Drugs of Abuse

CLINICAL REFERENCE® LABORATORY

CRL GLOBAL SERVICES

CRL PROVIDES SOLUTIONS FOR THE FUTURE

Excellence in Quality and Service

Clinical Reference Laboratory's mission is to offer clients a competitive advantage through a unique combination of quality testing and personalized service. In drug testing, this means results you can rely on when making difficult hiring or disciplinary decisions.

Since 1989, we have been certified by the Department of Health and Human Services Substance Abuse and Mental Health Services Administration (SAMHSA #0007) without interruption. For non-regulated testing, we are certified by the College of American Pathologists-Forensic Urine Drug Testing (CAP-FUDT) program. We are also licensed to perform testing in all states including New York, Florida, Oklahoma, Maryland, Vermont, Maine, Kansas, Pennsylvania, Texas and Hawaii, which have their own certification programs.

Both regulated and non-regulated specimens are screened on Bayer ADVIA 2400 analyzers using the same protocols and procedures. Screen positives are confirmed by Gas Chromatography/Mass Spectrometry (GC/MS), which identifies unknown drugs by their unique fingerprints and compares them to known drugs.

In drug testing, quality service is gauged by turnaround time, flexibility, and responsiveness. Our turnaround times are among the fastest in the industry. Screen negatives are available the day following collection, in many areas by 8:00am. Samples requiring GC/MS confirmation require an additional day or two.

We have the resources to serve clients of any size and adapt to their specific needs. Package billing options include collection site management and the MRO of your choice. You can receive results by mail, fax, or other computer-based electronic media.

CRL's reputation for quality service is second to none. Although we have voice mail at some positions, your call will always be answered by a real person who is committed to being courteous and helpful.

If you need additional information, please call **1-800-445-6917**. We look forward to working with you.

Standard Cutoff Levels

A "cutoff" is the concentration of analyte (drug) in a urine sample at or above which the sample is considered positive for that drug. The purpose of the cutoff is to insure consistency and reliability throughout the testing process. The screening cutoff level may be different than the confirmation cutoff when the screening test is detecting all forms of the drug and the confirmation cutoff is measuring only one form (metabolite) of the drug in question. For instance, in testing for marijuana, the screening test looks for all forms of cannibinoid while the confirmation test looks only at the major metabolite - delta 9-tetrahydrocannabinol carboxylic acid (D9 THCA). Test results in excess of the confirmation cutoff levels are consistent with recent ingestion of the analyte or an analyte-producing medication.

NON-DOT DRUG CATEGORIES TO BE TESTED AND CUTOFFS

DRUG NAME	SCREENING CUTOFF	CONFIRMATION CUTOFF
Amphetamines	1000 NG/ML	500 NG/ML
Barbiturates	300 NG/ML	300 NG/ML
Benzodiazepines	300 NG/ML	300 NG/ML
Cannabinoids	50 NG/ML	15 NG/ML
Cocaine	300 NG/ML	150 NG/ML
Methadone	300 NG/ML	300 NG/ML
MDMA/Ecstasy	500 NG/ML	500 NG/ML
Opiates	2000 NG/ML	2000 NG/ML
Phencyclidine	25 NG/ML	25 NG/ML
Propoxyphene	300 NG/ML	300 NG/ML

Amphetamines

Drug	Methamphetamine, Amphetamine
Trade Names	Desoxyn, Dexedrine
Street Names	Uppers, pep pills, bennies, moth, crank, speed, meth, crystal, dexies, hearts, whites, black beauties
Classification	Central nervous system stimulants
Physical/ Psychological Dependence	Possible/high
Methods of Administration	Swallowed or injected
Physical Appearance	Coarse powders, crystals, "chunks," capsules, or tablets of various sizes and colors
Approximate Detection Time in Urine	24 hours to 48 hours
Clinical Effects/ Symptoms	Palpitations, tachycardia, hypertension, restlessness, dizziness, insomnia, loss of appetite, and hallucinations

The Basics
Amphetamines are strong central nervous system stimulants with high abuse potential. They produce an initial state of euphoria (high) followed by restlessness, agitation, irritability and sometimes extreme paranoia. Tolerance develops rapidly and, although physical dependence has not been proved, psychological dependence is very high. Amphetamines may be used in the treatment for obesity, attention disorder, hyperactivity and narcolepsy, but, because of the high abuse potential, these compounds are used as a last resort in these treatments.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/ Mass Spectroscopy.

