

The Effects of Alcohol and other Drugs

The following information concerning the effects of alcohol and controlled substances use on an individual's health, work, and personal life is furnished to drivers.

Alcohol

Alcohol, a natural substance formed by the fermentation that occurs when sugar reacts with yeast, is the major active ingredient in wine, beer, and distilled spirits. There are many kinds of alcohol; the kind found in alcoholic beverages is ethyl alcohol. Whether one drinks a 12-ounce can of beer, a shot of distilled spirits, or a 5-ounce glass of wine, the amount of pure alcohol per drink is about the same (5 ounces.) Ethyl alcohol can produce feelings of well-being, sedation, intoxication, or unconsciousness, depending on the amount and the manner in which it is consumed.

Alcohol is a psychoactive or mind-altering drug, as are heroin and tranquilizers. It can alter moods, cause changes in the body, and become habit forming. Alcohol is called a "downer" because it depresses the central nervous system. That's why drinking too much causes slowed reactions, slurred speech, and sometimes even unconsciousness (passing out). Alcohol works first on the part of the brain that controls inhibitions. As people lose their inhibitions, they may talk more, get rowdy, and do foolish things. After several drinks they may feel "high," but their nervous systems actually are slowing down.

A person does not have to be an alcoholic to have problems with alcohol. Every year, for example, many young people lose their lives in alcohol-related automobile crashes, drownings, and suicides. Serious health problems can and do occur before drinkers reach the stage of addiction or chronic use.

In some studies, more than 25 percent of hospital admissions were alcohol-related. Some of the serious diseases associated with chronic alcohol use are alcoholism and cancers of the liver, stomach, colon, larynx, esophagus, and breast. Alcohol abuse also can lead to serious physical problems such as:

- Damage to the brain, pancreas, and kidneys;
- High blood pressure, heart attacks, and strokes;
- Alcoholic hepatitis and cirrhosis of the liver;
- Stomach and duodenal ulcers, colitis, and irritable colon;
- Impotence and infertility;
- Birth defects and Fetal Alcohol Syndrome, which causes retardation, low birth weight, small head size, and limb abnormalities;
- Premature aging; and
- A host of other disorders, such as diminished immunity to disease, sleep disturbances, muscle cramps, and edema.

Marijuana

Contrary to many young people's beliefs, marijuana is a harmful drug, especially since the potency of the marijuana now available has increased more than 275 percent over the last decade. For those who smoke marijuana now, the dangers are much more serious than they were in the 1960s.

Preliminary studies have shown chronic lung disease in some marijuana users. There are more known cancer-causing agents in marijuana smoke than in cigarette smoke. In fact, because marijuana smokers try to hold the smoke in their lungs as long as possible, one marijuana cigarette can be as damaging to the lungs as four tobacco cigarettes.

New studies using animals also show that marijuana interferes with the body's immune response to various infections and diseases. This finding may have special implications for those infected with the Acquired Immune Deficiency Syndrome (AIDS) Human Immunodeficiency Virus (HIV). Drugs like marijuana that weaken the immune system may exacerbate the condition of people infected with this virus.

Even small doses of marijuana can impair memory function, distort perception, hamper judgment, and diminish motor skills. Health effects also include accelerated heartbeat and, in some persons, increased blood pressure. The changes pose health risks for anyone, but particularly for people with abnormal heart and circulatory conditions such as high blood pressure and hardening of the arteries

More importantly, there is increasing concern about how marijuana use by children and adolescents may affect both their short- and long-term development. Mood changes occur with the first use. Observers in clinical settings have noted increased apathy, loss of ambition, loss of effectiveness, diminished ability to carry out long-term plans, difficulty in concentrating, and a decline in school or work performance. Many teenagers who end up in drug treatment programs started using marijuana at an early age.

Driving under the influence of marijuana is especially dangerous. Marijuana impairs driving skills for at least 4 to 6 hours after smoking a single cigarette. When marijuana is used in combination with alcohol, driving skills become even more impaired.

Cocaine

Cocaine is one of the most powerfully addictive of the drugs of abuse-and it is a drug that can kill. No individual can predict whether he or she will become addicted or whether the next dose of cocaine will prove fatal. Cocaine can be snorted through the nose, smoked, or injected. Injecting cocaine-or injecting any drug-carries the added risk of contracting AIDS if the user shares a needle with a person already infected with HIV, the AIDS virus.

