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# Drug Testing



Choosing the right medium  
for screening drugs and alcohol  
using oral fluid, urine and hair

## INTRODUCTION

You may have your own views on the matter, and so might your workforce, but there is certainly a compelling argument in favour of screening for many jobs where drug use could impact on other people and business activities.

Many successful companies have already addressed the issues of substance abuse, and you'll need a policy sooner or later because insurers are now insisting on it.

A substance abuse policy should cover drugs, alcohol and impairing substances such as abuse of solvents. Everyone is aware of the laws relating to alcohol, but many are ignorant of the laws on drugs, or their effect on performance.

It's your job to educate them, therefore, we believe it's our job to educate you.

Since the law and the drugs scene changes from time to time, we usually refer people to one or two of the excellent publications produced by the national Drugs Helpline if you want general information.

But if it's information on how to set up a testing policy, and conduct a test, you'll find all the information you need in this booklet.

## WHY SCREEN FOR SUBSTANCE ABUSE AT ALL?

Drug use is very much like alcohol consumption. There are casual users and there are alcoholics. Alcohol is an accepted part of everyday life, provided casual use doesn't affect others or put people at risk. But when the desire for alcohol becomes a craving, that is a different matter.

Current estimates say that there are three million Ecstasy tablets sold in Britain every week. Take ten single people at random and chances are that three of them use illicit drugs at some time or other. Supply of illicit drugs is a more successful business than the best company you can think of, including your own. And it's all cash—no invoices, no accountants, and no tax to pay. That's why 95% of all bank notes are contaminated with cocaine. And police estimate that 90% of all crime is conducted to pay for drugs.

Apart from the health risks, even casual users feel awful for days afterwards, and won't perform well at work. They also have more accidents and are more likely to sue you for negligence.

If you don't have a policy, then you should. And if you do, then you'll have to conduct some testing. If you don't it's like having a speed limit that isn't enforced - there will always be a few drivers who don't take any notice of the signs. If they can do it, so will others, and the 'speed' culture takes over. We know of several companies who had a *speed* culture too, which nearly crippled their business. Drug awareness and testing saved them.

But you need to tread carefully. All screening must be done on the basis of health, safety and welfare, to have all the workforce behind you.

## ORAL FLUID, URINE AND HAIR TESTING

Most manufacturers won't tell you the straight fact that there has to be three products to tackle drug screening - oral fluid, urine and hair. Each one does a specific job, and they're

## The Case for Oral Fluid 'Impairment' Testing in Industry

Most of the drug testing that is carried out in business premises is looking for impairment. Only oral fluid can achieve this, because only oral fluid levels of drugs match blood levels of drugs.

If it's in the saliva, it's in the blood. If it's in the blood, it's in the brain, and if it's in the brain, you're definitely under the influence. Oral fluid testing is quick, accurate and inexpensive. So far, it has proven to be impossible to fool a test, too.

We've taken special care to make sure that people can't claim that they have tested positive for cannabis, too. Our oral test will only accurately detect the metabolite of cannabis, not the parent drug. So anyone breathing in another person's smoke might have the merest trace of cannabis drug in their mouth, but they certainly won't have the metabolite in their mouth—unless they smoked a joint themselves.

## The Case for Urine Testing

Our integrated cup couldn't be easier. Just get someone to provide the sample, check the temperature strip, activate the one way valve, read the results. It's that simple.

The rest of the sample remains in the cup totally unadulterated. Just send it to the lab for a confirmation if the test was positive.

Urine testing is now well established, with the greatest range of detectable drugs, and the biggest database of non-reacting substances. It's detection window of around a week is ideal for most screening, especially suitable for drug treatment centres, clinics, and prisons.

We have cassettes and strips in over a hundred different combinations too, for those customers who need their budget to stretch as far as possible.

## SureScreen. Complete solutions to drug testing.



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.....to summarise:

## The Case for Hair Testing as a Tool for Pre-Employment.

Testing someone for drugs at a job interview, or at a pre-arranged medical some time afterwards, using urine is almost pointless because, apart from cannabis, drugs stay in the system for such a short time. By laying off most drugs for a week before attending the interview, anyone could pass the test.

But there is a better way. The drugs that pass out in urine so quickly are nevertheless captured in hair, so drug screening is simply a matter of taking a cosmetically undetected snip of hair, and carrying out a drug screen covering a 90 day period.

