



Are You Taking the Piss?

Understanding Results from Drug Testing:

Average detection times for urine testing and roadside drug and alcohol testing.

Substance	Drug or Metabolites in Urine Screen	Drug or Metabolites in Blood/Saliva	Roadside Saliva or Breath Test
Alcohol;	6 to 24 hours	12 to 24 hours	1 to 24 hours
Amphetamines;	1 to 5 days	12 hours	8 to 12 hours
Methamphetamine; (“Crystal Meth”, “Ice” or “Rock”)	3 to 5 days	1 to 3 days	8 to 21 hours (or longer?)
MDMA; (“XTC”)	2 to 3 days	8 to 25 hours	8 to 12 hours
Benzodiazepines; (therapeutic doses)	4 to 7 days	6 to 48 hours	Not tested
Benzodiazepines; (chronic or dependent use)	4 to 6 weeks	6 to 48 hours	Not tested
Cannabis; (occasional use)	2 to 7 days	2 to 3 days	2 to 5 hours
Cannabis; (chronic/heavy use)	Up to > 30 days	Up to 14 days	?

Substance	Drug or Metabolites in Urine Screen	Drug or Metabolites in Blood/Saliva	Roadside Saliva or Breath Test
Kronic; (synthetic cannabis, JWH018)	LC-MS test only	LC-MS test only	Not tested
Cocaine;	2 to 5 days	2 to 5 days	5 to 12 hours
Codeine;	2 to 3 days	1 to 2 days	Not tested
Morphine;	2 to 4 days	1 to 3 days	No tested
Heroin; (can only be distinguished from morphine for about 21 hours after use)	3 to 4 days	1 to 2 days	Not tested
LSD;	12 to 24 hours	2 to 4 days	Not tested
Methadone;	3 to 7 days	24 hours	Not tested
Buprenorphine; (Subutex, Suboxone)	3 to 7 days (requires special test)	24 hours	Not tested

These are approximate (or average) values for detection times. Actual detection times vary due to dose, frequency of use, and individual variations in metabolism. The following notes are useful for interpreting urine test results.

The standard urine drug screen is an immunoassay test. It can detect metabolites of the screened drugs long after the effect of the drug has worn off. The roadside saliva test works in a similar way, but it theoretically only detects drugs currently in the bloodstream, (see below, re: roadside testing). A small percentage of positive results in urine testing are false positives or contaminated samples. Up to 30% of positive saliva tests are false positives, and up to 40% of negative saliva tests are false negatives. This is why any positive result from roadside saliva tests must be confirmed by blood tests before the suspect is charged with an offence.

Urine Screen for Drugs of Abuse;

The standard Urine Screen costs about \$50, and tests for traces of all the following drugs (or metabolites of these drugs);

- Alcohol
- Amphetamine Type Stimulants, (dexamphetamine, methamphetamine, MDMA)
- Benzodiazepines
- Barbiturates
- THC (from cannabis)
- Cocaine
- LSD
- Opiates, (codeine, morphine, oxycodone, heroin, methadone etc)

Buprenorphine (Temgesic, Subutex or Suboxone) can be detected by immunoassay but is not part of the standard screen. Testing for Buprenorphine costs an extra \$10 per sample.

Several factors influence detection times from urine tests.

The first is simply what "cut-off" level is employed at the lab. The cut-off level is the amount of the drug or its metabolites, (measured in µg/l, that is, micro-grams per litre), that registers as a positive test. Immunoassay tests can return false positives. If a test is very sensitive it is also more likely to give false positives, so the chosen cut-off level is an attempt to find the balance between reliably detecting recent use and creating an overly-sensitive test that will produce too many false positive results. In different jurisdictions and in different labs different cut-off levels are used, which is one of the reasons that on-line advice is often contradictory.

Parent molecules may give false positives; for example, pseudoephedrine will give a false positive for amphetamine-type drugs. Codeine may give a false positive for morphine. In labs that use very low "cut-off" levels, natural sources of illicit substances may give a false positive; for example, eating a poppy seed bun can give a positive result for morphine.