Stability
After proper collection, neither amphetamine nor methamphetamine concentration in urine will change significantly for ten days at room temperature, for several weeks at refrigerated temperature or indefinitely when frozen.

Purpose
Urine positive indicates recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff for amphetamines is 1000 ng/mL The confirmation cutoff for either dextro-amphetamine or methamphetamine in those samples is 500 ng/mL. This confirmation is consistent with ingestion of the analyte or the analyte-producing medication sometime within the 48-hour period preceding the urine collection.

Interferences
Though no compounds have been tested which cannot be separated from amphetamine and methamphetamine by GC/MS analysis, there are medications, which actually contain these analytes or cause them to be produced by the body. The list of these medications includes, but is not limited to: Biphetamine, Dexedrine, Desaxyn, Didrex, Eldepryl.

Barbiturates

Drug	Phenobarbital, Secobarbital, Pentabarbital, Amobarbital, Butalbital
Trade Names	Seconal, Nembutal, Amytal, Fiorinal,Luminal, Phenobarbital
Street Names	Barbs, downers, goofballs, reds, yellow jackets, blue devils
Classification	Depressants/sedative-hypnotic
Physical/ Psychological Dependence	High/moderate
Methods of Administration	Swallowed or injected
Physical Appearance	Tablets, capsules, liquid (injectable), white powder
Approximate Detection Time in Urine	Short acting (e.g., secobarbital) - 1 day: long acting (e.g., phenobarbital) - 2 to 3 weeks
Clinical Effects/ Symptoms	Confusion, slurred speech, drowsiness, deep sleep, coma, respiratory depression

The Basics
There is a variety of these major sedative-hypnotic drugs. However, all are derivatives of barbituric acid. Depending on the derivation, the particular drug may be long acting, as is phenobarbital or short acting, as in pentobarbital. The long-acting barbiturate phenobarbital selectively reduces the excitability of rapidly firing neurons and is therefore an effective anticonvulsant drug. The short and ultra-short drugs inhibit arousal, hence their sedative and hypnotic effects. Low doses produce sedation, drowsiness, sleep and also impaired judgment. At high doses, anesthesia is produced. Very high doses can cause stupor, convulsions and death.

Sample
Random urine specimen, in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/ Mass Spectroscopy.

Stability
All types are stable ten days at room temperature, two weeks when refrigerated, indefinitely when frozen.

Purpose
Urine metabolite positive indicates recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff and confirmation cutoffs for barbiturates is 300 ng/mL. This concentration is consistent with ingestion of the analyte sometime within the 48-hour period preceding the urine collection.

Interferences
Though no compounds have been tested which cannot be separated from barbiturates by GC/MS analysis, there are medications, which contain these analytes or cause them to be produced by the body.

Benzodiazepines

Drug	Chlordiazepoxide, Diazepam, Oxazepam, Lorazepam, Flurazepam, Clorazepate
Trade Names	Librium, Valium, Serax, Ativan, Dalmane, Tranxene
Street Names	Tranks, downers, blues, yellows
Classification	Minor tranquilizers, anti-anxiety/sedative
Physical/ Psychological Dependence	Moderate
Methods of Administration	Swallowed or injected
Physical Appearance	White or pale yellow crystalline powders, tablets, capsules, liquid (injectable)
Approximate Detection Time in Urine	3 days (therapeutic dose)
Clinical Effects/ Symptoms	Hypnotic, anti-anxiety, anticonvulsant/ drowsiness, confusion, stupor, coma