Hair testing is incredibly accurate and results are routinely upheld in the courts, and over 2300 top companies in USA as well as police forces and schools rely on it exclusively for their company screening.

Hair testing has some major benefits. It gives a 90 day history of drug use, cannot be adulterated, and collection is non-invasive. Hair test will specifically detect ecstasy, too. It is gender friendly (e.g. men can test women), there are no problems with inability to provide a urine sample, and no special collection facilities are needed. Local collectors can carry it out in minutes wherever the donor happens to be.

The sample is secure, cannot be damaged, and is easily transported. The patented test procedures are analysed using 'gold standard' GC/MS/MS.

Body hair can also be taken if the person has exceptionally short hair, but if the person is totally bald, a simple nail scraping is taken instead. The process is very cost effective because four tests a year would provide 100% screening coverage.

In future most employee drug screening will be based on hair samples. However, saliva and urine still have their place, because saliva testing is the only appropriate test that can be used for impairment (giving instant results), and urine tests are good for screening drug users provided they are carried out frequently, because results are instant. For drug screening you have to have all three processes, supported by laboratory confirmation and medical review of any positive results. For company screening, however, best practice has to be hair testing, both technically and financially.

In 2002 SureScreen became a screening partner with Psychemedics, the world's leading hair test company with over 2 million hair tests now completed. Their patented technology is by far the most accurate because they digest the hair core and extract every last molecule of drug. Everyone else grinds up the hair and leaves it to soak in solvent, hoping drugs will leach out.

We have a very comprehensive package of information, so if you want to know more, just let us know. There are details such as the advice to write into your screening policy that to come to the screening session totally shaved of all body hair is classed as a refusal to take a test. It has happened on more than one occasion but if it doesn't say so you can't enforce it.

not interchangeable.

Why won't they tell you? Because most companies have concentrated on just one of these technologies. And even if they have access to more than one, they'll just sell you the one which is most profitable to them, and ignore the others.

Now, we haven't put all our faith in just one medium for testing, we're experts in all of them. We'll therefore tell you truthfully and authoritatively which product is right for your application.

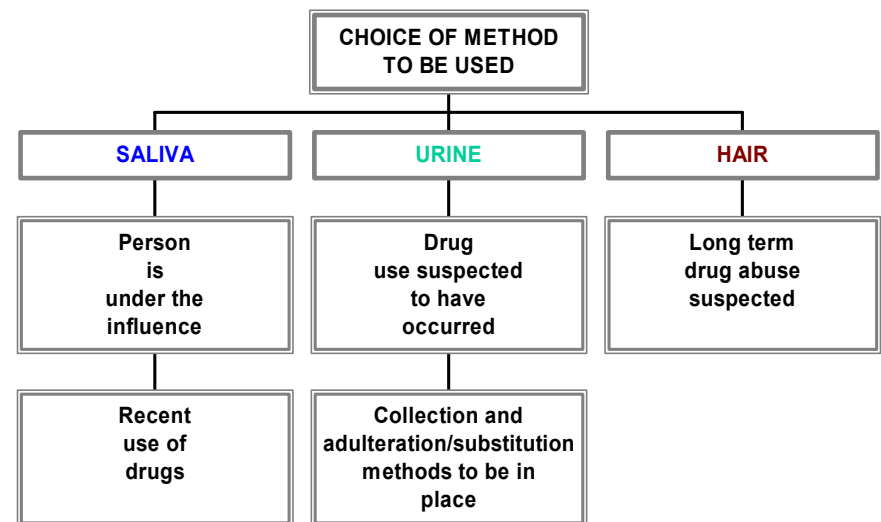
Whether it's oral fluid, urine, or hair testing, we supply the most comprehensive, state of the art tests. In fact, each one of our products happens to have become a brand leader in its own right.

### WHY THREE TECHNOLOGIES?

Snort cocaine, and the drug enters your bloodstream and affects your brain within seven seconds. Minutes later, it's in your oral fluid. In a matter of hours it's in your urine. A week or two later, it will be in hair cut from your scalp.

So, if you were tested shortly after a cocaine hit, using a urine test, the result would be negative, unless you were a habitual user. We'd need an oral fluid test. Conversely, if your oral fluid was tested after a couple of days, it would be negative even though a urine test would still be positive.