Because there is always a risk of false positive tests, at most labs urine samples are divided into two containers. The first sample is tested with the standard immunoassay (which is cheap but less accurate). Any positive result can then be confirmed by LC-MS testing. LC-MS and GC-MS (liquid or gas chromatograph mass spectrometry) testing is extremely accurate (and can detect specific drugs that are not part of the standard screen, such as "Kronic"), but LC-MS testing costs about \$150 per sample, and can only test for one substance (or its metabolites) at a time. So if the standard screen is positive to opiates, or to amphetamine-type-substances, the second sample will be subjected to LC-MS testing to confirm the immunoassay test and to determine which specific opiate or amphetamine is involved. This test can tell the difference between metabolites that come from eating poppy seeds, and those from heroin, morphine, or opium.

A second factor influencing detection times is related to your individual genetic make-up, general health, metabolism, and how drugs are broken down (by the liver) and excreted (by the kidneys).

- ❖ Different people metabolise the same drug differently, and you may take longer or shorter periods of time than average to "clear" the drug from your system.
- ❖ If you have liver or kidney disease this may extend detection times, as your body will take longer to process and excrete the drugs and metabolites that the test is looking for.
- ❖ If you use very high doses, use very regularly, or use more than one drug (whether legal or not) at one time, this can also extend detection times.
Some drugs slow the metabolism of other drugs, either by inhibiting the liver enzyme that breaks down the second drug, or by competing with the second drug if they are both metabolised by the same liver enzyme. *(For example, methamphetamine is quite hard work for your liver to break down. This is why if you have a really big whack, you can still be speedy a day later. The meth is "queuing up" waiting to be broken down. This effect is accentuated if you take two or more substances that are metabolised by the same liver enzyme- drink a lot of alcohol while you are speeding and you will prolong the time it takes for your body to clear the meth).*
- ❖ If you are very dehydrated, your kidneys will also take longer to flush out drug metabolites.

So if you have Hep C, are dehydrated, AND are taking high doses of the drug, AND/OR are consuming regular doses of several different drugs, detection periods can be extended considerably.

The next factor is whether the drug is soluble in water (like opiates, cocaine or amphetamines) or fat-soluble (like THC or benzodiazepines).

Water soluble drugs:

Opiates (apart from long acting ones, such as methadone and buprenorphine) and amphetamines or cocaine will generally be below detectable levels within 2 to 4 days of use. Methadone or Buprenorphine may take a week to clear.

Any of these drugs can take longer to clear, depending on dose, individual metabolism, hydration, exercise and on liver and kidney function (see above). A single high dose of methamphetamine may keep affecting the user for 2 days or more and can show a positive result for 5 or 6 days.

Also, be aware that Ural (urinary alkaliser) will NOT flush drug metabolites out of your system. This is a very common misconception amongst drug users. Alkalizing your system actually switches the nephron in the kidneys to excrete amphetamine and opiate metabolites MORE SLOWLY. If you are near the end of the detection window you might do yourself in by taking Ural.

Acidifying your system (for example by drinking cranberry juice or eating oranges, Vitamin C or Ascorbic acid powder) will slightly increase clearance rates and can reduce detection times slightly- in some cases by up to 12 hours. It won't help if you have used that day, but if you are concerned about amphetamines or opiates, and are in the "tail end" of the 2-3 day period after use it can make all the difference.

Drinking plenty of water will help speed clearance of water soluble drugs from your system. Drinking water, exercising and acidifying your system are the only undetectable ways of accelerating drug clearance.

Being well hydrated helps. However if you drink a ridiculous amount of water the test will come back as a "diluted sample". This is because the labs test for levels of creatine (a chemical in urine). Drinking too much water gives the same result as pouring some tap water into the sample.

Most masking agents are well known to pathologists and they do test for many of these substances. It will probably come back as an adulterated sample.

A test that comes back as adulterated or diluted will usually be interpreted as indicating drug use, and is often dealt with more harshly than a positive test, (as it is evidence of an attempt to deceive). The same is true if the lab detects any known "masking agents" in the sample. A single positive test may be a false-positive or a contaminated sample, where-as an adulterated or diluted sample will be assumed to indicate drug use.

Best advice for someone who's worried about a test?

The only way to completely cheat a urine screen is to put someone else's urine in the jar- and I mean someone who hasn't been using anything.

If you have used in the last 24 to 48 hours, it may be best to make some excuse and come in a couple of days later if possible.

Eat 1000mg of Vitamin C/day and drink a reasonable amount of water (2-3 litres a day). Make sure you urinate in the morning before the test- the first piss of the day will contain more metabolites. Drink 500mls to a litre of water on the morning of the test and hopefully you'll be okay. Be aware that many employers will actually allow one failed test as long as you can produce a clean test within the next few days.

