

URINE DRUG TEST INFORMATION SHEET

SYNTHETIC STIMULANT SUBSTANCES (CATHINONE, METHCATHINONE, MEPHEDRONE, MDPV)

Classification: Stimulant, entactogen, hallucinogen

Background: This group consists of several different designer drugs; however, they are frequently referred to collectively because they are often indiscriminately prepared together within one dose and because of their similar effects on the body. Designer drugs are so named because they were developed to subvert law enforcement and drug testing agencies and are advertised as legal highs. This group of drugs was designed to produce effects similar to amphetamines, ecstasy and cocaine. They are characterized as central nervous system (CNS) stimulants and dopamine reuptake inhibitors; therefore they are considered stimulant drugs with psychedelic and psychoactive properties.

The most common of these synthetics are MDPV, cathinone, methcathinone and mephedrone. MDPV (methylenedioxypyrovalerone) was first seen around the year 2004 as a research chemical with reportedly four times the potency of Ritalin. It has been popularized as a club drug, often used in combination with alcohol, GHB, cannabis and other abused drugs. Most recently it has been established as the primary ingredient of bath salts, such as Ivory Wave, and is associated with extreme side effects of psychological disturbances such as causing users to mutilate themselves and others while submerged in paranoid hallucinations. Cathinone is extracted from the shrub plant *Catha edulis* (khat) and is chemically similar to ephedrine and the amphetamines. Methcathinone, originally prescribed in the Soviet Union in the 1930s as an antidepressant and diet drug, is a recreational drug considered addictive in nature and is similar to cathinone. Methcathinone is created by bathtub chemists by oxidizing the common drug ephedrine, an easily obtainable legal stimulant. Mephedrone belongs to this same group of synthetic cathinone derivatives. It was first synthesized in 1929 but was rediscovered

in 2003 and is reportedly manufactured in China. There are currently no known prescribed uses for the synthetic stimulants.

Legally Obtained With Prescription: None

Legally Obtained OTC: None

Street names: Sold as bath salts, plant fertilizers and research chemicals under the names listed below and more: Ivory Wave, MCAT, Lightning, Meph, Bliss, WIN-35, 428, Ivory Coast, Purple Wave, The New Meow Meow, Vanilla Sky, Cat, Bathtub Speed, Stroof, Jeff, Khat, MDPK, Lunar Wave, Sunshine, Recharge, Sextacy, Magic, Super Coke, Ocean, Charge Plus, White Lightning, Cloud 9, PV, Scarface, Hurricane Charlie, Aura, Red Dove, White Dove, Blue Silk, Serenity Now, etc.

Labeled as “Not Meant for Human Consumption” and advertised as a “Legal High.”

Mode of Use: Smoked (salt or freebasing), oral capsules and tablets, insufflation of powder, rectal, IV

Appearance: Pure white to light brown powders, often with slight odors, and tablets/capsules ranging in many colors. These synthetics can be purchased online from sites claiming to be plant food or bath product stores and in smoke/head shops in plastic and foil pouches, typically in 500-mg packets.

Metabolism and Detection in Urine: Current data and literature is limited on the metabolism of the multiple synthetics available. Because of the batch-to-batch variability, dosing irregularities and the variable synthetics used, predicting a half-life and detection window is complex. Furthermore, the required effective dose for synthetic stimulants is much lower than their cocaine/ecstasy/amphetamine counterparts, resulting in lower excreted metabolite levels accompanied by higher psychoactive potency.

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To date, a predicted detection window of 48–72 hours is representative of the metabolism of these drugs, depending on the original dosing and synthetic abused. Despite the lack of data, owing to the lack of pharmacokinetic and pharmacodynamic study of these drugs, detection windows can be predicted based on the windows of their stimulant counterparts.

Physiological effects: Overstimulation of the cardiovascular system with risk of heart and circulatory problems, overstimulation of the nervous system with risk of agitation and fits, nose bleeds and burns, dangerously raised body temperature, rashes, dilated pupils, altered blood pressure, breathing difficulties, bruxism, loss of appetite, discoloration of the extremities (cold and/or blue fingers), rapid heartbeat, profuse sweating, loss of bowel control, muscle damage, renal failure, myocardial infarction, headaches, nausea, seizures.

Psychological effects: Euphoria, talkativeness, alertness, elevated mood, mild sexual stimulation, increased motivation, severe agitation/aggression, depression, severe paranoia, hallucinations (auditory and visual), delusions, anxiety, tinnitus, prolonged panic attacks, potential for developing personality disorders.

Toxicity: Interbatch variability due to differing synthetics and dosing allow for a high potential for overdose. Synthetics are active at extremely low doses: ~5 mg compared to 100 mg for other, more common stimulants. Users can inadvertently take larger doses, allowing risk for overdose. Use of these drugs is often followed by very painful hangovers for more than three days, causing emotional fragility, diminished cognitive ability, muscle pains, sore jaw, loss of appetite, hallucinations, paranoid delusions, acute agitation and crushing suicidal blackness. Toxicity of these drugs is typically treated with a CNS depressant, such as the benzodiazepine lorazepam, to counteract the stimulant affects.

Screen test: Performed by liquid chromatography tandem mass spectrometry (LC-MS/MS). Synthetic stimulants do not cross-react with traditional immunoassay screening techniques and therefore will not receive positive results by traditional screening methods.

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