Cocaine is a very strong stimulant to the central nervous system, including the brain. The drug accelerates the heart rate and at the same time constricts the blood vessels, which are trying to handle the additional flow of blood. Pupils dilate and temperature and blood pressure rise. These physical changes may be accompanied by seizures, cardiac arrest, respiratory arrest, or stroke.

Nasal problems, including congestion and a runny nose, occur with cocaine use, and with prolonged use the mucous membrane of the nose may disintegrate. Heavy cocaine use can severely damage the nasal septum and cause it to collapse.

Research has shown that cocaine acts directly on structures that have been called the brain's "pleasure centers." Stimulating these pleasure centers produces an intense desire to experience the pleasure effects again and again. The stimulation causes changes in brain activity; as a result, a brain chemical called dopamine is allowed to remain active longer than normal, which triggers an intense craving for more of the drug.

Users often report feelings of restlessness, irritability, and anxiety; and cocaine can trigger paranoia. Users also report being depressed when they are not using the drug and often resume use to alleviate further depression. In addition, cocaine users frequently find that they need increasingly more cocaine more often to generate the same level of stimulation. Therefore, any use can lead to addiction.

"Freebase" is a form of cocaine that is smoked. It is produced by a chemical process in which "street cocaine" (cocaine hydrochloride) is converted to a pure base by removing the hydrochloride salt and some of the "cutting" agents. The end product is not water soluble, so the only way to get it into the system is to smoke it.

"Freebasing" is extremely dangerous. The cocaine reaches the brain in seconds, creating a sudden and intense high. However, the euphoria quickly disappears, leaving the user with an enormous craving to freebase again and again. The user usually increases the dose and the frequency to satisfy this craving, resulting in addiction and physical debilitation.

"Crack" is the street name given to a type of freebase cocaine that comes in the form of small lumps or shavings. The term "crack" refers to the crackling sound made when the mixture is smoked (heated). Smoking "crack" is very dangerous, since it produces the same debilitating effects as "freebasing" cocaine. Crack has become a major problem in many American cities because it is cheap-selling for between \$5 and \$10 for one or two doses-and easily transportable-being sold in small vials, folding paper, or tinfoil.

PCP (Phencyclidine)

PCP is a hallucinogenic drug, meaning that it alters sensation, mood, and consciousness and may distort hearing, touch, smell, taste, and visual sensation. It is legitimately used as an anesthetic for animals. When used by humans, PCP induces a profound departure from reality, which leaves the user capable of bizarre behavior and severe disorientation. These PCP induced effects may lead to serious injuries or death.

PCP produces feelings of mental depression in some individuals. When PCP is used regularly, memory, perception functions, concentration, and judgment are often disturbed. Chronic PCP use may lead to permanent changes in cognitive ability (thinking), memory, and fine motor function.

Mothers using PCP during pregnancy often deliver babies who have visual, auditory, and motor disturbances. These babies also may have sudden

outbursts of agitation and other rapid changes in awareness similar to the responses of adults intoxicated with PCP.

Narcotics - Opiates

Narcotics are drugs that relieve pain and often induce sleep. The opiates, which are narcotics, include opium, morphine, codeine, heroin, and their synthetic substitutes, such as methadone.

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 and vomiting and, most significantly, respiratory depression.

Among the hazards of illicit drug use is the ever increasing risk of infection, disease and overdose. Skin, lung and brain abscesses, endocarditis, hepatitis and AIDS are commonly found among narcotic abusers. 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.

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 administer progressively larger doses to attain the desired effect.

Withdrawal symptoms experienced from heroin/morphine-like 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, tremors and severe sneezing appear as the syndrome progresses. Severe depression and vomiting are not uncommon.

Amphetamines

Amphetamine, dextroamphetamine and methamphetamine are collectively referred to as amphetamines. Unlike other frequently abused drugs, the amphetamines do not occur in nature but are synthesized in a laboratory. Their chemical properties and actions are so similar that even experienced users have difficulty knowing which drug they have taken.

Amphetamines can cause increased heart and respiratory rates, elevated blood pressure, dilated pupils, and decreased appetite. In addition, users may experience sweating, headache, blurred vision, dizziness, sleeplessness, and anxiety. Extremely high doses can cause a rapid or irregular heartbeat, tremors, loss of coordination, and even physical collapse.

Amphetamines are generally taken orally or injected. However, the addition of "ice," the slang name for crystallized methamphetamine, has promoted smoking as another mode of administration.

The effects of amphetamines, especially methamphetamine, are similar to cocaine, but their onset is slower and their duration longer. In general, 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. Violent and erratic behavior is frequently seen among chronic abusers of amphetamines.

