

DEMYSTIFYING THE INTOXILYZER 5000

By: Troy G. Broussard, The DWI Dr.

published in the Louisiana Criminal Defense Lawyers Association Magazine,
“The Advocate”

I was speaking with a state trooper friend of mine at court the other day about different breath testing devices. We started talking about recent news reports of a flashlight, which also contained a device for detecting alcohol and the inherent problems with such a device.

When this trained police officer stated, “It’s not infallible like the Intoxilyzer 5000.” Even though I knew that some officers say this, and CMI, (the manufacturer of the Intoxilyzer), thinks the Intoxilyzer 5000 is God’s gift to law enforcement, I was still blown away (pun intended) by this trooper’s sincerity.

He actually believed this statement.

Unfortunately, many judges in this state believe the same as the trooper. It is incumbent upon us as defense attorneys to challenge this erroneous assumption and offer facts, which will provide judges, prosecutors, and law enforcement officers, with realistic limitations of this machine.

This article will attempt to point out some of those limitations. The Intoxilyzer 5000 is not infallible.

At the recent Essentials of DWI Practice for Bench and Bar Seminar presented on May 12th in Hammond, Louisiana, Mary McMurray, a nationally known forensic consultant working with Forensic Associates, Inc. of Minneapolis, Minnesota, gave a 5- hour lecture on “Demystifying the Intoxilyzer 5000”.

During that presentation Ms. McMurray pointed out that the widespread use of breath analysis for legal purposes means that evidential breath testing machines and their operators take over the role of the blood-alcohol laboratory. Her question to us was, “So how do you assure that the high standards of analytical practice that are expected of a forensic laboratory are rigorously maintained?”

Since 1968 the minimum standards for forensic breath-alcohol testing quality assurance has revolved around two issues: 1) the practice of analyzing two or more breath samples and 2) the analysis of an appropriate control standard with every test run. Louisiana has declined to implement either one of these quality assurance standards.

The following is extracted from her materials. She can be reached at either (608) 437-5344 or (612) 339-7903.

Breath alcohol testing is not a true science. The concept of using a breath sample to accurately and reliably measure an alcohol concentration in a person's blood was intended to be a useful tool to aid the road officer in performing his job responsibilities.

The early breath testing scientists did a large amount of foundational research and made numerous assumptions that formed the basis of evidential breath-testing today. These early researchers and scientist made training, program and other recommendations for conducting the testing.

From the start, the individual state programs, including Louisiana's, have largely ignored the recommendations for training and testing procedures.

Breath-alcohol testing equipment is not infallible – it does malfunction on occasion. Calibration is not permanent on any equipment, despite sales propaganda claims.

Plus, there are some people who are not “good candidates” for breath-alcohol testing.

These inherent limitations need to be recognized in all testing programs. To minimize the limitations of the testing method, scientific test procedures should be applied. Procedures that incorporate repeated analysis of all unknowns and control standards are basic to any quality assurance program and should be considered mandatory when testing for evidential purposes.

Moreover, the breakdown and service logbook of each machine, as well as control charts reflecting the precision of breath analysis and variations in long-term calibration should be available for scrutiny by qualified independent bodies. On the newer model Intoxilyzer 5000, this data is stored within the machine and can be downloaded to disc.

The reason for making a measurement is to determine the true value. The true value will always be an unknown. The purpose of an analysis is to obtain a value as close to the true value as possible.

When performing any type of measurement or analysis two key elements that need to be addressed are the accuracy and precision of the measurement or analysis.

Accuracy is like trying to hit the center of a bull's eye. It is the ability of the machine or method to provide a result as close to the true value as possible.

Precision, on the other hand, is associated with the repeatability or results from analysis of the same sample. Is there clustering of the “hits” on the target or are they scattered? It is possible to have good precision without having good accuracy.

Thus, simply repeating a measurement does not insure accuracy. The practice of using

multiple breath samples provides an indication of the precision of the measurements *at the time of testing*. A check of the calibration provides an indication of the accuracy of the measurements *at the time of testing*.

The analysis of multiple breath samples for alcohol is the only means to insure precision in the measurements. Without such analyses there can be no testimony relating to the precision of that test.

Similarly, the measurement of at least one standard at the time of testing is the only way to assure the accuracy at that point in time. Every evidential breath-alcohol testing program in this country is capable of conducting duplicate breath analysis and analyzing standards with every test run.

But the failure to practice basic quality control measures in any evidential alcohol-testing program – be it breath, blood, or urine – is a failure to provide quality assurance to the people being tested and to the society being protected.

