

NATIONAL SAFETY COUNCIL
COMMITTEE ON ALCOHOL AND OTHER DRUGS

REPORT OF THE SUBCOMMITTEE ON ALCOHOL:
TECHNOLOGY, PHARMACOLOGY, AND TOXICOLOGY

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This subcommittee has completed its report on acceptable practices for evidential breath alcohol testing. This project was begun more than two years ago and led by Mack Cowan while he was co-chair of this subcommittee. The subcommittee met in February 2006 and decided to create a list of recommended practices applicable to Evidential Breath Alcohol Testing in general, while noting any special considerations for Evidential Field Breath Alcohol Testing. It was further decided that the recommendations would be concise and accompanied by an extensive list of references. These recommendations are attached to this report as a separate document. We are hopeful that the recommendations will be posted on the Committee webpage.

Further work is needed to complete the subcommittee's other current task of revising the Committee's "Recommendations for the Preparation of Alcohol Reference Solutions for Control Tests of Breath Alcohol Testing Instruments" (1989). A working group comprised of Rod Gullberg, Brian Hodgson, Randall Beaty and Mack Cowan was created to do the preliminary work on this task.

In the future this subcommittee intends to review and report on the relevant scientific literature in our area of interest and meet by email and in person this fall to discuss future projects.

The use of the term "alcohol" in this document refers to "ethanol" unless otherwise noted.

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COMMITTEE ON ALCOHOL AND OTHER DRUGS

RECOMMENDATIONS OF THE SUBCOMMITTEE ON ALCOHOL
TECHNOLOGY, PHARMACOLOGY, AND TOXICOLOGY

ACCEPTABLE PRACTICES FOR EVIDENTIAL BREATH ALCOHOL
TESTING

- A. Forensic breath alcohol test programs differ between jurisdictions for a variety of sound and important reasons. Programs differ with regard to instrumentation, protocols, personnel training and responsibility, documentation, etc. Programs also differ because of jurisdictional variations in statutory language, case law, administrative rules, political concerns, program funding, penalties associated with convictions, etc.
- B. The significant weight assigned to breath alcohol results, along with the serious consequences arising from conviction on an impaired driving offense require evidential breath alcohol testing programs to implement appropriate quality assurance measures. ⁽¹⁻⁷⁾
- C. The purpose of this subcommittee's recommendations is to outline the basic elements necessary for establishing quality assurance and fitness-for-purpose in evidential breath alcohol measurements.
1. These recommendations apply to both fixed location and roadside evidential breath alcohol testing.
 2. Roadside evidential breath alcohol testing may require additional consideration for factors such as:
 - a. testing for radio frequency interference, ^(7, 8a, 9)
 - b. use and type of control standards, ^(1, 2, 7, 8b, 8c, 10-17)
 - c. operating environment, ^(8d)
 - d. instrument mounting,
 - e. adequate electrical power supply
- D. The following recommendations are considered necessary for establishing reliable evidential breath alcohol test performance and enabling meaningful measurement interpretation.
1. Instruments should be operated, and tests administered by, trained and qualified breath alcohol test instrument operators. ^(1, 2, 7, 8e, 8f, 9)
 2. Instruments should be approved by an appropriate agency and, if used in the United States, also appear on the National Highway Traffic Safety Administration's Conforming Products List. ^(8f, 8g, 8h, 9)
 3. Testing protocols should employ a minimum pre-exhalation mouth alcohol deprivation period of 15 minutes. ^(1, 2, 7, 8b, 8i, 9, 10, 18, 19)

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4. Breath alcohol measurements should be conducted on at least duplicate independently exhaled end-expiratory breath samples; the breath sample results should agree within the applicable established and documented criteria. ^(1, 2, 7, 8i, 9, 18)
5. At least one control analysis should be performed as a part of each subject test sequence as an assessment of within-run accuracy and/or verification of calibration. ^(1, 2, 7, 8b, 9)
 - a. Controls should consist of either wet bath simulator ethanol vapor or dry gas ethanol standard.
 - b. Predetermined and documented acceptable control results should be established.
 - c. Control results found to be unacceptable during a test sequence should require the performance of a complete new test sequence or result in disabling the breath alcohol test instrument until it is inspected by appropriately trained personnel.
6. An ambient air blank/analysis should be performed before and after each breath and control sample analytical measurement. ^(1, 7, 8b, 8d, 9)
7. Any non-compliance or non-conformity with established and documented evidential test sequence protocol criteria should require the performance of a complete new evidential test sequence.
8. Printouts of all completed tests should show the results of all breath samples, ambient air analyses/blanks and control analyses performed during a subject test sequence. ^(2, 7, 9)
 - a. Jurisdictions may choose to report a reduced or statistically adjusted result in addition to the actual analytical results. ⁽⁷⁾
 - b. The date of analysis, instrument serial number and all measurement times should appear on the printout. ^(1, 7)
 - c. Any error messages generated during the test sequence should appear on the printout.
 - d. If a test is invalid, the reason for the invalidity should appear on the printout.
9. Periodic calibration, verification of calibration and/or certification of instruments must be performed in conformance with the documented and approved protocol recognized by the applicable jurisdiction. ^(1, 2, 9)
10. Periodic recertification of breath test instrument operators should be done in compliance with documented and established training criteria recognized by the applicable jurisdiction at least every five years. ^(2, 8j, 8k)

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