Drug Testing and Analysis

Received: 9 December 2008 Accepted: 22 December 2008 Published online in Wiley Interscience: 2 March 2009

(www.drugtestinganalysis.com) DOI 10.1002/dta.18

Testing employees

Lindsay Hadfield*

Testing employees for drugs and alcohol began in the USA in the 1980s and has spread around the world. All too often its development has been triggered by some disaster. For example the *Exxon Valdez* grounding set in place a rigorous testing requirement for all Exxon (now ExxonMobil)[1] personnel and contractors.

There are cultural differences in the way the benefits of testing are perceived and in the protections that are in place for employees. In the USA, federal legislation[2] stipulates the testing regimes for certain groups of employees. Canada has a substantially different response[3] and the EMCDDA legal web site[4] shows the enormous variation in attitudes to the legitimacy of employee testing within Europe.

Whatever the variations in response to the concept of testing, the principles and protocols for the test procedures are remarkably consistent.[5,6] The starting point is that the individual's livelihood may be affected by the outcome of the result, so safeguards must be in place to ensure that there is a robust chain of custody for the specimen and the testing process should be carried out to legally defensible standards. This principle applies to all matrices – urine, oral fluid and hair. Blood samples are not considered appropriate for workplace testing. Breath samples are generally used for alcohol tests.

In the workplace context, the 'chain of custody' is defined as the system of controls that establishes that a particular individual provided a particular specimen and that the results reported relate beyond doubt to that specimen. 'Testing' does not just refer to the analytical element but is a three-stage process – collecting the specimen and ensuring that it is freshly provided, analysing the specimen and, finally, interpreting the result. A positive drug test result can be defined as a laboratory positive result for which no legitimate explanation can be found. This allows for the overlap between legitimate medical uses of compounds that might otherwise be considered misuse.

The collection procedures have to establish the identity of the donor and obtain the informed consent of the donor for the specimen to be analysed. Signatures should acknowledge the transfer of the specimen from the donor to the person supervising the collection. In Europe the convention has always been that the specimen collected should be split into two portions in front of the donor; only one portion is opened for analysis, leaving the second available for counter-analysis in another laboratory if the result is challenged. The specimen containers should be identified and securely associated with the related paperwork, usually by barcode.

Using barcode technology means that the chain of custody of the specimen can be maintained throughout the analytical stages, including basic checks when the specimen arrives at the laboratory to ensure that its integrity has not been compromised.

The analysis itself begins with a screening test. In contrast with many other environments where testing is used to identify drug use, such as drug treatment centres, workplace testing has relatively few positive results so the use of immunoassay screening is an efficient tool for commercial laboratories to identify and screen out negative urine or oral fluid samples quickly. Those that are 'not negative' should be confirmed by gas or liquid chromatography linked to mass spectrometry.

In the early years all testing was carried out on urine specimens. Because of the potential embarrassment associated with collecting a urine specimen, elaborate procedures have been developed to allow the individual privacy while minimizing the opportunity for interference with, or substitution of, the specimen. The advent of oral fluid has reduced the need for special facilities to collect the specimen but there still needs to be awareness of potential opportunities for the donor to interfere with the process. For both urine and oral fluid testing, point-of-collection test (POCT) devices that provide 'instant' results are gaining acceptance.

The 'usefulness' of oral fluid, urine and hair as specimens for workplace drug testing is largely dictated by their window of detection. If determining impairment at a particular moment is important then oral fluid is more likely to give an informative result. If simply wanting to establish recent use, or to deter use close to working time, then urine will give a better picture. Hair testing can be valuable for monitoring abstinence, either for people returning to work or under disciplinary sanction following a positive result.

Another consideration is the robustness of the whole process if a drug test result is challenged. Analytically urine has the strongest track record, as most challenges have been explored and weaknesses eradicated. Oral fluid is still on a learning curve with regard to likely challenges. The cut-off levels for urine are generally the same worldwide but those for oral fluid have not yet been standardized and there is the additional complication of differing oral fluid-collection devices.[7]

For those who are looking for immediate results, particularly in industries where recruitment schedules are based on a short time frame, there is the option of using POCTs, which will give an immediate negative result. There is sometimes a misconception that these tests can dispense with the chain-of-custody requirements for the collection process but the same standards have to be maintained to avoid the risk that people may attempt to 'cheat'. The consequences of a 'not-negative' result also have to be thought through, deciding on what needs to be done with the individual pending the laboratory confirmation result.

Challenges will often target the whole process. Why was the person selected for testing? Was the selection fair? Is testing a proportionate response? This emphasizes that the starting point for workplace drug testing programmes is the company's policy.

* *Correspondence to: Lindsay Hadfield, Policy + Education Services Concateno Medscreen Harbour Quay 100 Preston's Road London E14 9PH. E-mail: lindsay.hadfield@Medscreen.com*

Testing should be used to support the policy, not the other way round.

References

[1] www.exxonmobil.com/corporate/about_operations_sbc_drug.aspx, accessed 6 January **2009**.
[2] www.dot.gov/ost/dapc/, accessed 6 January **2009**.
[3] www.chrc-ccdp.ca/pdf/poldrgalceng.pdf, accessed 6 January **2009**.
[4] http://eldd.emcdda.europa.eu/html.cfm/index16901EN.html?nNodeID=16901&sLanguageISO=EN, accessed 6 January **2009**.
[5] www.dot.gov/ost/dapc/NEW_DOCS/subpart_e/40_61.pdf, accessed 6 January **2009**.
[6] www.ewdts.org/guidelines.html, accessed 6 January **2009**.
[7] http://linkinghub.elsevier.com/retrieve/pii/S0379073805001209, accessed 6 January **2009**.