ISSUE 4 | DECEMBER, 2023 | DATAC.CA

2023 Quarterly Newsletter

Product Spotlight

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Tamper Tabs

Industry News Article

DOT Updates

What's New?

Get ready to take our new DOT Oral Fluid Training Course!

Infographic

The MRO Workflow Process

Overview of Forensic Testing Methods

Learn how illicit drugs are tested

Overview of Forensic Testing Methods

PART 1

In light of the ongoing opioid crisis in Canada, many cities and provinces have begun implementing drug testing services as a harms reduction measure to decrease the number of toxic overdoses and deaths. Moreover, drug testing is becoming more common at music festivals in several provinces to provide free information to festival goers regarding their substances as part of on-site harms reduction services available.

In this brief review, we will examine some of the most current methods used to test illicit drugs in order to determine their composition and help individuals make informed decisions.

Mass Spectrometry (MS)

How it works: Mass spectrometry technology involves analyzing substance components by separating and detecting ions based on differences in their charge and mass in an electromagnetic field. Common separation techniques used include gas chromatography (GC), liquid chromatography (LC), or capillary electrophoresis (CE).

Sensitivity: This method is highly sensitive and can detect virtually any substance.

Ease of use: Some expertise is required, including some theoretical knowledge and specialized training from an expert. Sample determination is also quick, providing results in seconds.

Ion Mobility Spectrometry (IMS)

How it works: This technique separates and identifies ionized molecules based on their mobility in a carrier buffer gas.

Sensitivity: IMS is quick and accurate, and can be used to analyze complex samples as well. Substance identification requires a reference database of known molecules for accurate detection.

Ease of use: IMS instruments are relatively easy to use and do not require a trained operator.

Infrared (IR) Spectrometry

How it works: IR spectrometry can be used to analyze substances by measuring the interaction of infrared radiation with molecules.

Sensitivity: This method can be used to identify most compounds if their reference data is available.

Ease of use: Varying levels of expertise are required, ranging from basic to intermediate, depending on the device.

Raman Spectroscopy

How it works: This analytical technique involves using scattered light to measure the vibrational energy of molecules to identify a sample's composition.

Sensitivity: Raman spectroscopy can be used to identify virtually any type of drug.

Ease of use: Required level of expertise varies depending on the device, ranging from intermediate, advanced, or expert.

X-ray Diffractometry (X-ray D)

How it works: This method works by comparing X-ray diffraction patterns obtained from samples to other patterns contained in reference databases to identify specific substances.

Sensitivity: X-ray diffractometry is both highly sensitive and accurate; however, only samples of crystalline or partially crystalline substances can be analysed using this technique.

Ease of use: Requires a high level of training and safety procedures and is restricted to laboratory environments. In addition, a high skill level (advanced to expert) is required for operating X-ray diffractometry instruments.

Overview of
Forensic Testing Methods

PART 2

In recent years, drug testing has been increasingly implemented as a harm reduction strategy across many Canadian provinces in order to identify components of illicit drugs with the aim of preventing drug-related overdose.

In this second part of our review, we will examine some of the least discriminatory current methods used to test illicit drugs.

Microcrystalline Tests

How they work: This technique involves the formation of microcrystals in the sample when a specific chemical is added. Then, the crystal formation is compared to a known standard using a microscope.

Sensitivity: Microcrystalline tests have high sensitivity; however, this method is best suited to pure and/or separated samples, since the presence of impurities, diluents, and adulterants can prevent or mask the formation of characteristic microcrystals

Ease of use: These tests require intermediate to advanced expertise, as well as advanced knowledge for interpretation of results.

Thin-layer Chromatography (TLC)

How it works: This technique aims to analyze mixtures of chemicals by separating the compounds present. As part of the test, a stationary phase (usually a silica gel) is deposited over a glass or aluminum support, and mixtures of the sample are applied to it. After elution with an organic solvent, the different compounds will move upwards at different rates, allowing their separation.

Sensitivity: TLC is less sensitive compared to Raman spectroscopy, mass spectrometry, and infrared spectrometry. It may be difficult to separate and identify novel substances using TLC, and it is not useful for separating complex mixtures. This technique is best used as a presumptive test with a fairly high degree of accuracy depending on sample purity

Ease of use Relatively simple to use and interpret and is thus suitable for basic skill levels. However, intermediate and advanced skill levels are needed to interpret the results.

