



### Methamphetamine - General Effects

**Methamphetamine** is a Central Nervous System (CNS) stimulant and a drug of abuse.

Methamphetamine exists as two isomers. One isomer is levo, or l-methamphetamine, which is an active ingredient in some over-the-counter nasal sprays and is a metabolite of selegiline, an anti-Parkinson’s drug. L-methamphetamine has a much weaker CNS effect compared to its isomer, d-methamphetamine. Dextro, or d-methamphetamine, is a CNS stimulant and a Schedule 2 controlled substance. D-methamphetamine will be the isomer discussed in this monograph. Please reach out to the local Traffic Safety Resource Prosecutor (TSRP) for legal information and resources regarding this subject in court.

1. Methamphetamine has historically been used in the treatment of obesity, narcolepsy, and attention deficit disorder, although it is currently considered a drug of abuse. Recreationally, methamphetamine is abused to increase alertness, relieve fatigue, control weight, treat mild depression, and for its intense euphoric effects.
  - a. Methamphetamine has a half-life of 6-15 hours.
  - b. Methamphetamine has a general therapeutic range, but experienced effects can vary based on an individual's prescription history.
    - i. Therapeutic range refers to the blood concentration expected to achieve the desired therapeutic effects. Due to many factors such as prescription history, dosage, tolerance, drug-drug interactions and use, an individual may exhibit signs of impairment even though blood concentrations fall within the therapeutic range.
2. Amphetamine is a CNS stimulant and a major active metabolite of Methamphetamine.
3. Methamphetamine is a CNS stimulant that may cause dizziness, restlessness, euphoria, dysphoria, insomnia, headache, lowered inhibitions, reduced fatigue/drowsiness, increased alertness, increased heart rate, increased blood pressure, tremors, and shakes. Overdosage effects can cause confusion, anxiety, hallucinations, cardiac arrhythmias, hypertension, hyperthermia, circulatory collapse, convulsions, and coma. Chronic users may develop paranoid psychosis.
  - a. General impairing effects of CNS stimulants on driving behavior during the “rush” phase include impaired divided attention, aggressive driving, taking unnecessary risks, over-confidence in abilities, disorientation, and inability to maintain lane position. The “rush” phase is followed by a “crash” phase where central nervous system depression may be observed.
  - b. Methamphetamine withdrawal, or the “crash” phase, can cause abstinence symptomology and manifest as depressant effects including, but not limited to, exhaustion, depression, agitation, and fatigue.
4. The longer an individual uses a drug, the more they can build up a tolerance to its effects. Tolerance occurs when an individual no longer responds to the drug in the way that they initially responded. When an individual gains tolerance to a drug, a higher dose of the drug is necessary to achieve the same level or response initially achieved. As tolerance is gained, it may reduce some of the possible negative effects of a drug.
5. Drug metabolism (alcohol excluded) exhibits first order kinetics, or the elimination of a constant fraction of drug quantity per unit of time, which means that the amount eliminated is proportional to the drug concentration.
6. The use of more than one drug at a time may enhance the effects the drugs would otherwise have on their own, leading to greater impairment.

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### References

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\*\* The interpretive information provided is not exhaustive nor meant to encompass all scenarios where toxicological results are reported. Interpretive information is meant to serve as a general guide for the reader and that for any given case, consultation with a forensic toxicologist is recommended. \*\*

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