



The complete guide to hair testing for drug & alcohol for Social Work



Chapter 1 | INTRODUCTION

In family law, making the wrong judgement about a parent, spouse, relative or friend can have longstanding, damaging consequences for those involved.



As a social worker, it's essential to know the decisions you make are backed by firm evidence. Using the right tests to build your case is important, saving time and money, and relieving the pressure of cross-examination in court.

Fast, cost-effective and exceptionally difficult to cheat, the hair test is among the most powerful means of proving drug or alcohol use over long periods. Introduced in 1993, the method has grown increasingly popular in UK family courts – a shift that will continue as the number of detectable substances grows.

It's essential to understand the benefits, methods and types of results given by hair tests before using one in any substance abuse case. Doing so could mean the difference between a right and wrong judgement for the families and children you work with.

For this reason, we've created this eBook to answer common questions about hair testing for drug and alcohol. This includes:

• When hair testing is useful,

in comparison to other tests

- How hair testing works
- The limits of accuracy in hair testing
- Tips for choosing a reliable hair testing lab
- How long hair tests take and how much the process costs
- Case studies involving hair tests

We hope you find our guide useful.



Cansford Laboratories

Chapter 2 | HAIR TESTING VERSUS OTHER TESTING METHODS

Allegations of substance abuse are more complicated than if an individual abused drugs or alcohol. When, how and how often a client used a substance are details that could make or break a family law case.

Choosing the right test method for your case is, therefore, important because different types of test prove different types of substance use. Hair testing is useful for detecting long-term lifestyle use. Urine testing, saliva (oral fluid) testing and transdermal alcohol testing are all appropriate for determining the current status or that of the past few days.

Which test should you choose for your case?

Your sampling tactics should be chosen based on the time and duration of drug and alcohol use to be detected.

A judge may request that an individual is screened for cocaine use over the past two months. In this case, a hair test offers the widest window for detection and would be the best choice. If the donor has a history of drug abuse and the judge decides they should be monitored for use after their court appearance, repeated urine testing or oral fluid testing may be more appropriate. Unlike hair tests, urine tests detect substance use over days, not weeks. Alternatively, a single hair test performed a month after the suspected use will prove or disprove abuse in the period required.

As a rule of thumb, hair testing should be used alongside other testing methods when the period of substance use is less than a week before the individual is tested.

This is because traces of ingested substances only show above the scalp – and therefore in hair samples – after approximately seven days. Using an alternative second test provides a full picture of an donor's drug or alcohol use.





The table below outlines the differences between each test method:

Test	Collection method	Detection period	Key benefits	Disadvantages	When to use this test
Hair test	A sample of hair is cut, usually the thickness of a shoelace. If the donor has no hair on their head, a sample can be taken from elsewhere on the body.	For alcohol: 0 – 6 months For drugs: 7 days – 12 months	Able to detect drug or alcohol use over long periods Non-invasive collection method Difficult to cheat the test	Test cannot indicate the amount of drugs or alcohol used. Cannot assess substance use from approximately 7 days before test, because traces take around one week to appear on scalp	When an individual is accused of long-term substance use and testing is required to go back months Useful for pre-employment tests
Blood test	Sample is taken by professional, using a needle and other specialist medical devices	Immediate: test detects substances currently in the donor's system	Test is the most effective method for proving substance use in-the-moment Well-established method	Invasive collection method Requires special equipment and a trained phlebotomist	When a user is accused of substance abuse in the past week
Urine test	The donor is asked to urinate into a cup, possibly with supervision to prevent tampering	0.5 – 5 days (although some substances can stay in donor's system longer)	Able to assess acute drug intake, within one week Cost-effective test method Large sample volume makes retesting possible	Medical conditions or shy bladder may prevent donor from producing sample on demand Samples can be tampered with, especially by diluting with water	When an individual has a history of substance use and must be tested over a long period to monitor for abuse. In this case, multiple tests should be taken over a period of weeks. Often used in pre- employment and workplace testing
Oral fluid (saliva) Test	A swab is pressed into the mouth to take a sample	0 – 2 days	Simple collection method Low risk of tampering	Low sample volume means retesting is difficult Donor anxiety can cause dry mouth and make collection difficult	Often used to confirm results of other types of test Often used in pre-employment and workplace testing



Chapter 3 | HAIR TESTING IN FAMILY LAW CASES

In addition to understanding which type of test is appropriate, it's important to know when and how a test can be used in a family court case or private setting. Permission to test

Hair tests can be used to demonstrate drug or alcohol use in both public and private family law cases.

