

9<sup>th</sup> September 2011

## **EXECUTIVE SUMMARY**

DASA would like to take the opportunity to comment on the **Draft model Work Health and Safety Regulation Codes of Practices for Mines - Issues Paper** with regard to **Regulations 9.3.2, 9.3.3 and 9.1.9**. In particular with reference to the selection of the most appropriate methodology for drug testing. We submit that the technology for onsite oral fluid testing has developed to a point where it is superior to the current onsite urine testing methodology in the key areas of:

- Accuracy
- Past vs Current Use
- Detection and analysis of prescription medications
- Operational utility

It is therefore better able to detect a person who is “adversely affected by ... drugs if ... drugs have caused the person’s judgment or capacity to be impaired to the extent that the person may expose the person’s or another person’s health or safety to a risk”.

We recommend that the new regulations reflect this ability and have onsite oral fluid drug testing replace urine testing on mining and related sites covered by these regulations.

## **INTRODUCTION**

Drug & Alcohol Solutions Australia (DASA) was established in 2007, It’s co-directors Dr David Allen, MBBS (Hons), DPH, FAFOEM Occupational and Environmental Physician, and John De Mellow, BSc, Medical Scientist, have over 30 years combined experience in workplace drug testing and have considerable knowledge of all aspects of this field including scientific, medical and risk management. Dr Allen is also a CASA registered Medical Review Officer.

DASA is accredited to both section 2 and section 3 of AS4760(2006) as well as ISO9001. It services a broad range of clients from transport, aviation (including CASA), electricity, industrial, engineering and mining sectors.

As such we have considerable expertise in providing a balanced and informed assessment of the relative merits of the available modes of for workplace drug testing.

## **ISSUES PAPER Regulations 9.3.2 ,9.3.3 and 9.1.9**

We would like to take the opportunity to comment on the sections outlined in the issues paper around drug and alcohol testing and the methodology which will achieve the best assessment of fitness for duty. The concerns listed are as follows:

*“Drug testing tends to be more controversial in the community because:*

- testing methods for some kinds of drugs may be in early stages of development so their effectiveness may not be proven or widely accepted*
- some kinds of drug tests pick up traces of drugs in a person’s system which may have been consumed well before the test is carried out and no longer pose any risk of impairment—this situation gives rise to privacy concerns*
- there may be an unclear relationship between drug consumption and the corresponding degree of impairment*
- testing tends to be focused on illicit rather than prescription drugs even if the potential for impairment is the same.*

*In relation to the last dot point there are no accepted threshold levels for deciding on impairment with prescription drugs, meaning they cannot be tested for work health and safety purposes in a meaningful way. Prescription drugs such as antidepressants may have significant work health and safety implications, for example affecting a person’s ability to operate plant. This means that a worker’s impairment would generally still need to be assessed.”*

These issues can be summarised as concerns over accuracy, past vs current use and detection and interpretation of legal medications. Another key issue that should also be considered is the operational implementation of any programme especially with regard to remote mining sites. The two technologies that are most relevant to this issue at the moment are that of onsite urine and onsite oral fluid drug testing.



## **ACCURACY**

As outlined in the issues paper a key concern with regard to the oral fluid drug technology has been the perception that it is “*in early stages of development so their effectiveness may not be proven or widely accepted*”. Though the technology is more recent than urine testing developments in the past few years have addressed all of the major issues as outlined below:

