



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK NC 27711

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Approval of SCAQMD Method 205.1 as Alternative to Method 306 Required by 40 CFR Part 63, Subpart N

FROM: For William F. Hunt, Jr. *William F. Hunt, Jr.*
Director, Emissions, Monitoring, and
Analysis Division (MD-14)

TO: Andrew Steckel, Chief
Rulemaking Office, Air Division
Region IX (AIR-4)

Over the past year, we have received several inquiries regarding the use of South Coast Air Quality Management District (SCAQMD) Method 205.1 as an alternative to Method 306, which is required by the National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks ("Chrome Plating NESHAP") (40 CFR Part 63, subpart N). In discussions with Region IX staff, we discovered that a preliminary review of Method 205.1 as an alternative to Method 306 had been conducted by a former employee of the Emission Measurement Center, but that review was never formalized according to the alternative method approval authority delegated under Delegation 7-121. This memo properly approves Method 205.1 with limitations as explained later.

In addition, at the request of Region IX, we have reviewed over 15 chromium electroplating performance test reports from California sources to determine whether they meet the requirements of §63.344(b) of subpart N. This paragraph provides that a source may use the results of testing conducted for a State operating permit to meet the performance testing

requirements of subpart N, provided the specified criteria are met. Many of the test programs described in the reports reviewed utilized SCAQMD Method 205.1 for sampling and analysis; Method 205.1 must be approved as an alternative method before the performance test results may be used to demonstrate compliance under §63.344(b).

We have again reviewed the August 1991 version of Method 205.1 which is designed to determine both hexavalent chromium and total chromium emissions from chrome plating and anodizing equipment using an impinger-type sampling train to sample isokinetically. Collected samples are analyzed for total chromium by flame atomic absorption spectroscopy, and hexavalent chromium by either visible range spectrophotometer by the diphenylcarbazide method or ion chromatography with a post-column reaction.

Method 205.1 is very similar to Method 306 with the following exceptions: (1) a Teflon filter is included in the Method 205.1 sampling train following the sampling impingers; (2) Method 205.1 utilizes 0.02N NaHCO₃ in the impingers rather than 0.1N NaHCO₃ or 0.1N NaOH; and (3) the recovered Method 205.1 samples are adjusted to a pH between 7 and 8, using acid as opposed to the Method 306 requirement that samples recovered for analysis of hexavalent chromium must have a pH above 8 or 8.5 depending on the impinger reagent.

Use of the Teflon filter is a minor modification that will not affect the sample results. The use of 0.02N NaHCO₃ in place of a more concentrated base may slightly alter the pH of the collected sample, but this should be acceptable if use of the method is limited to measurement of total chromium (see below).

Our principle concern with Method 205.1 is the adjustment of the recovered sample pH to between 7 and 8 when analyzing for hexavalent chromium. Method 306 requires that the pH of the recovered sample be at least 8 for the sample to be acceptable for analysis of hexavalent chromium. This approach derives from the work of Steinsberger, et. al. as reported in the paper "Sampling and Analytical Methodology for Measurement of Low Levels of Hexavalent Chromium from Stationary Sources," in the Proceedings of the 1989 EPA/A&WMA International Symposium on Measurement of Toxic and Related Air Pollutants, Air and Waste

Management Association, Pittsburgh, PA, 1989. For total chromium measurement, however, the pH adjustment procedure as described in Method 205.1 should not affect the method results.

Therefore, with this memorandum, we are approving the use of SCAQMD Method 205.1 as an alternative to Method 306 only for the measurement of total chromium. Questions regarding this determination should be referred to Robin Segall of my staff at (919)541-0893.

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