In a public law case where allegations of drug or alcohol use have been made, the individual making the allegation must have the permission of a court for a test to take place. This order may include conditions regarding how the test is carried out. These could include:

- That a particular type of test is used – i.e. a hair test or an oral fluid test
- That the test is made to detect a specific substance
- That the test covers a defined period.
 A court will often ask that a test covers the three months before the test date.
- That sectional or overview testing is performed. Sectional testing requires separate tests for different periods within a timeframe – for example, for three separate months in a three-month timeframe. Overview testing detects substance use at any point in a timeframe – for example, for any substance use in a three-month period.

Hair tests may also be used in private law cases not involving a family court. A client may choose to be tested to prove their innocence or be asked to undergo testing by family or friends.

Test results as evidence

In public cases where tests have been ordered by a court, the hair test result automatically stands as evidence in court.

In private cases where parties have chosen to conduct a test but have not been ordered to do so, parties must apply for permission to use the test result as evidence in court at a later date.



Paying for hair tests

In a public law case, legal aid may be used to cover the cost of the test. According to the Legal Aid Agency (LAA), payment is likely to be withheld if the test is conducted outside the test conditions stipulated by the court.

In a private law case, the party requesting the test will be expected to fund the drug or alcohol test themselves. Test costs are discussed in Chapter 07 of this book.

How fast is hair testing?

Care proceedings in family court cases must be completed within six months. As such, tests for substance use must be carried out quickly. Hair tests can be completed by some laboratories within three days, from sampling to delivery. Test speeds are discussed further in Chapter 07 of this book.





Chapter 4 | HOW HAIR TESTING WORKS

Hair testing is simple, fast and painless for all involved, using a small hair sample from a service user's scalp or body. How does hair testing work?



After consuming alcohol and certain drugs, the body breaks down the target substances into *metabolites*.







Each drug detected in the hair has its own chemical 'fingerprint'. When tested by a laboratory, the presence of a specific metabolite in a hair sample indicates if and when a person has ingested the substance in a certain period.

Hair on the human scalp typically grows one centimetre each month. As such, a three-centimetre strand of hair can be cut and tested to reveal drug and alcohol use over three months.

The test timeframe determines the amount of hair required for testing. If a case requires an individual to prove their drug use over 12 months, hairs of twelve centimetre-length are required.

If a subject is bald, hair from their body can be used instead. Hair tests can reliably detect substance use up to twelve months after the fact. In past cases, the method has even been used to indicate cocaine and heroin use after two years.



These metabolites and other drug traces circulate in the bloodstream.



The drugs and metabolites are then transferred into hair fibres on the scalp and elsewhere on the body.



The sampling and testing process

Hair samples are collected and tested as follows:



substance using an immunoassay, before using a more specific second test. At Cansford Labs, we use LC-MS/ MS testing in the first instance (Liquid Chromatography with Mass Spectrometry). This process separates the compounds in the extract, identifying traces of cocaine, heroin and other specified substances beyond any margin of doubt.

control sample to determine how much drug is present in the hair.

misinterpretation. Test results are issued as a certificate of analysis, which states the amount of substance present in nanograms per milligramme of hair. If necessary, the laboratory will also produce a witness statement for use in court, including a description of the testing process and their interpretation of the result. This report is written in accessible, easily-understood wording.

Who can collect a sample?

The person conducting the hair test is responsible for the reliability of the test - not the laboratory.

It is important to choose a qualified individual to take the hair sample, typically a trained collector

or GP. Donor identification must be provided and a witness may be present.

Once the sample is cut, the collector wraps the hair in foil and posts it in a tamper-proof envelope to the laboratory, where staff check all seals. Safeguarding the chain of custody is essential to achieving an accurate test result.



Chapter 5 | TEST ACCURACY, AND HOW RESULTS ARE INTERPRETED

Hair testing is a robust, reliable scientific testing method, provided that the conditions for the sample are known to the laboratory scientist performing the test.

