

BREATH TESTING

In Georgia every “official” state administered breath test will be conducted on an Intoxilyzer 5000. As of today close to ninety percent of the instruments currently being used by law enforcement departments across the state are actually 5000EN’s, the so-called “enhanced” models. Like any other infrared breath testing device, the Intox 5000 will determine a “breath alcohol concentration” based on certain assumptions. As far back as the report issued by the National Safety Council in 1952 the computations made by all breath testing devices in this country have been premised on assumption that there is a constant 2100:1 ratio between the amount of alcohol in the blood as opposed to the amount measured in an individual’s breath. Also of significance is the fact that the machines do not adjust for actual expired breath temperature but perpetuate the notion that the average temperature of human breath is 34 degrees centigrade, *and* everyone who is tested is average.

World class scientists have consistently reported that variability in breath temperatures alters test results. The seminal study by Fox and Hayward study published in the Journal of Forensic Sciences revealed that for every one degree increase in core body temperature the subjects’ breath alcohol concentration increased by 8.6 percent. Approximately twelve to fifteen years ago three studies of hundreds of subjects confirmed that the average breath temperature was 35, 35.1, and 34.9 degrees respectively, for an overall average of 35 degrees. Consequently, it appears that the “average” person whose breath alcohol concentration measured by an Intoxilyzer 5000 as .087 would actually have a blood alcohol concentration of .079, even if none of the other confounding factors besides breath temperature is taken into account.

There are other potential problems with your breath test besides partition ratio and breath temperature. These include:

The belief that the alcohol measured by the machine is “deep lung” or alveolar air, despite modern research that definitively proves the alcohol present in a breath sample comes entirely from the lining of the airways. This mucus and tissue, not the blood in the lower part of the lungs, is the source of “breath alcohol concentrations.”

The Intoxilyzer 5000 can report compounds other than ethyl alcohol when those compounds also have a methyl group (carbon and hydrogen atoms linked to each other). This carbon-hydrogen bond is common to numerous organic molecules.

Diabetics and dieters may have acetone levels far in excess of the general population. This is just one more chemical compound that may be read as ethyl alcohol by the Intoxilyzer 5000.

GERD, or gastroesophageal reflux disease. When the stomach air containing alcohol escapes into the esophagus, it will mix with lung air in the breath sample and cause a false elevated breath test result.

RFI or radio frequency interference. When the Intoxilyzer is inspected, it is checked only for interference on the frequency used by the Georgia State Patrol. This becomes a serious issue in many BATmobile cases with dozens of officers and dozens of radios on the scene.

There are many other issues that need to be examined. We keep on top of the most recent trends in the law and breath alcohol testing so we can do a better job of helping you. Training and hard work: That's what set us apart.

BLOOD TESTING

In Georgia there is only one manufacturer, Becton-Dickinson, that is an approved vendor of blood collection kits for DUI investigations. Blood that is drawn for a forensic blood alcohol test (or drug testing) is almost always taken from the suspect by way of a vacutainer, which ought to have a gray stopper and contain two powdery substances -sodium flouride, the preservative, and potassium oxalate, which is the anticoagulant. In addition, these collection tubes are vacuum sealed, which explains why they are called vacutainers .

Once again, the kits used in Georgia are made by Becton-Dickinson. These blood alcohol testing kits will also have an expiration date printed on the container, which is a corrugated cardboard box. The expiration date is the last date on which the warranty of the vacuum seal will still be valid. However, in every day situations very few phlebotomists, police officers, or state crime lab personnel ever take note (much less write down anything) of the expiration date. In plain English, almost none of the players take it seriously and take the time to be sure.

We are very aware that in the majority of cases there are at least three possible defects that could affect the integrity of the state's blood test:

1. A vacutainer with a defective seal, which will be impossible to detect once the blood has been tested, because the tube has been opened.
2. An incorrect amount of the preservative, sodium flouride, in the vial. Since the vacutainers are not always refrigerated before they are delivered to the Division of Forensic Sciences (crime lab), having the proper amount of sodium flouride is crucial. If the tube has too much or too little, the test can yield a false high result.

In the event that the seal is defective organisms from the environment, such as candida albicans, can find their way into the vial. If there is not enough sodium flouride in the tube, the organisms that may be in your client's blood will grow. One of these is the ubiquitous candida albicans, a yeast-like culprit that is highly resistant to sodium flouride. In the presence of both glucose and warmth, it will inevitably excrete ethanol via fermentation.

When there is too much sodium flouride in the tube used for blood testing you may observe a phenomenon known as "salting out", which has also been shown to cause a false high test result with headspace gas chromatography. This can happen even when there is no problem with the vacutainer, but the phlebotomist fails to draw a sufficient amount of blood.

3. An improper level of potassium oxalate, which is the anti-coagulant.

If the vial does not contain enough potassium oxalate, it is quite likely that the blood will coagulate or "micro-coagulate." The latter event is virtually undetectable. Because this will change the ratio of liquid to solid in the substance (such as blood) that is tested, this will usually cause a false high test result., because ethanol is water soluble and will "migrate" toward the liquid portion of the blood.

We can virtually guarantee that in any case where your blood is tested for alcohol the lab will not test for the presence of Candida Albicans, the lab does not inspect the vial seal, and the lab has does not make a practice of checking the amount of sodium flouride or potassium oxalate in the tube.

If any of these occurred, there is a considerable likelihood that you will have a false high blood alcohol concentration reported by the Division of Forensic Sciences.