HIGH-LIGHT

ALCOHOL AND DRUG NEWS BRIEF FOR EMPLOYERS

FEBRUARY 2002

Drug tests – a general guide

In this edition of HIGHLIGHT we take a brief look at alcohol and drug testing in the workplace, more particularly the types of tests and products available and how they function..

Most drug tests are mainly designed to show whether the drug is presents in the system or whether the user is acutely under the influence or not, whilst in the case of alcohol a distinction is often made between direct (eg Breathalyzer, which will detect the presence and quantity of alcohol consumed) and indirect (CDT, Gamma GT tests) which does not show the presence of alcohol per se but rather hematological or hepatic abnormalities caused by long standing abuse.

Direct tests - Rapid Drug Screens -How do they work ?

Rapid drug screens are one stop immunoassay tests in which a chemically labeled drug competes with the drug which may be present in urine for limited antibody sites. The test slide is precoated with a known quantitiy of the drug antibody.

If the test is positive , antigens (drug metabolites) react with the antibodies on the test site which remains clear. If there are no drug metabolites present in the test sample, the labeled drug antibodies show up as a line across the test area.

All tests have a cut-off level. This means that although the drug may be present, there may not be an sufficient amount present to react as a positive test. Most rapid tests for Dagga have a cut off level of 50ng. No one can say for certain what test result one Dagga joint may have, but it has been found that a novice smoker may probably show a positive test of between 90 and 100 ng although it should be emphasized that this **reading should never be used for official purposes to estimate the amount used or the time of last use.**

Interpretation of results

Negative

Two lines should appear adjacent to the name of the drug being tested for in the viewing window. The line in the test region (T) denotes the drug probe line and the line in the control region (C) is the control line which indicates that the test is performing correctly. The test line may vary in intensity and is frequently not as clear as the control line.

Positive

Only one line appears in the control region (C) The absence of a test line indicates a positive result. This means that the metabolites of the particular drug in the urine exceeds the cut-off level.

Invalid

I f no line appears in the control region the test is invalid. The control line should always appear, regardless of the presence of the drug. When the control line is absent it means that insufficient urine was added or that the flow of urine through the test device was impeded.

How long does a drug stay in the body ?

It is generally known that dagga lingers in the fatty cells of the body long after last use. This is seldom longer than 8 days in sporadic users but may be as long as 1 month in chronic users. In addition, Dagga has also been known to show fluctuating levels of elimination from the body, which means that a given test result may show a " higher reading" even though dagga was consumed since the last test. This fluctuation may be as much as 20 – 60 ng. However, a rise of over 60 ng may be indicative of more recent use.

Benzodiazepines (Valium, Librium etc.) has a half life of 7 – 10 hours in new users with chronic and older patients this may however be extended to 6 days.

The following is a rough guide for the detection of drugs in blood or urine samples but they should be interpreted with caution :

Substance	**Detection time in urine**
Amphetamines	2 – 4 days
Crack/cocaine	12 hours – 3 days
Dagga	2 – 8 days, but up to I month for regular users
Ecstasy	2 – 4 days
Heroin	1 – 2 days
LSD	2 – 3 days
Mandrax	Up to two weeks
Opiates	2 – 3 days

PRODUCTS*

* Pkease note that these prices were obtained in Nov 2001 and may have changed

Rapid Drug Strip (Medicare D'Afrique) (021 9767252)

Single tests ……R 19.72 (vat incl)
Multiple Drug Screen (Amph, Cocaine, Methamph, Morphine, THC……..R 65

Multi Drug Screen test (Makromed) 011 – 614-8805, 011 624-3300

Single tests (Dipstick tests) …….R 675 per 50
Multi Drug Screen (Amp. Coc, Meth, Mop, THC) R 89.95 (Vat excl)

Roche Diagnostics (011 – 8862400)

Frontline Single tests……R 232 per 10 (Vat Incl)
Ontrak Teststik (Single tests) ……R 34 per test (Vat Incl)
Ontrak Testcup 4 (Amp, Coc, THC, Morp)……
R 114 (Vat incl)
Ontrak Testcup 5 (+ PCP)…..…..R 120 (Vat incl)
Ontrak Testcup ER (+ PCP, Barb, Benzo's) …….R 120 (Vat incl)
Onsite Alcohol tests R34.20 per single test or
R1,425 per 50 tests

Global Diagnostics (011 – 6164514)

InstaCheck Multi drug (Amp, Coc, Opiates, PCP, THC) … R 430.35 per 25

Alco –Safe (012 – 4609251

Lion Alcolmeter SD-2……..R6,042.00 (incl)*
Alcolyser Screening tests (10)…….R250(incl)*
* Prices as provided in Jan 2002

THE RELIABILITY OF RAPID TESTS

Most manufacturers of these tests cite scientific studies which attest to very high specificity and sensitivity. However, some companies have reported false positives with these tests, along with the concomitant labour relations problems. Companies will be well advised to secure two specimens, the second which should be available for a confirmatory laboratory test, should the rapid test prove to be positive.

Indirect tests for alcohol abuse

Carbo – Deficient Transferrin (CDT)

Chronic alcohol intake interferes with the metabolism of a number of glyco proteins, including transferrin which is present in high concentrations in human serum. Regular high consumption of alcohol results in the appearance of serum transferring deficient in carbohydrate.

