reduces appetite. Compulsive use may result in manic behavior with grandiose delusions or in a paranoid type of illness, sometimes accompanied by hallucinations. Khat has been smuggled into the United States and other countries from the source countries for use by emigrants. It contains a number of chemicals, among which are two controlled substances, cathinone (Schedule I) and cathine (Schedule IV). As the leaves mature or dry, cathinone is converted to cathine, which significantly reduces its stimulatory properties.

Harvested Khat plants.

# Stimulants Identification

## Schedule II

**Trade Name: Biphetamine 12 1/2**
Controlled Ingredients: dl-amphetamine, 6.25 mg ; dextroamphetamine, 6.25 mg

**Trade Name: Biphetamine 20**
Controlled Ingredients: dl-amphetamine, 10 mg; dextroamphetamine, 10 mg

**Trade Name: Dexedrine**
Controlled Ingredients: dextroamphetamine sulfate, 10 mg

**Trade Name: Dexedrine**
Controlled Ingredients: dextroamphetamine sulfate, 15 mg

**Trade Name: Dexedrine Spansule**
Controlled Ingredients: dextroamphetamine sulfate, 5 mg

**Trade Name: Desoxyn**
Controlled Ingredients: methamphetamine hydrochlorate, 5 mg

**Trade Name: Desoxyn Gradumet**
Controlled Ingredients: methamphetamine hydrochlorate, 5 mg

**Trade Name: Desoxyn Gradumet**
Controlled Ingredients: methamphetamine hydrochlorate, 10 mg

**Trade Name: Desoxyn Gradumet**
Controlled Ingredients: methamphetamine hydrochlorate, 15 mg

**Trade Name: Methylphenidate Hydrochloride**
Controlled Ingredients: methylphenidate hydrochloride, 10 mg

**Trade Name: Methylphenidate Hydrochloride**
Controlled Ingredients: methylphenidate hydrochloride, 20 mg

**Trade Name: Ritalin**
Controlled Ingredients: methylphenidate hydrochloride, 5 mg

**Trade Name: Ritalin**
Controlled Ingredients: methylphenidate hydrochloride, 10 mg

**Trade Name: Ritalin**
Controlled Ingredients: methylphenidate hydrochloride, 20 mg

# Stimulants Identification

## Schedule III

**Trade Name: Didrex**
Controlled Ingredients: benzphetamine hydrochloride, 50 mg

**Trade Name: Plegine**
Controlled Ingredients: phendimetrazine tartrate, 35 mg


**Trade Name: Prelu-2**
Controlled Ingredients: phendimetrazine tartrate, 105 mg

## Schedule IV

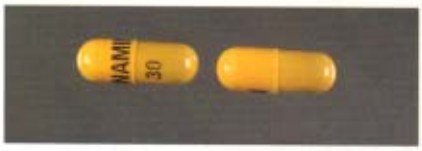
**Trade Name: Adipex**
Controlled Ingredients: phentermine hydrochloride, 37.5 mg

**Trade Name: Tenuate**
Controlled Ingredients: diethylpropion hydrochloride, 25 mg

**Trade Name: Tenuate Dospan**
Controlled Ingredients: diethylpropion hydrochloride, 75 mg

**Trade Name: Fastin**
Controlled Ingredients: phentermine hydrochloride, 30 mg


**Trade Name: Ionamin**
Controlled Ingredients: phentermine hydrochloride, 15 mg




**Trade Name: Ionamin**
Controlled Ingredients: phentermine hydrochloride, 30 mg

**Trade Name: Mazanor**
Controlled Ingredients: mazindol, 1.0 mg

**Trade Name: Sanorex**
Controlled Ingredients: mazindol, 1.0 mg

**Trade Name: Sanorex**
Controlled Ingredients: mazindol, 2.0 mg

# Depressants

GHB is an odorless, colorless liquid or a white powder. Street names include: Liquid Ecstasy, Scoop, Easy Lay, Georgia Home Boy, Grievous Bodily Harm, Liquid X, and Goop.

Historically, people of almost every culture have used chemical agents to induce sleep, relieve stress, and allay anxiety. While alcohol is one of the oldest and most universal agents used for these purposes, hundreds of substances have been developed that produce central nervous system depression. These drugs have been referred to as downers, sedatives, hypnotics, minor tranquilizers, anxiolytics, and anti-anxiety medications. Unlike most other classes of drugs of abuse, depressants are rarely produced in clandestine laboratories. Generally, legitimate pharmaceutical products are diverted to the illicit market. A notable exception to this is a relatively recent drug of abuse, *gamma* hydroxybutyric acid (GHB).

Choral hydrate and paraldehyde are two of the oldest pharmaceutical depressants still in use today. Other depressants, including gluthethimide, methaqualone, and meprobamate have been important players in the milieu of depressant use and abuse. However, two major groups of depressants have dominated the licit and illicit market for nearly a century, first barbiturates and now benzodiazepines.

Barbiturates were very popular in the first half of the 20th century. In moderate amounts, these drugs produce a state of intoxication that is remarkably similar to alcohol intoxication. Symptoms include slurred speech, loss of motor coordination, and impaired judgment. Depending on the dose, frequency, and duration of use, one can rapidly develop tolerance, and physical and psychological dependence on barbiturates. With the development of tolerance, the margin of safety between the effective dose and the lethal dose becomes very narrow. That is, in order to obtain the same level of intoxication, the tolerant abuser may raise his or her dose to a level that may result in coma or death. Although many individuals have taken barbiturates therapeutically without harm, concern about the addiction potential of barbiturates and the ever-increasing number of fatalities associated with them led to the development of alternative medications. Today, less than 10 percent of all depressant prescriptions in the United States are for barbiturates.

Benzodiazepines were first marketed in the 1960s. Touted as much safer depressants with far less

addiction potential than barbiturates, today these drugs account for about one out of every five prescriptions for controlled substances. Although benzodiazepines produce significantly less respiratory depression than barbiturates, it is now recognized that benzodiazepines share many of the undesirable side effects of the barbiturates. A number of toxic central nervous system effects are seen with chronic high-dose benzodiazepine therapy, including headaches, irritability, confusion, memory impairment, and depression. The risk of developing over-sedation, dizziness, and confusion increases substantially with higher doses of benzodiazepines. Prolonged use can lead to physical dependence even at doses recommended for medical treatment. Unlike barbiturates, large doses of benzodiazepines are rarely fatal unless combined with other drugs or alcohol. Although primary abuse of benzodiazepines is well documented, abuse of these drugs usually occurs as part of a pattern of multiple drug abuse. For example, heroin or cocaine abusers will use benzodiazepines and other depressants to augment their "high" or alter the side effects associated with over-stimulation or narcotic withdrawal.


There are marked similarities among the withdrawal symptoms seen with most drugs classified as depressants. In the mildest form, the withdrawal syndrome may produce insomnia and anxiety, usually the same symptoms that initiated the drug use. With a greater level of dependence, tremors and weakness are also present, and in its most severe form, the withdrawal syndrome can cause seizures and delirium. Unlike the withdrawal syndrome seen with most other drugs of abuse, withdrawal from depressants can be life threatening.

## Barbiturates

Barbiturates were first introduced for medical use in the early 1900s. More than 2,500 barbiturates have been synthesized, and at the height of their popularity, about 50 were marketed for human use. Today, about a dozen are in medical use. Barbiturates produce a wide spectrum of central nervous system depression, from mild sedation to coma, and have been used as sedatives, hypnotics, anesthetics, and anticonvulsants. The primary differences among many of these products are how fast they produce an effect and how long those effects last. Barbiturates are classified as ultrashort, short, intermediate, and long-acting.

The ultrashort-acting barbiturates produce anesthesia within about one minute after intravenous administration. Those in current medical use are the Schedule IV drug methohexital (Brevital®), and the Schedule III drugs thiamyl (Surital®) and thiopental (Pentothal®). Barbiturate abusers prefer the Schedule II short-acting and intermediate-acting barbiturates that include amobarbital (Amytal®), pentobarbital (Nembutal®), secobarbital (Seconal®), and Tuinal (an amobarbital/secobarbital combination product). Other short and intermediate-acting barbiturates are in Schedule III and include butalbital (Fiorina®), butabarbital (Butisol®), talbutal (Lotusate®), and aprobarbital (Alurate®). After oral administration, the onset of action is from 15 to 40 minutes, and the effects last up to six hours. These drugs are primarily used for insomnia and preoperative sedation. Veterinarians use pentobarbital for anesthesia and euthanasia.

Long-acting barbiturates include phenobarbital (Luminal®) and mephobarbital (Mebaral®), both of which are in Schedule IV. Effects of these drugs are realized in about one hour and last for about 12

hours, and are used primarily for daytime sedation and the treatment of seizure disorders.

## Benzodiazepines

The benzodiazepine family of depressants is used therapeutically to produce sedation, induce sleep, relieve anxiety and muscle spasms, and to prevent seizures. In general, benzodiazepines act as hypnotics in high doses, anxiolytics in moderate doses, and sedatives in low doses. Of the drugs marketed in the United States that affect central nervous system function, benzodiazepines are among the most widely prescribed medications. Fifteen members of this group are presently marketed in the United States, and about 20 additional benzodiazepines are marketed in other countries. Benzodiazepines are controlled in Schedule IV of the CSA.

Short-acting benzodiazepines are generally used for patients with sleep-onset insomnia (difficulty falling asleep) without daytime anxiety. Shorter-acting benzodiazepines used to manage insomnia include estazolam (ProSom®), flurazepam (Dalmane®), temazepam (Restoril®), and triazolam (Halcion®). Midazolam (Versed®), a short-acting benzodiazepine, is utilized for sedation, or treating anxiety and amnesia in critical care settings and prior to anesthesia. It is available in the United States as an injectable preparation and as a syrup (primarily for pediatric patients).

Benzodiazepines with a longer duration of action are utilized to treat insomnia in patients with daytime anxiety. These benzodiazepines include alprazolam (Xanax®), chlordiazepoxide (Librium®), clorazepate (Tranxene®), diazepam (Valium®), halazepam (Paxipam®), lorzepam (Ativan®), oxazepam (Serax®), prazepam (Centrax®), and quazepam (Doral®). Clonazepam (Klonopin®), diazepam, and clorazepate are also used as anticonvulsants.

Benzodiazepines are classified in the CSA as depressants. Repeated use of large doses or, in some cases, daily use of therapeutic doses of benzodiazepines is associated with amnesia, hostility, irritability, and vivid or disturbing dreams, as well as tolerance and physical dependence. The withdrawal syndrome is similar to that of alcohol and may require hospitalization. Abrupt cessation of benzodiazepines is not recommended and tapering-down the dose eliminates many of the unpleasant symptoms.

Given the millions of prescriptions written for benzodiazepines, relatively few individuals increase their dose on their own initiative or engage in drug-seeking behavior. Those individuals who do abuse benzodiazepines often maintain their drug supply by getting prescriptions from several doctors, forging prescriptions, or buying diverted pharmaceutical products on the illicit market. Abuse is frequently associated with adolescents and young adults who take benzodiazepines to obtain a "high." This intoxicated state results in reduced inhibition and impaired judgment. Concurrent use of alcohol or other depressant with benzodiazepines can be life threatening. Abuse of benzodiazepines is particularly high among heroin and cocaine abusers. A large percentage of people entering treatment for narcotic or cocaine addiction also report abusing benzodiazepines. Alprazolam and diazepam are the two most frequently encountered benzodiazepines on the illicit market.

## Flunitrazepam

Flunitrazepam (Rohypnol®) is a benzodiazepine that is not manufactured or legally marketed in the United States, but is smuggled in by traffickers. In the mid-1990s, flunitrazepam was extensively trafficked in Florida and Texas. Known as "rophies," "roofies," and "roach," flunitrazepam gained popularity among younger individuals as a "party" drug. It has also been utilized as a "date rape" drug. In this context, flunitrazepam is placed in the alcoholic drink of an unsuspecting victim to incapacitate them and prevent resistance from sexual assault. The victim is frequently unaware of what has happened to them and often does not report the incident to authorities. A number of actions by the manufacturer of this drug and by

government agencies have resulted in reducing the availability and abuse of flunitrazepam in the United States.