And if you needed to know whether anyone is a drug user, perhaps for a key job, then saliva and urine are useless if the person has abstained from drugs prior to the interview. Hair testing is the only suitable technology.



That's why there is a product for every application.

## SO WHICH ONE IS BEST?

The answer is all three. But each one for the appropriate application—for other occasions one or other technology is probably a waste of time.

We can summarise as follows:

- *Oral fluid detects very recent use, and impairment*
- *Urine tests detect drug use in the previous few days*
- *Hair analysis detects drug use in the last three months, but it can't be used until a week after drug use.*

There's blood, sweat and tears, too, but they're really only used in forensic pathology. Blood is too invasive and needs complicated laboratory tests, sweat is too easily contaminated, and we're here to make sure your workforce isn't reduced to tears.

If you really need to detect whether someone is **under the influence of drugs**, there is only one test you can use—oral fluid. And 'under the influence' is just what most workplace testing should be about.

If you're screening new employees, **then hair is the best.**

And urine testing is the ideal, universal, cheaper 'instant' alternative.

Let's take a closer look at each of these test technologies in turn. Then later in the booklet we'll tackle alcohol and solvents.

## ORAL FLUID TESTS

### Oral fluid versus Saliva

Firstly, let's get the name sorted out. Oral fluid and saliva are not the same thing. Saliva comes from numerous glands lining the mouth, and is only important in some health tests such as saliva HIV tests that rely on a rich supply of antibodies.

Oral fluid, on the other hand, consists of saliva plus many other fluids such as sputum from the lungs and throat, and nasal drainage etc.

Now, drugs will permeate the body, irrespective of whether they are ingested, snorted or swallowed. So any oral fluid can be used for drug testing, not just saliva.

Oral fluid is very close to blood serum, so if it's in the oral fluid it's in the blood. And of course if it's in the blood it's in the brain too, and so the person is impaired by the drug. This view is becoming more widely acknowledged as a test for impairment by drugs, just as it is with alcohol detection. That's why many companies are turning to oral testing instead of urine testing especially in 'for cause' cases. As yet though, there are no 'legal driving limits' for driving under the influence of drugs.

**HAIR TESTS** - The hair test collection kit contains all you need to collect the sample and send it to us in the evidence kit.

## EVIDENCE BAGS

These come in several shapes and sizes, but some we have found are a heat sealed sleeve, which can be cut open and simply resealed. These are not secure. Our bags are a little more expensive but they are folded bags with a crease at the bottom. The sides are sealed and overprinted so they cannot possibly be tampered with. Again, it pays to be buying from the experts in this field.

## ALCOHOL

For many companies, alcohol abuse is still a problem, and is complicated by case law that controls what action you may take. Those companies employing at-risk workers such as scaffolders, drivers, and machinists need to take a harder line than those employing office workers.

Testing is limited to saliva tests and breathalysers. The Alcoscreen is a convenient strip that is touched on the tongue and displays an instant colour change which relates to alcohol level. The result is read according to blood levels, and in Britain the legal limit is 80 mg/100 ml. The strip is a once-use only, but it is also valuable to check liquids found on site to see whether they are alcoholic or not.

For more frequent use we recommend our digital alcohol meter. Although it is inexpensive it is very accurate and is calibrated to breath levels. The legal limit in Britain is 35 microgrammes per 100 ml of breath.

## SOLVENTS

Solvent abuse is not usually a problem at work, but anyone found who is thought to be under the influence should receive immediate medical attention.

## HELPFUL LITERATURE

This brochure was produced to help a particular customer who had to make a decision on what type of test to purchase from us. Over the years we've generated lots of useful information, and we're always happy to share this with you.

If you need more information just call us. We'll give you advice that is easy to understand and simple to apply.

## KEEPING IN TOUCH

There's lots of information on the web but if we were recommending only one source it would be [www.dailydose.net](http://www.dailydose.net) - and don't forget there's lots of useful information on drugs and alcohol testing on our site [www.surescreen.com](http://www.surescreen.com) plus a full list of our extensive products.

mune system designs them for us. This is highly accurate technology, and is exactly the same principle used by laboratories for their initial tests.

## CONFIRMATIONS

Whichever test process you use, any positives should be supported by a confirmation, usually using either GC/MS or HPLC/MS. These are sensitive analysers, and some are capable of measuring parts per billion or parts per trillion. They would be capable of detecting the presence of a cup of coffee tipped into Loch Lomond.