Spot/colour Tests

How they work: Spot/colour tests work based on the chemical reaction produced between analytes and indicators. The indicator reacts with the analyte to create a reaction that results in a certain colour staining. The results are then compared visually with reference charts.

Sensitivity: These tests are considered presumptive, since they can only identify the presence or absence of a particular substance based on the test administered. A single test/reagent will only test for the presence or absence of a drug or class of drugs.

Ease of use: Colorimetric tests can be performed with minimal training

Immunoassay

How it works: This technique involves the binding of an antibody selective for the specific compound, creating an antibody-antigen complex that can be detecting methods such as fluorescence.

Sensitivity: Immunoassay tests have high sensitivity within the microgram range; however, specificity is low due to a high false positive rate.

Ease of use: Intermediate skill level for running the tests and result interpretation required.

Urine Dipstick Test

How it works: This test is a presumptive test for fentanyl, and works via a chromatographic immunoassay. In the presence of the specific analyte (fentanyl), a strip on the indicator stick appears or changes colour.

Sensitivity: There is currently no data on fentanyl urine dipstick sensitivity

Ease of use: Easy to use, with low skill level required for test administration and interpretation.

Ultraviolet Spectroscopy

How it works: UV spectroscopy analyses the intensity of light passing through a sample to create a characteristic spectrum and identify the substance.

Sensitivity: This method has lower sensitivity, and has a higher rate of false positive results, since drugs with similar structures can yield the same UV spectra. It can be combined with chromatographic techniques for greater specificity.

Ease of use: Low skill level is needed to run the test, while intermediate to advanced knowledge is required for the interpretation of results.

Product Spotlight

As per the U.S. Department of Transportation (DOT) CFR 40.41(2)(i), Secure all sources of water and other substances that could be used for adulteration and substitution (e.g., water faucets, soap dispensers) and place bluing agent in all toilets.

Tamper Tabs are an easy-to-use bluing agent to eliminate the opportunity of using water (e.g. toilet bowl water) to **dilute a urine sample in order to adulterate a urine drug test.**

Simply place a single tablet in the toilet bowl and watch as it instantly "fizzes up" and turns the water blue.

Reliable & Accurate

Ensuring reliable, accurate testing is of paramount importance to us and to each one of our customers. That's why there are no shortcuts made in the manufacturing process of VeriCheck® products. We only use the best materials and processes to ensure that we deliver consistency every time. Manufactured in a ISO 13485:2016 environment with strict adherence to quality & manufacturer processes and procedures include an **easy-to-remove security label** designed to ensure privacy, professionalism and confidentiality of the test results on our VeriCheck® Test Cups.

LEARN MORE

Industry News Article

2023 DOT Updates

According to a recent reminder released by the Federal Motor Carrier Safety Administration (FMCSA) regarding its Clearinghouse-II final rule (86 FR 55718), truck drivers with a "prohibited" status in the Federal Drug & Alcohol Clearinghouse will have their commercial driving privileges revoked by U.S. state licensing agencies beginning on November 18, 2024.

Consequently, this would result in a downgrade of the license until the driver completes the return-to-duty (RTD) process as outlined in 49 CFR part 40, subpart O. Moreover, these new regulations reinforce the current federal rules regarding drivers with a "prohibited" Clearinghouse status.

"As established in the first Clearinghouse Final Rule, drivers with a "prohibited" Clearinghouse status are prohibited from operating a commercial motor vehicle (CMV) on public roads. The second Clearinghouse final rule (Clearinghouse-II) further supports this by ensuring that drivers with a "prohibited" Clearinghouse status do not continue to hold a commercial driver's license (CDL) or commercial learner's permit (CLP)," reads a statement released by the FMCSA.

In addition, the driver's employer is required to provide the driver with a list of DOT-qualified substance abuse professionals for education and treatment, while drivers can choose their substance abuse program (SAP) based on their preferences. Finally, the SAP will determine the driver's eligibility to be retested.