The Basics
Among this group of drugs, the most prominent is Valium. Benzodiazepines are used therapeutically as so-called minor tranquilizers. Doses between 2.5 and 10 mg produce a calming effect while higher doses produce muscle-relaxing effects. Drug addicts utilize Valium in high doses to counter the excitatory effects of other drugs or as a means of inducing tranquil states. Acutely, benzodiazepine overdose may produce somnolence, confusion, seizures, and coma. Rarely, hypertension, respiratory depression, and cardiac arrest may occur. Chronically, physical and psychological dependence occur. Sudden discontinuance of the drug may lead to anxiety, sweating, irritability, hallucination, diarrhea, and seizures.

Sample
Random urine specimen, in a properly sealed and labeled urine container.

Method and instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/ Mass Spectroscopy.

Stability
After proper collection, benzodiazepines concentration in urine will not change significantly for ten days at room temperature, for several weeks at refrigerated temperature or indefinitely when frozen.

Purpose
Urine positive indicates recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff for benzodiazepines is 300 ng/mL. This concentration is consistent with ingestion of the analyte sometime within the 72-hour period preceding the urine collection.

Interferences
Though no compounds have been tested which cannot be separated from benzodiazepines by GC/MS analysis, there are medications which contain these analytes or cause them to be produced by the body.

Cannabinoids

Drug	Marijuana, Hashish, Hashish Oil
Street Names	Grass, pot, joint, weed, ragweed, Thias sticks, Columbian, Sinsemilla, Acapulco gold, ace, Hash, Lebanese blond, Nepalese fingers, black Afghan
Classification	Hallucinogen
Physical/ Psychological Dependence	Unknown/moderate
Methods of Administration	Swallowed or smoked
Physical Appearance	Dry crushed leaves (marijuana), hand-rolled cigarettes (joints), hard chunks of resin of various colors (hashish), dark viscous liquid (hashish oil)
Approximate Detection Time in Urine	Acute dosages of 1 or 2 joints - 2 to 3 days; chronic use of more than 5 joints/day - 1 4 to 1 8 days; oral ingestion (20ng) - 1 to 5 days
Clinical Effects/ Symptoms	Hallucinations, euphoria, relaxed inhibitions

The Basics
Marijuana consists of the dried leaves and flowering tops of the Cannabis sativa plant and is a source of psychoactive agents, a major one being delta 9-tetrahydrocannabinol (D9-THC). The gastrointestinal tract and the respiratory system rapidly absorb this drug after oral or inhalation routes of ingestion. The drug is extensively and rapidly metabolized and can be detected in the urine within a couple of hours and for as long as several days after use. Regular users report feelings of euphoria, hallucinations, and relaxed inhibitions.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/ Mass Spectroscopy.

Stability
After proper collection, the concentration of cannabinoid in urine does not change significantly for several days at room temperature, for several weeks at refrigerated temperature or indefinitely when frozen.

Purpose
To detect recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS.This concentration is consistent with ingestion of marijuana sometime within the 72-hour period preceding the urine collection. The screening cutoff for marijuana is 50 ng/mL. The confirmation cutoff for D9-THCA in those samples is 15 ng/mL.

Interferences
No compounds have been tested which cannot be separated from D9-THCA by GC/MS analysis.

Cocaine

Drug	Cocaine
Trade Names	
Street Names	Coke, snow, nose candy, toot, crack, stardust, flake, white lady, blow, cola, Bolivian rock, mother of pearl
Classification	Stimulant/local anesthetic
Physical/ Psychological Dependence	Possible/high
Methods of Administration	Sniffed, swallowed or injected
Physical Appearance	Odorless, white crystalline powder with bitter numbing taste.
Approximate Detection Time in Urine	2 to 4 days
Clinical Effects/ Symptoms	Euphoria, motor and verbal hyperactivity, mood elevation, inflated self-esteem, grandiose delusions

The Basics
Cocaine is a central nervous system stimulant. It usually appears in the form of a fine crystal-like powder, although it can come in larger pieces called rocks. It may be injected, snorted or smoked as the free base. The effects of the drug begin within minutes and peak within 15 to 20 minutes. The effects include dilated pupils, increase in blood pressure, heart rate, breathing rate, and body temperature. The dangers associated with cocaine use vary depending on how the drug is taken, the dose, and the individual. Feelings of restlessness, irritability, anxiety, and sleeplessness are reported by some regular users. Even low doses of cocaine may create psychological problems. Use of high doses of cocaine over a prolonged period of time may lead to paranoia, commonly called cocaine psychosis, which includes hallucinations of touch, sight, taste, and smell.

