

## **“The Flawed Nature of the Calibration Factor in Breath-Alcohol Analysis”**

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Breath-alcohol analysis is a method of testing the blood alcohol concentration (BAC). The uncertainties associated with the calibration factor are questionable. A breath-alcohol simulator is an ideal Henry's Law system consisting of a dilute solution of ethanol in water maintained at 34°C. Simulator solutions are intended to simulate human test subjects and are routinely used to check the accuracy of breath-alcohol analysis. Breath-alcohol analyzers rely on a fixed blood-alcohol to breath-alcohol partition ratio. A major flaw with the calibration factor is that the simulator solution is an ideal Henry's Law system while a human subject is not. Other errors include systematic errors and method errors. Consistent with Henry's Law is the fact that temperature must be controlled in any given application. The length of time involved in a breath sample is also an important effect of the result of the breath-alcohol analysis. The claim by users of the breath-alcohol analyzers that such instruments are accurate because they produce accurate results within a specified margin of error when calibrated with simulator solutions is, therefore, a very limited claim.

### **Bibliography**

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