"To remain in a 'not prohibited' status, your employer must complete the follow-up testing plan with you as specified by the SAP, which must include a minimum of six unannounced follow-up tests in the first 12 months of returning to performing safety-sensitive functions,"

states the communication from FMCSA. "If you are an owner-operator, your designated consortium/third-party administrator must complete your follow-up testing plan."

Since the Clearinghouse was implemented in January 2020, there have been 224,000 positive drug and alcohol tests recorded, the majority of which were for positive cannabis drug tests. In September 2023, a total of 149,374 drivers remained in prohibited status, with 113,639 not yet starting the return-to-work program.

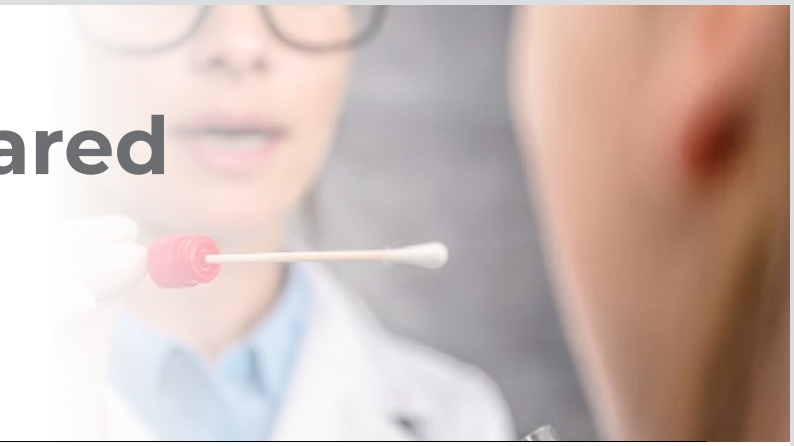
Furthermore, the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) announced that its Center for Substance Abuse Prevention's (CSAP) Drug Testing Advisory Board (DTAB) will hold a meeting on December 5, 2023 to discuss changes to the guidelines for federal workplace testing programs.

Specifically, some of the changes to be discussed include adding fentanyl to the urine and oral-fluid analyte table. Currently, SAMHSA is requesting public comments regarding the change to the drug testing panel. These changes would affect both employers and employees subject to DOT drug testing protocols. As with any changes made to the CFR the DOT must follow HHS scientific guidelines for its drug testing procedures in 49 CFR Part 40. This means that the DOT must conduct its own rulemaking to amend Part 40, as per the HHS guidelines. The meeting will also address updates to the medical review officer (MRO) manuals, testing for lab-created cannabinoids and other contaminants in commercially available products, and the process for amending the analytes table for federally regulated testing.

SAMHSA is requesting public comments on this proposed change to the DOT drug panel, which may be made up until Jan. 4th, 2023.

If you have any comments or views about the addition of fentanyl to the DOT drug panel you can send them to SAMHSA here: **DFWP@samhsa.hhs.gov**

Getting Prepared for DOT Oral Fluid Testing



As we head into 2024 the drug and alcohol testing industry continues to work towards getting set up for the addition of the newly approved DOT oral fluid drug testing. Of course, as with any new thing, there are many questions arising from this preparation, and some conclusions being jumped to that are incorrect. Let's go over the two most common questions that we are getting asked and dispel some confusion that is happening within the industry regarding this new testing mode.

When are we actually going to be able to start DOT Oral Fluid testing?

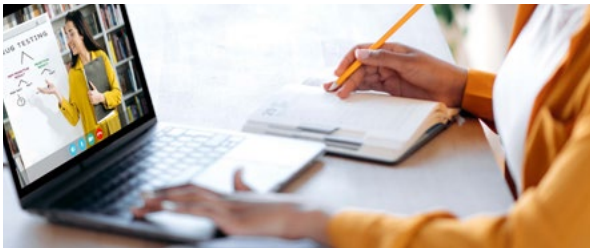
At this point, from the sources who are in the know, the estimate is that the testing will likely be able to be implemented by the end of next year. However, this is obviously NOT a hard line, but more of a guess based on the knowledge of what has to occur before testing can begin and knowing where the parties are in that process.

What has to happen before we can start using Oral Fluid testing?