## *Gamma* Hydroxybutyric Acid (GHB)

In recent years, *gamma* hydroxybutyric acid (GHB) has emerged as a significant drug of abuse throughout the United States. Abusers of this drug fall into three major groups: (1) users take GHB for its intoxicant or euphoriant effects; (2) bodybuilders who abuse GHB for its alleged utility as an anabolic agent or as a sleep aid; and (3) individuals who use GHB as a weapon for sexual assault. These categories are not mutually exclusive and an abuser may use the drug illicitly to produce several effects. GHB is frequently taken with alcohol or other drugs that heighten its effects and is often found at bars, nightclubs, rave parties, and gyms. Teenagers and young adults who frequent these establishments are the primary users. Like flunitrazepam, GHB is often referred to as a "date-rape" drug. GHB involvement in rape cases is likely to be unreported or unsubstantiated because GHB is quickly eliminated from the body making detection in body fluids unlikely. Its fast onset of depressant effects may render the victim with little memory of the details of the attack.

GHB produces a wide range of central nervous system effects, including dose-dependent drowsiness, dizziness, nausea, amnesia, visual hallucinations, hypotension, bradycardia, severe respiratory depression, and coma. The use of alcohol in combination with GHB greatly enhances its depressant effects. Overdose frequently requires emergency room care, and many GHB-related fatalities have been reported.

*Gamma* butyrolactone (GBL) and 1,4-butanediol are GHB analogues that can be used as substitutes for GHB. When ingested, these analogues are converted to GHB and produce identical effects. GBL is also used in the clandestine production of GHB as an immediate precursor. Both GBL and 1,4-butanediol have been sold at health food stores and on various internet sites.

The abuse of GHB began to seriously escalate in the mid-1990s. For example, in 1994, there were 55 emergency department episodes involving GHB reported in the Drug Abuse Warning Network (DAWN) system. By 2002, there were 3,330 emergency room episodes. DAWN data also indicated that most users were male, less than 25 years of age, and taking the drug orally for recreational use.

GHB was placed in Schedule I of the CSA in March 2000. *Gamma* butyrolactone (GBL) was made a List I Chemical in February 2000. GHB has recently been approved as a medication (Xyrem®) for the treatment of cataplexy associated with some types of narcolepsy. This approved medication is in Schedule III of the CSA.

## Paraldehyde

Paraldehyde (Paral®) is a Schedule IV depressant used most frequently in hospital settings to treat delirium tremens associated with alcohol withdrawal. Many individuals who become addicted to paraldehyde have been initially exposed during treatment for alcoholism and, despite the disagreeable odor and taste, come to prefer it to alcohol. This drug is not used by injection because

of tissue damage, and taken orally, it can be irritating to the throat and stomach. One of the signs of paraldehyde use is a strong, characteristic smell to the breath.

### Chloral Hydrate

The oldest of the hypnotic (sleep inducing, depressants, chloral hydrate was first synthesized in 1832. Marketed as syrups or soft gelatin capsules, chloral hydrate takes effect in a relatively short time (30 minutes) and will induce sleep in about an hour. A solution of chloral hydrate and alcohol constituted the infamous "knockout drops" or "Mickey Finn." At therapeutic doses, chloral hydrate has little effect on respiration and blood pressure; however, a toxic dose produces severe respiratory depression and very low blood pressure. Chronic use is associated with liver damage and a severe withdrawal syndrome. Although some physicians consider chloral hydrate to be the drug of choice for sedation of children before diagnostic, dental, or medical procedures, its general use as a hypnotic has declined. Chloral hydrate, Noctec®, and other compounds, preparations, or mixtures containing choral hydrate are in Schedule IV of the CSA.

### Glutethimide and Methaqualone

Glutethimide (Doriden®) was introduced in 1954 and methaqualone (Quaalude®, Sopor®) in 1965 as safe barbiturate substitutes. Experience demonstrated, however, that their addiction liability and the severity of withdrawal symptoms were similar to those of barbiturates. By 1972, "luding out," taking methaqualone with wine, was a popular college pastime. Excessive use leads to tolerance, dependence, and withdrawal symptoms similar to those of barbiturates. In the United States, the marketing of methaqualone pharmaceutical products stopped in 1984, and methaqualone was transferred to Schedule I of the CSA. In 1991, glutethimide was transferred into Schedule II in response to an upsurge in the prevalence of diversion, abuse, and overdose deaths. Today, there is little medical use of glutethimide in the United States.

### Meprobamate

Meprobamate was introduced as an anti-anxiety agent in 1955 and is prescribed primarily to treat anxiety, tension, and associated muscle spasms. More than 50 tons are distributed annually in the United States under its generic name and brand names such as Miltown® and Equanil®. Its onset and duration of action are similar to the intermediate-acting barbiturates; however, therapeutic doses of meprobamate produce less sedation and toxicity than barbiturates. Excessive use can result in psychological and physical dependence. Carisoprodol (Soma®), a skeletal muscle relaxant, is metabolized to meprobamate. This conversion may account for some of the properties associated with carisoprodol and likely contributes to its abuse.

### Newly Marketed Drugs

Zolpidem (Ambien®) and zaleplon (Sonata®) are two relatively new, benzodiazepine-like CNS depressants that have been approved for the short-term treatment of insomnia. Both of these drugs share many of the same properties as the benzodiazepines and are in Schedule IV of the CSA.

# Depressants Identification

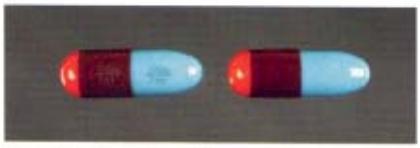
## Schedule II

**Trade Name: Amytal**
Controlled Ingredient: amobarbital. 200 mg

**Trade Name: Doriden**
Controlled Ingredient: glutethimide, 500 mg

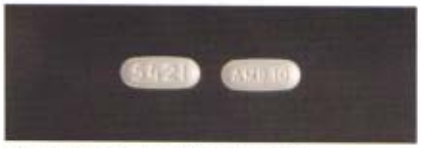
**Trade Name: Nembutal**
Controlled Ingredient: pentobarbital 100 mg

**Trade Name: Seconal**
Controlled Ingredient: secobarbital sodium, 100 mg



**Trade Name: Tuinal**
Controlled Ingredient: amobarbital sodium, 100 mg, secobarbital sodium, 100 mg

## Schedule IV



**Trade Name: Ambien Zolpidem**
Controlled Ingredient: Zolpidem Tartrate, 10 mg

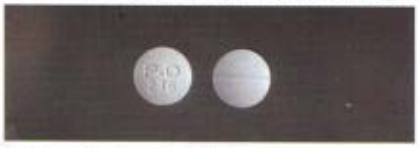
**Trade Name: Ambien Zopidem**
Controlled Ingredient: Zolpidem Tartrate, 5 mg

**Trade Name: Ativan**
Controlled Ingredient: lorazepam. 1.0 mg

**Trade Name: Ativan**
Controlled Ingredient: lorazepam. 0.5 mg

**Trade Name: Ativan**
Controlled Ingredient: lorazepam. 2.0 mg

**Trade Name: Centrax**
Controlled Ingredient: prazepam, 10 mg

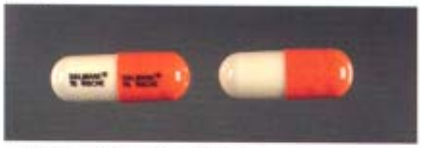


**Trade Name: Centrax**
Controlled Ingredient: prazepam, 10 mg

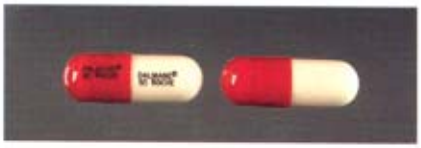
**Trade Name: Centrax**
Controlled Ingredient: prazepam 5 mg

# Depressants Identification

**Trade Name: Centrax Prazepam**
Controlled Ingredient: prazepam
5 mg



**Trade Name: Dalmane**
Controlled Ingredient: flurazepam hydrochloride,
15 mg



**Trade Name: Dalmane**
Controlled Ingredient: flurazepam hydrochloride,
30 mg

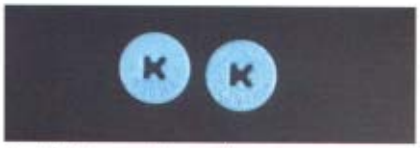
**Trade Name: Equanil**
Controlled Ingredient: meprobamate,
200 mg

**Trade Name: Equanil**
Controlled Ingredient: meprobamate,
400 mg

**Trade Name: Halcion**
Controlled Ingredient: triazolam,
0.25 mg

**Trade Name: Halcion**
Controlled Ingredient: triazolam,
0.50 mg

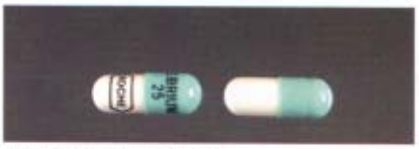

**Trade Name: Klonopin**
Controlled Ingredient: clonazepam,
0.50 mg



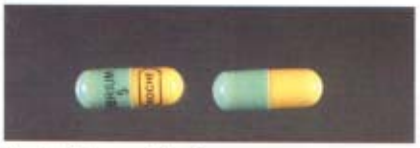

**Trade Name: Klonopin**
Controlled Ingredient: clonazepam,
1.0 mg


**Trade Name: Klonopin**
Controlled Ingredient: clonazepam,
2.0 mg

**Trade Name: Librium**
Controlled Ingredient: chlordiazepoxide
hydrochloride, 10 mg



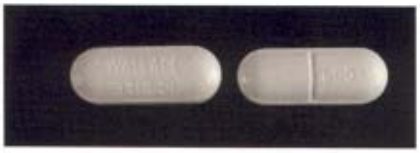
**Trade Name: Librium**
Controlled Ingredient: chlordiazepoxide
hydrochloride, 25 mg



**Trade Name: Librium**
Controlled Ingredient: chlordiazepoxide
hydrochloride, 5 mg

# Depressants Identification

**Trade Name: Miltown 400**
Controlled Ingredient: meprobamate,
400 mg



**Trade Name: Miltown 600**
Controlled Ingredient: meprobamate,
600 mg

**Trade Name: Placidyl**
Controlled Ingredient: ethchlorvynol,
200 mg

**Trade Name: Placidyl**
Controlled Ingredient: ethchlorvynol, 500 mg

**Trade Name: Placidyl**
Controlled Ingredient: ethchlovynol,
750 mg

**Trade Name: Restoril**
Controlled Ingredient: temazepam.
15 mg

**Trade Name: Restoril**
Controlled Ingredient: temazepam.
30 mg

**Trade Name: Serax**
Controlled Ingredient: oxazepam,
15 mg

**Trade Name: Serax**
Controlled Ingredient: oxazepam,
15 mg

**Trade Name: Serax**
Controlled Ingredient: oxazepam,
30 mg

**Trade Name: Tranxene**
Controlled Ingredient: chlorazepate dipotassium,
15 mg

**Trade Name: Tranxene**
Controlled Ingredient: chlorazepate dipotassium,
3.75 mg

**Trade Name: Tranxene**
Controlled Ingredient: chlorazepate dipotassium,
7.5 mg

# Depressants Identification

**Trade Name: Valium**
Controlled Ingredient: diazepam,
10 mg

**Trade Name: Valium**
Controlled Ingredient: diazepam,
5 mg

**Trade Name: Valium**
Controlled Ingredient: diazepam,
2 mg

**Trade Name: Xanax**
Controlled Ingredient: alprazolam,
0.25 mg

**Trade Name: Xanax**
Controlled Ingredient: alprazolam,
0.5 mg

**Trade Name: Xanax**
Controlled Ingredient: alprazolam,
1.0 mg

**Trade Name: Rohypnol**
Controlled Ingredient: flunitrazepam -not sold or marketed in the U.S. but illicitly smuggled into the country

**Trade Name: Rohypnol**

# Cannabis

Indoor marijuana growth has become a popular means of clandestine cultivation.

