

## Drugs and their Effects by Class

### 1: Cannabinoids

The chemical compounds unique to the cannabis plant are known as the cannabinoids. The main pharmacologically active constituent of cannabis is  $\Delta^9$ -tetrahydrocannabinol (THC). This is a central nervous system depressant that may cause ataxia, confusion, dizziness, somnolence, euphoria, hallucinations, speech difficulties, weakness, malaise and vision difficulties. Single doses of THC, via smoking or oral ingestion, are capable of producing significant psychomotor performance decrements in healthy volunteers for up to 24 hours in laboratory studies and up to 3 hours under actual driving conditions. The deleterious effects of THC appear to be additive to or possibly synergistic with those of alcohol, and the combination of the two agents results in the prolongation as well as enhancement of their effects.

### 2: Benzodiazepines

Examples of benzodiazepines are drugs such as diazepam and alprazolam. Many benzodiazepines are available on prescription. Such drugs are central nervous system depressants that may cause drowsiness, lethargy, dizziness and confusion. Manufacturers state that patients taking these drugs should be warned against engaging in potentially hazardous activities requiring mental alertness and that they should be advised against the simultaneous use of alcohol and other central nervous system (CNS) depressants. Simulator and driving studies have shown that such drugs produce significant driving impairment. Single doses of diazepam can increase lateral deviation of lane control, reduce reaction times, reduce ability to perform multiple tasks, decrease attention, adversely affect memory and cognition and increase the effects of fatigue. Significant impairment is further increased if diazepam is combined with low concentrations of alcohol.

### 3: Opiates

Drugs in the opiates class include morphine, codeine and heroin. Many opiates are available on prescription. These drugs are central nervous system depressants that can cause drowsiness and dizziness, lethargy, ataxia, visual disturbances, weakness and confusion. Some of the drugs are used medicinally and manufacturers warn that the drug can impair mental and/or physical abilities required for the performance of potentially hazardous tasks and additive depressant effects may be produced by the concomitant administration of other CNS depressants, including alcohol. Single or repeated intravenous intramuscular or oral morphine doses given to healthy volunteers as well as former opiate addicts, have been shown to be capable of causing subjective sedation and significant psychomotor impairment for up to 4 hours after a single dose and for up to 36 hours after a repeated doses in laboratory studies.

### 4: Methadone

Methadone is a central nervous system depressant that can cause drowsiness, dizziness, weakness, disorientation, lightheadedness and visual disturbances. Prescription users are advised that methadone may impair their mental and/or physical abilities required for the performance of potentially hazardous tasks, and that the sedative effects of the drug may be enhanced by the concurrent use of other CNS depressants such as alcohol. In healthy, non-methadone using volunteers, single doses of methadone will impair driving ability. Studies of long-term methadone maintenance patients have shown appropriately administered methadone doses do not cause significant psychomotor or cognitive impairment when administered regularly and when the subject abstains from all other drugs.

### 5: Cocaine

Cocaine is a central nervous system stimulant that may cause restlessness, euphoria, dizziness, dyskinesia, tremors, dysphoria and insomnia. Chronic usage may lead to personality changes,

irritability, hyperactivity and psychosis. Observed signs of impairment and driving performance have included subjects speeding, losing control of the vehicle, causing collisions, turning in front of other vehicles, high risk behavior, inattentive driving and poor impulse control. As the effects of cocaine wear off subjects may suffer from fatigue and depression, sleepiness and inattention.

#### **6: Amphetamines, Methamphetamines and Ecstasy (MDMA)**

Amphetamine and methamphetamine are central nervous system stimulants that may cause restlessness, euphoria, dizziness, dyskinesia, tremor, dysphoria and insomnia. Chronic use may lead to personality changes, irritability, hyperactivity and psychosis. Driving and driving behaviours included; speeding, erratic driving and accidents. Other notable effects included nervousness, rapid and non-stop speech, un-intelligible speech, disorientation, agitation, staggering and awkward movements, irrational violent behavior and unconsciousness. Impairment is attributed to distraction, disorientation, over excitation, hyperactive reflexes, general cognitive impairment or withdrawal, fatigue and hypersomnolence.

MDMA (ecstasy) is a weak central nervous system stimulant that may cause the sensory disturbances, nausea and dizziness, ataxia, muscular rigidity, diaphoresis, restlessness and tremor. In driving studies moderate effects on vehicle control, acceptance of higher levels of risk, acute changes in cognitive performance and impaired information-processing ability were observed