When will CDT be elevated ?
Generally, CDT will be elevated following the daily consumption of 60 grams of alcohol or more for more than 7 days.

What are the cut-off levels for elevated CDT levels ?
This is normally indicated on the laboratory report . Usually 20u/l for males and 26 u/l for females

How long a period of abstinence is required for CDT levels to return to normal ?
An alcohol abuser must abstain for at least 2 weeks before serum levels will revert to normal. For this reason CDT is a useful tool in establishing patient compliance.

How specific and sensitive is this test ?
The specificity of a test refers to its ability to link abnormal test results to a specific condition or substance. CDT has shown a specificity of 87 % which means that 87 % of positive tests will be alcohol abusers. Hence there are few alternative explanations for an elevated CDT.
CDT's sensitivity has been shown to be 95 % - this means that 95 % of alcohol abusers will show positive results.

What other conditions can cause elevated CDT values ?
Rare genetic D variants of transferring
Inborn deficits of glyco protein metabolism
Severe Hepatic insufficiency
Pregnancy

Gamma Glutamyl Transferase

Gamma GT is generally raised in 75 – 85 % of chronic alcohol abusers and is more likely to be raised in regular excessive drinkers than in sporadic binge drinkers. To raise GGT a person has to sustain 5 weeks of daily consumption of 60 grams of alcohol. GGT will only return to normal levels after 6 weeks of abstinence. In heavy , chronic drinkers the GGT levels can be expect to be as high as 2 to 3 times the upper limit whereas in severe alcoholism it has shown to be as high as 3 to 4 times the upper limit.
Normal levels of GGT may vary between different laboratories depending on the substrate being used. The upper cut-off level is usually higher for males than for females.
Although GGT has a high sensitivity as a biochemical marker it lacks specificity and is not considered entirely reliable.
Apart from a number of hepatobiliary causes for elevated GGT levels (cirrhosis, obstructive liver disease) a host of non-hepatobiliary causes may also be responsible for elevated GGT levels, such as kidney disease, diabetes, pulmonary disease and arthritis

Mean Corpuscular Volume

MCV refers to the size of the red blood cell. In alcoholism this condition is mainly caused by folate and Vit B 12 deficiencies. With chronic alcohol abuse the cell is enlarged in approximately 60% of cases. In most people consuming more than 80 grams of alcohol a day for more than a week, MCV will be enlarged. With abstinence, MCV will return to normal in about 2 months

Aspartate Transaminase (AST) Alanine Transaminase (ALT)

Normal levels 4 – 36 (AST)
0 – 40 (ALT)

ALT is normally raised first since it solely occurs in the cytoplasma. As alcohol induced damage moves deeper into the cell and affects the mitochondria, AST will also be elevated. In a typical chronic alcoholic patient, AST will normally be higher than ALT levels

Raised Uric acid levels

Proteins are made up of amino acids (the building blocks of protein). When amino acids are metabolized in the liver ammonia is formed. Ammonia is extremely toxic but it is rapidly transformed to urea. When alcohol abuse interferes with the uric cycle, uric acid builds up in the blood, causing hyperuricemia, which may lead to gout. Normal reference range : 2.5 – 7

Raised bilirubin levels

Normal range : (Total) 3 – 17
Alcohol interferes with the processing of bile which builds up in the blood and tissue causing jaundice.

Raised Triglyceride levels

Triglycerides are synthethized from carbohydrates and stored in fat cells to be released as fatty acids. Because of excessive carbohydrate intake in the form of alcohol and dietary deficits, serum triglycerides will rise. If blood cells are allowed to settle the usually clear serum appears opaque to milky white.

Raised Alkaline Phosphatase

Alkphos is increased in 80% of patients with hepatitis and cirrhosis but in only 28 % of fatty liver patients. The normal range is between 60 and 220

IN THE NEXT ISSUE :

IMPLEMENTING TESTING STRATEGIES IN THE WORKPLACE

Should you wish to obtain further information on this , please contact me at :
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e-mail : icons@mweb.co.za

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SANCA (WC) VIDEO LIST

A gift for life
Alcohol and the family
Alcohol – The drink that kills (Part 4: Alcoholism & Teens
Alcohol, Drugs & Kids
Alkohol en Alkoholisme (animated, Afr)
Assessment
Building a successful business
Coming together on prevention
Dagga , Mandrax & LSD
Decision-making Values and goals, Alternatives and info
Drug & Alcohol Abuse
Drugline SA
Part 1 : The challenge
Part 2 : White lines, Brown Sugar & Pink Ladies
Part 3 : Don't Panic, it's organic (Dagga Part 1
Part 4 : The Dagga Debate (Part 2)
Ecstasy
Feeling Good : Alternatives to drug abuse
Foetal Alcohol Syndrome
Goldtooth
Goldtooth 2 A parents guide to teenagers
A teenagers guide to parents
Marijuana Alert
Olympic Spirit
Relapse prevention
Say no to alcohol and drugs
She drinks a little
Solvent abuse, the adolescent epidemic
Sooper Puppy
Stoned
Stress: Are you coping (Episode 1 – 12)
Substance Abuse – A management intervention programme
Taking the first steps
The addictive personality
Enablers & Intervention
The Social Drinker and the anti-social driver
Thinking about drinking
To your health
Use or abuse (episodes 1 – 10)
I'll quit tomorrow
Learning to be assertive
Liquid Liability
Vry om te kies
You're not communicating