§ 53.58 Operational field precision and blank test.

(a) Overview. This test is intended to determine the operational precision of the candidate sampler during a minimum of 10 days of field operation, using three collocated test samplers. Measurements of PM are made at a test site with all of the samplers and then compared to determine replicate precision. Candidate sequential samplers are also subject to a test for possible deposition of particulate matter on inactive filters during a period of storage in the sampler. This procedure is applicable to both reference and equivalent methods. In the case of equivalent methods, this test may be combined and conducted concurrently with the comparability test for equivalent methods (described in subpart C of this part), using three reference method samplers collocated with three candidate equivalent method samplers and meeting the applicable site and other requirements of subpart C of this part.

(b) Technical definition. (1) Field precision is defined as the standard deviation or relative standard deviation of a set of PM measurements obtained concurrently with three or more collocated samplers in actual ambient air field operation.

(2) Storage deposition is defined as the mass of material inadvertently deposited on a sample filter that is stored in a sequential sampler either prior to or subsequent to the active sample collection period.

(c) Test site. Any outdoor test site having PM$_{2.5}$ (or PM$_{10-2.5}$, as applicable) concentrations that are reasonably uniform over the test area and that meet the minimum level requirement of paragraph (g)(2) of this section is acceptable for this test.

(d) Required facilities and equipment. (1) An appropriate test site and suitable electrical power to accommodate three test samplers are required.

(2) Teflon sample filters, as specified in section 6 of 40 CFR part 50, appendix L, conditioned and preweighed as required by section 8 of 40 CFR part 50, appendix L, as needed for the test samples.

(e) Test setup. (1) Three identical test samplers shall be installed at the test site in their normal configuration for collecting PM samples in accordance with the instructions in the associated manual referred to in §53.4(b)(3) and also in accordance with applicable supplemental guidance provided in reference 3 in appendix A of this subpart. The test samplers’ inlet openings shall be located at the same height above ground and between 2 (1 for samplers with flow rates less than 200 L/min.) and 4 meters apart horizontally. The samplers shall be arranged or oriented in a manner that will minimize the spatial and wind directional effects on sample collection of one sampler on any other sampler.

(2) Each test sampler shall be successfully leak checked, calibrated, and set up for normal operation in accordance with the instruction manual and with any applicable supplemental guidance provided in reference 3 in appendix A of this subpart.

(f) Test procedure. (1) Install a conditioned, preweighed filter in each test sampler and otherwise prepare each sampler for normal sample collection. Set identical sample collection start and stop times for each sampler. For sequential samplers, install a conditioned, preweighed specified filter in each available channel or station intended for automatic sequential sample filter collection (or at least five additional filters for magazine-type sequential samplers), as directed by the sampler’s operation or instruction manual. Since the inactive sequential channels are used for the storage deposition part of the test, they may not be used to collect the active PM test samples.
§ 53.59 Aerosol transport test for Class I equivalent method samplers.

(a) Overview. This test is intended to verify adequate aerosol transport through any modified or air flow splitting components that may be used in a Class I candidate equivalent method sampler such as may be necessary to achieve sequential sampling capability. This test is applicable to all Class I candidate samplers in which the aerosol flow path (the flow path through which sample air passes upstream of sample collection filter) differs significantly from that specified for reference method samplers as specified in 40 CFR...