Because these instruments are very expensive, confirmations are usually carried out by a few private laboratories or NHS trust pathology departments.

SureScreen has the capability in house to do confirmations, but we've taken a policy decision not to offer this service to customers. We use our instruments for development work, and feel it would not be ethical to manufacture screening tests and confirm our own product's results in house. But we can direct you to efficient, professional labs who will do this work for you.

Of course, screening will have ensured that only your positive samples need this treatment, making your screening as efficient and inexpensive as possible.

It is very important that the confirmation is carried out on the same sample. You should not expect that the next urine sample will be the same as the earlier one. Similarly, you can't screen with oral fluid then confirm with a urine sample.

Don't worry, each of our products has been specially designed to make the process of confirmation easy and irrefutable.

## CHAIN OF CUSTODY

For your tests to be evidential, you need to follow certain rules. The easiest way is to use our pre-printed forms. If you don't already have these, we will email them to you.

The donor has to identify any medication they are taking, and we can carry out a medical review on these if you should get a positive result. Just telephone us any time during works hours—that's all part of the SureScreen service.

Make sure that any positive test results are read by two separate people, and get them to sign the results form. Then prepare the samples for sending off to the laboratory. The process depends on the medium used.

**ORAL TEST** - After conducting the rapid test, the vial still contains the remains of the oral fluid. Put this in one of our despatch boxes, put this in an evidence bag, sign and retain the identity slip, and post the whole package.

**URINE TESTS** - If you use an integrated cup, simply post the cup and its contents to us in an evidence bag. If you use a standard cup, decant the liquid into two vials and place these in the evidence bag, and post the whole package.

## Oral Fluid Collection

Collecting devices are very important, because some drugs will bind to unsuitable materials. This sort of collector would filter out all the drugs.

The most suitable collector happens to be the simplest—basically a non-binding sponge on a stick. Naturally, health and safety has to be thought of here too, to avoid someone biting off the sponge and choking to death, so be sure to buy your products from reliable sources.

Many drug addicts have a dry mouth, especially if their health has been affected by chronic drug use. Also many people get a dry mouth when confronted with a test. It's a natural defence mechanism, just like the 'cold hand' syndrome that's so obvious when fingerprinting a guilty party.

So SureScreen's sponge contains a pleasant tasting stimulant to get the saliva flowing easily. Just put the sponge in the mouth and collect any liquid.

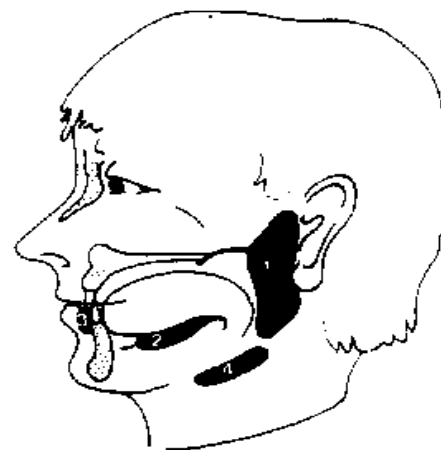


Figure 1. The salivary glands: 1. glandula parotis; 2. glandula sublingualis; 3. glandula labialis; 4. glandula submandibularis. (From ref. Van Dam and Van Loenen, 1978)

You'll need to know when the collector has done its job, and the SureScreen collector softens and starts to droop when there is enough saliva collected. Thanks to the stimulant, this can take less than a minute.

The method of extracting the fluid from the collector is also important, because although oral fluid is much less risky than blood or urine, it can still be infectious. So we've made the whole process simple and hygienic, without any mess, though we still recommend you wear a pair of disposable gloves.

## CONDUCTING THE ORAL SURESCREEN TEST

The collector is pushed down onto the grid near the bottom of the collection vial to

squeeze out the oral fluid. You can see an animation of this whole process on our website at [www.surescreen.com](http://www.surescreen.com) (and then go to oral test).

The top is closed and the collector is put back in its packet and discarded.

To conduct a test, simply unscrew the top and add three drops into the test well on the cassette. Results are shown within a couple of minutes in the results window. One line is positive, two lines are negative. The remaining liquid in the vial is ideal for confirming a positive result - just send it to us still in the vial.

