

# Urine Drug Analysis

**At Douglass Hanly Moir Pathology urine specimens for drug screening are routinely tested for the presence of the following drugs/drug classes:**

- Amphetamine type substances e.g. speed, ecstasy
- Cannabis metabolites
- Opiates including heroin, morphine & codeine
- Benzodiazepines, e.g. clonazepam, diazepam
- Cocaine metabolites

Screening is also available for other drugs including alcohol, barbiturates, methadone, PCP, propoxyphene, oxycodone, and buprenorphine.

Screening of urine specimens is carried out using immunoassay based methods, either on-site or within the laboratory. Immunoassay screening can be non-specific showing reactivity with parent drugs, metabolites and similarly structured compounds to produce an overall result. If the presence of drugs cannot be excluded (non-negative screening test), then further confirmatory testing may be performed to identify the presence of specific members of a particular drug class. Confirmatory analysis is carried out using a chromatographic mass spectrometry method (GC/MS, LC/MS/MS).

The table below lists the screening cut-off levels as applied in AS/NZ 4308:2008 as well as drugs that may produce a non-negative result with respect to the various classes listed. It should be noted that immunoassay cross-reactivity is dependent upon the compound concentration in the urine.

URINE DRUG SCREEN					
Drug/Drug class	Cut-off level	Drugs that may be associated with a positive or 'DETECTED' result			
Amphetamine type substances	300 ug/L	Amphetamine <sup>^</sup> Methamphetamine <sup>^</sup> BDB MDA <sup>^</sup>	MDMA (Ecstasy) <sup>^</sup> MDEA MBDB PMA	PMMA Phentermine <sup>^</sup> Phenylpropanolamine Pseudoephedrine <sup>^</sup>	Ephedrine <sup>^</sup> Dexamphetamine
Benzodiazepines	200 ug/L	Alprazolam <sup>^</sup> Bromazepam Clobazam Clonazepam <sup>^</sup> Clorazepate Delorazepam	Diazepam <sup>^</sup> Estazolam Flunitrazepam <sup>^</sup> Flurazepam Halazepam Lorazepam	Lormetazepam Medazepam Midazolam Mirtazapine Nitrazepam <sup>^</sup> Nordiazepam <sup>^</sup>	Oxazepam <sup>^</sup> Prazepam Sertraline Temazepam <sup>^</sup> Triazolam
Cannabinoids	50 ug/L	11-Hydroxy- $\Delta^9$ -THC 11-Hydroxy- $\Delta^9$ -THCCOOH <sup>^</sup> 11-Hydroxy- $\Delta^8$ -THCCOOH	8- $\beta$ -Hydroxy- $\Delta^9$ -THC 8- $\beta$ -11-Hydroxy- $\Delta^9$ -THC $\Delta^9$ -THC	Cannabinol	
Cocaine Metabolites	300 ug/L	Cocaine <sup>^</sup>	Benzoyllecgonine <sup>^</sup>	Ecgonine methyl ester <sup>^</sup>	
Opiates	300 ug/L	Morphine <sup>^</sup> Codeine <sup>^</sup> Dihydrocodeine	Hydrocodone Hydromorphone Oxycodone	6-monoacetylmorphine (Heroin metabolite) <sup>^</sup>	
Alcohol*	0.01 mg/dL	Ethyl alcohol	n-propanol		
Barbiturates*	200 ug/L	Alphenal Amobarbital Aprobarbital Barbital	Butabarbital Butalbital Butethal Diallylbarbital	Pentobarbital Phenobarbital Secobarbital Talbutal	Thiopental
Buprenorphine*	5 ug/L	Buprenorphine	Norbuprenorphine	codeine	
Methadone*	300 ug/L	Methadone*			
Methadone metabolite*	100 ug/L	EDDP (primary metabolite of methadone)*			
Oxycodone*	100 ug/L	Oxycodone	Oxymorphone		

\*Only tested for if specifically requested

<sup>^</sup>Compounds designated can be identified by confirmatory analysis

# Urine Drug Analysis

The creatinine level is tested in all urines as a routine check of specimen integrity. The report will indicate if the specimen was abnormally dilute based upon the measured creatinine value.

## Detection Times

Estimates of drug detection times have been obtained from various published references. Detection times will differ amongst individuals and are dependent on the amount of drug intake and frequency of drug exposure as well as a range of parameters such as physical size, age, metabolic rate, diet and physical activity.

DRUG DETECTION TIMES	
Drug/Drug class	Detection time (days)
Amphetamine type substances	1–4
Cannabis metabolites	1–5
Oral Ingestion	2–3
Acute dosage (1–2 joints)	5
Moderate (4 / week)	10
Heavy (daily)	14–20
Chronic (>5 joints / day)	Up to ~60 possible
Cocaine	2–4
Barbiturates – short acting (e.g. secobarbital)	1–2
Barbiturates – long acting (e.g. phenobarbital)	14–21
Benzodiazepines (therapeutic) Long term users (>1 year) can be positive several months following cessation.	2–4
Methadone and its metabolites	2–4
Opiates	1–3

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