In the October 2000 issue of the DWI Journal, William C. “Bubba” Head of Atlanta, Georgia, phone (404) 250-1113 and e-mail: wthead@absolutely-not-guilty.com, authored the article entitled, “High Protein Diet Causes Unreliable Breath Test Results.” In the article, Mr. Head states:

“A strict diet of high protein foods produces ketosis as the body converts stored body fat into energy. It is this ketosis, or production of ketone and subsequent by-products, that most breath test devices will not reliably report as an interfering substance.”

“...self-generated isopropyl alcohol is part of the body’s defense to the toxicity of acetone or ketone build up. As the ketone level increases in a person, the body uses certain amino acids to create enzyme pathways to remove or convert the ketones into safer compounds. Isopropyl alcohol is that safer compound. One pathway uses the enzyme alcohol dehydrogenase (ADII). This is the same enzyme the liver uses to break down ethanol into the metabolic, acetaldehyde.”

“Most breath testing devices will render a cumulative reading of ALL alcohols in the body (ingested and auto-generated) is the likely result.”

This is the same type of effect that persons with the condition known as hypoglycemia, a condition involving low blood sugar levels, could display. A.W. Jones of Linkoping, Sweden 1995.

Mr. Head also has a list of 50 ways to beat the breath test. I will only lists those, which involve the machine’s accuracy and precision, or the individual not being a good candidate for the test.

Defendant has a physical problem or health limitation, which the officer did not discover or ask questions about.

Testing room or circuitry has a problem (RFI; recently painted walls or trim; certain cleaning solutions, smoking in or near machine; shared power supply with A/C or other appliance-must be dedicated “clean” electrical source)

Defendant has had environmental exposure to volatiles and will have cumulative reading.

Defendant unable to blow sufficient sample due to lung capacity or size, respiratory health or high alcohol level.

Air bag defense – the “Tyndall effect” – diffusion of light; propellant exposure; cut lips; lung and airway irritation & fluid build-up from caustic gas propellant.

Something in mouth containing alcohol (Breath Drops with SD alcohol).

Something in mouth that contains interfering or contaminating substances (Skoal snuff – wintergreen; Altoids curiously strong mints).

Dentures, gingivitis, bridgework, “pockets”

Vomiting, belching within 20 minutes of test/ no rinsing of mouth, or inadequate deprivation period before retest.

Elevated breath temperature caused by fever, hot tub, sauna, detention in hot sun or back of police car in summer, dancing, menstrual cycle, etc. [only Draeger is supposed to catch this].

Failure to verify simulator temperature remains constant and within tolerance; otherwise, results cannot be accurate.

Breath/blood ration (2100:1) not proven to be Defendant’s ratio; show how minor error gets multiplied 2100 times; $0.12 = 17/10,000,000^{\text{th}}$ of an ounce. Show Defendant has abnormally LOW blood/breath ratio through testing/expert.

If BatMOBILE, wiring issues and electrical configuration; AC/DC issues; low voltage spikes.

No proper periodic testing of quantities of commonly occurring interfering substances likely found in a living subject, to assure machine’s ability to distinguish alcohol from other volatiles.

Burp, belch that is silent.

Gastric reflux or hiatal hernia, preferably diagnosed and treated before arrest occurred.

Simulator solution not kept for subsequent re-analysis.

Simulator solutions not checked by GC-Mass Spec analysis upon receipt from company that sell them.

Blowing pattern irregularities (blubbering and crying causing artificially high water vapor problem)

Defendant has been on a strict high protein DIET and then introduces carbohydrates, thereby triggering auto-generated alcohol production when ketones are converted to isopropyl alcohol.

Defendant has diabetes, is “borderline” diabetic or is hypoglycemic and consumes alcohol in *any* amount, causing conversion of high acetone levels into isopropyl alcohol.

It is interesting to note that temperature variances in the subject breath will yield different breath test results.

As stated in the list above, the Draeger machine is the only machine on the market, which measures the temperature of the subject's breath and then adjusts the results as a result of the temperature.

Ms. McMurray showed an example of a Draeger result card from Alabama in which the subject blew a .120g% with a breath temperature of 36 degrees Celsius, the machine had been calibrated at 34 degree Celsius (the same as Louisiana's Intoxilyzer 5000s) and the resulting adjustment resulted in the subject actually having a BAC of .080g%.

The Intoxilyzer 5000 is not the infallible machine that the manufacture or law enforcement make it out to be. Defense attorneys should not look at an over-the-limit breath test and immediately think that the client is guilty, but should investigate all possible avenues that would indicate that either the machine was not functioning properly at the time of the test or that the client was not a "good candidate" for the breath test.