*Cannabis sativa L.*, the cannabis plant, grows wild throughout most of the tropic and temperate regions of the world. Prior to the advent of synthetic fibers, the cannabis plant was cultivated for the tough fiber of its stem. In the United States, cannabis is legitimately grown only for scientific research.

Cannabis contains chemicals called cannabinoids that are unique to the cannabis plant. Among the cannabinoids synthesized by the plant are cannabinol, cannabidiol, cannabinolidic acids, cannabigerol, cannabichromene, and several isomers of tetrahydrocannabinol. One of these, delta-9-tetrahydrocannabinol (THC), is believed to be responsible for most of the characteristic psychoactive effects of cannabis. Research has resulted in development and marketing of the dronabinol (synthetic THC) product, Marinol®, for the control of nausea and vomiting caused by chemotheraputic agents used in the treatment of cancer and to stimulate appetite in AIDS patients. Marinol® was rescheduled in 1999 and placed in Schedule III of the CSA.

Cannabis products are usually smoked. Their effects are felt within minutes, reach their peak in 10 to 30 minutes, and may linger for two or three hours. The effects experienced often depend upon the experience and expectations of the individual user, as well as the activity of the drug itself. Low doses tend to induce a sense of well-being and a dreamy state of relaxation, which may be accompanied by a more vivid sense of sight, smell, taste, and hearing, as well as by subtle alterations in thought formation and expression. This state of intoxication may not be noticeable to an observer. However, driving, occupational, or household accidents may result from a distortion of time and space relationships and impaired motor coordination. Stronger doses intensify reactions. The individual may experience shifting sensory imagery, rapidly fluctuating emotions, fragmentary thoughts with disturbing associations, an altered sense of self-identity, impaired memory, and a dulling of attention despite an illusion of heightened insight. High doses may result in image distortion, a loss of personal identity, fantasies, and hallucinations.

Bongs.

Three drugs that come from cannabis—marijuana, hashish, and hashish oil—are distributed on the U.S. illicit market. Having no currently accepted medical use in treatment in the United States, they remain under Schedule I of the CSA. Today, cannabis is illicitly cultivated, both indoors and out, to maximize its THC content, thereby producing the greatest possible psychoactive effect.

## Marijuana

Marijuana is the most frequently encountered illicit drug worldwide. In the United States, according to the 2003 Monitoring the Future Study, 57 percent of adults aged 19 to 28 reported having used marijuana in their lifetime. Among younger Americans, 17.5 percent of 8th graders and 46.1 percent of 12th graders had used marijuana in their lifetime. The term "marijuana," as commonly used, refers to the leaves and flowering tops of the cannabis plant that are dried to produce a tobacco-like substance. Marijuana varies significantly in its potency, depending on the source and selection of plant materials used. The form of marijuana known as sinsemilla (Spanish, sin semilla: without seed), derived from the unpollinated female cannabis plant, is preferred for its high THC content. Marijuana is usually smoked in the form of loosely rolled cigarettes called joints, bongs, or hollowed out commercial cigars called blunts. Joints and blunts may be laced with a number of adulterants including phencyclidine (PCP), substantially altering the effects and toxicity of these products. Street names for marijuana include pot, grass, weed, Mary Jane, and reefer. Although marijuana grown in the United States was once considered inferior because of a low concentration of THC, advancements in plant selection and cultivation have resulted in higher THC-containing domestic

marijuana. In 1974, the average THC content of illicit marijuana was less than one percent. Today most commercial grade marijuana from Mexico/Columbia and domestic outdoor cultivated marijuana has an average THC content of about 4 to 6 percent. Between 1998 and 2002, NIDA-sponsored Marijuana Potency Monitoring System (MPMP) analyzed 4,603 domestic samples. Of those samples, 379 tested over 15 percent THC, 69 samples tested between 20 and 25 percent THC and four samples tested over 25 percent THC.

Marijuana contains known toxins and cancer-causing chemicals. Marijuana users experience the same health problems as tobacco smokers, such as bronchitis, emphysema, and bronchial asthma. Some of the effects of marijuana use also include increased heart rate, dryness of the mouth, reddening of the eyes, impaired motor skills and concentration, and hunger with an increased desire for sweets. Extended use increases risk to the lungs and reproductive system, as well as suppression of the immune system. Occasionally, hallucinations, fantasies, and paranoia are reported. Long-term chronic marijuana use is associated with an Amotivational Syndrome characterized by: apathy; impairment of judgement, memory and concentration; and loss of interest in personal appearance and pursuit of goals.

Rolling papers used to make marijuana cigarettes (joints).

## Hashish

Hashish consists of the THC-rich resinous material of the cannabis plant, which is collected, dried, and then compressed into a variety of forms, such as balls, cakes, or cookie-like sheets. Pieces are then broken off, placed in pipes, and smoked. The Middle East, North Africa, and Pakistan/ Afghanistan are the main sources of hashish. The THC content of hashish that reached the United States, where demand is limited, averaged about five percent in the 1990s.

## Hashish Oil

The term "hash oil" is used by illicit drug users and dealers, but is a misnomer in suggesting any resemblance to hashish. Hash oil is produced by extracting the cannabinoids from plant material with a solvent. The color and odor of the resulting extract will vary, depending on the type of solvent used. Current samples of hash oil, a viscous liquid ranging from amber to dark brown in color, average about 15 percent THC. In terms of its psychoactive effect, a drop or two of this liquid on a cigarette is equal to a single "joint" of marijuana.

## Synthetic THC Identification

**Schedule III**

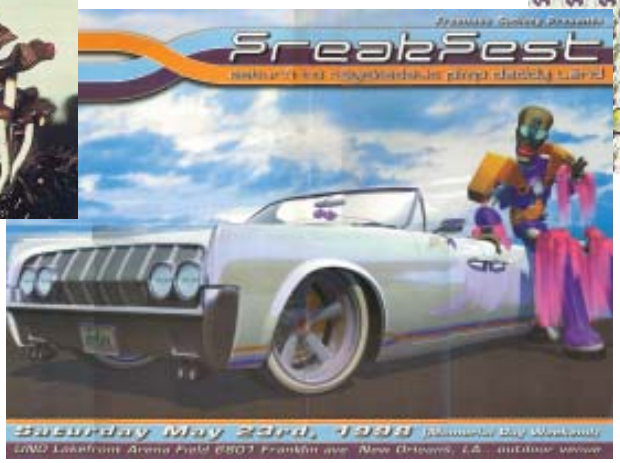
**Trade Name: Marinol**
Controlled Ingredients:
dronabinol,
2.5 mg

**Trade Name: Marinol**
Controlled Ingredients:
dronabinol,
5 mg

**Trade Name: Marinol**
Controlled Ingredients:
dronabinol,
10 mg

# Hallucinogens

Mushrooms.




Rave poster.

LSD blotter paper.

Hallucinogens are among the oldest known group of drugs used for their ability to alter human perception and mood. For centuries, many of the naturally occurring hallucinogens found in plants and fungi have been used for a variety of shamanistic practices. In more recent years, a number of synthetic hallucinogens have been produced, some of which are much more potent than their naturally occurring counterparts.

The biochemical, pharmacological, and physiological basis for hallucinogenic activity is not well understood. Even the name for this class of drugs is not ideal, since hallucinogens do not always produce hallucinations.

However, taken in non-toxic dosages, these substances produce changes in perception, thought, and mood. Physiological effects include elevated heart rate, increased blood pressure, and dilated pupils. Sensory effects include perceptual distortions that vary with dose, setting, and mood. Psychic effects include disorders of thought associated with time and space. Time may appear to stand still and forms and colors seem to change and take on new significance. This experience may be either pleasurable or extremely frightening. It needs to be stressed that the effects of hallucinogens are unpredictable each time they are used.

Weeks or even months after some hallucinogens have been taken, the user may experience flashbacks—fragmentary recurrences of certain aspects of the drug experience in the absence of actually taking the drug. The occurrence of a flashback is unpredictable, but is more likely to occur during times of stress and seem to occur more frequently in younger individuals. With time, these episodes diminish and become less intense.

The abuse of hallucinogens in the United States received much public attention in the 1960s and 1970s. A subsequent decline in their use in the 1980s may be attributed to real or perceived hazards associated with taking these drugs.

However, a resurgence of the use of hallucinogens is cause for concern. According to the 2003 Monitoring the Future Study, 10.6 percent of 12th graders reported hallucinogenic use in their lifetime. According to the 2003 National Survey on Drug Use and Health, approximately 1 million Americans were current hallucinogen users. Hallucinogenic mushrooms, LSD, and MDMA are popular among junior and senior high school students who use hallucinogens.

There is a considerable body of literature that links the use of some of the hallucinogenic substances to neuronal damage in animals, and recent data support that some hallucinogens are neurotoxic to humans. However, the most common danger of hallucinogen use is impaired judgment that often leads to rash decisions and accidents.

## LSD

Lysergic acid diethylamide (LSD) is the most potent hallucinogen known to science, as well as the most highly studied. LSD was originally synthesized in 1938 by Dr. Albert Hoffman. However, its hallucinogenic effects were unknown until 1943 when Hoffman accidentally consumed some LSD. It was later found that an oral dose of as little as 0.000025 grams (or 25 micrograms, equal in weight to a couple grains of salt) is capable of producing rich and vivid hallucinations. Because of its structural similarity to a chemical present in the brain and its similarity in effects to certain aspects of psychosis, LSD was used as a research tool to study mental illness. LSD abuse was popularized in the 1960s by individuals like Timothy Leary who encouraged American students to "turn on, tune in, and drop out." LSD use has varied over the years but it still remains a significant drug of abuse. In 2003, lifetime prevalence of LSD use for 8th and 12th graders was 2.1 and 5.9 percent, respectively.

The average effective oral dose is from 20 to 80 micrograms with the effects of higher doses lasting for 10 to 12 hours. LSD is usually sold in the form of impregnated paper (blotter acid), typically imprinted with colorful graphic designs. It has also been encountered in tablets (microdots), thin squares of gelatin (window panes), in sugar cubes and, rarely, in liquid form.

High school students often purchase drugs from fellow students.

Physical reactions may include dilated pupils, lowered body temperature, nausea, "goose bumps," profuse perspiration, increased blood sugar, and rapid heart rate. During the first hour after ingestion, the user may experience visual changes with extreme changes in mood. In the hallucinatory state, the LSD user may suffer impaired depth and time perception, accompanied by distorted perception of the size and shape of objects, movements, color, sound, touch, and the user's own body image. During this period, the ability to perceive objects through the senses is distorted: a user may describe "hearing colors" and "seeing sounds." The ability to make sensible judgments and see

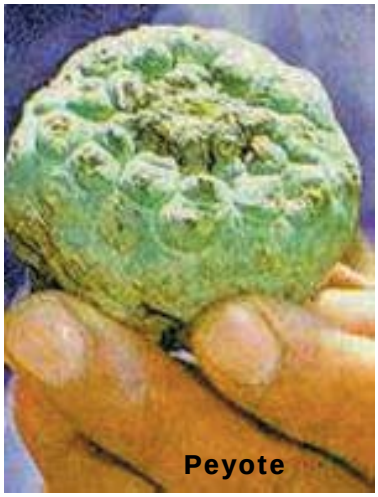
common dangers is impaired, making the user susceptible to personal injury. After an LSD "trip," the user may suffer acute anxiety or depression for a variable period of time. Flashbacks have been reported days or even months after taking the last dose.