## URINE TESTS

Urine testing has been the main technology for many years, so there is a wide range of products, from several manufacturers, and tests are cheaper than oral fluid tests. SureScreen's tests have become the industry standard.

Urine is actually a good medium to use for drug detection provided the test is not being carried out to detect impairment. By the time the drug is in the urine, impairment has mostly ceased.

However, the donor may still be in withdrawal or in a depressed condition, so urine tests could still be used 'for cause' to identify those in withdrawal.

There are just two disadvantages to urine. One is the embarrassment factor associated with urine collection, and the other is a proliferation of products on the internet to 'fool a drug test' - but most of them don't work.

We've made collection easy with the Integrated Cup - simply give the cup to the donor, and they will then produce a sample and snap the lid back on the cup. The sample is now sealed. When you're ready to conduct the test, use the key to depress the plunger. That lets in just the right amount of urine into the test region, which is then soaked up by the test panel. The remaining urine is isolated within the cup so if the test is positive you simply post off the cup to a laboratory for confirmation.

We sell lots of other combinations too— single strips, single cassettes, multi line cassettes and multi-panels, all for use with a standard collection cup or an integrated cup which is like the one described above but will accept a huge range of test combinations. You can see all these on [www.surescreen.com](http://www.surescreen.com)

Adulteration is easily taken care of by preparing the toilet area beforehand, making sure people don't take items in the toilet with them, putting SureScreen's toilet dye in the bowl, and using a temperature strip on the cup.

Incidentally, we have a comprehensive guide to adulteration on our website [www.ssdlab.com](http://www.ssdlab.com) (look for search this site— then click on adulteration)

## HAIR TESTS

We now realise that SureScreen was one of the pioneers of hair analysis, after our foren-

sic laboratory took on a legal case in which faulty hair perm solution totally dissolved away someone's hair. We began to experiment and found that drugs could be extracted from a hair sample via a modification of this method.

We abandoned this line of research due to the expense of the analytical equipment needed, but just a handful of other laboratories took up the challenge.

In 2001 we became partners with Psychemedics, the world's leading hair test analysis facility. They have conducted over two million analyses, based on the same digestion and extraction concepts we pioneered, and which they have now patented. No other laboratory can come close to their capabilities, because they have to mill the hair to a powder and soak it in solvent to extract some of the drug.

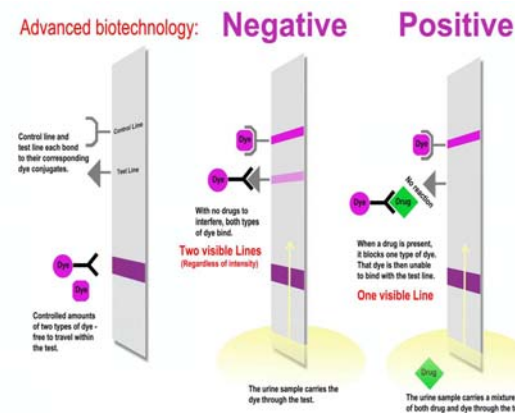
Over 300 drugs have already been extracted from hair, but the standard analysis which is carried out is for the standard drugs—cocaine, amphetamines, methamphetamines, cannabis, opiates and PCP

Drugs in the bloodstream get trapped in the hair shaft as it grows in the root follicle. Since hair is inert protein, the drugs remain trapped there until the hair is cut. About a week after drug use the hair has grown enough to be cropped close to the scalp, providing the perfect history of drug abuse.

The drugs cannot be washed out or affected by chemicals because they remain locked away in the centre of the hair, known as the hair cortex. Even perm solution or bleaching will not affect the hair core.

The process has been proven in a court of law many times, and strict procedures are adopted to prevent surface contamination, ethnic differences, or variations in hair growth rate. The usual sample is tested for a three month history, but tests can be done month by month if needed.

Just a small snippet of about 50 hairs are used, to a special procedure which avoids any signs of hair being taken from the donor.



## THE TECHNOLOGY BEHIND THE TEST

The oral fluid and urine rapid tests are based on a relatively new technique called competitive immunoassay. The hair test technology is based on radioimmunoassay or RIA

The detection of the drug is made by a mouse antibody, and the control line works using goat antibody. In reality antibodies are just proteins with a special role in identifying substances. The animal's im-