“Designer Drugs”

By modifying the chemical structure of certain drugs, underground chemists have been able to create what are called “designer drugs”—a label that incorrectly glamorizes them. They are, in fact, analogs of illegal substances. Frequently, these drugs can be much more potent than the original substances, and can therefore produce much more toxic effects. Health officials are increasingly concerned about “ecstasy,” a drug in the amphetamine family that, according to some users, produces an initial state of disorientation followed by a rush and then a mellow, sociable feeling. We now know, however, that it also kills certain kinds of brain cells. These “designer drugs” are extremely dangerous.

Turning Awareness Into Action
Office for Substance Abuse Prevention
U.S. Department of Health and Human Services

Blood Alcohol Concentration

Blood alcohol concentration (BAC) is the amount of alcohol in the bloodstream. It is measured in percentages. For instance, having a BAC of 0.10 percent means that a person has 1 part alcohol per 1,000 parts blood in the body.

In a review of studies of alcohol-related crashes, reaction time, tracking ability, concentrated attention ability, divided attention performance, information process capability, visual functions, perceptions, and psycho-motor performance, impairment in all these areas was significant at blood alcohol concentrations of 0.05 percent. Impairment first appeared in many of these important areas of performance at blood alcohol concentrations of 0.02 percent, substantially below the legal standard in most States for drunkenness, which is 0.10 percent.

Approximately half of traffic injuries involve alcohol. About one-third of fatally injured passengers and pedestrians have elevated blood alcohol levels. For fatal intentional injuries, half of homicides involve alcohol, as do one-quarter to one-third of suicides.

The Centers for Disease Control and Prevention (CDC) estimate that about 30,000 unintentional injury deaths per year are directly attributable to alcohol. Another 15,000 to 20,000 homicides or suicides per year are associated with alcohol.

For non-fatal unintentional injuries many studies show that 25 to 50 percent involve alcohol. The same rates are found for a wide range of non-fatal intentional injuries involving alcohol, including assaults, spouse abuse, child molestation, sexual assault, rape, and attempted suicide.

BAC can be measured by breath, blood, or urine tests. BAC measurement is especially important for determining the role of alcohol in crashes, falls, fires, crime, family violence, suicide, and other forms of intentional and unintentional injury.

One problem in obtaining accurate BAC data is a lack of testing in hospital emergency rooms. Research indicates that emergency rooms do not test routinely for alcohol in crash victims. A national survey of trauma centers found

that although two-thirds of the centers estimated that the majority of patients had consumed alcohol, only 55 percent routinely conducted BAC tests at patient admissions. A review of emergency room studies indicated that up to one-third of patients admitted to emergency rooms are not tested.

BAC and Impaired Driving

The public most commonly associates BAC with drunk driving. However, it is more accurate to refer to alcohol-impaired driving because one does not have to be drunk (intoxicated) to be demonstrably impaired. Driving skills, especially judgment, are impaired in most people long before they exhibit visible signs of drunkenness. While most States define legal intoxication for purposes of driving at a BAC of 0.10 percent or higher, alcohol may cause deterioration in driving skills at 0.05 percent or even lower. Deterioration progresses rapidly with rising BAC.

In recognition of impairment at lower BAC levels, the National Highway Traffic Safety Administration (NHTSA) refers to traffic crashes as “alcohol involved” or “alcohol related” when a participant (driver, pedestrian, or bicyclist) has a measured or estimated BAC of 0.01 or above. NHTSA defines a “high-level alcohol crash” as one where an active participant has a BAC of 0.10 or higher.

The Technology of Breath-Alcohol Analysis (1992) PH312
Prevention Resource Guide: Impaired Driving (1991) MS434
Safer Streets Ahead (1990) PH292

BLOOD ALCOHOL PERCENTAGE APPROXIMATIONS

		Body Weight in Pounds							
		100	120	140	160	180	200	220	240
Number of Drinks Per Hour	1	.04	.03	.03	.02	.02	.02	.02	.02
	2	.08	.06	.05	.05	.04	.04	.03	.03
	3	.11	.09	.08	.07	.06	.06	.05	.05
	4	.15	.12	.11	.09	.08	.08	.07	.06
	5	.19	.16	.13	.12	.11	.09	.09	.08
	6	.23	.19	.16	.14	.13	.11	.19	.09
	7	.26	.22	.19	.16	.15	.13	.12	.11
	8	.30	.25	.21	.19	.17	.15	.14	.13
	9	.34	.28	.24	.21	.19	.17	.15	.14
	10	.38	.31	.27	.23	.21	.19	.17	.16