## Psilocybin & Psilocyn and other Tryptamines

A number of Schedule I hallucinogenic substances are classified chemically as tryptamines. Most of these are found in nature but many, if not all, can be produced synthetically. Psilocybin and psilocyn (4-hydroxy-N,N-dimethyltryptamine) are obtained from certain mushrooms indigenous to tropical and subtropical regions of South America, Mexico, and the United States. As pure chemicals at doses of 10 to 20 mg, these hallucinogens produce muscle relaxation, dilation of pupils, vivid visual and auditory distortions, and emotional disturbances. However, the effects produced by consuming preparations of dried or brewed mushrooms are far less predictable and largely depend on the particular mushrooms used and the age and preservation of the extract. There are many species of "magic" mushrooms that contain varying amounts of these tryptamines, as well as uncertain amounts of other chemicals. As a consequence, the hallucinogenic activity, as well as the extent of toxicity produced by various plant samples, are often unknown.

Dimethyltryptamine (DMT) N,N-Dimethyltryptamine has a long history of use and is found in a variety of plants and seeds. It can also be produced synthetically. It is ineffective when taken orally, unless combined with another drug that inhibits its metabolism. Generally it is sniffed, smoked, or injected. The effective hallucinogenic dose in humans is about 50 to 100 mg and lasts for about 45 to 60 minutes. Because the effects last only about an hour; the experience has been referred to as a "businessman's trip."

A number of other hallucinogens have very similar structures and properties to those of DMT.


Peyote

Diethyltryptamine (DET) N,N-Diethyltryptamine, for example, is an analogue of DMT and produces the same pharmacological effects but is somewhat less potent than DMT. Alpha-ethyltryptamine (AET) is another tryptamine hallucinogen added to the list of Schedule I hallucinogens in 1994. Bufotenine (5-hydroxy-N,N-dimethyltryptamine) is a Schedule I substance found in certain mushrooms, seeds, and skin glands of Bufo toads. In general, most bufotenine preparations from natural sources are extremely toxic. N,N-Diisopropyl-5-methoxytryptamine (referred to as Foxy-Methoxy) is an orally active tryptamine recently encountered in the United States.

## Peyote & Mescaline

Peyote is a small, spineless cactus, *Lophophora williamsii*, whose principal active ingredient is the hallucinogen mescaline (3, 4, 5-trimethoxyphenethylamine). From earliest recorded time, peyote has been used by natives in northern Mexico and the southwestern United States as a part of their religious rites.

The top of the cactus above ground—also referred to as the crown—consists of disc-shaped buttons that are cut from the roots and dried. These buttons are generally chewed or soaked in water to produce an intoxicating liquid. The hallucinogenic dose of mescaline is about 0.3 to 0.5 grams and lasts about 12 hours. While peyote produced rich visual hallucinations that were important to the native American peyote users, the full spectrum of effects served as a chemically induced model of mental illness. Mescaline can be extracted from peyote or produced synthetically. Both peyote and mescaline are listed in the CSA as Schedule I hallucinogens.

Many chemical variations of mescaline and amphetamine have been synthesized for their "feel good" effects. 4-Methyl-2,5-dimethoxy-amphetamine (DOM) was introduced into the San Francisco drug scene in the late 1960s and was nicknamed STP; an acronym for "Serenity, Tranquility, and Peace." Other illicitly produced analogues include 4-bromo-2,5-dimethoxy-amphetamine (DOB) and 4-bromo-2,5-dimethoxy-phenethylamine (2C-B or Nexus). In 2000, *para*-methoxyamphetamine (PMA,) and *para*-methoxy-methamphetamine (PMMA) were identified in tablets sold as Ecstasy. PMA, which first appeared on the illicit market briefly in the early 1970s, is associated with a number of deaths in both the United States and Europe.

## New Hallucinogens

A number of phenethylamine and tryptamine analogues have been encountered on the illicit market. Those recently placed under federal control include, 2C-T-7 (dimethoxy-4-(n)-propylthio-phenethylamine) permanently placed in Schedule I in March 2004 and 5-MeO-DIPT (5-methoxy-diisopropyltryptamine) and AMT (alpha-methyltryptamine) which were placed in Schedule I on an emergency basis in April 2003. In addition, a number of other analogues are being encountered. These include DIPT (N,N-diiso-propyltryptamine), DPT (N,N-dipropyltryptamine), 5-MeO-AMT (5-methoxy-alphamethyltryptamine), MIPT (N,N-methylisopropyltryptamine) and 5-MeO-MIPT (5-Methoxy, N,N-methyliso-propyltryptamine) to name a few. While these drugs are not specifically listed under the CSA, individuals trafficking in these substances can be prosecuted under the Analogue Statute of the CSA. The ever-increasing number of these types of hallucinogens being encountered by law enforcement is a testament to the efforts of individuals to engage in profitable drug enterprises while trying to avoid criminal prosecution.

## MDMA (Ecstasy) and other Phenethylamines

3, 4-Methylenedioxymethamphetamine (MDMA, Ecstasy) was first synthesized in 1912 but remained in relative obscurity for many years. In the 1980s, MDMA gained popularity as a drug of abuse resulting in its final placement in Schedule I of the CSA. Today, MDMA is extremely popular. In 2000, it was estimated that two million tablets were smuggled into the United States every week.

MDMA (Ecstasy) tablets are sold in many colors with a variety of logos designed to attract young abusers.


Ecstasy is often purchased at "rave" parties advertised by colorful posters.

MDMA produces both amphetamine-like stimulation and mild mescaline-like hallucinations. It is touted as a "feel good" drug with an undeserved reputation of safety. MDMA produces euphoria, increased energy, increased sensual arousal, and enhanced tactile sensations. However, it also produces nerve cell damage that can result in psychiatric disturbances and long-term cognitive impairments. The user will often experience increased muscle tension, tremors, blurred vision, and hyperthermia. The increased body temperature can result in organ failure and death.

MDMA is usually distributed in tablet form and taken orally at doses ranging from 50 to 200 mg. Individual tablets are often imprinted with graphic designs or commercial logos, and typically contain 80-100 mg of MDMA. After oral administration, effects are felt within 30 to 45 minutes, peak at 60 to 90 minutes, and last for 4 to 6 hours. Analysis of seized MDMA tablets indicates that about 80 percent of all samples actually contain MDMA. About 10 percent of the MDMA-positive samples also contain MDA (3,4-methylenedioxyamphetamine) and MDEA (3,4-methylenedioxyethylamphetamine), while another 10 percent contain amphetamine, methamphetamine, or both. Fraudulent MDMA tablets frequently contain combinations of ephedrine, dextromethorphan, and caffeine or newer piperazine compounds.

Hundreds of compounds can be produced by making slight modifications to the phenethylamine molecule. Some of these analogues are pharmacologically active and differ from one another in potency, speed of onset, duration of action, and capacity to modify mood, with or without producing overt hallucinations. The drugs are usually taken orally, sometimes snorted, and rarely injected. Because they are produced in clandestine laboratories, they are seldom pure and the amount in a capsule or tablet is likely to vary considerably.

According to the National Survey on Drug Use and Health , initiation of Ecstasy use has increased from 1993 until 2001, when it peaked at 1.8 million new users. In 2002 the number declined to 1.1 million. Two-thirds (66 percent) of new Ecstasy users in 2002 were 18 or older, and 50 percent were male.

## Phencyclidine and Related Drugs

In the 1950s, phencyclidine (PCP) was investigated as an anesthetic but, due to the side effects of confusion and delirium, its development for human use was discontinued. It became commercially available for use as a veterinary anesthetic in the 1960s under the trade name of Sernylan® and was placed in Schedule III of the CSA. In 1978, due to considerable abuse, phencyclidine was transferred to Schedule II of the CSA and manufacturing of Sernylan® was discontinued. Today, virtually all of the phencyclidine encountered on the illicit market in the United States is produced in clandestine laboratories.

PCP is illicitly marketed under a number of other names, including Angel Dust, Supergrass, Killer Weed, Embalming Fluid, and Rocket Fuel, reflecting the range of its bizarre and volatile effects. In its pure form, it is a white crystalline powder that readily dissolves in water. However, most PCP on the illicit market contains a number of contaminants as a result of makeshift manufacturing, causing the color to range from tan to brown, and the consistency from powder to a gummy mass. Although sold in tablets and capsules as well as in powder and liquid form, it is commonly applied to a leafy material, such as parsley, mint, oregano, or marijuana, and smoked.

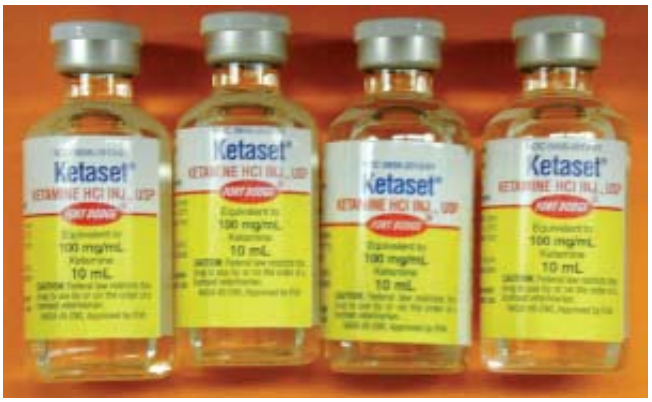
The drug's effects are as varied as its appearance. A moderate amount of PCP often causes the user to feel detached, distant, and estranged from his surroundings. Numbness, slurred speech, and loss of coordination may be accompanied by a sense of strength and invulnerability. A blank stare, rapid and involuntary eye movements, and an exaggerated gait are among the more observable effects. Auditory hallucinations, image distortion, severe mood disorders, and amnesia may also occur. In some users, PCP may cause acute anxiety and a feeling of impending doom; in others, paranoia and violent hostility; and in some, it may produce a psychosis indistinguishable from schizophrenia. PCP use is associated with a number of risks, and many believe it to be one of the most dangerous drugs of abuse.

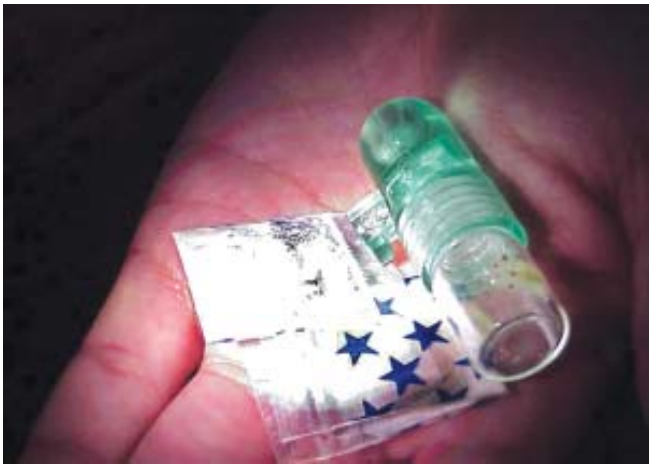
Modification of the manufacturing process may yield chemically related analogues capable of producing psychic effects similar to PCP. Four of these substances N-ethyl-l-phenylcyclohexylamine or PCE, l-(phenylcyclohexyl)pyrrolidine or PCPy, l-[l-(2-thienyl)cyclohexyl]piperdine or TCP, and l-[l-(2-thienyl)cyclohexyl]pyrrolidine or TCPy have been encountered on the illicit market and have been placed in Schedule I of the CSA. Telazol®, a Schedule III veterinary anesthetic containing tiletamine (a PCP analogue), in combination with zolazepam, (a benzodiazepine), is sporadically encountered as a drug of abuse.

## Ketamine

Ketamine is a rapidly acting general anesthetic. Its pharmacological profile is essentially the same as phencyclidine. Like PCP, ketamine is referred to as a dissociative anesthetic because patients feel

Ketamine.



Ketamine powder is clandestinely sold at "rave" parties and is usually snorted.

detached or disconnected from their pain and environment when anesthetized with this drug. Unlike most anesthetics, ketamine produces only mild respiratory depression and appears to stimulate, not depress, the cardiovascular system. In addition, ketamine has both analgesic and amnesic properties and is associated with less confusion, irrationality, and violent behavior than PCP. Use of ketamine as a general anesthetic for humans has been limited due to adverse effects including delirium and hallucinations. Today, it is primarily used in veterinary medicine, but has some utility for emergency surgery in humans.

