



E42 The Misleading Nature of Unconfirmed Single Column Headspace Gas Chromatography Flame Ionization Detection Blood Ethanol Reports

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After attending the presentation, attendees will appreciate the need for confirmation testing of forensic blood ethanol samples consistent with the published Society of Forensic Toxicologists and American Academy of Forensic Sciences (SOFT/AAFS) Forensic Toxicology Laboratory Guidelines – 2006 and the various gas chromatograph column manufacturer guidelines. The need for confirmatory testing will be evidenced by real life examples of unjust consequences that occur when these critical guidelines are not followed.

This presentation will impact the forensic science community by furthering the discussion that just because a blood ethanol report has the appearance of reliability does not unequivocally mean the results are an unquestionable true value.

For the past several decades forensic toxicology reporting of blood ethanol levels by crime laboratories have been relied upon by attorneys, juries, and judges largely without scrutiny to the qualification of the subject analyte, quantification of the reported blood ethanol level, or reporting of any uncertainty in the measurement. The 2006 SOFT/AAFS Guidelines dedicate a section to Confirmatory Tests. The Guidelines specifically provide that “...confirmation using a second analytical system is encouraged...Confirmation using a second GC column is acceptable IF the second results in significant changes in retention time AND change in elution order of at least some of the common volatiles.” One major column manufacturer publishes, “Don’t forget: Blood alcohol analysis requires dual column confirmation when using GC/FID.” Yet many crime laboratories fail to adhere to either the 2006 Guidelines or the gas chromatograph column manufacturer’s published warnings/instructions. Instead, these crime laboratories report blood ethanol results from only a single column.

The admissibility of blood ethanol reports and other forensic evidence have now been addressed in multiple recent United States Supreme Court decisions. These issues are now at the forefront of our country’s high court and forensic community. Despite the guidance from the high court, state courts are slow and even reluctant to require a proper foundation prior to the introduction of blood ethanol reports which do not comply with SOFT/AAFS and gas chromatograph column manufacturer guidelines and warnings. State courts routinely allow unconfirmed blood ethanol results into evidence. Often times judges are persuaded to believe that the blood ethanol reports, inclusive of quantitation, should be published to the jury and admitted into evidence without being subjected to pretrial in-limine motions. Some state courts have ruled that the jury may determine what weight to give the blood ethanol reports without any substantial foundational showing. Judges are also faced with the challenge to determine what expert testimony regarding the blood ethanol report is required. These “weight versus admissibility” rulings appear more prevalently in states where the well known *Frye* “general acceptance” test is used and not the *Daubert* or federal standard which requires both a preliminary assessment of whether the methodology underlying the blood ethanol report is scientifically valid and whether that methodology properly can be applied.

Jurors rely upon the blood ethanol reports to convict defendants based on partial information, educated guesses, and the belief that the judge as the gate keeper would not allow the reports into evidence unless they were accurate, precise, and reliable.

Single Column GC, Unconfirmed Results, AAFS/SOFT Guidelines