SUMMARY OF COMMENTS AND RESPONSES

FOR METHODS 204, 204A - F

TABLE OF CONTENT

Chapter 1

INTRODUCTION

On August 2, 1995 the U.S. Environmental Protection Agency published the preamble, proposing Methods 204, 204A-F, in the Federal Register (60 FR 39297). These methods were proposed under the authority of Section 110 of the Clean Air Act, as amended.

Public comments were solicited at the time of proposal. To provide interested persons the opportunity of oral presentation of data, views, or arguments concerning the proposed test methods, a public hearing was scheduled at 10:00 a.m. on August 20, 1995 at the Research Triangle Park, North Carolina, but no one requested a hearing. The public comment period was from August 2, 1995 to October 2, 1995.

Six comment letters were received concerning issues relative to the proposed test methods. A detailed discussion of these comments have been carefully considered, and necessary changes have been made to the proposed methods.

Chapter 2

SUMMARY OF PUBLIC COMMENTS AND RESPONSES

Commenter IV-D-01

1.1 Comment: The Environmental Protection Agency (EPA) needs to specify somewhere in either 40 CFR 51 or in Appendix M that a total enclosure is required for determining capture efficiency (CE) in order to be consistent with the January 9, 1996 EPA guidance document entitled " Guidelines for determining capture efficiency: and the Chicago Federal Implementation Plan.

Response: It is EPA's policy that the specific rules designate which test methods must be used for determining compliance. Placing Methods 204, 204A-F in 40 CFR 51, Appendix M as example State Implementation Plan methods is consistent with the EPA guidance. The total enclosure approach is one of several different approaches discussed in the guidance document for determining CE.

1.2 Comment: The enclosure approach is not readily adaptable to surprise spot testing of a source believed to be in violation. The commenter suggested two alternatives to the total enclosure: (1) estimation of fugitive volatile organic compound (VOC) as the difference between liquid VOC input and collected VOC or (2) abandoning specification of CE as such in favor of specifying that air velocity and direction achieved by the collection system be consistent with effective and complete collection.

Response: The commenter is correct that the total enclosure approach is not adaptable to surprise inspections and is not designed for that purpose; however, the two alternative approaches suggested by the commenter have some serious draw backs. The first alternative, which is commonly referred to as a traditional liquid/gas approach, has a high degree of variability associated with it. The use of parameters in lieu of CE has been looked by the EPA, but we were unable to find any one or series of parameters that could be used to indicate CE.

1.3 Comment: In Method 204, section 4, the commenter feels that "any potential hazard" which a total enclosure poses should be listed explicitly and that all temporary total enclosures (TTE's) and permanent total enclosures (PTE's) should be required to conform to all applicable building, fire and Occupational Safety and Health Administration (OSHA) code requirements.

Response: The EPA agrees that the TTE and PTE should conform to building, fire and OSHA code requirements, however, we do not have the authority to make such a requirement. The EPA feels that the general safety precaution noted in the method is sufficient.

1.4 Comment: In Method 204, section 5, the commenter feels that the section is incorrectly labeled. The commenter also believes that each natural draft opening (NDO) should be served by a duct in order to measure flow using EPA Method 2.

Response: The EPA disagrees with the commenter on both issues. The section is properly labeled and the NDO's should not be served by ducts. The method does not require that the flow rate at each individual NDO be measure but requires that an average face velocity be calculated based on volumetric flow from forced makeup air, the volumetric flow from all exhaust ducts and the total area of all NDO's in the enclosure.

1.5 Comment: In Method 204, section 6.1, the reference section numbers are incorrect.

Response: The EPA agrees and the section numbers have been corrected.

1.6 Comment: In Method 204, sections 7.1 and 7.2, the commenter believes that these section should be located in section 5.

Response: The EPA disagrees. Section 7 describes quality control action to be undertaken to ensure the quality of the enclosure setup but are not criteria.

