

BrAC vs BAC

Background

Breath testing in the workplace involves the sampling of breath for analysis to determine whether alcohol is present. Any time that a test is conducted and may result in any form of sanction against an employee, the matter may be subject to legal challenge.

It is for this reason that we must be able to defend results, a defence which generally requires traceability of units of measurement when used for a legal purpose. The international body overseeing this process is the *Organisation International Meteorological Legale (OIML)* based in Paris. In Australia, the *National Measurements Act (1960)* determines the manner in which measurement is to occur. The *National Measurement Institute (NMI)* is Australia's peak measurement body responsible for biological, chemical, legal, physical and trade measurement, and has the responsibility for ensuring that requirements of the *National Measurements Act (1960)* are enforced. The *NMI* follows the lead set by *OIML* in matters pertaining to metric measures.

NMI Regulation 126 (2004)

National Measurement Institute Regulation 126 (2004) covers *Pattern Approval Specifications for Evidential Breath Analysers*. Fit for purpose testing includes a series of tests that analysing equipment must pass in relation to:

- *Vibration*
- *Mechanical shock*
- *Humidity*
- *Damp heat cycle*
- *Electrostatic discharge*
- *Repeatability*
- *Maximum permissible errors*
- *Drift*
- *Durability*

Of paramount importance is Section 4 of the Regulation, pertaining to *Physical Quantities and Units of Measurement* which states:

“ The EBA shall display measurement results in terms of mass concentration of alcohol in a specified volume of breath...the unit of measurement used is the gram (of alcohol) in 210 litres (of exhaled breath), g/210L.” NMI R 126 does not permit the reporting of a breath analysis as a Blood Alcohol Concentration (BAC).

Evidential Breath Analysing Instruments were required to comply with the provisions of NMI R 126 (Pattern Approval Specifications) by October 2010. All Lion EBAs supplied by Pacific Data Systems in Australia have been compliant for some 4 years.

Legal experts consulted agree that in the legal/scientific world BAC and BrAC should not be considered the same.....

- 0.05 Blood Alcohol Concentration (BAC) is defined as “50 milligrams of alcohol per 100mL of blood” as against
- 0.05 Breath Alcohol Concentration (BrAC) is defined as “0.05g of alcohol in 210L of breath”

The numbers remain the same, but BAC and BrAC are not the same by definition.

Implications

It is not hard to gauge the degree of difficulty in successfully arguing a case using BAC when the test is performed using breath, or on BrAC if a blood test has been conducted.

All Australian Police Services have changed from using BAC to BrAC in g/210L for the reporting of results of evidential breath analyses and RBT testing with some \$28m spent on legislative and equipment changes. AS 3547 Breath alcohol testing devices for personal use currently uses the term BAC, but *Standards Australia* is aware of the changes and will amend in due course.

There are implications for the wording of Company policy, as a possible legal challenge must always be considered.



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