

# WORKPLACE DRUG TESTING

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Humans have been using natural or herbal medications to enhance performance for millennia; cannabis, peyote (a small cactus) and mushrooms figure prominently. In Europe and North America opium and amphetamine was used legally in the 1800's and early 1900's; cocaine was sold as Vin Mariani and opium as Laudanum. The use of drugs to gain a competitive advantage dates back to the Romans. Drug abuse was a serious problem during the Vietnam War. In 1982 the American President, Ronald Reagan, declared a war on drugs. This resulted in Federal legislation and the formation of an Agency to administer Federal Workplace Drug testing; currently SAMHSA (Substance Abuse and Mental Health Services Administration) is the agency involved. There is extensive legislation to define and manage "regulated" drug testing programmes in the USA. It resulted in the birth of an industry to test and confirm drug abuse. A parallel, illicit industry formed for the sole purpose of "beating the drug test".

## Why do drug testing?

There is no regulated drug testing in South Africa. Non-regulated drug testing is becoming more prevalent as employers are becoming aware of drug abuse in the workplace. The aim is to provide a safe working environment with a motivated and productive workforce.

There is a paragraph in the General Safety Regulations of The Occupational Health and Safety Act of 1993 dealing with intoxication. The employer is responsible for ensuring that no worker performs work while intoxicated. The worker should be removed as he/she is a danger to themselves or others. If a contractor is injured due to an intoxicated worker the employer is held responsible, and liable for compensation. The safety of the worker is the key to the act. By the same token the worker is obligated not to be intoxicated at work. The term intoxicated refers to the use of both alcohol and drugs.

Before drug testing in the workplace is embarked on, a formal Drug and Alcohol Policy needs to be drawn up and made available to the workers. It may form part of an employment contract. The policy should comply with the Employment Equity Act, the Occupational Health and Safety Act as well as the relevant laws of the country. The Drug and Alcohol testing Policy should describe the whole process; from who gets tested, what drugs to test for and what the consequences are of a non-negative (positive) drug test. The policy also needs to spell out what the consequences are of refusing to have a drug test, or if a urine sample has been altered or tampered with.

## Who to test?

The type of activity that is performed may define which personnel are tested. Activities that are defined as high risk would be included. Employees that may be subjected to workplace drug testing include the operators of heavy machinery, operators of dangerous machinery (i.e. high speed hand tools that may cause loss of body parts), people performing highly technical activities that may have a high risk associated with the activity (e.g. commercial pilots), and people employed in sensitive positions (e.g. finance). All the relevant job categories should be specified in the drug policy, together with a description of the testing programme.

## When to test?

Drug testing is commonly performed as a pre-employment screen, or random in time and random in the personnel tested. This should be truly random. If not, it may form the foundation of a victimisation claim. Testing can also be done for cause, i.e. if a person is behaving in a manner that is inappropriate, and testing should also be done after accidents or incidents.

## Which drugs to test for?

The scope of the drug panel tested for should be defined in the policy i.e. the list of drugs that the company is going to test for should be specified before testing starts. This may change and the list can be updated as the process evolves.

This is of practical importance: the usual first step of testing is to perform a screening test. This screening test is most often an immunoassay and tends to test for drug classes. Unless a specific drug is included in the panel, it will not be tested for. An example would be methaqualone (Mandrax) – unless it is in the panel, it will not be tested for. A drug may also be in the drug class tested for, but the assay is not sensitive to that particular drug, e.g. methcathinone or cat (a synthetic amphetamine). Few amphetamine assays cross-react with methcathinone to give a positive result. So testing for amphetamines does not mean you are necessarily testing for methcathinone, unless it is stated by the manufacturer of the assay.

## Type of sample

The typical biological sample used for drug testing in the workplace is urine. It is easily obtainable, does not require specialised staff and the matrix is easy to work with. There are some difficulties related to using urine samples, for example a defined facility is required to obtain the sample. Urine samples are also prone to adulteration, either by ingestion of substances or the addition of substances to the urine sample. The aim of both would be to render the test false-negative.