### **1. Onsite oral fluid testing is at least as accurate as onsite urine devices**

- a) A number of the current devices including the Mavand Rapid Stat Device and the Draeger system have scientifically validated accuracies equivalent to the standard urine devices of 90% or better<sup>1,2,3,4,5,6</sup>
- b) A number of older studies including Rosita<sup>7</sup> and even the early sections of the Esther<sup>8</sup> study are quoted as indicative of performance of current testing devices, however advances have been so rapid in this field that only the most recent studies<sup>1,2,3,4,5,6</sup> are relevant.
- c) If the collection agency is AS4760 accredited the onsite devices are checked for accuracy by a negative and a positive control every 25 devices<sup>9</sup>. If the test fails that batch is not used in testing process. In addition one in 20 samples that are taken that are designated as negative by the onsite device are tested in the laboratory by the confirmatory method. In our collecting agency over the 4 years we have been testing we have a 99.8% specificity for our devices.
- d) Drug levels in urine can be greatly altered due to adulteration. An ever increasing range of methods freely available on the internet are not included in the current Australian Standard method<sup>10</sup>. Conversely the few verified methods of cheating oral fluid testing can be eliminated by ensuring that no fluid is taken 10 minutes prior to testing and that the mouth is checked visually.
- e) The level of drug in any urine sample can vary considerably due to the amount of liquid consumed. This is partially detected by a creatinine strip but there can be large variations even within a normal range. This means that a drug level can vary several-fold depending on the hydration level of the worker and can certainly mean the difference between a positive or negative test.
- f) A very comprehensive study in 2002 which involved collating almost 100,000 oral fluid and urine drug tests across the US concluded that in similar populations the rate of detection of the major forms of drugs of abuse by oral fluids and urine were almost identical<sup>11</sup>.
- g) In many mining operations the current urine standards AS4308(2008) are not always complied with, in particular with regard to running regular quality controls. In this case there can be no guarantee of accuracy of the devices used. In many other cases the samples are sent to the laboratory without proper protection from the effects of heat, once again totally negating any claims of accuracy.


## **2. There are accredited AS4760 confirmation labs in most states in Australia**

- a) There are now five AS4760 accredited labs in WA, Vic, NSW and Qld and more labs are expected by the end of 2011<sup>12</sup>.
- b) The sophistication of the equipment used in oral fluids confirmation, the LCMS is “100 to 1000 times more accurate than most of the GCMS equipment currently utilised for urine confirmations<sup>13</sup>”.

## **3. There are onsite oral fluid devices that can detect THC accurately**

- a) There are a number of devices currently available that detect THC with an accuracy of over 90%<sup>1,2,3,4,5,6</sup>.
- b) Urine drug testing actually misses the period of impairment that results from THC inhalation. The peak period of physiological effect is 0 to 4 hours after smoking; the metabolite for THC doesn't appear in the urine in sufficient quantity to cause a positive until after that period. However it can be detected by many current oral fluid devices during the entire period of impairment<sup>14</sup>.


## **4. Neither urine nor oral fluid can detect the hangover effect of methamphetamine**

- a) It is often proposed that there is a significant “hangover” effect caused by the withdrawal from methamphetamine and that this is not detected by oral fluid testing. However studies<sup>17</sup> have shown that methamphetamine can be detected for up to 48 hours in oral fluids. In addition the medical evidence for the impairing effect of methamphetamine hangover lasting days is mixed and in any event is similar to the impairing effects of alcohol, caffeine or nicotine withdrawal, none of which can be accurately measured.
  - b) Urine does not detect the “hangover” effect of methamphetamine, it merely detects the fact that the worker has taken the drug which has now passed through their system and may or may not still have some physiological effect. It is the equivalent to testing a worker for alcohol days or weeks before they actually commence work.
  - c) If the standard of “if they are a drug user then they must be a risk at work” is properly applied then the same would have to be applied to anyone who consumed alcohol at ANY time. A policy that is plainly unworkable in Australian workplaces.
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## **5. A verified oral fluid device is not required under the current Australian standard**

- a) AS4760(2006)<sup>9</sup> does not require the oral fluid device to be verified. This was a process introduced in the urine standard AS4308(2008)<sup>10</sup> and involves the testing of a small number of devices in an accredited laboratory to determine if they are “fit for purpose”. This was required because very few of the current urine devices had any independently determined scientific data to prove their accuracy. However many of the current oral fluid devices have independently obtained scientific data proving their performance.
- b) If the collecting agency is complying with AS4760 then the quality controls that are run every 25 tests and the one in twenty samples that are sent to the laboratory are more relevant proof of “fit for purpose” than a one off verification process.
- c) A number of oral fluids devices are in the process of verification.