This is important. Given their scientific nature, hair test results must be interpreted by a toxicologist before they can be used as evidence in a court or private case. The toxicologist must have confidence in their results and be able to trust the chain of custody for the sample.

This is because a number of factors can affect the accuracy of test results:

• The person taking and handling the sample must be able to prove the sample is from the correct person.

In the past, laboratories

have been sent hairs from hairpieces and the twin brother or sister of the donor. For this reason, many labs recommend their trained collectors or a GP take the samples. Donors should supply official photo identification before giving a sample, and a reliable witness should be present to sign documents verifying the sampling process.

- The donor's use of medication must be known. Some types of medication – including codeine – can give the appearance of drug use. Knowing when medication was taken is essential as this helps the toxicologist to look for patterns in a donor's test results, relative to their use of other drugs.
- Hair samples can be damaged using bleach. The donor may repeatedly bleach and wash their hair to attempt to remove traces of substances from their scalp.
- Hair colour also affects trace levels in a sample, because some substances bind with the melanin in dark hair more than in lighter hair.

Finally, it's important to know that substance levels in the body do not fall immediately after an individual stops using a substance. In practice, drug and metabolite levels drop to 10–20% of their previous amount but traces will still be present in hair samples up to four months after use ends. As such, a repeat hair test will be necessary to demonstrate that a donor has stopped using alcohol or drugs altogether.



Cansford Laboratories Pioneering drug and alcohol testing

Interpreting results

The laboratory running the hair test must have information about these factors to interpret their test results correctly. Interpretation does require input from a toxicologist in regard of the analytical data but it is vital to place the interpretation in the full context of the situation. In many ways, the person with the best overall view of the situation is the Social Worker.

The laboratory can produce accurate data as regards drug use over time; but it is the Social Worker or possibly the Psychologist who is aware of behavioural changes that ultimately could be more crucial to an accurate assessment than any drug taking.

It is the responsibility of the team working with the donor to provide these details. The laboratory conducting the hair test must declare when there exists any doubt about their test results.

Seemingly small decreases in substance abuse may give the individual the 'space' to improve their behaviour. It is never right that the drug/alcohol level should overrule behavioural assessments.

As well as considering the factors which can affect a hair test result, the laboratory performing the test must also determine when a positive result indicates actual substance use, as opposed to whether the individual has been in an environment where those substances have been used.

A hair test will indicate when a substance has been ingested by an individual or whether their hair has been contaminated by exposure to a particular environment. To make this distinction, laboratory teams use analytical and user cut-offs. Cut-offs are not absolute values but they do reduce the possibility of misclassifying environmental contamination as actual use

An analytical cut-off indicates when the level of a substance in a hair sample is significant enough to be reliably detected by the analytical method used. These cut-offs vary between laboratories according to the test method.

A user cut-off indicates that an individual has a substance in their system not from environmental contamination. For example, it's possible to detect traces of cannabis in a donor who has not used the drug but has been in a room where others have been smoking the substance. Along with the detection of metabolites, this second cut-off helps toxicologists interpret their test results.

It's important to note that testing cut-offs vary according to several factors. These may be used to challenge the results of a test, and can include:

• Different drug types. For example, the cut-off for cocaine in hair samples is 0.5 nanograms/per milligramme (ng/mg), yet the cut-off for the metabolite of THC (the main component of cannabis) is 0.002 ng/mg of hair.

- The type of test. Urine tests involve different cut-offs to hair tests.
- The analytical method used. A hair testing laboratory using the chromatographic method will have different cut-offs to one using an immunoassay technique for screening.

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CUT-OFFS IN ACTION

With hair testing we use 1000 ng/mg as the level to define "chronic excessive use" as per World Health Organisation guidelines. But we have to recognise that a level of 750 ng/mg is also high and if the hair is re-analysed a different answer, 825 ng/mg, could be produced. This only requires a 10% variation in the analytical process. Only competent laboratories can interpret results in these cases. For help finding a qualified laboratory, please read Chapter 07.

Splitting hairs

Interpreting test results from different donors requires expert knowledge. People 'take-up' drugs and alcohol at different rates and, therefore, exhibit different levels of that substance in their body even when the amount of substance ingested is the same for each person.

