

Appendix F

APPENDIX F

FIELD PROCEDURES USED IN COLLECTION AND RECOVERY OF SAMPLES

A. WATER TRAIN PER EPA METHOD 4

PRE TEST PROCEDURES

- a. Add 100 ml. deionized-distilled water to each of the first 2 impingers of the train.
- b. Interconnect the four impingers with pre-cut 16-inch lengths of vinyl tubing.
- c. Weigh desiccator unit and record weight.
- d. Attach desiccator unit to last impinger of the train.
- e. Add water and ice to impinger case.
- f. Connect vinyl line between desiccator unit and umbilical line.
- g. Connect stainless steel probe to first impinger with suitable vinyl tubing.
- h. Leak check assembled train.
- i. Sample at 0.75 CFM for 15 minutes.

POST TEST PROCEDURES

- a. Remove impinger train from test assembly.
- b. Disconnect vinyl tubing from impingers.
- c. Measure the condensate collected in all four impingers in a graduated cylinder and record net amount collected.
- d. Disconnect desiccator unit. Weigh and record net weight increase.

B. PARTICULATE TRAIN PER EPA METHOD 5

PRE TEST PROCEDURES

- a. Add 100 ml. deionized-distilled water to each of the first two impingers of each train.
- b. Interconnect the four impingers of each train with pre-cut 16-inch lengths of vinyl tubing.
- c. Weigh desiccator unit, and record weight.
- d. Attach desiccator unit to last impinger of the train.
- e. Add water and ice to impinger case.
- f. Connect vinyl line between desiccator unit and umbilical line.
- g. Select filter assembly and record filter disc serial number for each run.
- h. Select sampling probe. Record pitot tube number and C_p factor. Attach nozzle to probe.
- i. Insert filter assembly in filter heater box and attach both to sampling probe.
- j. Attach Teflon-lined vinyl tubing between filter assembly and first impinger of train.
- k. Attach pigtail to umbilical connector and filter box.
- l. Leak check completed train assembly.

POST TEST PROCEDURES

- a. Leak check train assembly on completion of test run.
- b. Disconnect desiccator unit, reweigh and record net weight increase.
- c. Remove nozzle from sample probe and rinse with acetone or deionized-distilled water. Collect rinsings in a mason jar.
- d. Rinse probe with acetone or deionized water. Collect rinsings in a mason jar.
- e. Run probe cleaning brush through sample probe.
- f. Rinse brush and re-rinse probe with acetone or deionized-distilled water. Repeat until clean. Collect rinsings in a mason jar.

- g. Record test run serial number on mason jars.
- h. Rinse Teflon-lined vinyl tubing with methylene chloride and collect rinsings in a mason jar separate from probe rinsings. Record test run serial number on jar.
- i. Remove filter assembly from heater box and return to filter carrying case.

C. CO₂, O₂, AND CO GRAB SAMPLES PER EPA METHOD 3

- 1. Identify each scotch-pak bag with test run serial number.
- 2. Connect Teflon-lined flex hose to stainless steel probe.
- 3. Attach free end of flex hose to condense.
- 4. Connect condenser to vacuum side or pump with ¼" O.D. Teflon tubing.
- 5. Connect Teflon line between vacuum pump and sample bag.
- 6. After purging sample lines with sample gas, connect bag and fill until 2/3 full.

D. NO_x GRAB SAMPLES PER EPA METHOD 7

PRE TEST PROCEDURES

- a. Identify each 2-liter flask with test run serial number.
- b. Mix absorbing solution – 6 ml. of 3.0% H₂O₂ to 1 liter of H₂SO₄ solution.
- c. Pipette 25 ml. of absorbing solution into each flask.
- d. Evacuate each flask and turn flask valve to purge position.
- e. Using same test setup as in Section C, connect flask between condenser and the vacuum pump.
- f. After allowing system to purge, open flask valve to sampling line to draw in sample.

POST TEST PROCEDURES

- a. Turn flask valve to purge position.
- b. Disconnect flask from sample line and shake flask for 5 minutes, then place in carrying box.

E. SO₂ TRAIN PER EPA METHOD 6

PRE TEST PROCEDURES

- a. Mix an 80% solution of isopropanol.
- b. Dilute 30% H₂O₂ to 3.0% by adding deionized distilled water, 1:9.
- c. Add 15 ml. of 80% isopropanol to the midget bubbler of each train.
- d. Add 15 ml. of 3.0% H₂O₂ to the second and third impinger of each train.
- e. Interconnect the one bubbler and four impingers with glass connectors.
- f. Connect single desiccator unit to the last impinger of each train.
- g. Connect probe with sampling line to bubbler.
- h. Add ice and water to midget impinger case.
- i. Connect the desiccator unit to stack-sampler console with an appropriate length of 3/8 inch vinyl tubing.
- j. Leak check completed assembly.

POST TEST PROCEDURE

- a. Disconnect probe and sample line from impinger train. Attach an MSA filter cartridge to bubble and purge train for 15 minutes.
- b. Disconnect impinger train after purging.
- c. Discard contents of midget bubbler and first impinger.
- d. Collect contents of midget impingers in prescription bottles.

- e. Rinse each impinger and connecting tubes with deionized-distilled water and add rinsings to sample bottle.
- f. Seal bottle and label with test run serial number.

F. HYDROCARBON GRAB SAMPLES

- 1. Identify each double-ended flask with test run serial number.
- 2. Using same test setup as Section C, connect flask between the condenser and the vacuum pump.
- 3. Open both flask valves, and purge the flask with sample gas for 2 minutes.
- 4. After purging, close the downstream valve first, then close the upstream valve trapping the sample in the flask.