

# **BASIC INFORMATION ABOUT ALCOHOL & CONTROLLED SUBSTANCES**

## **ALCOHOL**

Section 382.601(b)(11) FMCSR mandates that all employees be provided with training material discussing the effects of alcohol and controlled substance use on an individual's health, work, and personal life.

The following information is intended to help individuals understand the consequences of alcohol and substance abuse.

### **ALCOHOL**

Although used routinely as a beverage for enjoyment, alcohol can also have negative physical and mood-altering effects when abused. These physical or mental alterations in a driver may have serious personal and public safety risks.

#### Health Effects

An average of three or more servings per day of beer (12 oz.), whiskey (1 oz.), or wine (6 oz.) over time may result in the following health hazards:

- Dependency
- Fatal liver diseases
- Kidney disease
- Pancreatitis
- Ulcers
- Decreased sexual functions
- Increased cancers of the mouth, tongue, pharynx, esophagus, rectum and breast
- Malignant melanoma
- Spontaneous abortion and neonatal mortality

#### Social Issues

- 2-3% of the driving population are legally drunk at any one time. This rate doubles during nights and weekends.
- 2/3 of all Americans will be involved in an alcohol-related accident during their lifetime.
- The separation and divorce rate in families with alcohol dependency problems is 7 times the average.
- 40% of family court cases are alcohol-related.
- Alcoholics are 15 times more likely to commit suicide.
- More than 60% of burns, 40% of falls, 69% of boating accidents, and 76% of private aircraft accidents are alcohol-related.
- Over 17,000 fatalities occurred in 1993 in highway accidents, which were alcohol-related. This was 43% of all highway fatalities.
- 30,000 people will die each year from alcohol caused liver disease.
- 10,000 people will die each year due to alcohol-related brain disease and suicide.
- Up to 125,000 people die each year due to alcohol-related conditions or accidents.

#### Workplace Issues

- It takes one hour for the average person (150 pounds) to process one serving of alcohol from the body.
- Impairment can be measured with as little as two drinks in the body.
- A person who is legally intoxicated is 6 times more likely to have an accident than a sober person is.

## **ALCOHOL'S TRIP THROUGH THE BODY**

**Mouth and Esophagus:** Alcohol is an irritant to the delicate linings of the throat and food pipe. It burns as it goes down.

**Stomach and Intestines:** Alcohol has an irritating effect on the stomach's protective lining, resulting in gastric or duodenal ulcers. This condition, if it becomes acute, can cause peritonitis, or perforation of the stomach wall. In the small intestine, alcohol blocks absorption of such substances as thiamin, folic acid, fat, vitamin B1, vitamin B12 and amino acids.

**Bloodstream:** 95% of the alcohol taken into the body is absorbed into the bloodstream through the lining of the stomach and duodenum. Once in the bloodstream alcohol quickly goes to every cell and tissue in the body. Alcohol causes red blood cells to clump together in sticky wads, slowing circulation and depriving tissues of oxygen. It also caused anemia by reduction of red blood cell production. Alcohol slows the ability of white cells to engulf and destroy bacteria and degenerates the clotting ability of blood platelets.

**Pancreas:** Alcohol irritates the cells of the pancreas, causing them to swell, thus blocking the flow of digestive enzymes. The chemicals, unable to enter the small intestine, begin to digest the pancreas, leading to acute hemorrhagic pancreatitis. One out of five patients who develop this disease die during the first attack. Pancreatitis can destroy the pancreas and cause a lack of insulin thus resulting in diabetes.

**Liver:** Alcohol inflames the cells of the liver, causing them to swell and block the tiny canal to the small intestines. This prevents bile from being filtered properly through the liver. Jaundice develops, turning the whites of the eyes and skin yellow. Each drink of alcohol increases the number of live cells destroyed, eventually causing cirrhosis of the liver. This disease is eight times more frequent among alcoholics than among non-alcoholics.

**Heart:** Alcohol causes inflammation of the heart muscle. It has a toxic effect on the heart and causes increased amounts of fat to collect, thus disrupting its normal metabolism.

**Urinary Bladder and Kidneys:** Alcohol inflames the lining of the urinary bladder making it unable to stretch properly. In the kidneys, alcohol causes increased loss of fluids through its irritating effect.

**Brain:** The most dramatic and noticed effect of alcohol is on the brain. It depresses brain centers, producing loss of coordination: confusion, disorientation, stupor, anesthesia, coma and possibly death. Alcohol kills brain cells and brain damage is permanent. Drinking over a period of time causes loss of memory, judgment and learning ability.

