

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

FIELD OPERATIONS MANUAL FOR AIR INSPECTORS
Air Standard Operating Procedures (ASOPs)

ASOP-8
PARTICULATE TESTING: ROLE OF AGENCY OBSERVER

I. PURPOSE:

The purpose of this section is to aid regional personnel in the observation of particulate stack testing, to evaluate the compliance status of the source operation with applicable environmental regulations, and to determine the efficiency of the air pollution control apparatus.

II. PRETEST PREPARATION:

It is imperative that agency personnel familiarize themselves with the regulatory requirements for compliance and emissions testing, as well as the methodology and nomenclature of the reference tests.

A. REGULATIONS

The Commonwealth of Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution (SAPCB), specify compliance and emissions testing for **existing facilities** under **9 VAC 5-40-20 & 9 VAC 5-40-30**, and compliance and performance testing of **new or modified facilities** under **9 VAC 5-50-20 & 9 VAC 5-50-30** respectively. Individual particulate emission rate standards may be found in the applicable sections of SAPCB regulations.

The Environmental Protection Agency Code of Federal Regulations 40 CFR part 60 (40 CFR 60), identifies those sources subject to the New Source Performance Standards (NSPS) and the requirements for performance testing under section **§ 60.8 and 60.11**. Individual particulate emission rate standards may be found in the applicable subparts.

The approved, reference test methods may also be found in 40 CFR 60 **Appendix A**. For particulate emissions testing, agency personnel should read and understand **Methods 1-5** prior to observing the test. Also, if applicable, agency personnel should be familiar with 40 CFR 51, Appendix M, Methods 201 and 202.

Agency observers should also familiarize themselves with the operations of the facility being tested, and all SAPCB permits which pertain to the unit, or units, being tested.

B. TEST PROTOCOL

The agency normally requires that **30 days** prior to conducting the compliance test the facility or consultant test team submit, to the agency, a test protocol for approval. This requirement may already be specified in the SAPCB permit for the facility. The test protocol should include the following:

1. Source information
2. Test firm information
3. Gas stream information
4. Testing and analytical procedures to be used:
 - a. identification of pollutants to be sampled
 - b. number of sampling points for each pollutant
 - c. total time per test
 - d. number of runs
 - e. the testing/analytical methodologies to be used for each pollutant
 - f. cyclonic flow checks, if necessary
5. Sampling and process monitoring data sheets to be used.
6. Description of process operation:
 - a. process flow sheet
 - b. maximum rated capacity
 - c. data to be monitored and recorded during testing to ensure representative operations
 - e. normal process operation in a 24-hour period
 - f. feedstock composition that tend to cause greatest emissions and percentage of annual production using this material

- g. normal maintenance schedule
7. Description of emission control operation:
- a. type and manufacturer of control equipment
 - b. data to be monitored and recorded to ensure representative operation during testing
 - c. minimum acceptable values of all control device parameters (i.e., flow and pressure of liquids, voltage and amperage of electrical input, normal cleaning cycle, etc.)
 - d. normal maintenance schedule on control equipment

C. PRETEST MEETING/DISCUSSION

After review of the test protocol, a pretest meeting or discussion may be arranged for all parties involved in the performance test.

The regulatory agency
The affected facility
The test consultant

1. The first item of business is to establish official lines of communication, and designating the responsible person to be contacted from each of the organizations involved.
2. The next item to be discussed are plant entry and safety requirements, acceptability of sampling sites, and changes or modifications to the testing methodology.

3. PLANT REQUIREMENTS

- a. Safety - any required safety equipment needed by visitors in the plant should be specified at this time along with who will provide the equipment. Any mandatory safety briefings should also be mentioned and scheduled if possible.
- b. Entrance - which gate should be used for entry and exit? How will the passes be handled? Will new passes be required each day?

- c. Other - any special conditions etc. that everyone should be aware of.
- d. Sampling methodology to be used - any changes or additions to the testing methodology should be noted here and resolved.
- e. During this time, confidentiality of data can be discussed. The agency can outline its procedures for handling any data that is labeled confidential. The affected facility can also specify any special handling of process and other data that is supplied for the test report.
- f. An agreement on facility operations is the next item to be discussed. This will cover both process and control equipment operation during the test. The agency normally requires that the unit being tested operate at a minimum of **80 % of maximum rated capacity**. Operating rate during testing, however, may vary on a case-by-case basis, depending upon whether or not a straight line relationship between operating rate and emissions is expected.