Sample
Random urine specimen in properly sealed and labeled urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/Mass Spectroscopy.

Stability
All sample types are stable ten days at room temperature, two weeks when refrigerated, indefinitely when frozen.

Purpose
Urine and saliva metabolite positive indicate recent usage.

Normal Results
Negative.

Abnormal Results
The original enzyme immunoassay has been confirmed by GC/MS. The screening cutoff is different than the confirmation cutoff because the screening test detects all forms of the drug whereas the confirmation test measures only one form (metabolite) of the drug in question. The screening cutoff for cocaine metabolites is 300 ng/mL. The confirmation cutoff for the metabolite benzoylecgonine is 150 ng/mL. This concentration is consistent with ingestion of cocaine within a 48-hour period preceding the urine collection.

Interferences
No compounds have been tested which cannot be separated from benzoylecgonine by GC/MS analysis.

Methadone

Drug	Methadone
Trade Names	Dolopine, Methadone
Street Names	Dolly
Classification	Narcotic, opioid, analgesic
Physical/ Psychological Dependence	High/high
Methods of Administration	Swallowed
Physical Appearance	White crystalline powder, tablets, liquid (injectable)
Approximate Detection Time in Urine	3 days
Clinical Effects/ Symptoms	Euphoria, drowsiness

The Basics
Methadone is a nonbicyclic drug, which binds competitively with morphine to receptors in the brain. Although it can become addictive, the effects are less than those of equivalent concentrations of heroin. Thus, administration of methadone to heroin addicts allows them to experience the effects of heroin but in a modulated manner. A gradual lowering of the dose reduces the physical dependence, however addiction to methadone can also occur. Methadone is also used as a pain medication.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/Mass Spectroscopy.

Stability
After proper collection, methadone concentration in urine will not change significantly for ten days at room temperature, for several weeks at refrigerated temperature or indefinitely when frozen.

Purpose
Urine positive indicates recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff for methadone is 300 ng/mL The confirmation cutoff for methadone in those samples is 300 ng/mL. This concentration is consistent with ingestion of the analyte sometime within the 48-hour period preceding the urine collection.

Interferences
No compounds have been tested which cannot be separated from methadone by GC/MS analysis.

MDMA-Ecstasy

Drug	(MDMA-ECSTASY) Methylene dioxy methamphetamine
Trade Names	MDMA
Street Names	Hug Drug, Ecstasy, XTC, clarity, essence, Adam
Classification	Stimulant/psychedelic
Physical/ Psychological Dependence	Possible/high
Methods of Administration	Swallowed
Physical Appearance	Tablets/capsules
Approximate Detection Time in Urine	1 - 3 days
Clinical Effects/ Symptoms	Short term: Euphoria, Empathy, reduction of inhibition, Hyperthermia Long term: Selective and permanent brain damage, confusion, depression

The Basics
MDMA is 3,4-methylenedioxymethamphetamine. It was originally manufactured as a weight loss product, but was never marketed because of its side effects. The white powder/solid is supplied in the form of capsules or tablets, which are easy to counterfeit, which in turn leads to contaminated or substituted products being sold as ecstasy and a true 'buyers beware' market. MDMA effects last three to six hours and the doses are often 'piggy-backed', leading to cases of severe over-heating and cardiac emergencies. Depression, anxiety, disruption of sleep and paranoia have been reported to occur days or weeks after use. Symptoms of toxicity can include confusion, agitation, hallucinations, seizures, hyperpyrexia, coma and hypotension. Large doses can cause malignate hyperthermia, leading to muscle breakdown as well as kidney and cardiovascular failure. As a real capper, MDMA is neurotoxic and can cause irreversible brain damage.