There are THREE major things which need to happen prior to DOT Oral Fluid testing actually being able to be implemented. The first is that at least two laboratories have to be approved by SAMHSA (Substance Abuse and Mental Health Services Administration) for oral fluid testing. This is the same approval required by any laboratory which does DOT urine testing, they are required to go through a specific approval process as set out by the CFR Part 40 (applicable regulations include Subparts F, Q, R as well as Appendices A, B and C). Without a lab to send the tests to, and a secondary lab to send a split specimen reconfirmation to, no testing can begin.

The second requirement to begin the oral fluid testing for the DOT is that there must be an FDA approved Oral Fluid collection device. The DOT has **only** approved the use of a collection device which **subdivides a SINGLE specimen**, as per §40.72 d) 4) ii) and 5. The third requirement is that once the device exists and is approved by the FDA it must be validated by the SAMHSA approved laboratories.

This current lack of an approved collection device greatly impacts a collector's ability to get certified to do oral fluid collections for the DOT at this point; in fact, it means they can not! Although collectors can do preliminary training for DOT Oral Fluid collection (such as completing the course DATAC will open in January), they will not be able to complete their certification. To be fully certified for oral fluid collections the DOT includes the requirement of an initial proficiency demonstration (IPD or "mock collections") and until there is an approved device to use for the IPD, no collector can complete their training and thereby their certification to collector DOT oral fluid specimens. Once the two laboratories and a device have been approved/validated then collectors can complete their DOT Oral Fluid training.



DATAC will open up a DOT Oral Fluid certification course in January which can be purchased and the modules and content completed. Once a device and labs have been approved DATAC will add the Exam to the course and open up the mock schedule to include the DOT Oral Fluid mock bookings. This is so that the exam can be written within 30 days of the mock being completed as is preferred by the DOT. DATAC is very aware that there is going to be a BIG lineup for all of the collectors who will suddenly need to get this certification so the bookings will be offered in the order of those who first purchased and completed the course. **This means that if you want to be at the front of the line for your mock and getting certified, make sure you purchase your DATAC DOT Oral Fluid Collector Certification course as soon as it's offered in January!**

Infographic

THE WORKFLOW OF A MEDICAL REVIEW OFFICER

And the assistant's roles In drug testing.

TEST PROCEDURE

Specimen Collected

Collector sends the specimen to the laboratory.

Collector sends a copy of the CCF to the MRO.

The MRO completes the QA (Quality Assurance) of the CCF.

If an error is found the MRO issues an MFR (Memorandum For the Record).

OBTAINING RESULTS

After the lab tests the specimen, the results are sent digitally to the MRO.

When the MRO receives the test results they must match the correct CCF with the results.

NEGATIVE RESULT

If a result is Negative the MRO matches the results to the CCF. QA is completed before releasing the report to the employer.

NON-NEGATIVE RESULT

If a result is Non-Negative, the interview process begins. The MRO calls the donor to obtain any medical information or prescriptions.

If the donor has a Rx and can provide proof, the MRO may overturn the positive test result.

INTERVIEW PROCESS

The interview process requires that the donor be called at least three times within the first 24 hours after receipt of the results.

MRO ····· DER

If the donor has not been reached within 24 hours, the MRO will contact the DER asking for their help to reach them.

The DER notifies the MRO that they were able to contact the donor. The report will be released 72 hours later, or immediately after the interview is completed.

The MRO will continue to call the donor and if they not interviewed, the MRO will then release the report 10 days from when the lab results were received.

When a POS result is released, the DER will be notified by the MRO so they may remove the donor from safety-sensitive jobs.

Why is it important to have a Medical Review Officer?

To comply with regulations – DOT, Federal, State or Provincial laws.

To reduce exposure to liability in your drug testing program.

DATAC

Season's greetings from our DATAC family to yours! We thank you all for a wonderful 2023 and look forward to the new adventures that 2024 will bring.

Happy Holidays!

Are you certified in all areas of Canadian specimen collection, beyond split specimen lab testing?

If not, our courses will arm you with all of the knowledge you need to stay legally defensible and prepared for any testing situation.

LEARN MORE

1 (866) 324-7093

EFFECTIVE DATE 22DEC23_1.1