Although ketamine has been marketed in the United States for many years, it was only recently associated with significant diversion and abuse and placed in Schedule III of the CSA in 1999. Known in the drug culture as "Special K" or "Super K," ketamine has become a staple at dance parties or "raves." Ketamine is supplied to the illicit market by the diversion of legitimate pharmaceuticals (Ketaset®, Ketalar®). It is usually distributed as a powder obtained by removing the liquid from the pharmaceutical products. As a drug of abuse, ketamine can be administered orally, snorted, or injected. It is also sprinkled on marijuana or tobacco and smoked. After oral or intranasal administration, effects are evident in about 10 to 15 minutes and are over in about an hour.

After intravenous use, effects begin almost immediately and reach peak effects within minutes. Ketamine can act as a depressant or a psychedelic. Low doses produce vertigo, ataxia, slurred speech, slow reaction time, and euphoria. Intermediate doses produce disorganized thinking, altered body image, and a feeling of unreality with vivid visual hallucinations. High doses produce analgesia, amnesia, and coma.

# Inhalants


Many types of household glues contain harmful vapors that are inhaled when placed in bags or spread inside of a painters face mask.

Inhalants are a diverse group of substances that include volatile solvents, gases, and nitrites that are sniffed, snorted, huffed, or bagged to produce intoxicating effects similar to alcohol. These substances are found in common household products like glues, lighter fluid, cleaning fluids, and paint products. Inhalant abuse is the deliberate inhaling or sniffing of these substances to get high, and it is estimated that about 1,000 substances are misused in this manner. The easy accessibility, low cost, legal status, and ease of transport and concealment make inhalants one of the first substances abused by children.

According to the National Survey on Drug Use and Health, there were over 1 million new inhalant users in 2002. During 2003, almost 23 million (9.7%) persons ages 12 and older reported using an inhalant at least once in their lifetime. The 2003 Monitoring the Future Study from the University of Michigan reported that 8.7 percent of 8th graders, 5.4 percent of 10th graders, and 3.9 percent of 12th graders used inhalants in the past year. The study also showed that 4.1 percent of 8th graders, 2.2 percent of 10th graders, and 1.6 percent of 12th graders used inhalants in the past month.

The highest incidence of use is among 10 to 12 year old children with rates of use declining with age. Parents worry about alcohol, tobacco, and drug use but may be unaware of the hazards associated with products found throughout their homes. Knowing what these products are, how they might be harmful, and recognizing the signs and symptoms of their use as inhalants, can help a parent prevent inhalant abuse.

For example, volatile solvents are found in a number of everyday products. Some of these products include nail polish remover, lighter fluid, gasoline, paint and paint thinner, rubber glue, waxes, and varnishes. Chemicals found in these products include toluene, benzene, methanol, methylene chloride, acetone, methyl ethyl ketone,

methyl butyl ketone, trichloroethylene, and trichlorethane. The gas used as a propellant in canned whipped cream and in small lavender metallic containers called "whippets" (used to make whipped cream) is nitrous oxide or "laughing gas"—the same gas used by dentists for anesthesia. Tiny cloth-covered ampules, called poppers or snappers by abusers, contain amyl nitrite, a medication used to dilate blood vessels. Butyl nitrite, sold as tape head cleaner and referred to as "rush," "locker room," or "climax," is often sniffed or huffed to get high.

Inhalants may be sniffed directly from an open container or huffed from a rag soaked in the substance and held to the face. Alternatively, the open container or soaked rag can be placed in a bag where the vapors can concentrate before being inhaled. Some chemicals are painted on the hands or fingernails or placed on shirt sleeves or wrist bands to enable an abuser to continually inhale the fumes without being detected by a teacher or other adult. Although inhalant abusers may prefer one particular substance because of taste or odor, a variety of substances may be used because of similar effects, availability, and cost. Once the substance is inhaled, the extensive capillary surface of the lungs allows rapid absorption of the substance, and blood levels peak rapidly. Entry into the brain is fast, and the intoxicating effects are short-lived but intense.

Inhalants depress the central nervous system, producing decreased respiration and blood pressure. Users report distortion in perceptions of time and space. Many users experience headaches, nausea, slurred speech, and loss of motor coordination. Mental effects may include fear, anxiety, or depression. A rash around the nose and mouth may be seen, and the abuser may start wheezing. An odor of paint or organic solvents on clothes, skin, and breath is sometimes a sign of inhalant abuse. Other indicators of inhalant abuse include slurred speech or staggering gait, red, glassy, watery eyes, and excitability or unpredictable behavior.

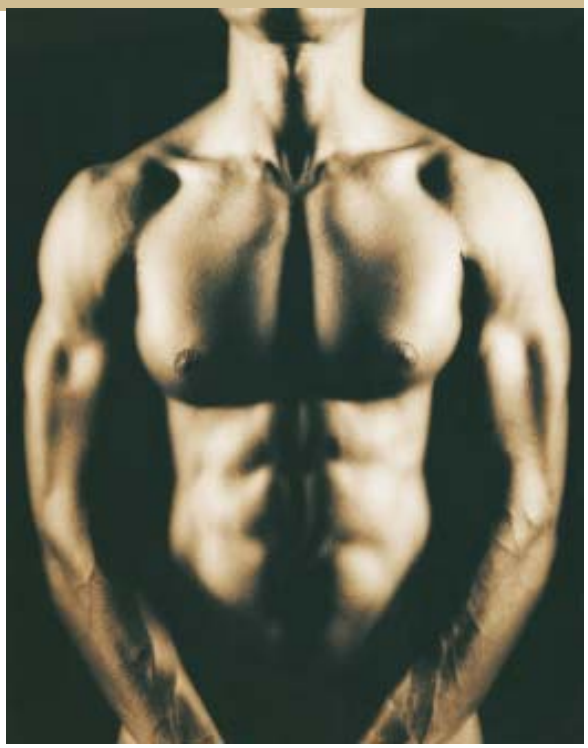
The chronic use of inhalants has been associated with a number of serious health problems. Sniffing glue and paint thinner causes kidney abnormalities, while sniffing the solvents toluene and trichloroethylene cause liver damage. Memory impairment, attention deficits, and diminished non-verbal intelligence have been related to the abuse of inhalants. Deaths resulting from heart failure, asphyxiation, or aspiration have occurred.

For more information regarding inhalants, contact the National Inhalant Prevention Coalition by telephone (1-800-269-4237) or by the Internet (www.inhalants.org).

Left. Vapors from pocket lighters are inhaled or "huffed" through the nostrils. These lighters are cheap and easily concealed.

Right. Markers are placed in a sandwich bag and then stepped on and crushed to breath the vapors.

# Steroids





When athletes gather the issue of performance enhancing drugs, especially anabolic steroids, once again gained international attention. These drugs are used by high school, college, professional, and elite amateur athletes in a variety of sports (e.g., weight lifting, track and field, swimming, cycling, and others) to obtain a competitive advantage. Body builders and fitness buffs take anabolic steroids to improve their physical appearance, and individuals in occupations requiring enhanced physical strength (e.g., body guards, night club bouncers, construction workers) are also known to use these drugs.

Concerns over a growing illicit market, abuse by teenagers, and the uncertainty of possible harmful long-term effects of steroid use, led Congress in 1991 to place anabolic steroids as a class of drugs into Schedule III of the Controlled Substances Act (CSA). The CSA defines anabolic steroids as any drug or hormonal substance chemically and pharmacologically related to testosterone (other than estrogens, progestins, and corticosteroids) that promotes muscle growth.

Once viewed as a problem associated only with professional and elite amateur athletes, various reports indicate that anabolic steroid abuse has increased significantly among adolescents. According to the 2003 Monitoring the Future Study, 2.5 percent of 8th graders, 3.0 percent of 10th graders, and 3.5 percent of 12th graders reported using steroids at least once in their lifetime.

Most illicit anabolic steroids are sold at gyms, competitions, and through mail-order operations. For the most part, these substances are smuggled into the United States from many countries. The illicit market includes various preparations intended for human and veterinary use as well as bogus and counterfeit products. The most commonly encountered anabolic steroids on the illicit market include testosterone, nandrolone, methenolone, stanozolol, and methandrostenolone. Other steroids seen in the illicit market include boldenone, fluoxymesterone, methandriol, methyltestosterone, oxandrolone, oxymetholone, and trenbolone.

A limited number of anabolic steroids have been approved for medical and veterinary use. The primary legitimate use of these drugs in humans is for the replacement of inadequate levels of testosterone resulting from a reduction or absence of functioning testes. Other indications include anemia and breast cancer. Experimentally, anabolic steroids have been used to treat a number of disorders including AIDS wasting, erectile dysfunction, and osteoporosis. In veterinary practice, anabolic steroids are used to promote feed efficiency and to improve weight gain, vigor, and hair coat. They are also used in veterinary practice to treat anemia and counteract tissue breakdown during illness and trauma.

When used in combination with exercise training and a high protein diet, anabolic steroids can promote increased size and strength of muscles, improve endurance, and decrease recovery time between workouts. They are taken orally or by intramuscular injection. Users concerned about drug tolerance often take steroids on a schedule called a cycle. A cycle is a period of between 6 and 14 weeks of steroid use, followed by a period of abstinence or reduction in use. Additionally, users tend to "stack" the drugs, using multiple drugs concurrently. Although the benefits of these practices are unsubstantiated, most users feel that cycling and stacking enhance the efficiency of the drugs and limit their side effects.

Another mode of steroid use is called "pyramiding." With this method users slowly escalate steroid use (increasing the number of drugs used at one time and/or the dose and frequency of one or more steroids), reach a peak amount at mid-cycle and gradually taper the dose toward the end of the cycle. The escalation of steroid use can vary with different types of training. Body builders and weight lifters tend to escalate their dose to a much higher level than do long distance runners or swimmers.

The long-term adverse health effects of anabolic steroid use are not definitely known. There is, however, increasing concern of possible serious health problems associated with the abuse of these agents, including cardiovascular damage, cerebrovascular toxicity, and liver damage.

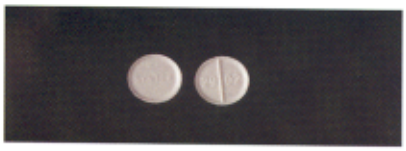
Physical side effects include elevated blood pressure and cholesterol levels, severe acne, premature balding, reduced sexual function, and testicular atrophy. In males, abnormal breast development (gynecomastia) can occur. In females, anabolic steroids have a masculinizing effect, resulting in more body hair, a deeper voice, smaller breasts, and fewer menstrual cycles. Several of these effects are irreversible. In adolescents, abuse of these agents may prematurely stop the lengthening of bones, resulting in stunted growth. For some individuals, the use of anabolic steroids may be associated with psychotic reactions, manic episodes, feelings of anger or hostility, aggression, and violent behavior.

A variety of non-steroid drugs are commonly found within the illicit anabolic steroid market. These substances are primarily used for one or more of the following reasons: 1) to serve as an alternative to anabolic steroids; 2) to alleviate short-term adverse effects associated with anabolic steroid use; or 3) to mask anabolic steroid use. Examples of drugs serving as alternatives to anabolic steroids include clenbuterol, human growth hormone, insulin, insulin-like growth factor, and GHB. Drugs used to prevent or treat adverse effects of anabolic steroid use include tamoxifen, diuretics, and human chorionic gonadotropin. Diuretics, probenocid, and epitestosterone may be used to mask anabolic steroid use.

Over the last few years, a number of precursors to either testosterone or nandrolone have been marketed as dietary supplements in the United States. Some of these substances include androstenedione, androstenediol, norandrostenedione, norandrostenediol, and dehydroepiandrosterone (DHEA). New legislation has been introduced in Congress to add several steroids to the CSA and to alter the CSA requirements needed to place new steroids under control in the CSA.