## **CONTROLLED SUBSTANCES**

### **Marijuana**

#### Health Effects

- Emphysema-like conditions
- One joint of marijuana contains cancer-causing substances equal to 1/2 pack of cigarettes.
- One joint causes the heart to race and overwork. People with heart conditions are at risk.
- Marijuana is commonly contaminated with the fungus aspergillus, which can cause serious respiratory tract and sinus infections.
- Marijuana lowers the body's immune system response making users more susceptible to infection.
- Chronic smoking causes changes in brain cells and brain waves. The brain does not work as efficiently or effectively. Long-term brain damage may occur.
- Tetrahydrocannabinol (THC) and 60 other chemicals in marijuana concentrate in the ovaries and testes.
- Chronic smoking of marijuana in males causes a decrease in testosterone and an increase in estrogen, the female hormone. Therefore, the sperm count is reduced, leading to temporary sterility.
- Chronic smoking of marijuana in females causes a decrease in fertility.
- A higher than normal incidence of stillborn births, early termination of pregnancy, and higher infant mortality rate during the first few days of life are common in pregnant marijuana smokers.
- THC causes birth defects including brain damage, spinal cord, forelimbs, liver, and water on the brain and spine in test animals.
- Prenatal exposure may cause underweight newborns.
- Fetal exposure may decrease visual functioning.
- User's mental function can display the following effects:
  - ✓ delayed decision making
  - ✓ diminished concentration
  - ✓ impaired short-term memory
  - ✓ impaired signal detection
  - ✓ impaired tracking
  - ✓ erratic cognitive function
  - ✓ distortion of time estimation

#### Workplace Issues

- THC is stored in body fat and slowly released.
- Marijuana smoking has long-term effects on performance.
- Increased THC potency in modern marijuana increases the impairment.
- Combining alcohol or other depressant drugs with marijuana increases impairment.

### **Cocaine**

Cocaine is used medically as a local anesthetic. When abused, it becomes a powerful physical and mental stimulant. The entire nervous system is energized. Muscles tense, the heart beats faster and stronger, and the body burns more energy. The brain experiences an exhilaration caused by a large release of neurohormones associated with mood elevation.

### Health Effects

- Regular use may upset the chemical balance of the brain. As a result, it may speed up the aging process by causing damage to critical nerve cells.
- Parkinson's Disease could also occur.
- Cocaine causes the heart to beat faster, harder, and rapidly increases blood pressure. It also causes spasms of blood vessels in the brain and heart. Both lead to ruptured vessels causing strokes and heart attacks.
- Strong dependency can occur with one "hit" of cocaine. Usually mental dependency occurs within days for "crack" or within several months for snorting coke. Cocaine causes the strongest mental dependency of all the drugs.
- Treatment success rates are lower than other chemical dependencies.
- Extremely dangerous when taken with other depressant drugs. Death due to overdose is rapid.
- Fatal effects are usually not reversible by medical intervention.

### Workplace Issues

- Extreme mood and energy swings create instability. Sudden noise causes a violent reaction.
- Lapses in attention and ignoring warning signals increases probability of accidents.
- High cost frequently leads to theft and/or dealing.
- Paranoia and withdrawal may create unpredictable or violent behavior.
- Performance is characterized by forgetfulness, absenteeism, tardiness and missing assignments.

## **Opiates**

Narcotic drugs that alleviate pain and depress body functions and reactions.

### Health Effects

- Intravenous users have a high risk of contracting hepatitis or AIDS when sharing needles.
- Increased pain tolerance. As a result, a person may more severely injure themselves and fail to seek medical attention as needed.
- Narcotic effects are multiplied when combined with other depressants causing an increased risk for an overdose.
- Because of tolerance, there is an ever increasing need for more.
- Strong mental and physical dependency occurs.
- With increased tolerance and dependency combined, there is a serious financial burden for the user.

### Workplace Issues

- Side effect such as nausea, vomiting, dizziness, mental clouding and drowsiness place the user at high risk for an accident.
- Causes impairment of physical and mental functions.

## **Amphetamines**

Central nervous system stimulant that speeds up the mind and body.

### Health Effects

- Regular use causes strong psychological dependency and increased tolerance.
- High doses may cause toxic psychosis resembling schizophrenia.

- Intoxication may induce a heart attack or stroke due to increased blood pressure.
- Chronic use may cause heart or brain damage due to severe constriction of capillary blood vessels.
- Euphoric stimulation increases impulsive and risk taking behavior, including bizarre and violent acts.
- Withdrawal may result in severe physical and mental depression.

#### Workplace Issues

- Since the drug alleviates the sensation of fatigue, it may be abused to increase alertness during periods of overtime or failure to get rest.
- With heavy use or increasing fatigue, the short-term mental or physical enhancement reverses and becomes an impairment.

## **Phencyclidine (PCP)**

Often used as a large animal tranquilizer and abused primarily for its mood altering effects. Low doses produce sedation and euphoric mood changes. Mood can rapidly change from sedation to excitation and agitation. Larger doses may produce a coma-like condition with muscle rigidity and a blank stare. Sudden noises or physical shocks may cause a “freak out” in which the person has abnormal strength, violent behavior, and an inability to speak or comprehend.

#### Health Effects

- The potential for accidents and overdose emergencies is high due to the extreme mental effects combined with the anesthetic effect on the body.
- PCP, when combined with other depressants, including alcohol, increases the possibility of an overdose.
- If misdiagnosed as LSD induced, and treating with thorazine, can be fatal.
- Irreversible memory loss, personality changes, and thought disorders may result.

#### Workplace Issues

- Not common in workplace primarily because of the severe disorientation that occurs.
- There are four phases to PCP abuse:
  - ✓ Acute toxicity causing combativeness, catatonia, convulsions, and coma. Distortions of size, shape, and distorted perception are common.
  - ✓ Toxic psychosis with visual and auditory delusions, paranoia and agitation.
  - ✓ Drug induced schizophrenia.
  - ✓ Induced depression, which may create suicidal tendencies and mental dysfunction.