Sample
Random urine collected and sealed in a proper urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/Mass Spectroscopy.

Stability
Drug is stable in urine for at least two weeks at room temperature and one year when frozen.

Purpose
Drug and/or metabolite detection is indicative of recent (1-3 days) ingestion.

Normal Results
Negative

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff for MDMA is 500 ng/mL. The confirmation cutoff for MDMA is 500 ng/mL. This concentration is consistent with ingestion of the analyte sometime within the 48-hour period preceding the urine collection.

Interferences
MDMA and its metabolite, MDA, can be detected by GC/MS without interference from any other known compounds.

Opiates

Drug	Morphine, Heroin, Codeine, Hydromorphone, Hydrocodone
Trade Names	Morphine Sulphate, Codeine, Dilaudid
Street Names	M, morph, Miss Emma, smack, junk, horse, H, gum, dust, Mexican brown, China white, schoolboy Juice, dillies, D's, No. 2's, No. 4's, Percs
Classification	Narcotic analgesic
Physical/ Psychological Dependence	Morphine-high; Heroin-high; Codeine-moderate; hydromorphone-high
Methods of Administration	Swallowed or injected
Physical Appearance	White, brown, or black powder, liquids (injectable), tablets, capsules of various sizes and colors
Approximate Detection Time in Urine	3 days
Clinical Effects/ Symptoms	Euphoria, analgesia, drowsiness, respiratory depression

The Basics
Opiates are drugs such as heroin, codeine and morphine, which can produce a very high physical and/or psychological dependence by their users. Samples may be tested for codeine and morphine (a metabolite of both codeine and heroin), and follow-up testing for 6-acetylmorphine, also a metabolite of heroin, is allowed on morphine-positive samples. Testing for the opiates, hydrocodone (Vicodin, Lortabs), hydromorphone (Dilaudid), is performed on non-regulated samples. Feelings of euphoria, analgesia, drowsiness, and respiratory depression are reported by users.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/Mass Spectroscopy.

Stability
After proper collection, concentration of codeine, morphine or other opiates in urine will not change significantly for several days at room temperature, for several weeks at refrigerated temperature or indefinitely when frozen.

Purpose:
Urine positive indicates recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff for opiates in regulated samples is 2000 ng/mL. The confirmation cutoff for either codeine or morphine in these samples is 2000 ng/mL. This concentration is consistent with ingestion of the analyte or the analyte-producing medication sometime within the 72-hour period preceding the urine collection.

Interferences
Though no compounds have been tested that cannot be separated from codeine and morphine by GC/MS analysis, there are numerous prescription medications which contain codeine. In addition, poppy seeds contain morphine and codeine in varying amounts, so careful evaluation of confirmed opiate-positive samples by an experienced professional can be essential in avoiding a false accusation of drug abuse.

Phencyclidine

Drug	Phencyclidine
Trade Names	
Street Names	PCP, angel dust, killer weed, supergrass, hog, peace pill
Classification	Hallucinogen, dissociative anesthetic
Physical/ Psychological Dependence	Unknown/high
Methods of Administration	Smoked, swallowed or injected
Physical Appearance	PCP encountered on street as pills, capsules, powders of various colors, white crystalline powder
Approximate Detection Time in Urine	2 days, 8 days (overdose)
Clinical Effects/ Symptoms	Psychedelic reaction, hallucinations, catatonia, combativeness

The Basics
Phencyclidine is almost exclusively seen as a drug of abuse. It has numerous effects on a variety of different neural pathways and hence a wide array of bizarre symptoms can be seen in the same patient. Its physiological effects appear to be analgesic, anesthetic, and, paradoxically, stimulating. Because of its varied actions, clinically acute manifestations vary from depression to euphoria and can induce catatonia, violence, rage and auditory and visual hallucinations. Vomiting, hyperventilation, tachycardia, shivering, seizures, coma, and death are also common occurrences that result from abuse of this drug.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/Mass Spectroscopy.