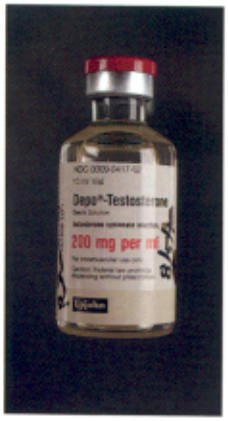
# Steroids Identification

## Schedule III



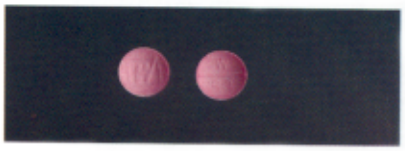
**Trade Name: Anadrol**
Controlled Ingredients: oxymetholone, 50 mg

**Trade Name: Android-25**
Controlled Ingredients: methyltestosterone, 25 mg




**Trade Name: Depo- Testosterone**
Controlled Ingredients: testosterone cypionate, 200 mg/ml

**Trade Name: Testosterone**
Controlled Ingredients: testosterone cypionate, 200 mg/ml



**Trade Name: Winstrol**
Controlled Ingredients: stanozolol, 2mg/ml

The 22 controlled syteroid substances are sold under hundreds of brand names. This is just a sampling.

## National Guard Counterdrug Coordinators

**Alabama**
Counterdrug Coordinator
1750 Congressman Dickinson, PO Box 3711
Montgomery, AL 36109
(334) 213-7658

**Alaska**
Counterdrug Coordinator
PO Box 5800, Bldg 60802, Camp Carroll
Ft. Richardson, AK 99505
(907) 428-3617

**Arizona**
Counterdrug Coordinator
5636 E. McDowell Road
Phoenix, AZ 85008
(602) 267-2623

**Arkansas**
Counterdrug Coordinator
DOMS-CD, Bldg 16412, Camp JT Robinson
N. Little Rock, AR 72199
(501) 791-5492

**California**
Counterdrug Coordinator
10293 Rockingham Drive
Sacramento, CA 95827
(916) 854-3715

**Colorado**
Counterdrug Coordinator
55 S. Potomac Street
Aurora, CO 80012
(303) 677-8303

**Connecticut**
Counterdrug Coordinator
360 Broad Street
Hartford, CT 06105
(860) 493-2723

## National Guard Demand Reduction Administrators

**Alabama**
Drug Demand Reduction Administrator
1750 Congressman Dickinson, PO Box 3711
Montgomery, AL 36109
(334) 213-7724

**Alaska**
Drug Demand Reduction Administrator
PO Box 5800, Bldg 60802, Camp Carroll
Ft. Richardson, AK 99505
(907) 428-3617

**Arizona**
Drug Demand Reduction Administrator
5636 E. McDowell Road
Phoenix, AZ 85008
(602) 267-2901

**Arkansas**
Drug Demand Reduction Administrator
DOMS-CD, Bldg 16412, Camp JT Robinson
N. Little Rock, AR 72199
(501) 212-5484

**California**
Drug Demand Reduction Administrator
10293 Rockingham Drive
Sacramento, CA 95827
(916) 854-3889

**Colorado**
Drug Demand Reduction Administrator
55 S. Potomac Street
Aurora, CO 80012
(303) 677-8303

**Connecticut**
Drug Demand Reduction Administrator
360 Broad Street
Hartford, CT 06105
(860) 493-2724

## National Guard Counterdrug Coordinators

**Delaware**
Counterdrug Coordinator
First Regiment Road
Wilmington, DE 19808
(302) 326-7085

**District of Columbia**
Counterdrug Coordinator
2001 E. Capital Street
Washington, DC 20003
(202) 685-9726

**Florida**
Counterdrug Coordinator
POMSO-CD, 2305 State Rd #207
St. Augustine, FL 32086
(904) 823-0438

**Georgia**
Counterdrug Coordinator
JOPS-CD, 1651 Perry Street, Bldg 826
Dobbins ARB, GA 30069
(678) 919-3473

**Guam**
Counterdrug Coordinator
622 E. Harmon Ind Park Road
Fort Juan Muna
Tamuning, GU 96911
(671) 472-7588

**Hawaii**
Counterdrug Coordinator
3949 Diamond Head Road
Honolulu, HI 96816
(808) 732-0209

**Idaho**
Counterdrug Coordinator
4736 Kennedy Street, Bldg T-927
Boise, ID 83705
(208) 422-3530

**Illinois**
Counterdrug Coordinator
1301 N. MacArthur Blvd, Camp Lincoln
Springfield, IL 62702
(217) 761-3728

## National Guard Demand Reduction Administrators

**Delaware**
Drug Demand Reduction Administrator
HQ, DEARNG, First Regiment Road
Wilmington, DE 19808
(302) 326-7079

**District of Columbia**
Drug Demand Reduction Administrator
2001 E. Capital Street
Washington, DC 20003
(202) 685-9723

**Florida**
Drug Demand Reduction Administrator
POMSO-CD/DDR, 2305 State Rd #207
St. Augustine, FL 32086
(904) 823-0355

**Georgia**
Drug Demand Reduction Administrator
JOPS-CD, 1651 Perry Street, Bldg 826
Dobbins ARB, GA 30069
(770) 919-3475

**Guam**
Drug Demand Reduction Administrator
622 E. Harmon Ind Park Road
Fort Juan Muna
Tamuning, GU 96911
(671) 475-0834

**Hawaii**
Drug Demand Reduction Administrator
3949 Diamond Head Road
Honolulu, HI 96816
(808) 732-0209

**Idaho**
Drug Demand Reduction Administrator
4736 Kennedy Street, Bldg T-927
Boise, ID 83705
(208) 422-3534

**Illinois**
Drug Demand Reduction Administrator
1301 N. MacArthur Blvd, Camp Lincoln
Springfield, IL 62702
(773) 288-5482

## National Guard Counterdrug Coordinators

**Indiana**
Counterdrug Coordinator
3766 W. Morris Street
Indianapolis, IN 46241
(317) 486-8291

**Iowa**
Counterdrug Coordinator
7700 NW Beaver Drive
Johnston, IA 50131
(515) 252-4606

**Kansas**
Counterdrug Coordinator
PO Box 19012, Bldg 684, Forbes Field
Pauline, KS 66619
(785) 862-0001

**Kentucky**
Counterdrug Coordinator
Joint Spt Opns, 5751 Briar Hill Rd
Lexington, KY 40512
(859) 293-4192

**Louisiana**
Counterdrug Coordinator
LANG-POTO-CD, Bldg 35, Jackson Barracks
New Orleans, LA 70146
(504) 278-8556

**Maine**
Counterdrug Coordinator
74 Drummond Avenue
Waterville, MA 04091
(207) 873-4727

**Maryland**
Counterdrug Coordinator
29th Div St, 5th Regt Armory
Baltimore, MD 21201
(410) 576-6135

**Massachusetts**
Counterdrug Coordinator
50 Maple Street
Milford, MA 01757
(508) 233-6804

## National Guard Demand Reduction Administrators

**Indiana**
Drug Demand Reduction Administrator
IN Nat'l Guard, c/o HIDTA, PO Box 420
Crown Point, IN 46308
(219) 769-7679

**Iowa**
Drug Demand Reduction Administrator
7700 NW Beaver Drive
Johnston, IA 50131
(515) 252-4190

**Kansas**
Drug Demand Reduction Administrator
PO Box 19012, Bldg 684, Forbes Field
Pauline, KS 66619
(785) 862-0001

**Kentucky**
Drug Demand Reduction Administrator
Bluegrass Sta, Bldg 26, 5751 Briar Hill Rd
Lexington , KY 40516
(859) 293-3900

**Louisiana**
Drug Demand Reduction Administrator
Bldg 35, Rm 251, Jackson Barracks
New Orleans, LA 70146
(504) 278-8555

**Maine**
Drug Demand Reduction Administrator
74 Drummond Avenue
Waterville, MA 04091
(207) 873-4727

**Maryland**
Drug Demand Reduction Administrator
29th Div St, 5th Regt Armory
Baltimore, MD 21201
(410) 576-6137

**Massachusetts**
Drug Demand Reduction Administrator
50 Maple Street
Milford, MA 01757
(508) 233-6834

## National Guard Counterdrug Coordinators

**Michigan**
Counterdrug Coordinator
2500 S. Washington Avenue
Lansing, MI 48913
(517) 483-5896

**Minnesota**
Counterdrug Coordinator
MNAG-MSO-CDC, 20 W. 12th St
St. Paul, MN 55155
(651) 282-4147

**Mississippi**
Counterdrug Coordinator
NGMS-OTO-DS, 550 Keyway Dr.
Flowood, MS 39233
(601) 313-1670

**Missouri**
Counterdrug Coordinator
MONG CD Program, 2302 Militia Drive
Jefferson City, MO 65101
(573) 638-9599

**Montana**
Counterdrug Coordinator
1900 Williams St, PO Box 4789
Helena, MT 59604
(406) 324-3177

**Nebraska**
Counterdrug Coordinator
DCSOPS-CD, 1300 Military Road
Lincoln, NE
(402) 309-1860

**Nevada**
Counterdrug Coordinator
685 East Plum Lane
Reno, NV 89502
(775) 348-9724

**New Hampshire**
Counterdrug Coordinator
State Military Reservation
Concord, NH 03301
(603) 227-1542

## National Guard Demand Reduction Administrators

**Michigan**
Drug Demand Reduction Administrator
2500 S. Washington Avenue
Lansing, MI 48913
(517) 483-5601

**Minnesota**
Drug Demand Reduction Administrator
MNAG-MSO-CDC, 20 W. 12th St
St. Paul, MN 55155
(651) 282-4149

**Mississippi**
Drug Demand Reduction Administrator
550 Keyway Dr.
Flowood, MS 39233
(601) 313-1670

**Missouri**
Drug Demand Reduction Administrator
MONG CD Program, 2302 Militia Drive
Jefferson City, MO 65101
(816) 512-4990

**Montana**
Drug Demand Reduction Administrator
1900 Williams St, PO Box 4789
Helena, MT 59604
(406) 324-3179

**Nebraska**
Drug Demand Reduction Administrator
DCSOPS-CD, 1300 Military Road
Lincoln, NE
(402) 309-1875

**Nevada**
Drug Demand Reduction Administrator
685 East Plum Lane
Reno, NV 89502
(775) 348-9749

**New Hampshire**
Drug Demand Reduction Administrator
State Military Reservation
Concord, NH 03301
(603) 228-3364

| National Guard Counterdrug Coordinators | National Guard Demand Reduction Administrators |
|---|---|

**New Jersey**
Counterdrug Coordinator
POTO-CDTF, Bldg 3650, Saylors Pond Rd
Ft. Dix, NJ 08640
(609) 562-0812

**New Jersey**
Drug Demand Reduction Administrator
POTO-CDTF, Bldg 3650, Saylors Pond Rd
Ft. Dix, NJ 08640
(201) 368-0583

**New Mexico**
Counterdrug Coordinator
PO Box 5610
Albuquerque, NM 87185
(505) 846-1031

**New Mexico**
Drug Demand Reduction Administrator
PO Box 5610
Albuquerque, NM 87185
(505) 846-7234

**New York**
Counterdrug Coordinator
109th AG, 1 Air National Guard Rd
Scotia, NY 12302
(518) 786-3477

**New York**
Drug Demand Reduction Administrator
109th AG, Air National Guard Rd
Scotia, NY 12302
(518) 786-3478

**North Carolina**
Counterdrug Coordinator
4105 Reedy Creek Road
Raleigh, NC 27607
(919) 664-6322

**North Carolina**
Drug Demand Reduction Administrator
145 AW, 5225 Morris Field Drive
Charlotte, NC 28208
(704) 391-4424

**North Dakota**
Counterdrug Coordinator
Fraine Barracks, Bldg 040, PO Box 5511
Bismarck, ND 58502
(701) 333-2050

**North Dakota**
Drug Demand Reduction Administrator
Fraine Barracks, Bldg 040, PO Box 5511
Bismarck, ND 58502
(701) 333-2054

