



Connecticut Department of Environmental Protection
Bureau of Air Management
Source Emissions Monitoring Unit
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SOURCE EMISSIONS MONITORING TEST GUIDELINES

Emission tests are performed in the State of Connecticut for the purposes of (1) determining compliance with air pollution permits and regulations, and (2) for conducting Continuous Emissions Monitoring (CEM) relative accuracy test audits. All emissions testing must be conducted in accordance with procedures prescribed by or acceptable to the Department of Environmental Protection (hereinafter referred to as "Department"). These guidelines are designed to ensure standardization of test requirements, standards regarding test equipment and competence of persons intending to perform emission tests. Failure to follow these guidelines or provide the information required may result in the rejection of the test and/or test program.

The source owner or operator should review all applicable permits, regulations and enforcement orders prior to completing an emission test protocol. Reference test and analysis methods for stack testing and CEM relative accuracy testing are as specified in Title 40, Code of Federal Regulations, Parts 51, 60, 61, 63 and 75. The reference methods and equipment requirements must be strictly complied with, unless otherwise specified and agreed to by the Department.

All Intent-to-Test transmittal forms, test protocols, reports and associated correspondence should be submitted to the Source Emissions Monitoring (SEM) unit at the above address.

Section 1 – Clean Air Act National Stack Testing Guidance

The requirements contained in USEPA's Clean Air Act National Stack Testing Guidance are hereby incorporated by reference. They are available at the following web address:

<http://www.epa.gov/compliance/resources/policies/monitoring/caa/stacktesting.pdf>

Section 2 – Selection of the Measurement Site

Stack Testing

Selection of the measurement site must be in accordance with Reference Method 1 of Title 40, Code of Federal Regulations, Part 60. Plan and elevation drawings of the duct and stack configuration must be submitted to the Department in accordance with the following:

1. For an existing source, drawings must be submitted with the test protocol described below showing the plan and elevation view of the ducting and stack arrangement. The drawings must include the position of all processes or operations venting to the stack or duct to be tested. It must also include the position of the sampling ports relative to the nearest upstream and downstream gas flow directional or duct dimensional change; and
2. For a new or modified source, design drawings as specified above must be submitted to the SEM unit prior to construction (as well as with the test protocol). A representative of the SEM unit may also perform an inspection of the proposed sample port locations during the construction phase.

Relative Accuracy Testing

For relative accuracy testing, the measurement site must be selected in accordance with the applicable relative accuracy test procedures contained in 40 CFR 60, 61, 63 and/or 40 CFR 75 (as may be applicable).

Section 3 – Submittal of Test Protocols

Submission of Test Protocol

An Intent-to-Test Transmittal Form (available at the SEM web address shown below) and Test Protocol must be completed by the tester and received by the SEM unit no less than thirty (30) days prior to the test or as specified by the applicable regulation, permit or enforcement order. A mutually acceptable test date will be determined during the test protocol approval process. **Note that any reference to a proposed test date in the protocol is not considered final until it is scheduled through SEM unit.**

Test Protocol Content

The Emission Test Protocol will be evaluated for its conformance to applicable test methods and process conditions. The protocol must include, at a minimum, the following information:

1. A schematic diagram of each sampling train, including construction materials;
2. The type or types of media to be used to determine each gas stream component;
3. Sample recovery, clean-up methods and solvents to be used (sample recovery procedures must be performed on-site);
4. A sample of all field data sheets to be used during the test;
5. Sampling area description:
 - a. Stack configuration;
 - b. Sampling port locations; and
 - c. Sampling point locations for each port.
6. A written description of process operations and monitoring to include, but not be limited to, the descriptions of the following:
 - a. Material usage and associated recordkeeping;
 - b. Throughput rates and monitoring (e.g., feed, fuel flow and steam flow rates);
 - c. Maximum Rated Capacity (MRC) of equipment and parameters to be monitored to show MRC;
 - d. Typical (and, if necessary, historical) operating levels; and
 - e. Control equipment operation and monitoring (as applicable).
7. A description of each test method to be used;
8. Quality assurance/quality control procedures; and
9. Samples of calculations.

Section 4 – Process Operating Conditions

Stack Testing

Emission values obtained from any test program may be considered valid only for the process operating conditions existing during testing. In general, the source must be operated at or above ninety percent (90%) of maximum capacity during emissions testing. Operation of equipment at rates differing from those existing during testing may place the equipment in violation.

