



**North Dakota Department of Health  
Division of Air Quality  
Emission Testing Guideline**

**A. General:**

Emission testing is required to determine the types and amounts of air pollutants emitted by a variety of emission units in the State of North Dakota. Information gathered from emission testing may be used for several purposes including: enforcing emission limits, issuing permits, evaluating pollution control systems, determining emission inventories, and assessing permit fees.

The purpose of this guideline is to set forth the requirements of a proper test plan and to ensure that test results yield data which are representative, consistent and accurate relative to the tested emission unit(s).

**B. Emission Testing – Planning, Conducting and Reporting:**

The elements of a successful test program include the following:

- Submittal of a proposed test plan
- Department review of the plan
- Pretest meeting with the Department
- Department observer on-site during testing
- Facility operations and testing
- Submittal of a complete test report

Acceptance of emission testing information by the Department is dependent on the facility following the requirements as outlined below. Each requirement should be studied carefully to avoid invalidation of the test by the Department.

**1. Submittal of a Proposed Test Plan**

A proposed emission test plan must be submitted for each emission unit test at least thirty (30) calendar days in advance of the test date unless otherwise specified by the Department, or by rule (such as 40 CFR Part 63 which requires a 60-day notice). If this schedule cannot be met, the Department should be contacted as soon as possible to work out an agreeable schedule. When preparing a proposed test plan, the format shown in Appendix A should be followed. If any modifications to the accepted or approved plan are to be made, the Department must be notified at least five (5) days prior to the test date.

Prior to submitting the plan, careful consideration must be given to the following:

- a. Failure to give proper notification(s) may result in testing which cannot be accepted as valid by the Department.
- b. The Department generally requires that all testing be conducted in accordance with methodology promulgated by the Environmental Protection Agency (EPA) in the Code of Federal Regulations. The proposed test plan must clearly identify the test method(s) and include detailed discussion concerning any deviations from the EPA reference methods or other approved procedures if such deviations exist.
- c. If a federal regulation is the basis of an emission limit, the specific regulation(s) should be checked before selecting the test method(s). Federal regulations may include a New Source Performance Standard (NSPS), a National Emission Standard for Hazardous Air Pollutants (NESHAP) or a National Emission Standard for Hazardous Air Pollutants for Source Categories (MACT Standard). Emission units subject to a federal regulation must be tested in accordance with EPA methods, sampling times and volumes, and other conditions specified by the regulation.
- d. A Permit to Construct or a Permit to Operate may include site-specific test methods and/or test procedures. The proposed test plan must follow all requirements of the applicable permit unless deviations are approved in advance by the Department.

2. Department Review of the Proposed Test Plan

Upon receipt of the proposed test plan, the Department will review the plan for completeness and compliance with specific requirements in permits, regulations, etc. The facility will be contacted as soon as practical if any problems are noted so that they may be resolved prior to testing. Unless advised otherwise, the facility may assume that no changes or modifications will be necessary.

3. Pretest Meeting With the Department

A pretest meeting shall be held if requested by the Department or by the facility. Submittal of a complete proposed test plan and use of test methodology in accordance with EPA reference methods generally alleviates the need for a pretest meeting unless special conditions or circumstances so warrant.

4. Department Observer On-Site During Testing

The Department must be afforded the opportunity to observe any emission testing in the State of North Dakota that is conducted for compliance purposes. Accordingly, the Department must be notified of any changes in test methodology, test dates, or test times in accordance with the requirements in this guideline. If the Department is unable to observe a test due to improper notification by the facility, the test results may be rejected.

5. Facility Operations and Testing

All facility operations and testing must be conducted in accordance with the accepted test plan. Any unforeseen changes due to such things as plant operations or weather must be discussed with the Department. Failure to operate the emission unit or to conduct testing in accordance with the accepted test plan could result in the Department rejecting the test.

Generally, testing must be conducted during emission unit operations where maximum emissions may be expected. This means that testing is to be conducted while operating the emission unit at a level that is at least 90% of design capacity, or at least 90% of the maximum operating rate/level, whichever is greater. Failure to test at the appropriate rate, level, or condition may result in additional restrictions being placed on the emission unit by the Department; this could include a de-rating of the emission unit. Exceptions to the 90% minimum level exist in situations where a relative accuracy test audit (RATA) is conducted on the continuous emission monitoring equipment; during a RATA the minimum acceptable operational level is 50% of capacity.

Testing procedures must follow the applicable reference methods published by the EPA in the Code of Federal Regulations under 40 CFR Parts 51 60, 61 and 63. Specific approval by the Department is necessary for proposed test procedures which include deviations from EPA reference methods or for alternative testing methods.

6. Submittal of a Complete Test Report

An emission test report must be submitted to the Department within sixty (60) days of completion of the test unless otherwise approved by the Department. The report may incorporate, by reference, any material previously submitted to the Department which is part of the accepted test plan, or in subsequent correspondence with the Department. The Department will review the report and will notify the facility of any problems with the report. A suggested report format, including a listing of the minimum data requirements, is shown in Appendix B.