Blood sampling requires a trained phlebotomist to obtain the sample. The window of detection is usually smaller and the matrix of the sample more complex. An advantage to using a blood sample, is that adulteration is less likely.

Other samples include hair, oral fluid and sweat. These are attractive options as collecting these samples are truly non-invasive. There are however analytical difficulties and some issues regarding defensibility of these sample types.

## Where to test?

The process of obtaining the sample in brief:

- Before the person is asked to produce a urine sample he/she should be observed, asked to remove bulky outer garments and if necessary a pat-down can be performed to exclude the presence of adulterants or devices used in the adulteration of a urine sample.
- Currently it is not allowed to perform witnessed urine collections. Therefore the facility used should conform to a number of requirements. There should not be any running water in the room where the collection is being performed, and the toilet bowl and cistern should contain a dye, to discourage adulteration of the urine sample.

It should be apparent that when embarking on this process it is done in a planned, well executed manner to ensure that a proper urine sample is obtained at the end of the process.

## The testing process

### Chain of custody

The purpose of a chain of custody is to document the identity of the sample donor, to certify that the specimen was obtained willingly and in the correct fashion, and that there was no opportunity to alter the specimen. The chain of custody consists of 2 parts, an external part and an internal part. The external part is the responsibility of the collection staff and the courier staff. The purpose of this part of the chain of custody is to ensure that the sample collection and transport processes are of such a nature that the results obtained on the specimen can be legally defended.

The elements include: a consent form, signed by the collection agent as well as the urine donor. A sealed specimen container containing an adequate volume of urine. The seal on the container should be signed by the donor as well as by the collection agent. In some instances a record of the urine temperature is available as well. The consent form as well as the specimen should be placed in a separate container and sealed.

The internal chain of custody process tracks movement of the sample once it has been received in the laboratory, documenting all processes up to and including resulting.

## Testing for Adulteration

The urine sample is susceptible to substitution, dilution and adulteration. As the science of drug testing has become more sophisticated, so too has the efforts to beat the test. Testing for adulteration has become an integral part of urine drug testing. Laboratories are routinely testing for the presence of adulterants, and when present, the specimen will be subjected to confirmatory drug testing.

The tests for urine sample integrity include pH, Specific Gravity (S.G.), creatinine and a test for the presence of oxidants. The urine temperature is also measured at the time of sample collection. These tests are performed in various combinations by the different laboratories. The more complete this part of the testing process is, the less likely it is that the urine sample was tampered with.

## Screening test

The usual screening test is an immunoassay. This can take the form of a near-patient testing device or point-of-care (POC) test, or a test performed on a large automated instrument in the laboratory. Immunoassays are rapid, sensitive and can be easily automated. They test for drug classes, not individual drugs. Due to the nature of the assay, they are susceptible to interference, which may result in false-positive as well as false-negative results. For this reason they are only to be used for screening purposes.

## Confirmatory test

This test is performed after a non-negative screening test result is obtained. It is required that the confirmatory test uses a different analytical principle – this would typically include some form of chromatography.

## **Cut-offs**

One of the guiding principles of workplace drug testing is not to unfairly prejudice the employee as there may be other reasons for a positive drug test. The worker may be exposed to drugs in his environment, at work or in his diet. The employee may even have a legal prescription from a medical practitioner. One of the biggest problems is opiates; it may be contained in foodstuffs, i.e. poppy seeds, or may be prescribed legally or in over-the-counter medications. Cannabis has also been known to make it into food in the form of hemp or hemp oil, particularly in health foods. Some herbal teas may also contain certain drugs.

The second reason for using cut-off levels is to create a level playing field; samples are tested using the same standard, irrespective of how low a laboratory's test can measure. All laboratories only report above a given cut-off.

## **Conclusions**

It is undesirable to make the finding of a positive drug test in somebody that has been exposed to foodstuff or over-the-counter medications, or through occupational or environmental exposure to a drug or their metabolite. A medical reason for a positive drug test has to be excluded as well, as in the event of a legal script, or a drug obtained legally from a foreign country.