**Ohio**
Counterdrug Coordinator
8302 South Perimeter Road
Columbus, OH 43217-5931
(614) 336-6426

**Ohio**
Drug Demand Reduction Administrator
8302 South Perimeter Road
Columbus, OH 43217-5931
(614) 336-6432

**Oklahoma**
Counterdrug Coordinator
OK-POT-MS-CD, 3501 Military Cir NE
Oklahoma City, OK 73111
(405) 228-5043

**Oklahoma**
Drug Demand Reduction Administrator
OK-POT-MS-CD, 3501 Military Cir NE
Oklahoma City, OK 73111
(405) 475-1491

**Oregon**
Counterdrug Coordinator
PO Box 12889
Salem, OR 97309
(503) 584-3938

**Oregon**
Drug Demand Reduction Administrator
PO Box 12889
Salem, ,OR 97309
(503) 584-3351

## National Guard Counterdrug Coordinators

**Pennsylvania**
Counterdrug Coordinator
Ft Indiantown Gap, Bldg 8-64
Annville, PA 17003
(717) 861-2482

**Puerto Rico**
Counterdrug Coordinator
PO Box 9023786, Stop 3 1/2, Puerta de Tierra
San Juan, PR 00902-3786
(787) 289-1548

**Rhode Island**
Counterdrug Coordinator
570 Read School House Road
Coventry, RI 02816
(401) 392-0827

**South Carolina**
Counterdrug Coordinator
TAG-CS-CD, 1 Nat'l Guard Rd, Stop 24
Columbia, SC 29201
(803) 806-1559

**South Dakota**
Counterdrug Coordinator
SDMSCA-CD, 2823 W Main Street
Rapid City, SD 57702
(605) 737-6723

**Tennessee**
Counterdrug Coordinator
Bldg 603, Fitzhugh Blvd, Volunteer Tng Site
Smyrna, TN 37167
(615) 355-3901

**Texas**
Counterdrug Coordinator
PO Box 5218, Bldg 10, Camp Mabry
Austin, TX 78763
(512) 782-5154

**Utah**
Counterdrug Coordinator
12953 S. Minuteman Drive
Draper, UT 84020
(801) 523-4150

## National Guard Demand Reduction Administrators

**Pennsylvania**
Drug Demand Reduction Administrator
Ft Indiantown Gap, Bldg 8-64
Annville, PA 17003
(717) 861-2231

**Puerto Rico**
Drug Demand Reduction Administrator
PO Box 9023786, Stop 3 1/2, Puerta de Tierra
San Juan, PR 00902-3786
(787) 289-1548

**Rhode Island**
Drug Demand Reduction Administrator
570 Read School House Road
Coventry, RI 02816
(401) 392-0830

**South Carolina**
Drug Demand Reduction Administrator
TAG-CS-CD, 1 Nat'l Guard Rd, Stop 24
Columbia, SC 29201
(803) 806-2623

**South Dakota**
Drug Demand Reduction Administrator
SDMSCA-CD, 2823 W Main Street
Rapid City, SD 57702
(605) 737-6602

**Tennessee**
Drug Demand Reduction Administrator
Bldg 603, Fitzhugh Blvd, Volunteer Tng Site
Smyrna, TN 37167
(615) 355-3902

**Texas**
Drug Demand Reduction Administrator
PO Box 5218, Bldg 10, Camp Mabry
Austin, TX 78763
(512) 782-5238

**Utah**
Drug Demand Reduction Administrator
17800 Camp Williams Rd, Bldg 605
Riverton, UT 84065
(801) 253-5521

## National Guard Counterdrug Coordinators

**Vermont**
Counterdrug Coordinator
VT NG, Green Mtn Armory, Camp Johnson
Colchester, VT 05446
(802) 338-3350

**Virginia**
Counterdrug Coordinator
VAOT-CDC, Bldg 473, Ft Pickett
Blackstone, VA 23824
(804) 292-8529

**Virgin Islands**
Counterdrug Coordinator
4031 Lagrande Princesse Lot 1B
Christianstead
St. Croix, VI 00820
(340) 712-7772

**Washington**
Counterdrug Coordinator
DCSOPS-CDTF, Camp Murray, Bldg 33
Tacoma, WA 98430
(253) 512-8894

**West Virginia**
Counterdrug Coordinator
101 High Street
St. Albans, WV 25177
(304) 727-5068

**Wisconsin**
Counterdrug Coordinator
2400 Wright St, PO Box 8111
Madison, WI 53704
(608) 242-3540

**Wyoming**
Counterdrug Coordinator
DCSOPS-CDC, 5500 Bishop Blvd
Cheyenne, WY 82009
(307) 772-5259

## National Guard Demand Reduction Administrators

**Vermont**
Drug Demand Reduction Administrator
VT NG, Green Mtn Armory, Camp Johnson
Colchester, VT 05446
(802) 338-3440

**Virginia**
Drug Demand Reduction Administrator
VAOT-CDC, Bldg 316, Ft Pickett
Blackstone, VA 23824
(434) 292-8522

**Virgin Islands**
Drug Demand Reduction Administrator
4031 Lagrande Princesse Lot 1B
Christianstead
St. Croix, VI 00820
(340) 712-7772

**Washington**
Drug Demand Reduction Administrator
DCSOPS-CDTF, Camp Murray, Bldg 34
Tacoma, WA 98430
(253) 512-8355

**West Virginia**
Drug Demand Reduction Administrator
101 High Street
St. Albans, WV 25177
(304) 727-5068

**Wisconsin**
Drug Demand Reduction Administrator
2400 Wright St, PO Box 8111
Madison, WI 53704
(608) 242-3540

**Wyoming**
Drug Demand Reduction Administrator
DCSOPS-DDR, 5500 Bishop Blvd
Cheyenne, WY 82009
(307) 772-5959

# DEA Demand Reduction Coordinators

## DIVISION OFFICES

### ATLANTA DIVISION
(GEORGIA, SOUTH CAROLINA,
NORTH CAROLINA, TENNESSEE)
Atlanta, GA Division Office
75 Spring Street SW
Suite 800
Atlanta, GA 30303
404-893-7124/7123

### COLUMBIA, SC DISTRICT OFFICE
(SOUTH CAROLINA)
1835 Assembly Street
Suite 1229
Columbia, SC 29201
803-765-5251

### NASHVILLE, TN DISTRICT OFFICE
(TENNESSEE)
Estes Kefauver Bldg.
FB-USCH
801 Broadway, Suite 500
Nashville, TN 37203
615-736-2952

### AVIATION
(OFFICE OF AVIATION OPERATIONS)
USDEA Aviation Operations Center
2300 Horizon Road
Ft. Worth, TX 76177-5300
817-837-2028

### CARIBBEAN DIVISION
(PUERTO RICO, VIRGIN ISLANDS, BARBADOS,
DOMINICAN REPUBLIC, HAITI, JAMAICA,
TRINIDAD & TOBAGO, CURACAO)
San Juan, P.R. Division Office
P.O. Box 2167
San Juan, Puerto Rico 00922-2167
787-775-1736

### CHICAGO DIVISION
(NORTHERN AND CENTRAL ILLINOIS, INDIANA,
WISCONSIN, MINNESOTA, NORTH DAKOTA)
Chicago, IL Division Office
320 S. Dearborn Street
Suite 1200
Chicago, IL 60604
312-8865241

### MINNEAPOLIS / ST. PAUL DISTRICT OFFICE
330 Second Avenue South
Suite 450
Minneapolis, MN 55401-2224
612-348-1712

### DALLAS DIVISION
(NORTHERN TEXAS, OKLAHOMA)
Dallas, TX Division Office
10160 Technology Blvd. East
Dallas, TX 75220
214-366-6970

### DETROIT DIVISION
(MICHIGAN, OHIO, KENTUCKY)
Detroit, MI Division Office
431 Howard Street
Detroit, MI 48226
313-234-4310

### LOUISVILLE, KY DISTRICT OFFICE
(KENTUCKY)
1006 Federal Building
600 Martin Luther King Place
Louisville, KY 40202
502-582-5908 ext 106

## DEA Demand Reduction Coordinators

### EL PASO DIVISION
(SOUTHWESTERN TEXAS, NEW MEXICO)
El Paso, TX Division Office
660 N. Mesa Hills
Suite 2000
El Paso, TX 79912
915-832-6233

### ALBUQUERQUE, NM DISTRICT OFFICE
301 Martin Luther King Ave., N.E.
Albuquerque, NM 79912
505-346-7419

### EPIC
(INTELLIGENCE SUPPORT WORLDWIDE)
11339 SGG Sims Street
El Paso, TX 79912
915-760-2013

### HOUSTON DIVISION
(SOUTHEASTERN & SOUTH-CENTRAL TEXAS)
Houston, TX Division Office
1433 West Loop South
Houston, Texas 77027-9506
713-693-3152/3153

### LOS ANGELES DIVISION
(CENTRAL CALIFORNIA, NEVADA, & HAWAII)
Los Angeles, CA Division Office
255 East Temple Street
20th Floor
Los Angeles, CA 90012
213-621-6768

### HONOLULU, HI DISTRICT OFFICE
(HAWAII, GUAM, SIAPAN)
P.O. Box 50163
Honolulu, HI 96850
808-541-3053

### LAS VEGAS, NEVADA DISTRICT OFFICE
550 South Main Street
Suite A
Las Vegas, NV 89101
702-759-8117

### MIAMI DIVISION
(FLORIDA & THE BAHAMAS)
Miami, FL Division Office
8400 N.W. 53rd Street
Miami, FL 33166
305-994-4604

### NEWARK DIVISION
(NEW JERSEY)
Newark, NJ Division Office
80 Mulberry Street
Newark, NJ 07102
973-273-5095

### NEW ENGLAND DIVISION
(CONNECTICUT, MAINE, MASSACHUSETTS,
NEW HAMPSHIRE, RHODE ISLAND, VERMONT)

### SPRINGFIELD, MA RESIDENT OFFICE (BOSTON)
(CONNECTICUT, MASSACHUSETTS, RHODE ISLAND)
1441 Main Street, 10th Floor
Springfield, MA 01103
413-785-0284 ext. 203

### MANCHESTER, NH RESIDENT OFFICE
(MAINE, NEW HAMPSHIRE, VERMONT)
197 Loundon
Concord, NH 03301
603-225-1574 ext. 112

### NEW ORLEANS DIVISION
(ALABAMA, ARKANSAS, LOUISIANA,
MISSISSIPPI)
New Orleans, LA Division Office
3838 North Causeway Blvd.
Suite 1800
Metairie, LA 70002
504-840-1032

### LITTLE ROCK, AR DISTRICT OFFICE
(ARKANSAS)
10825 Financial Centre Pkwy.
Building #2, Suite 200
Little Rock, AR 72211
501-312-8613

## DEA Demand Reduction Coordinators

### NEW YORK DIVISION
(NEW YORK)
New York, NY Division Office
99 Tenth Avenue, 8th Floor
New York, NY 10011
212-337-1266

### PHILADELPHIA DIVISION
(PENNSYLVANIA & DELAWARE)
Philadelphia, PA Division Office
600 Arch Street, Suite 10224
Philadelphia, PA 19106
215-861-3291

### PHOENIX DIVISION
(ARIZONA)
Phoenix, AZ Division Office
3010 North Second Street
Suite 301
Phoenix, AZ 85012
602-664-5657

### ROCKY MOUNTAIN DIVISION (DENVER)
(COLORADO, UTAH, MONTANA, WYOMING)
Denver, CO Division Office
115 Inverness Drive East
Englewood, CO 80112-5116
303-705-7340

### SALT LAKE CITY, UT DISTRICT OFFICE
348 East South Temple
Salt Lake City, UT 84111
801-524-4353

### BILLINGS, MT RESIDENT OFFICE
303 North Broadway, Suite 302
Billings, MT 59101
406-657-6020

### ST. LOUIS DIVISION
(IOWA, KANSAS, MISSOURI, NEBRASKA, SOUTH DAKOTA, SOUTHERN ILLINOIS)
St. Louis, MO Division Office
317 South 16th Street
St. Louis, MO 63103
314-538-4752