Donors act as their own control. With hair testing, it's possible to tell if a donor has ingested more or less of a substance over a period, or whether they've started using an alternate substance.

INDIVIDUAL DIFFERENCES

A male and female couple used the same drugs, prepared the same way. The laboratory results of a hair test found that the female's blond hair had fewer traces of the substance than her partner's dark hair. Without proper interpretation, a social worker may have mistakenly assumed the male had used more drugs than the female.

Chapter 6 | CASE STUDIES

Since 1993, members of the Cansford Labs team have assisted social workers across the UK and abroad in challenging cases involving substance abuse. The two cases below highlight the importance of expert interpretation of test results and maintaining the chain of custody for samples.

Case 1 | THE BLEACH CHALLENGE

Following her case in a family court, a young female methadone user was required to undergo a hair test two months after her appearance.

Against the suspicions of her social worker – who believed the individual had begun using the drug again – our laboratory initially found them to be clean of methadone.

However, the social worker had noticed that the woman repeatedly dyed her hair different colours. Notifying us of this fact, we suggested they were retested with another sample once their roots had grown out over several weeks..

This time, the result was positive.

What happened?

Hair tests detect substances at a molecular level. Provided a laboratory's equipment is sophisticated enough, this means that no shampoo, dye or other hair treatment can 'cheat' a hair test, because toxicologists test the inside of the hair. In this instance, the donor's repeated dyeing of her hair had left the structure of her hair 'leaky'. Therefore, we interpreted her first set of results as negative because the levels of methadone in her hair were lower than expected.

When we understood the conditions of the hair sample, we were able to revise our interpretation.

Why is this important?

Traces of drug and alcohol bind very tightly to the melanin in healthy hair. However, individuals with hair of different colours have different levels of melanin, which can determine their test result. Blonde donors that use the same drugs in the same conditions as those with darker hair will generate different test readings.

Damaging the internal structure of an individual's hair in this way is very rare, but can happen. For this reason, it's essential that the testing laboratory knows the colour and condition of the hair before testing. Alternatively, hair tests can be conducted using pubic or axilla (underarm) hair.

Case 2 | MOTHER AND CHILD AT RISK

A young baby belonging to a vulnerable mother was tested for cocaine and heroin use, following social workers' concern that the mother had continued to use the drugs before and after giving birth to her son. The mother had already had several children removed from her care for the same reason.

Our test results were positive, indicating traces of cocaine and morphine – a marker for heroin use – in the baby's hair at birth.

The baby was retested several times over the following six months. During this period, traces of heroin disappeared, but the baby's hair continued to prove positive for cocaine.

What happened?

Social workers for the family needed to understand why the baby continued to test positive for cocaine. In a series of emergency child care meetings, various explanations were offered. The family's house was dirty; the mother was giving the baby small doses of the drug; the baby's hair was growing slowly and the traces dated from in-utero exposure to the drug. The mother had also stated that the baby licked her continually and that the drug could be coming from her skin or clothes. The child was removed from his mother and placed into foster care for three months. In this time, traces of cocaine disappeared from his hair. When the child was returned to his mother, the traces reappeared.

The conclusion reached by the social workers was that the mother was still using cocaine and that the baby had been exposed to the drug deliberately or accidentally in his mother's care.

Why is this important?

When the circumstances for an individual's substance use are not known, it can be necessary to test and retest the donor to make an educated judgement about their behaviour.



Chapter 7 | CHOOSING THE RIGHT LABORATORY

Given that hair test laboratory results require expert interpretation, the accuracy and reliability of hair tests can vary between laboratories. As such, choosing the right hair testing laboratory is of paramount importance in family law cases.

Social workers should choose their laboratory **based on proficiency, speed, cost,** accreditation and – most importantly – result accuracy. Other factors, including the location of the laboratory, are of much less importance.

Proficiency

The first step to choosing a suitable laboratory is to judge their proficiency. This is simple, thanks to proficiency schemes, which indicate the credibility and accuracy of a laboratory's test procedures for particular substances.

In the UK, the Society of Hair Testing (SoHT) provides a standardised proficiency scheme for laboratories working in forensic and clinical cases.