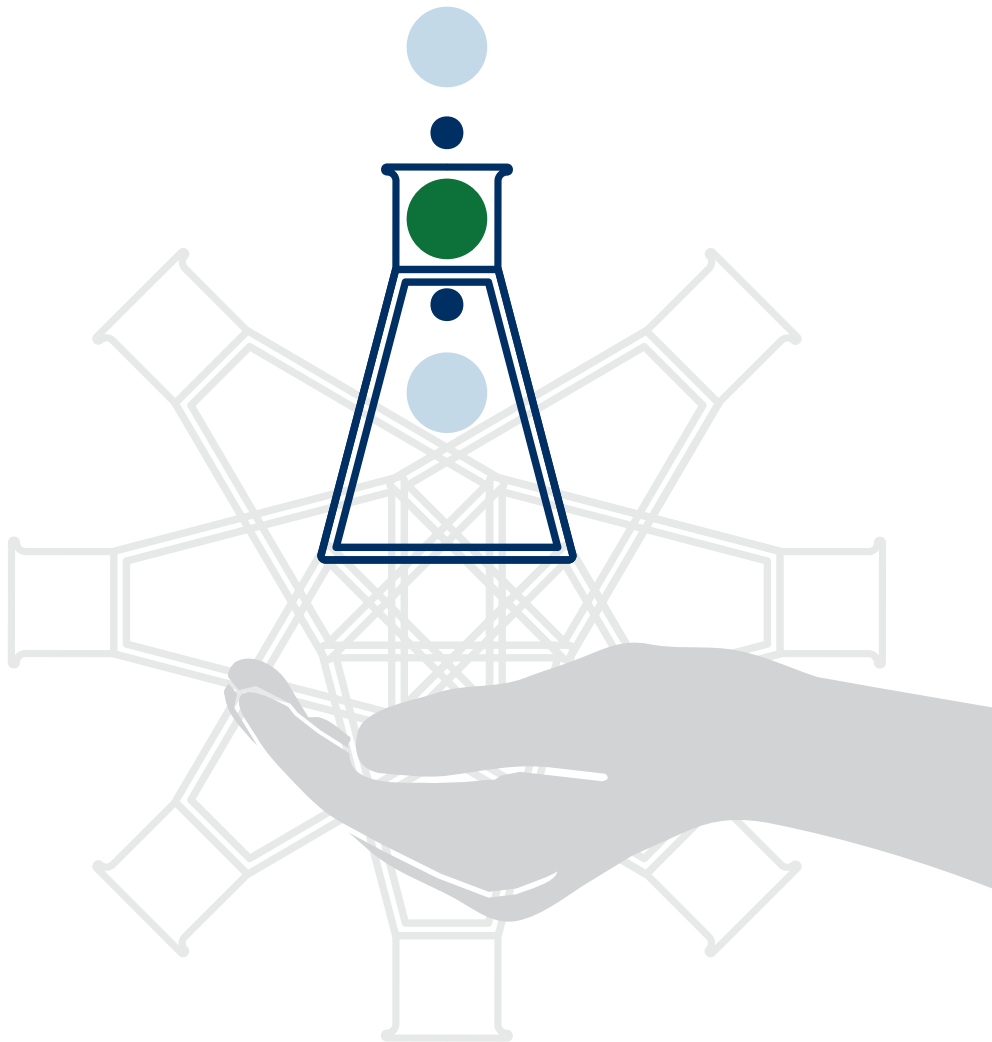
Drug testing in the workplace is done to dissuade drug abuse, to create a safe working environment, to improve morale and increase productivity, to mention a few. For workplace drug testing to be a rewarding process, it has to be well defined. There has to be a Drug and Alcohol Policy, which needs to be clear and comply with the Occupational Health and Safety Act and the respective laws of South Africa. The process needs to be clear – which drugs are going to be tested for, when, where, and what test will be performed, and what the consequences are of a non-negative result.

Rapid tests are only screening tests; all positive results should be followed up by a confirmatory drug test, which must meet the specific requirements of a confirmatory test.

This cannot be stressed enough: Whenever there are consequences to a positive drug test, forensic principles should be observed. If not, the evidence will be lacking when it comes to defending the result of the drug test, and the employer will have no case, exposing the company to the consequences of a failed defence.

## References

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