**C. Test Invalidation Criteria:**

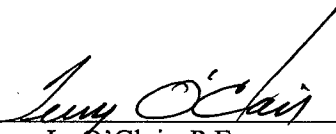
An emission test for compliance purposes must be validated by the Department prior to acceptance of the test results. A test report may be invalidated or rejected by the Department on the basis of irregularities observed on-site or noted during the test report review. The most common test invalidation criteria include, but are not limited to, the following:

1. Testing and/or Sampling Errors

- a. Sampling procedures that do not conform to test method requirements unless approved in advance by the Department.
- b. Isokinetic sampling rate out of acceptable range

- c. Procedures or items of equipment that do not conform to the test method requirements
  - d. Samples collected during non-representative process operating conditions
  - e. Zero and upscale calibration values exceed the sampling system bias specification stated in an instrumental analyzer method
  - f. A measured gas concentration that exceeds the measurement range of the analyzer (i.e., the analyzer is pegged) at any time during a test run
  - g. Excessive post-test leak rate
2. Major Sample Loss or Alteration
- a. Spillage of sample
  - b. Loss of filter integrity (holes or tears)
  - c. Events or procedures that cause sample loss
  - d. Sample contamination
3. Analysis Errors
- a. Reagents, procedures, or analysis techniques that do not conform to the test method requirements
  - b. Improper formulas for calculating results
  - c. Missing pages in report

Date: 2/9/09

Approved by:   
Terry L. O'Clair, P.E.  
Director  
Division of Air Quality

Attachments:  
Appendix A  
Appendix B

**APPENDIX A**

**Test Plan Format for Emission Unit Testing  
In North Dakota**

## Emission Unit Test Plan

**A. General Information:**

Facility Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Location: \_\_\_\_\_

Type: \_\_\_\_\_ Permit to Operate No. \_\_\_\_\_

Name of Contact Person: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_ Email: (optional) \_\_\_\_\_

Emission Unit Name and Identification Number: \_\_\_\_\_

Startup Date (if emission unit is new): \_\_\_\_\_

Proposed Test Date: \_\_\_\_\_

**B. Testing Firm Information:**

Firm Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Name of Contact Person: \_\_\_\_\_

Title: \_\_\_\_\_ Telephone No.: \_\_\_\_\_

**C. Emission Test Information:**

List all pollutants to be sampled.

	Pollutant	EPA Reference Method	No. of Test Runs	No. of Sampling Points	Total Time per Test Run
1					
2					
3					
4					
5					

Include information on the sampling train, laboratory analysis, process operation, safety considerations, and samples of the data sheets that will be used.

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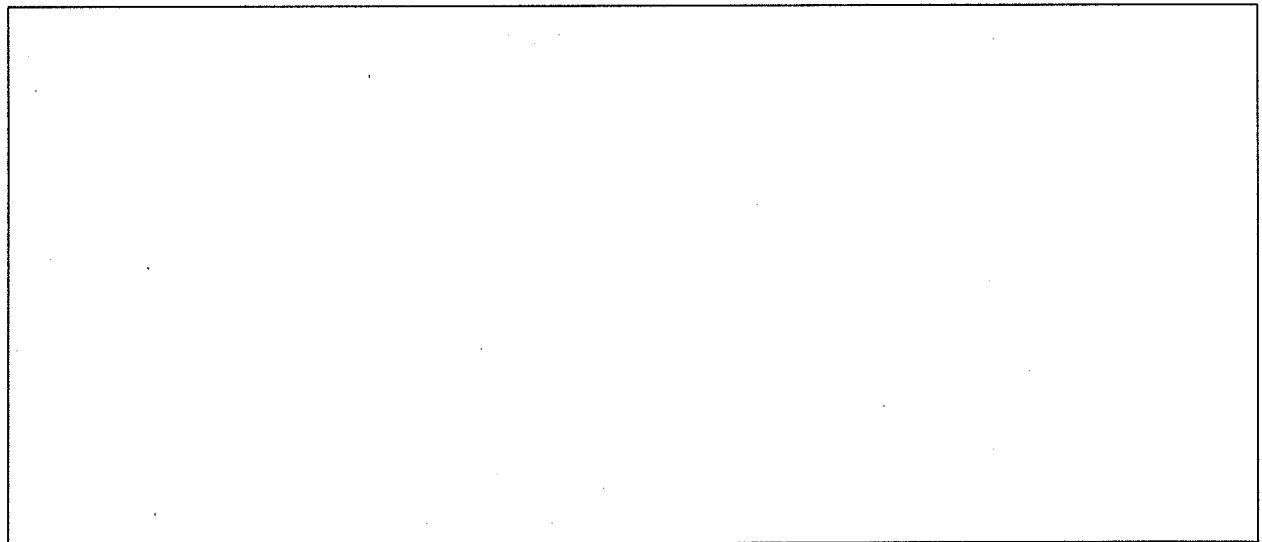
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**D. Stack or Emission Point Information:**

Dimensions at Testing Location: \_\_\_\_\_

Estimated Temperature: \_\_\_\_\_ Estimated Moisture Content: \_\_\_\_\_

Attach a sketch of the stack or duct showing port locations relative to upstream and downstream flow disturbances.