## **6. Oral fluids drug testing is widely accepted**

- a) In Australia oral fluid testing has been introduced by police enforcement, transport, aviation and many more industries.
  - b) Police random roadside drug testing using oral fluid testing is now in force in all states and territories. In NSW alone they have detected over 600 drivers with drugs in their system.
  - c) The Civil Aviation Safety Authority (CASA) introduced a national random drug and alcohol testing program for the aviation industry in September 2008 and has tested over 40 000 workers.
  - d) Transport companies such as TNT and Queensland Rail, and electricity providers such as Energex , have all chosen to utilise oral fluid drug testing as part of their fitness for work programmes. In our experience there are 10 companies choosing to institute oral fluids testing for every one adopting urine testing for the first time.
  - e) Internationally organisations such as the FAA in the US and the French and German police forces have all begun successful oral fluid drug testing programmes.
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## 7. The evidence presented at the 2010 Holcim vs TWU case<sup>15</sup> was not complete or current

- a) Much of the technical evidence provided in the above case did not take into account the current developments in oral fluid testing and placed emphasis on conditions such as the hangover effect of methamphetamine that were already disproved in the earlier Shell vs CFMEU case<sup>16</sup> by Prof Olaf Drummer:

*"But for the most part clinical impairment for drugs of interest that we're talking about here, cannabis, cocaine, heroine, for example amphetamines, (incl methamphetamine sic), that normally last for hours and as a gross impairment, not days." ..... "If we're looking at recent use and possible impairment, then if you get a choice between those two specimens and that was the only choice you have, well oral fluid would give you a much better indication of that"*

### **PAST VS CURRENT USE**

As outlined in the points "some kinds of drug tests pick up traces of drugs in a person's system which may have been consumed well before the test is carried out and no longer pose any risk of impairment—this situation gives rise to privacy concerns" and "there may be an unclear relationship between drug consumption and the corresponding degree of impairment". There has been considerable concern regarding the ability of a urine test which is only a measure of past use to address a workers current "fitness for duty". Below we address those issues and how oral fluids drug testing offers a fairer assessment of the actual level of drug currently within a workers system.

- a) By its very nature the measurement of drugs in urine is historical. Studies<sup>17</sup> have shown that many drugs can be present days after any possible physiological effect of the drug and for THC this can be weeks and even months. This means that there is no correlation with impairment. It also means that there is always a delay in detection, sometimes very significantly as in THC which may mean that a worker could be impaired but test negative using a urine device.
- b) As THC is stored in the fatty tissue and released in a variable manner over time a worker who has not taken the drug for some time could test negative one day and positive the next depending on a number of factors, and can be equally fit for work on both occasions.
- c) There can be considerable difficulties in discriminating some legal and illegal drugs in urine. The drug class that contains heroin also includes codeine and both are converted into morphine and excreted in the urine. Therefore it can be very difficult to discriminate between someone taking the legal or illegal drug. However in oral fluid the primary compounds 6-MAM for heroin and codeine **can** be detected<sup>18</sup>, therefore making a correct judgment much more straight forward. Heroin users can be very easily missed with urine testing – particularly if they take codeine e.g. Nurofen Plus, which can give the impression that they have used an over the counter medication rather than heroin.
- d) Although there are no studies directly comparing oral fluids drug levels with impairment there are studies that show the correlation of oral fluid drug levels and blood<sup>19</sup>. There are studies
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that correlate blood levels with impairment and therefore a connection can be made with oral fluids and impairment if only indirectly.

- e) There are clear privacy concerns with regard to any testing procedure that detects what a worker has done on their own time and which cannot in any way be directly related to their actual fitness for work. In the Full Bench of the former Australian Industrial Relations Commission in their review of the Hamberger decision *Shell vs CFMEU*<sup>16</sup>. “it would be unjust and unreasonable to permit random urine testing....Underlying this conclusion is the view that drug use which is unlikely to directly impact on an employee’s fitness for work is not the employer’s business”.

