Summary of the ASTM Code of Ethics and Standards for Stack Sampling Firms

This document is a summary of the final ASTM document which is titled: **Standard Practice for the Competence of Air Emission Testing Bodies.** This practice assesses the overall ability of a testing firm to deliver data of known and documented quality on consistent bases by use of a quality manual for establishing a quality system. The testing body or firm must have in place the resources, training system and QA/QC consistent to insure data of acceptable quality. This practice is a performance based system that includes feedback mechanisms and is also focused on the education and qualifications of the individual tester.

1. Organization/Management: The testing body shall have in place a structure that includes a quality system that enables it to continually monitor and improve its ability to deliver the defined data quality. The testing activities shall be conducted in accordance with local, state and federal laws and regulations. The testing body shall provide its employees with the resource and authority to take corrective actions and to verify and document their effectiveness. The organization shall have a technical manager or director and a quality manager, both with extensive experience and education.

2. Document Control: The testing body shall establish and maintain procedures to control all documents that make up its quality system. All quality system documents generated shall be uniquely identified and any changes to the documents shall be reviewed and approved by management. There shall be procedures established to describe how changes to computerized documents are made and controlled.

3. Quality System, Audit and Review: The testing body shall develop and disseminate a quality policy, which is a statement signed by top management documenting the commitment to provide data of known and documented quality. The testing body shall ensure that the policy is understood, implemented and maintained at all levels within the organization. A quality system shall be established, maintained and operated under the quality policy as a means of ensuring that operations are appropriate for providing air emission testing services and to meet the degree of completeness, representativeness, comparability and uncertainty needed to meet the data quality objectives. A quality manual shall be prepared to document all components as defined in this standard practice.

The testing body shall annually conduct internal audits of its activities to verify that its operations continue to conform to the requirements of the quality system. The testing firm shall participate in third party proficiency testing programs.

4. Personnel: The testing firm management shall ensure the competence of all staff that perform testing, calibration, evaluate results and sign reports. Staff performing specific tasks or methods shall be qualified on the basis of appropriate education, qualifications, training, experience and demonstrated skills. The testing body shall have a policy and procedures for identifying training needs and provide training as needed.

Personnel: (Continued)
To be deemed a qualified individual, that person shall have adequate experience in the Methods or Method Groups for which they are seeking qualifications.

Such experience shall include instrument calibration, equipment preparation, field set-up, equipment operation and data recording, sample recovery/ handling, sample analyses, data reduction, quality control and reporting. The experience qualification shall be met before taking and passing the qualifications test. The individual must take the examination at least every five years. Each qualified individual shall sign a statement agreeing that all test projects conducted under his or her supervision will conform to the test firm's quality plan and to this standard practice.

5. Accommodation and Environment: The test body shall ensure that environmental conditions do not invalidate the results or adversely affect the required quality of any measurements. Specific measures shall be taken to ensure good housekeeping in all locations where testing or analyses are conducted**.**

6. Equipment and Reference Materials: The testing body shall have access to all items of sampling, measurement and testing equipment required for the correct performance of the testing and calibrations. The equipment, instrumentation and software shall meet accuracy and performance criteria for applicable test methods. Calibration programs shall be in place for all equipment and completed on a regular basis. All equipment which requires calibration shall have the last calibration information documented on the equipment. Records shall be maintained for each piece of equipment. The test body shall provide for safe handling, transport, storage, use and planned maintenance for all equipment to ensure proper functioning, accuracy and to prevent contamination.

7. Measurement, Traceability and Calibration: All equipment used for testing and/or calibrations, including equipment for subsidiary measurements having a significant effect on the accuracy or validity of the results of the test, shall be calibrated before placed into service. All reference materials (where possible) shall be traceable to certified reference materials. Internal reference materials shall be checked as far as technically and economically practicable.

8. Test Methods: The testing body shall use the appropriate methods and procedures for all testing performed. The methods used for demonstration of compliance are currently defined by the applicable regulations. Any alternatives or deviations from these methods shall be detailed in the test protocol and the test report, along with authorization for use by regulatory agency. A site specific test plan shall be used for each test project. The test plan shall be the primary source of information on testing and quality procedures for the test project. Any use of non-standard test methods shall be subject to agreement with the client and any relevant regulating authority. The test body shall procedures for estimating the uncertainty of measurements. The use of approved test protocols, which documents the specified published literature uncertainty, for given methods.

9. Handling of Sampling and Calibration Material: The testing body shall have procedures for the chain-of-custody, transportation, receipt, handling, protection, storage, retention, and disposal of samples, sampling media, and calibration materials. All samples, sampling media and calibration materials shall be identified. The testing body shall have procedures and appropriate facilities for avoiding deterioration, loss or damage to samples, sampling media or calibration materials during storage, handling and preparation.

10. Records: The testing body shall establish and maintain procedures for handling and storage of quality and technical records. The quality records shall include reports for customers, regulatory feedback, internal audits, management reviews and corrective and preventive actions. All records shall be legible, retrievable, secure and confidential as well as stored in a suitable environment to prevent damage or loss. The records shall retain records of original observations, derived data sufficient for information to establish an audit trail, calibration records, staff records, identity of field staff, internal and external audits, personnel training records, performance feedback and chain-of-custody records.

11. Reporting: The results of each test, calibration, or series of tests or calibrations conducted by the test body shall be reported accurately, clearly, unambiguously, objectively and in accordance with test methods used. Each test report shall contain a standard list of information germane to the individual project, which is not limited to the signed statement by a responsible official of the testing firm, identification of methods, test results, any deviations from the methods and technical discussion of results.

When opinions and interpretations are included, the report writer shall document the basis for such information and should be clearly defined as such. Any amendments to the report, after issued, shall be made only in the form of a further document, which includes the statement: Supplement to the Test Report.

12. Identification and Control of Non-Conforming Work: The identification of non-conforming work originates with performance feedback from various sources including the client, regulating authorities, internal audits and reviews. The testing body shall document this performance feedback and shall have policies and procedures that shall be implemented when any aspect of its testing or calibration work or the results do not conform to its own procedures or the agreed requirement of the client. Corrective actions must be taken within an appropriate time period.

13. Corrective Action: The testing body shall establish a policy and procedure and shall designate appropriate authorities for implementing corrective action, when nonconforming work or departures from the policies and procedures in the quality system or technical operations have been identified.