**E. Proposed Emission Unit Operation During Test:**

Operating Rate: \_\_\_\_\_ % of Capacity: \_\_\_\_\_

Name and Title of Person Responsible for Collecting Process and Pollution Control Equipment Data: \_\_\_\_\_

**F. Comments:**

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Submit the test plan to:  
  
North Dakota Department of Health  
Division of Air Quality  
918 E. Divide Avenue, 2<sup>nd</sup> Floor  
Bismarck, ND 58501-1947

Telephone: 701-328-5188  
Fax: 701-328-5185

**APPENDIX B**

**Emission Test Report Format**

## **Emission Test Report Format**

**A. Cover Page:**

Indicate the name and location of the facility, the specific emission unit(s) tested (including unit identification and/or serial number when applicable), the name and address of the testing firm (or agency), and the date of the test.

**B. Certification:**

Include a certification by the test team leader who is responsible for the test data, and a certification by the reviewer of the test report (normally the supervisor of the team leader) attesting to the authenticity and accuracy of the report.

**C. Table of Contents:**

Self explanatory

**D. Introduction:**

Pertinent background information is presented here, but is not limited to the following:

1. Name, address/location, and owner of the facility
2. Purpose of the test
3. Test date(s)
4. Pollutant(s) tested
5. Name and address of testing firm
6. Names of persons present during testing (facility, industry and Department)
7. Any other relevant background information

**E. Summary of Test Results:**

This section should include, but not be limited to the following items:

1. Emission results in the same units as the applicable emission limit(s) or standard
2. Allowable emissions
3. Summary of key parameters such as date/time of test runs, stack gas velocity and flow rate, stack temperature, moisture content, CO/O<sub>2</sub>/CO<sub>2</sub> gas composition; and isokinetic variation, pollutant gas concentration, and particulate concentration when applicable.
4. Description of collected samples
5. Discussion of any errors or deviations in testing

**F. Emission Unit Operations During Testing:**

This section describes the emission unit and includes, at least, the following items:

1. General description of the emission unit, including associated air pollution control equipment
2. Process and control equipment flow diagram
3. Presentation of the operations and process data and a determination of whether these conditions were representative of those required for testing
4. Changes in operating conditions from those previously agreed upon by the facility and the Department

**G. Sampling and Analytical Procedures:**

A description of the sampling and analytical methods should be presented in this section. The information shall include, but not be limited to the following items:

1. Description of sampling location(s) and sampling points
2. Schematic drawings showing sampling location(s), major and minor flow disturbances, and stack or duct cross section(s) with dimensions indicated
3. Description of sampling equipment
4. Schematic drawings of sampling trains (may be included in an appendix)
5. Description of sampling procedures and run times, with a discussion of any deviations\* from the standard test method(s), and a justification of the deviations
6. Description of the analytical procedures, with a discussion of any deviations\* from the standard methods
7. Description of the methods employed for other types of sampling and analyses, such as fuel

\* All deviations from the Reference Method procedures must be explained fully (i.e., failure to maintain required temperature in the sampling train, improper calibration gas, shorter run time, etc.). The explanation must include an analysis of how the deviation may have affected the test result(s).

**H. Quality Assurance:**

This section shall include, but not be limited to the following items:

1. Equipment calibration data sheets for dry gas meters, pitot tubes, probe nozzles and magnehelic gauges, etc.
2. Calibration gas certification data sheets, if applicable
3. Impinger solution blanks, if required
4. Acetone and water residue blanks, if required
5. Instrument linearity data
6. NO<sub>x</sub> analyzer (NO<sub>2</sub> to NO) converter performance test
7. Instrument analyzer calibration error and response time results

8. Sampling system bias and drift results
9. Results of EPA Quality Assurance Audit samples, if applicable

**I. Laboratory Reports:**

Include the following if applicable:

1. Photocopies of original data sheets
2. Chain of custody data sheets
3. Analytical methods description
4. Laboratory QA/QC including impinger, acetone and water residue blanks
5. Laboratory statement of qualifications

**J. Methods and Calculations:**

This section shall include, but not be limited to the following items:

1. Equations used match those in the applicable test method
2. Complete set of step-by-step example calculations for at least one test run
3. Description of deviations from applicable calculations or test methods

**K. Appendices:**

Reports may include an appendix for any section listed above, or as appropriate for the following items:

1. A summary of all data used in the calculations
2. Copies of all raw field data sheets; sheets must be legible
3. Process/production data signed by a plant official if provided by the facility
4. Chain-of-custody procedures utilized and chain-of-custody forms
5. Any other information necessary to assist the Department in making a compliance determination