## **DETECTION AND ANALYSIS OF PRESCRIPTION MEDICATIONS**

A key problem identified in the issues paper is the detection and analysis of legal medications “*testing tends to be focused on illicit rather than prescription drugs even if the potential for impairment is the same*”.

As outlined below these issues are problematic when utilising urine testing, but can be more reasonably addressed by the use of oral fluid devices:

### **1. Oral fluid testing can detect benzodiazepines**

- a) Although the benzodiazepines are not included in the current Australian Standard there are now a number of devices that can accurately measure this drug in oral fluids<sup>8</sup>.
- b) In the *Shell case* Hamberger indicated that even though benzodiazepines were not included in the standard they could be tested for if there was evidence of an accurate method.
- c) AS4760 is currently under review and the inclusion of benzodiazepines is being considered.

### **2. Oral fluid testing can provide an accurate guide to the abuse of prescription medications**

- a) As mentioned there is a demonstrated correlation between blood and oral fluid concentrations<sup>19</sup>. A trained expert such as a CASA registered Medical Review Officer can interpret the levels of prescription medications found in the sample and can then make an interpretation as to whether they correspond to therapeutic use or are more likely abuse. As the rate of excretion of a drug is far more complex no such interpretation can be made for urine concentrations<sup>18</sup>.



- b) In addition as mentioned because medications that are similar are broken down into common metabolites such as morphine the discrimination between drug of abuse and prescription medication can be in itself problematic.


### **3. Oral fluid testing does not have a limited range of drugs that can be tested**

- a) The range of drugs available for onsite oral fluid testing is growing rapidly with benzodiazepines and methadone already available and many more are currently being validated.
- b) The range of laboratory based oral fluid tests are even more extensive with tests for the synthetic cannabinoids and many other drugs now available in Australian laboratories.

## **OPERATIONAL REQUIREMENTS**

An issue not addressed in the paper but of significant importance in the efficient implementation of any drug and alcohol programme is the operational requirements of the testing devices. Once again recent developments in oral fluids technology has provided it with significant advantages over urine testing:

### **1. It is easier to collect an oral fluid sample than a urine sample**

- a) In the past oral fluid devices required a large amount of saliva which under certain circumstances took up to 20 minutes to collect. The Mavand Rapid Stat device only requires 200ul (0.2ml) and can be collected in 2 minutes.
  - b) The Mavand device also has a built in saliva stimulation system that ensures even the driest mouth will produce a sample.
  - c) A urine collection can be difficult to collect due to dehydration and drinking large amounts of water can significantly reduce the concentration of the drug in the sample and even lead to a failure of the adulteration checking device.
  - d) A urine collection requires specially prepared toilet facilities and the number of workers that can be tested on any test occasion is limited to the number of suitable facilities available. This considerably restricts the number of workers that can be tested at any one time. This means that typically a selection process is required as only a limited number of the workforce can be tested at once. This is known as random selection and can be problematic as some workers may be tested frequently while others may never be selected.
  - e) Oral fluids testing can be set up quickly and practically anywhere. The number of workers that can be tested on any test occasion can be in the order of hundreds. This enables a form of testing known as blanket testing where an entire site can be tested on the same
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occasion. This ensures transparent fairness and a degree of deterrence as workers know they will be tested and therefore are more likely to be detected if they are impaired.

## **CONCLUSION**

Oral fluids drug testing is an accurate and widely accepted form of workplace drug testing. It overcomes many of the inherent limitations of the current urine testing regime and addresses all of the concerns outlined in the issues paper with regard to **Regulations 9.3.2, 9.3.3 and 9.1.9**.

If the aim of a drug and alcohol programme is to ensure fitness for work and not punish workers for what they may do in their own time then oral fluids testing should replace the current urine testing regime in the regulations.

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