



Traffic Safety Facts Banner

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## STATE OF KNOWLEDGE ON DRUGS AND TRAFFIC SAFETY

The Department of Transportation published its first review of the state of knowledge on drugs and traffic safety in 1980. A new literature review, conducted by Mid-America Research Institute for the National Highway Traffic Safety Administration (NHTSA), covers scientific studies published since 1980. The review consisted of more than 300 documents, including research from other countries.

The report describes the detection and measurement of drugs in drivers, experimental research, epidemiological research, and drug-crash countermeasures. The report focused on "controlled substances." These controlled substances are placed into one of five "schedules" based on the substance's medicinal value, harmfulness, and potential for abuse or addiction. Schedule I is for drugs that have no recognized medical use, while Schedule V is for the least dangerous drugs. Studies on narcotics, central nervous system (CNS) depressants, CNS stimulants, cannabis, antidepressants, and antihistamines were included.

### Drugs in Drivers

Experts assay drugs through urine, blood, sweat, saliva, and hair. Most laboratories use immunoassay-screening technology with gas chromatography-mass spectrometry (GC/MS) confirmation. The cost of using these technologies has become affordable, and many laboratories now have the equipment, the assays, and the expertise to identify the most commonly used drugs.

Their use for highway safety purposes, however, is limited because few of these laboratories are available to traffic safety agencies. This reduces the number of prosecutable drug-impaired driving cases. Point-of-contact-testing devices offer promise by allowing officers to routinely screen DUI suspects for illegal drug use and obtain test results immediately.

### Experimental Research

Experimental research has established that a number of drugs of abuse can impair driving performance. The amount of experimental research in these classes varies widely, with the most attention given to CNS depressants and the least attention to narcotics. There is essentially no experimental research on some other classes of drugs such as hallucinogens and inhalants. The literature review found that the following drug classes have a high potential for significant impairment of driving and driving-related performance:

- Narcotics
- Long-life benzodiazepines in therapeutic doses
- Short-life benzodiazepines in high doses
- Barbiturates
- First-generation H1 antihistamines
- Certain anti-depressants (amitriptyline, doxepin, and mianserin)

Drug classes with a relatively low potential for significant impairment after acute usage are:

- CNS stimulants (which, at low dosages, actually may improve performance in some instances)
- Second-generation H1 antihistamines and most other anti-depressants

Acute use of cannabis has a moderate potential for impairment. Few studies have examined the chronic and sub-chronic use of controlled substances. In general, drugs with a strong sedative action taken in the highest doses have the highest potential for significant impairment.

### Epidemiological Research

Usage of impairing drugs varies considerably with drug class. For example, in a number of studies, the police performed toxicological tests of drivers suspected of driving under the influence of drugs. Drug-positive drivers as a percentage of such drivers were about the same in foreign studies as in U.S. studies, ranging from an average of about 13 percent for barbiturates to 28 percent for cannabis. Benzodiazepines appeared in an average of 30 percent of the tested drivers in foreign studies versus 14 percent in the U.S. studies. Only one foreign study (in Switzerland) had data for cocaine use (11 percent), and the U.S. studies indicated that an average of about 16 percent of the tested drivers were positive for cocaine.

Drivers in North American crashes were most often tested for narcotics, benzodiazepines, barbiturates, cocaine, amphetamines, and cannabis. For fatally injured drivers, cannabis had the highest percentages, with an average of 14 percent. The average percentages for each of the five other drug classes were five percent or less.

The causal role of drugs in traffic crashes is not understood well. Drug risk factors are not known precisely, and some evidence suggests little or no increase in crash risk at drug levels detected by current chemical test procedures. Evidence suggests a maximum risk factor of about 2.0 occurring for benzodiazepines and cannabis, followed closely by

narcotics at 1.5. CNS stimulants (including cocaine and amphetamines) were associated with no increased relative risk.

## Drug-Crash Countermeasures

Available literature indicates no evaluations of the impact of any drugged driving countermeasure on crashes, in either the United States or Europe.

## HOW TO ORDER

For a copy of *State of Knowledge of Drug-Impaired Driving* (132 pages), write to the Office of Research and Technology, NHTSA, NHT-131, 400 Seventh Street, S.W., Washington, DC, 20590, or send a fax to (202) 366-7096. Richard Compton, Ph.D., and Amy Berning were the project managers for this study.

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