### OMAHA, NE DISTRICT OFFICE
2707 North 108th Street
Suite D-201
Omaha, NE 68164

### KANSAS CITY, MO DISTRICT OFFICE
Midwest HIDTA
10220 NW Ambassador Drive
Kansas City, MO 64153
816-746-4962 ext. 250

### SAN DIEGO DIVISION
(SOUTHERN CALIFORNIA)
San Diego, CA Division Office
4560 Viewridge Avenue
San Diego, CA 92123
858-616-4410

### SAN FRANCISCO DIVISION
(NORTHERN CALIFORNIA)
San Francisco, CA Division Office
450 Golden Gate Avenue
Room 12215
San Francisco, CA 94102
415-436-7851

### SACRAMENTO, CA DISTRICT OFFICE
(SACRAMENTO)
Sacramento District Office
4328 Watt Avenue
Sacramento, CA 95660
916-480-7154

### SEATTLE DIVISION
(WASHINGTON, OREGON, IDAHO, ALASKA)
Seattle, WA Division Office
400 2nd Avenue West
Seattle, WA 98119
206-553-2824

### PORTLAND, OR DISTRICT OFFICE
(OREGON)
1220 SW Third Avenue
Room 1525
Portland, OR 97204
503-326-2466

## DEA Demand Reduction Coordinators

**WASHINGTON DIVISION**
(WASHINGTON, DC, MARYLAND,
VIRGINIA, & WEST VIRGINIA)
Washington, DC Division Office
801 I Street NW, Room 514
Washington, DC 20024
202-305-8259

**HEADQUARTERS, DEMAND REDUCTION SECTION**
ARLINGTON, VIRGINIA
Phone: 202-307-7936

# National Drug Intelligence Center

319 Washington Street,
5th Floor
Johnstown, PA 15901
Telephone: 814-532-4601
Fax: 814-532-4690

U.S. Department of Justice

NDIC Washington Liaison Office
8201 Greensboro Drive, Suite 1001
McLean, VA 22102-3840
Telephone: 703-556-8970
Fax: 703-556-7807


The National Drug Intelligence Center (NDIC), established in 1993, is a component of the U.S. Department of Justice and the nation's principal center for strategic domestic counterdrug intelligence.

**Products and Services Available to Law Enforcement Personnel:**

## Strategic Drug Threat Assessments

NDIC produces national, regional, and state drug threat assessments to provide policymakers and law enforcement officials with timely, predictive reports of the threat posed by illicit drugs in the United States. The reports highlight the most current information on availability, demand, production and cultivation, transportation, and distribution of illicit drugs in the United States.

## Narcotics Digest Weekly

NDIC publishes a weekly digest of current intelligence, indications and warnings of emerging drug trends. Law enforcement officials, drug treatment providers and educators may receive the digest by e-mail or in hard copy.

## Document and Computer Exploitation (Doc Ex)

NDIC supports major drug investigations by quickly analyzing information to expedite evidence processing. Doc Ex teams in reviewing seized documents and electronic media use the Real-time Analytical Intelligence Database (RAID) to identify hidden assets, previously unknown associates, and other leads for further investigation. Investigators and prosecutors are provided with a fully sourced summary report of the key findings in about a week's time.

## Counterdrug Analysis Training

NDIC provides a 1-week counterdrug analysis training course at no cost for federal, state, and local law enforcement personnel via video teleconferencing to networked distance learning sites in four cities, four times per year.

## Counternarcotics Publications Quarterly

NDIC publishes a quarterly abstract index listing titles of counterdrug publications from various federal, state, and local agencies.

For more information on NDIC's products and services:

Telephone: 814-532-4601
E-mail: NDIC.Contacts@usdoj.gov
Internet: www.usdoj.gov/ndic
LEO: home.leo.gov/lesig/ndic
ADNET: http://ndicosa
RISS: ndic.riss.net

U.S. Department of Justice
Drug Enforcement Administration

# DRUGS OF ABUSE / Uses and Effects

| Drugs | CSA Schedules | Trade or Other Names | Medical Uses | Dependence: Physical | Dependence: Psychological | Tolerance | Duration (Hours) | Usual Method | Possible Effects | Effects of Overdose | Withdrawal Syndome |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Narcotics** | | | | | | | | | | | |
| Heroin | Substance I | Diamorphine, Horse, Smack, Black tar, *Chiva, Negra (black tar)* | None in U.S., Analgesic, Antitussive | High | High | Yes | 3-4 | Injected, snorted, smoked | Euphoria, drowsiness, respiratory depression, constricted pupils, nausea | Slow and shallow breathing, clammy skin, convulsions, coma, possible death | Watery eyes, runny nose, yawning, loss of appetite, irritability, tremors, panic, cramps, nausea, chills and sweating |
| Morphine | Substance II | MS-Contin, Roxanol, Oramorph SR, MSIR | Analgesic | High | High | Yes | 3-12 | Oral, injected | | | |
| Hydrocodone | Substance II, Product III,V | Hydrocodone w/Acetaminophen, Vicodin, Vicoprofen, Tussionex, Lortab | Analgesic, Antitussive | High | High | Yes | 3-6 | Oral | | | |
| Hydromorphone | Substance II | Dilaudid | Analgesic | High | High | Yes | 3-4 | Oral, injected | | | |
| Oxycodone | Substance II | Roxicet, Oxycodone w/Acetaminophen, OxyContin, Endocet, Percocet, Percodan | Analgesic | High | High | Yes | 3-12 | Oral | | | |
| Codeine | Substance II, Products III,V | Acetaminophen, Guaifenesin or Promethazine w/Codeine, Fiorinal, Fioricet or Tylenol w/Codeine | Analgesic, Antitussive | Moderate | Moderate | Yes | 3-4 | Oral, injected | | | |
| Other Narcotics | Substance II,III,IV | Fentanyl, Demerol, Methadone, Darvon, Stadol, Talwin, Paregoric, Buprenex | Analgesic, Antidiarrheal, Antitussive | High-Low | High-Low | Yes | Variable | Oral, injected, snorted, smoked | | | |
| **Depressants** | | | | | | | | | | | |
| *gamma* Hydroxybutyric Acid | Sub I, Product III | GHB, Liquid Ecstasy, Liquid X, Sodium Oxybate, Xyrem® | None in U.S., Anesthetic | Moderate | Moderate | Yes | 3-6 | Oral | Slurred speech, disorientation, drunken behavior without odor of alcohol, impaired memory of events, interacts with alcohol | Shallow respiration, clammy skin, dilated pupils, weak and rapid pulse, coma, possible death | Anxiety, insomnia, tremors, dellrium, convulsions, possible death |
| Benzodiazepines | Substance IV | Valium, Xanax, Halcion, Ativan, Restoril, Rohypnol (Roofies, R-2), Klonopin | Antianxiety, Sedative, Anticonvulsant, Hypnotic, Muscle Relaxant | Moderate | Moderate | Yes | 1-8 | Oral, injected | | | |
| Other Depressants | Substance I,II,III,IV | Ambien, Sonata, Meprobamate, Chloral Hydrate, Barbiturates, Methaqualone (Quaalude) | Antianxiety, Sedative, Hypnotic | Moderate | Moderate | Yes | 2-6 | Oral | | | |
| **Stimulants** | | | | | | | | | | | |
| Cocaine | Substance II | Coke, Flake, Snow, Crack, *Coca, Blanca, Perico, Nieve, Soda* | Local anesthetic | Possible | High | Yes | 1-2 | Snorted, smoked, injected | Increased alertness, excitation, euphoria, increased pulse rate & blood pressure, insomnia, loss of appetite | Agitation, increased body temperature, hallucinations, convulsions, possible death | Apathy, long periods of sleep, irritability, depression, disorientation |
| Amphetamine/Methamphetamine | Sub II | Crank, Ice, Cristal, Krystal Meth, Speed, Adderall, Dexedrine, Desoxyn | Attention deficit/hyperactivity disorder, narcolepsy, weight control | Possible | High | Yes | 2-4 | Oral, injected, smoked | | | |
| Methylphenidate | Substance II | Ritalin (Illy's), Concerta, Focalin, Metadate | Attention deficit/hyperactivity disorder | Possible | High | Yes | 2-4 | Oral, injected, snorted, smoked | | | |
| Other Stimulants | Substance III,IV | Adipex P, Ionamin, Prelu-2, Didrex, Provigil | Vasoconstriction | Possible | Moderate | Yes | 2-4 | Oral | | | |
| **Hallucinogens** | | | | | | | | | | | |
| MDMA and Analogs | Substance I | (Ecstasy, XTC, Adam), MDA (Love Drug), MDEA (Eve), MBDB | None | None | Moderate | Yes | 4-6 | Oral, snorted, smoked | Heightened senses, teeth grinding and dehydration | Increased body temperature, electrolyte imbalance, cardiac arrest | Muscle aches, drowsiness, depression, acne |
| LSD | Substance I | Acid, Microdot, Sunshine, Boomers | None | None | Unknown | Yes | 8-12 | Oral | | | |
| Phencyclidine and Analogs | Sub I,II,III | PCP, Angel Dust, Hog, Loveboat, Ketamine (Special K), PCE, PCPy, TCP | Anesthetic (Ketamine) | Possible | High | Yes | 1-12 | Smoked, oral, injected, snorted | Illusions and hallucinations, altered perception of time and distance | (LSD) Longer, more intensed "trip" episodes | None |
| Other Hallucinogens | Substance I | Psilocybe mushrooms, Mescaline, Peyote Cactus, Ayahausca, DMT, Dextromethorphan* (DXM) | None | None | None | Possible | 4-8 | Oral | | Unable to direct movement, feel pain, or remember | Drug seeking behavior |
| **Cannabis** | | | | | | | | | | | *Not regulated |
| Marijuana | Substance I | Pot, Grass, Sinsemilla, Blunts, *Mota, Yerba, Grifa* | None | Unknown | Moderate | Yes | 2-4 | Smoked, oral | Euphoria, relaxed inhibitions, increased appetite, disorientation | Fatigue, paranoia, possible psychosis | Occasional reports of insomnia, hyperactivity, decreased appetite |
| Tetrahydrocannabinol | Sub I, Product III | THC, Marinol | Antinauseant, Appetite stimulant | Yes | Moderate | Yes | 2-4 | Smoked, oral | | | |
| Hashish and Hashish Oil | Substance I | Hash, Hash oil | None | Unknown | Moderate | Yes | 2-4 | Smoked, oral | | | |
| **Anabolic Steroids** | | | | | | | | | | | |
| Testosterone | Substance III | Depo Testosterone, Sustanon, Sten, Cypt | Hypogonadism | Unknown | Unknown | Unknown | 14-28 days | Injected | Virilization, edema, testicular atrophy, gynecomastia, acne aggressive behavior | Unknown | Possible depression |
| Other Anabolic Steroids | Substance III | Parabolan, Winstrol, Equipose, Anadrol, Dianabol, Primabolin-Depo, D-Ball | Anemia, Breast cancer | Unknown | Yes | Unknown | Variable | Oral, injected | | | |
| **Inhalants** | | | | | | | | | | | |
| Amyl and Butyl Nitrite | | Pearls, Poppers, Rush, Locker Room | Angina (Amyl) | Unknown | Unknown | No | 1 | Inhaled | Flushing, hypotension, headache | Methemoglobinemia | Agitation |
| Nitrous Oxide | | Laughing gas, balloons, Whippets | Anesthetic | Unknown | Low | No | 0.5 | Inhaled | Impaired memory, slurred speech, drunken behavior, slow onset vitamin deficiency, organ damage | Vomiting, respiratory depression, loss of consciousness, possible death | Trembling, anxiety, insomnia, vitamin deficiency, confusion, hallucinations, convulsions |
| Other Inhalants | | Adhesives, spray paint, hair spray, dry cleaning fluid, spot remover, lighter fluid | None | Unknown | High | No | 0.5-2 | Inhaled | | | |
| **Alcohol** | | Beer, wine, liquor | None | High | High | Yes | 1-3 | Oral | | | |

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