Stability
After proper collection, phencyclidine concentration in urine will not change significantly for ten days at room temperature, for several weeks at refrigerated temperature or indefinitely when frozen.

Purpose
Urine positive indicates recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff for phencyclidine is 25 ng/mL The confirmation cutoff for phencyclidine in those samples is 25 ng/mL. This concentration is consistent with ingestion of the analyte or the analyte-producing medication sometime within the 48-hour period preceding the urine collection.

Interferences
No compounds have been tested which cannot be separated from phencyclidine by GC/MS analysis.

Propoxyphene

Drug	Propoxyphene
Trade Names	Darvon
Street Names	
Classification	Narcotic, analgesic, opioid
Physical/ Psychological Dependence	High-low/high-low
Methods of Administration	Swallowed
Physical Appearance	Capsules, tablets of various sizes and colors, white powder
Approximate Detection Time in Urine	6 hours to 2 days
Clinical Effects/ Symptoms	Analgesia, euphoria, intoxication

The Basics
Propoxyphene is an analgesic drug, which has very similar pharmacologic properties to those of the opiates like morphine. A major cause of drug-related deaths is propoxyphene overdose, either alone or in combination with CNS depressants like barbiturates and alcohol. Toxic symptoms are similar to those seen with opiate overdoses i.e., respiratory depression, cardiac arrhythmias, seizures, pulmonary edema, and coma.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay, Bayer ADVIA 2400. Confirmation by Gas Chromatography/Mass Spectroscopy.

Stability
After proper collection, propoxyphene concentration in urine will not change significantly for ten days at room temperature, for several weeks at refrigerated temperature or indefinitely when frozen.

Purpose
Urine positive indicates recent usage.

Normal Results
Negative.

Abnormal Results
The original immunoassay has been confirmed by GC/MS. The screening cutoff for propoxyphene is 300 ng/mL The confirmation cutoff for propoxyphene in those samples is 300 ng/mL. This concentration is consistent with ingestion of the analyte or the analyte-producing medication sometime within the 48-hour period preceding the urine collection.

Interferences
Though no compounds have been tested which cannot be separated from propoxyphene by GC/MS analysis, there are medications which actually contain these analytes or cause them to be produced by the body.

Medical Professional Panel

Medical Opiates/ Narcotics Drug (Trade Name)	Alfentanyl (Alfenta, Rapifen), Burprenorphine (Buprex, Subutex), Butorphanol (Stadol), Methylphenidate (Ritalin), Fentanyl (Sublimaze, Duragesic), Hydrocodone (Lortab, Vicodin), Hydromorphone (Dilaudid), Meperidine (Demerol), Nalbuphine (Nubain), Naltexone (Vivitrol) Oxycodone (OxyContin, Percodan), Oxymorphone (Numorphan), Pentazocine (Talwin), Sufentanil (Sufenta), Tramadol (Ultram)
Stimulants Drug (Trade Name)	Diethylproprion (Tenuate), Methylphenidate (Ritalin), Phendimetrazine (Plegine), Phentermine (Ionamin), Ketamine (Ketalar)
Expanded Benzodiazepines Drug (Trade Name)	Aprazolam (Xanax), Bromazepam, Clonazepam (Klonopin), Diazepam (Valium), Estazolam (ProSom), Flurazepam (Dalmane), Flunitrazepam (Rohypnol), Halzepam (Paxipam), Lorazepam (Ativan), Lormetazepam (Loramet), Midazolam (Versed), Nitrazepam (Mogadon), Oxazepam (Serax)
Sleep/Muscle Relaxant Drug (Trade Name)	Meprobamate (Soma), Zolpidem (Ambien)

The Basics
The Medical/Professional Drug Panel consists of an expanded list of prescription drugs often abused or misused by medical professionals or professionals. This list of drugs is added to the traditional drugs of abuse panel. Individuals tested under a medical professional panel may be tested more than once per month as a requirement to maintain or regain a professional license. All of these drugs may cause impairment and affect an individual's job performance. Depending on the drug consumed, these drugs can create euphoria, analgesia, drowsiness, respiratory failure, or stimulation. Prescription drugs are often ingested orally, through a patch or IV and have a detection window of less than one day to several days.