4. PROCESS

- a. Maximum process rate/capacity (and what parameters indicate that the process is operating within the agreed-upon range during the test)
- b. Method of process weight or rate determination
 - 1. calibration of scales
 - 2. variability of computer program to tabulate short time periods
- c. Process parameters to be monitored and recorded and their acceptable limits to document process operation
- d. Raw material feed and/or fuel
- e. Normal operating cycle or procedures
- f. The portion of the operating cycle that will be represented by each run

5. CONTROL EQUIPMENT

- a. Control equipment and effluent parameters to be monitored and recorded
- b. Normal operating cycle
- c. Normal maintenance schedule
- d. Manner in which control equipment will be operated

III. TEST PROGRAM OBSERVATION

- A. Upon entry to the affected facility the observer should, in accordance with all established DEQ safety policies and procedures:
 1. Ensure that all necessary process and control device monitoring instrumentation have been calibrated and are actually recording operational data
 2. Ensure that the process is being operated at the agreed upon conditions
- B. The observer should then go to the test site and:
 1. Collect all sampling train calibration data
 2. Request to check the dry gas metering system calibration value
 3. Observe the test team perform a check for the presence of cyclonic flow (optional)
 4. Inspect the probe nozzle for roundness and for damage to the tapered edge, such as nicks, dents, and burrs
 5. Visually inspect the pitot-tube for face opening misalignment

6. Ensure that the pitot-tube and sampling nozzle configuration is such that aerodynamic interference shall not occur
7. Ensure that the manometer is level and zeroed
8. Request a leak check of the pitot-tube assembly:
 - a. Blow through the impact opening until at least 3 inches H₂O pressure drop is registered on the manometer
 - b. Close off the impact opening
 - c. The pressure must remain stable for at least 15 seconds
 - d. Do the same for the other pitot-tube opening, except use suction to obtain the 3 inches H₂O pressure drop
9. Request a leak check of the sampling train (pre-test leak check recommended, not required):
 - a. Turn on the system and set the filter and probe heating system at their desired temperatures
 - b. Allow time for the temperatures to stabilize
 - c. Plug the nozzle and pull a 15 inch Hg vacuum (or highest vacuum pulled during test if less than 15 inches)
 - d. The leak rate cannot be in excess of 0.02 cfm (or 4% of average sampling rate during test)

IV. RESPONSIBILITIES OF THE TEST OBSERVER

- A. Specify all requirements prior to test commencement:
 1. Process (operation, monitoring)
 2. Air pollution control devices (operation, monitoring)
 3. Test Methodology (sampling, analysis)
- B. During the test program determine:
 1. Representativeness of the process operation
 2. Representativeness of the APCD operation
 3. Adequacy of process and APCD monitoring data
 4. Acceptability of actual sampling, sample recovery and analytical procedures
- C. Summarize notes and observations in report for permanent record

- D. Review the test report for completeness and accuracy
- E. Determine compliance status of source operation by comparing test results with regulatory limits and other decision making factors

V. BEHAVIOR OF THE OBSERVER

- A. Work cooperatively with the facility and consultants
- B. Be specific and forthright with requests
- C. Be respectful of positions of other parties
- D. Strive to achieve all program objectives
- E. Don't adjust process/APCD controls or recorders
- F. Don't touch or adjust testing/analytical equipment
- G. Don't interfere with the test team during critical periods
- H. Don't conceal unacceptable acts or procedures to later use as justification to reject the test program

VI. LEGAL USE OF TEST DATA

Every performance test must be conducted as if it is ultimately to be used as evidence in court. It is therefore imperative that source sampling and analyses be done following standard methodologies, and that all procedures be well documented.

In attacking the validity of source sampling results, the adverse party will concentrate on four main items relative to the test program:

- A. Sampling and analytical procedures: Deviations from EPA Reference Method procedures must be kept to a minimum and applied only where absolutely necessary to obtain an accurate sample. Changes in methodology must be based on sound engineering judgment and must be documented. In addition, any

modifications to the testing procedures must be submitted to the regulatory agency for concurrence prior to commencement of the test program.

- B. Recorded data and calculations: Close scrutiny is focused upon the recorded field data since these form part of the physical evidence, and, therefore, is subject to the requirement of The Rules of Evidence. Standardized forms, as developed and/or directed by supervisor, should be used to ensure that there is no lack of necessary information. During the test program, all data should be recorded in the provided spaces immediately upon observation. These data determine the accuracy of the test and cannot be erased or altered. Any errors should be crossed out with a single line, and the correct value recorded above the crossed-out number.

- C. Appropriateness and adequacy of test equipment: Process-measuring equipment includes any relevant monitoring device through which process operational data is obtained. This can include scales for weighing fuel or raw materials, orifices and differential pressure units for measuring flow rates, thermocouples for the measurement of gas temperature, and continuous emission monitoring devices. Because proper maintenance and calibration is often lacking, it can never be assumed that these devices provide accurate and precise results. Prior to commencement of the test program, all relevant process monitoring equipment must be calibrated and documented as such. The maintenance and calibration of gas-sampling equipment is subject to an even greater scrutiny in court. Thus, detailed written maintenance records must be kept.