To pass a proficiency test, a laboratory will test a control sample and have their result screened against other laboratories within the scheme that also tested the control sample. As such, scheme membership indicates a minimum level of accuracy and reliability on the part of the laboratory.

Look for mentions of your laboratory's proficiency scheme on their website or ask staff directly.



Speed and cost

The time it takes to test a sample varies from laboratory to laboratory, from three working days to two weeks after the sample is received. This time is determined by the size and processes of the laboratory in question. An effective laboratory is an efficient one, and will turn around samples quickly with no loss of accuracy. For this reason, it is not important to choose a laboratory that is close to your area of work. Test quality is a more important consideration.

The cost of a hair test is more complicated and can be affected by factors including:

- The number of substances being tested for.
- The volume of tests you require over a certain period.
- Whether you require a professional sample collector to take your sample.
- The detection window being tested. A longer period with multiple testing points will be more expensive.

Depending on these factors, a hair test will typically cost from \pounds 60 to test for a single substance without the help of a professional collector, to \pounds 170 for the services of a professional collector and a test for five substances. Most laboratories will consider amending their prices in cases where tests are required for many donors at once. It's also important to consider the wide detection window hair testing offers. A single hair test can prove or disprove substance use over a period of months. Multiple hair or blood tests would be required to prove the same.

This said, cost should not be your sole consideration when choosing a laboratory. More important is that your test is reliably conducted and produces results that will stand up to cross-examination in a family court or elsewhere.

Accreditation

Like all laboratories in the UK, hair testing labs must be accredited to minimum standards set by the UKAS (United Kingdom Accreditation Service).

As a minimum, your laboratory should hold an ISO/IEC 17025 rating. This mark indicates their competence to use valid sampling and testing methods to produce precise, accurate and reliable results.

Crucially, an ISO/IEC 17025 rating does not cover all the types of test a laboratory performs. For hair testing, this means laboratories will be accredited for testing certain substances but not others.

When a judge orders a hair test, it's important to ensure the labs under consideration are accredited to test for your target substance. This information can be found on the UKAS website.



Below is a list of drug groups and specific drugs a laboratory may be accredited to test for:

- Cocaine group: Benzoylecgonine, Cocaine, Cocaethylene, Norcocaine
- Opiates group: 6-Acetylmorphine, Codeine, Dihydrocodeine, Morphine, Heroin
- Methadone group: Methadone, EDDP
- Tramadol group: Tramadol,

Desmethyl Tramadol

- Amphetamine group: Amphetamine
- Benzodiazepines group: Diazepam, Nordiazepam, Lorazepam, Nitrazepam, Oxazepam, Temazepam
- Cannabinoids group: THC, Cannabinol, Cannabidiol, THC-Carboxylic Acid (THC-COOH)
- Mephedrone group: Mephedrone
- Methamphetamine group: Methamphetamine, MDMA, MDA, MDEA, MBDB
- Ketamine group: Ketamine, Norketamine
- Alcohol markers: ETG, FAEE (Ethyl-Myristate, Ethyl-Oleate, Ethyl-Stearate, Ethyl-Palmitate)

Accuracy in processes and reporting

The differences in testing and reporting methods used by laboratories causes the accuracy of their results to vary.

Given the significant role that expert interpretation plays in hair testing, this is perhaps the single most important issue to consider once you've chosen to use a hair test for your case. Some laboratories, including Cansford Labs, use Liquid Chromatography with Mass Spectrometry (LC-MS/MS) as their primary testing method.

This is a highly reliable process which uses a physicochemical test to identify beyond any doubt the mass spectrometric fingerprints of substances used by a donor. The speed of the test depends on how advanced the laboratory is.

Other laboratories conduct an immunoassay test followed by a physicochemical test.

The immunoassay provides an overview of whether or not a substance is present in the sample. A positive result by the immunoassay must be confirmed by a physicochemical test, like LC-MS/MS.

In the past, laboratories have failed to perform both halves of the test, declaring a 'presumptive positive' as a final result. This is misleading and can lead to incorrect conclusions in courts.

As such, it's important to know which type of method a laboratory uses before selecting their services and using their findings to inform your decision-making.