Individualized panels and cutoffs are available.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening for drugs of abuse in urine is performed by immunoassay or Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS). Confirmation is performed by Gas Chromatography/Mass Spectrometry (GC/MS) or LC/MS/MS.

Stability
After proper collection, the samples are stable for several days at room temperature, several weeks at refrigerated temperatures, or indefinitely when frozen.

Purpose
Urine positive indicates recent use.

Normal Results
Negative.

Abnormal Results
Positive results indicate recent use of the drug. An MRO interview is required to determine if the presence of the drug in the urine is due to a prescription or illegal use.

Interferences
No interferences are known following confirmation by GC/MS or LC/MS/MS.

Ethyl Glucuronide/ Ethyl Sulfate (EtG/EtS)

The Basics
Ethyl Glucuronide (EtG) and Ethyl Sulfate (EtS) are metabolites generated from the consumption of ethyl alcohol (ethanol). These metabolites are produced in low levels from drinking alcohol and have the advantage of being detectable for up to three days following excessive drinking. A single drink can be detected for up to twenty-four hours after consumption. Monitoring for EtG/EtS should be limited to those individuals that are required to abstain from the consumption of all ethanol. Because ethanol is found in many OTC products and EtG and EtS are produced through normal metabolism of ethanol, an MRO review is necessary to determine if the positive result is due to the intentional ingestion of alcohol or as incidental exposure due to occupational exposure (hand sanitizer which is 60% ethanol) or food ingestion.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening is performed by immunoassay using the Bayer ADVIA 2400. Confirmation is performed by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS).

Stability
Most EtG samples are not stable at room temperature longer than 72 hours due to the presence of certain bacteria commonly found in urine. EtS, however, is stable for a week or more at room temperature and is not susceptible to bacterial degradation. Samples are stable for one year if maintained in frozen state.

Purpose
Urine positive indicates recent use or ingestion of alcohol.

Normal Results
Negative.

Abnormal Results
There are two immunoassay screening cutoffs for EtG. They have been established at either 250 ng/mL or 500 ng/mL. Confirmation of EtG and EtS is performed by LC/MS/MS. A positive sample must have both EtG and EtS.

Interferences
There are no substances that generate EtG and EtS at the concentration necessary for a positive sample result other than ethanol. The scientific literature has reported that EtG has been produced in a spiked laboratory sample; however, no EtS was produced.

Nicotine

The Basics
Nicotine is the primary active ingredient in tobacco. It is quickly metabolized into hydroxycotinine which is its primary metabolite. The presence of cotinine and hydroxycotinine is indicative of the exposure to tobacco or tobacco products (e.g, chew or nicotine patch). Hydroxycotinine levels above the cutoff substantiate the active use of tobacco products or at lower levels suggest secondary exposure.

Sample
Random urine specimen in a properly sealed and labeled urine container.

Method and Instrument
Preliminary screening is performed by immunoassay. Confirmation of hydroxycotinine is performed by Gas Chromatography/Mass Spectrometry (GC/MS) or Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS).

Stability
After proper collection, samples are stable at room temperature for several days, for several weeks at refrigerated temperature, or indefinitely when frozen.

Purpose
Urine or oral fluid positive indicates recent use of tobacco products.

Normal Results
Negative.

Abnormal Results
The presence of hydroxycotinine in urine at a concentration of 500 ng/mL or greater indicates the use of tobacco products.

Interferences
There are no substances that generate hydroxycotinine levels greater than the established cutoffs.

CRL provides complete testing services for Forensic Toxicology, Insurance, Corporate Wellness Programs, and Clinical Trials.

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