It is recognized, however, that there are specific processes that may warrant testing at less than 90% of maximum capacity (e.g., a process with a control or removal efficiency of a specified pollutant, in which lower inlet loading to a control device may result in worst case operating conditions). Therefore, on a

case-by-case basis, the Department may approve emission tests conducted at less than 90% of maximum capacity, provided a sufficient justification for a different testing condition is submitted with the test protocol. See USEPA's Clean Air Act National Stack Testing Guidance for further discussion on representative testing conditions.

Relative Accuracy Testing

For relative accuracy testing, the process operating level must be as specified in 40 CFR 60, 61, 63 and/or 40 CFR 75 (as may be applicable).

Section 5 – Test Observations

Department representatives may audit the field test procedures and process operation during testing. At a minimum, the following information will need to be supplied during each test program:

1. Prior to testing, calibration data as specified by the applicable test methods must be submitted to the Department representative auditing the test. Frequency of calibration must be as specified by the appropriate test methods;
2. During field testing, the Department's representative may collect copies of test data sheets and process documentation; and
3. Based upon availability, EPA audit samples will be supplied by SEM unit staff for analysis along with collected field samples. Failure to meet audit criteria will result in rejection of test results.

Section 6 – Submittal of Test Reports

Report Submittal Deadlines

Unless a more stringent requirement is specified in an applicable regulation, permit or enforcement order, the following report submittal deadlines shall apply:

Regulation	Report Submittal Deadline
Title 40 of the Code of Federal Regulations, Part 60 (40 CFR 60) – New Source Performance Standards	Within 180 days after the initial startup date or within 60 days after reaching maximum production rate (ref. 40 CFR 60.8(a))
Title 40 of the Code of Federal Regulations, Part 61 (40 CFR 61) – National Emission Standards for Hazardous Air Pollutants	Within 31 days after completion of the test (ref. 40 CFR 61.13(f))
Title 40 of the Code of Federal Regulations, Part 63 (40 CFR 63) – Maximum Achievable Control Technology	Within 60 days after the test is completed unless another time frame is specified in the applicable subpart (ref. 40 CFR 63.9(h)(2)(i)(G))
Nitrogen Oxides (NO _x) RACT (ref. R.C.S.A. 22a-174-22)	Within 30 days after emission tests are conducted (ref. 22a-174-22(l)(2) of the R.C.S.A.)
Municipal Waste Combustor (MWC) Regulations (ref. R.C.S.A. 22a-174-38)	Within 60 days after tests are conducted
Sewage Sludge Incinerators (ref. 22a-191a(b) of the Connecticut General Statutes)	Within 60 days after tests are conducted
Routine testing pursuant to any New Source Review (NSR) permit	Within 60 days after tests are conducted
Initial Relative Accuracy Test Audit	Deadlines are specified in applicable permit or regulation
Ongoing Relative Accuracy Test Audit	Within 30 days following the close of the calendar quarter in which the test is conducted

Test Report Content

The test report must include, at a minimum, the following information:

1. Summary of the test program;
2. Key personnel involved in the test program;
3. Description of the process and operation (include schematic diagrams where applicable);
4. Description of the control equipment (include schematic diagrams where applicable);
5. Description of the flue gas sampling locations (with schematic diagrams where applicable);
6. Description of process sampling locations/ procedures (with schematic diagrams where applicable);
7. Test objectives and matrix;
8. Description of any test changes (i.e., deviations from the test protocol) and/ or problems encountered;
9. Test results and emission limitations in tabular form including averages. The units of measurement must be consistent with units in the applicable permit, regulation or enforcement order;
10. A photocopy of all actual field data sheets used during the test. If any field data sheets are illegible, legible transcribed copies must also be included;
11. A sample of all formulas used in calculating results;
12. Copies of all pre and post calibration data;
13. Quality assurance/ quality control documentation;
14. Process data (including percent of MRC) in tabular form averaged over each test period; and
15. Laboratory data sheets and laboratory QA/QC.

Helpful Source Testing Web Links

1. SEM Web Address (CT-DEP):
http://www.ct.gov/dep/cwp/view.asp?a=2684&q=322076&depNav_GID=1619
2. Emission Measurement Center (EPA):
<http://www.epa.gov/ttn/emc/>
3. Code of Federal Regulations (E-CFR):
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?&c=ecfr&tpl=/ecfrbrowse/Title40/40tab_02.tpl
4. DEP Source Monitoring Regulations
<http://www.ct.gov/dep/lib/dep/air/regulations/mainregs/sec4.pdf>
5. DEP Stack Testing Regulations
<http://www.ct.gov/dep/lib/dep/air/regulations/mainregs/sec5.pdf>