Chapter 8 | FAQs



Q. Can hair tests detect substance use week by week?

Yes; some laboratories will conduct hair tests on three millimetre-long hair samples when an allegation of specific substance abuse is made – for example if an individual had their drink tampered with. In this case, the test result will show a spike in concentration of the substance.

Testing a three-millimetre section of a hair sample is not accurate enough to indicate substance use on an exact date, but is useful to indicate an exceptional instance within a pattern of drug use.

Q. Can anybody take a hair sample?

In short, yes. However, the collector must be able to guarantee the integrity of the sample to generate a useful test result. For this reason, relatives or friends of a donor should not be used as collectors. A GP, solicitor or other professional is acceptable. We recommend a trained collector is employed to take the sample.

For collections by untrained collectors, your hair testing laboratory should provide instructions with detailed schematic drawings.



Q. Can a hair test categorically prove that a donor has stopped using a substance?

Immediately after they've stopped using a substance, a heavy drug or alcohol user will still present 10–20% of their previous level of that substance in their sample. This is because it takes three to four months for traces of a substance to disappear from new hair.

As such, it may be necessary to retest a donor after three to four months to prove they have finished using a substance altogether.

Q. A 2 ng/mg trace of MDMA has been found in my service user's hair sample. How much of the substance did the individual take?

Making an accurate judgement of this kind using a hair test is not possible for two reasons. Different people take up substances at different rates, so each person acts as their own control.

Furthermore, the purity of the drug used affects the amount present in a donor's sample. Therefore, no single standard of substance concentration exists.

Q. Two people claim to have used the same amount of drugs, but the results from their hair tests are very different. Is one lying?

It's possible both donors are telling the truth because metabolites pass into hair fibres at different rates. If one service user is fair-haired and the other dark, a toxicologist would expect to find higher substance levels in the darker hair sample. Other variables affect uptake and would be considered by the laboratory conducting the test.

If both donors claimed to be taking similar amounts of the drug at the same time but the test results demonstrated different patterns of use, it's reasonable to believe that one or both of the individuals is lying



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Chapter 9 | CONCLUSION: THE HAIR TEST CHECKLIST

Fast, accurate and cost-effective, hair testing is a valuable tool for social workers dealing with cases involving substance abuse. One simple test can mean the difference between presenting an evidence-based decision in a court or allowing abuse or neglect to continue.





For a successful case outcome, however, it's essential to understand the character and limits of hair testing. Before you use a hair test in your next case, ask yourself the following to make the right choice for the families and children you work with:

Which substance and time period do you need to test for? This will determine which test method you should use.
See Chapter 2
Do you require sectional or overview testing? See Chapter 3
Will you require a trained hair collector to take the sample? See Chapter 4
Could your client's circumstances affect their test result? See Chapter 5
Is your chosen laboratory qualified to test for your target substance? See Chapter 7
How fast will you require your hair test results? See Chapter 7

Got questions about hair testing? We'd love to hear from you. Visit: cansfordlabs.co.uk or contact us on 029 2054 0567 today.



Chapter 10 | THE ROOTS OF HAIR TESTING

Drug testing extends back to the early twentieth century.

In the late 1970s, drug detection in urine samples gained popularity thanks to the new enzyme multiplied immunoassay technique developed by the Syva Foundation. This expanded the possibilities for blood and urine drug testing in therapeutic applications, making it easier to track whether patients were taking the right amount of anticonvulsant drugs, for example. Syva's technology had the dual benefit of being useful when testing for substance abuse. Doctors John Wicks and Lolita Tsanaclis, the founding team behind Cansford Labs, built on Syva's work and pioneered hair testing as a detection method in the UK in 1993. Having researched and proved their method, the pair first used their technique in a family care court two years later, before expanding their sampling service to the employers, clinics, schools and government bodies throughout the UK as TrichoTech Ltd.

By 2000, hair testing had become routine in courts of all types across the country. Since 1993, the team around John and Lolita have refined the hair testing method to offer an unrivalled sampling service. Back then, testing took up to ten days – still an industry standard.

Today, Cansford provide an improved testing regime that delivers results in three days with no loss in accuracy. The Cansford team is based in Cardiff, UK, and is part of the Phenna Group.



To find out more or enquire about hair drug & alcohol testing:

Call: 029 2054 0567 Visit: cansfordlabs.co.uk