If you defer tests more than once you will probably be subjected to stricter scrutiny or drug use may be assumed to be the reason for repeated deferrals.

Drugs that are not water soluble:

THC is hard to excrete rapidly as it is fat-soluble, not water soluble.

THC can show up in a urine screen for 2 or 3 days from a single occasion of use, up to a week if you smoke once every week or two, and for up to 4 weeks- maybe longer- if you have been smoking more regularly/heavily.

Drinking lots of water may dilute the sample enough for the THC to slip under the cutoff level, but because the labs test creatine levels they will know you have tried to hide something.

Because THC is stored in fat cells, exercising (and not smoking ganja) in the week before a test may lower your levels (by burning off some fat and releasing lots of THC to be excreted before you are tested). Conversely, exercising heavily within a day or so before the test may increase the levels of THC metabolites in your urine as they are released from your fat stores.

While water soluble drugs should show lower levels with each subsequent test if the person is abstaining, THC levels may fluctuate up and down over weeks, and can increase due to exercise or weight loss even when the person is maintaining abstinence.

Benzodiazepines are generally listed as showing up in urine screens for 1-5 days. However a single high dose of some benzos may be detected for up to a week, and when used regularly and frequently some benzos will be at detectable levels for 4 to 6 weeks.

Most products which claim to speed up clearance of drugs are bogus- (just like the alleged "detoxification" regimes available from pharmacies). Some products are available that can "mask" the presence of some drugs. These masking agents interfere with the immunoassay, and some of them will work reliably. Some products can interfere with the chemistry of the test, (such as bleach). However pathologists know all the old tricks, and become aware of most or all of these products as soon as they become available, and test for them. If a suspect agent is detected, the sample will probably be subjected to LC-MS testing.

There's some pretty comprehensive info here:

http://www.drugtest.com.au/personal/masking_agents.html#

Roadside Saliva Testing:

Saliva is diffused blood plasma. This means anything currently in your blood stream is detectable in your saliva. If the object of drug testing is to detect intoxicated drivers or workers, saliva testing should be fairer and more effective than urine testing, because it (theoretically) only detects substances that are currently circulating in the person's blood stream, not metabolites of something they took several days ago.

Alcohol breathalysers exploit the fact that saliva is diffused blood to gauge your current blood-alcohol level by measuring the amount of ethanol in your breath. In the case of alcohol, a legal limit has been arbitrarily decided which represents possible impairment in most drivers.

Roadside drug testing kits currently employed by WA Police take a small sample of saliva and test it for traces of amphetamine-type-stimulants (detecting dexamphetamine, methamphetamine, MDMA, and most other amphetamine analogues), cocaine, and THC (from cannabis) AND ONLY these substances. The "legal limit" for driving under the influence of these substances is any detected trace at all regardless of impairment.

The kits currently in use have been demonstrated to produce up to 30% false positives (3 in 10 positive results are false) and, (perhaps more alarmingly), up to 40% false negatives (4 in 10 intoxicated drivers *might* get off scot-free and keep driving home...).

This is why roadside drug testing is conducted in a targeted fashion. It is also why any positive result is confirmed with a second (different) saliva test, and must be confirmed by a blood test before proceeding to court.

Saliva tests are particularly unreliable with cannabis, because THC is fat soluble. Theoretically THC should only be detected within 3 to 5 hours or so of use. However a negative result has frequently been recorded immediately after use. Conversely, very heavy smokers may test positive even when they are not intoxicated, as THC metabolites may be "leaching" into their mouth from buccal fat cells in the cheeks.

Generally speaking, the higher the dose of alcohol, ATS or cocaine, the longer it will take to be broken down by the liver. This means the drug is circulating in the bloodstream for longer and this will extend the detection window in saliva or breath testing.

Best advice for avoiding detection through saliva tests; "don't take drugs and drive within about 8 hours" (which is damn good advice regardless of the saliva testing).

Second best advice; if you smoke cannabis you should rinse your mouth with water (or brush your teeth and scrub the top of your tongue with the toothbrush, *then* rinse your mouth with water), before driving, (many positive results for pot are suspected to actually be detecting tars and smoking residue in the mouth, not THC in the blood).

Last ditch advice? Salivate as much as possible. This changes the ph in your mouth and makes detection of any drug by these kits slightly less likely.

Paul Dessauer,
Outreach Coordinator,
WASUA
outreach@wasua.com.au