1.7 Comment: In Method 204, section 7.2, the commenter suggested that the fugitive emissions and exhaust fan capacity should be estimated in other ways then discussed in the method.

Response: The procedure described in the method for estimating the fugitive exhaust fan capacity is only a suggestion not a requirement. The tester is allowed to use other procedures to estimate the fan capacity.

1.8 Comment: In Method 204, section 7.3, the commenter feels the baseline measurements should include both the capture VOC concentration and the ambient VOC concentration.

Response: The EPA does not believe that it is necessary to obtain a baseline ambient VOC concentration, but that monitoring

for any increases in the VOC concentration inside the TTE is sufficient.

1.9 Comment: In Method 204, sections 7.4 and 7.5, the sections should be combined and moved to section 8. Also, EPA should specify a maximum increase in the ambient VOC concentration and the measurement locations for the ambient measurements.

Response: The EPA does not see any benefit in combining sections 7.4 and 7.5. Also the EPA does not feel it would be appropriate to move these sections to section 8. Section 8 describes the procedure for verifying that the TTE or PTE is acceptable while sections 7.4 and 7.5 are measurements made to help setup the TTE properly.

Since every enclosure is different it is difficult to specify specific measurement locations or maximum average increase. The tester needs to measure at a variety of distances away from the coating line. Special attention needs to be given to areas in the enclosure which may form pockets of increased concentrations. Modifications to the enclosure may be needed when pockets of high concentrations are discovered even if the average concentration inside the enclosure does not change.

1.10 Comment: In Method 204, section 8.3, the specification of Method 2 for determining flow rate is inappropriate because the minimum velocity requirement of 60 m/minute is below Method 2's measurement capabilities.

Response: Section 8.3 specifies Method 2 for measuring the flow rate of the exhaust streams and makeup air streams. These stream would have flow rates in excess of 60 m/minute and therefore Method 2 is appropriate. The 60 m/minute minimum requirement is for the NDO’s for which Method 204 does not require individual measurements but a calculated average velocity.

1.11 Comment: Due to the high estimated error of Method 204A and the cost and effort involved in constructing a TTE, the EPA should under take efforts to improve or replace the liquid analysis portion of the method.

Response: The EPA went back and reviewed the method evaluation report for Method 204A and discovered that the 12 percent is an error. The estimated uncertainty for this method is 4.0 percent. The method has been revised to correct this error.

1.12 Comment: In Method 204A, sections 6.2, and Method 204F, section 8.2.1, the sections discuss the acquisition of coating samples but omits provision for collection of the final sample.

Response: Both sections specifically state that samples should be taken "at each application location at the beginning and end of each test run"

1.13 Comment: In Method 204A, sections 6.2 and 6.3, and Method 204F, section 8.2.1, the description of acceptable procedures for obtaining liquid coating samples are ambiguous and vague. In addition, the method should indicate acceptable procedures for grounding the sample containers.

Response: Because of the variety of coating application stations, it is difficult to specify one detailed procedure that will work for everyone. The EPA has specified the general requirements for collecting coating samples and feels that these are sufficient.

1.14 Comment: Even though Methods 204B and 204C measure the same parameter, captured VOC stream, the applicability sections of the methods are not consistent with respect to what type of material balance is permissible.

Response: The EPA reviewed the applicability section for both methods and determined that their was an error in Method 204B. Method 204B is intended to be used only in a gas/gas protocol not in a liquid/gas protocol. The method has been revised to correct this error.

1.15 Comment: In Method 204A, section 11 and Methods 204B, 204C, 204D and 204E, section 10, the statement of "probable uncertainty" should be clarified or deleted and a required degree of agreement between the three required runs should be specified.

Response: The probable uncertainty is the estimated uncertainty between two different laboratories. The probable uncertainty was calculated for the average of 3 determinations from the estimated uncertainty of each of the individual measurements used to calculated the desired component (i.e. L, G or F) by propagation of error techniques. Because the methods allow the facility to run different products during the testing, the agency does not expect the individual components to agree from run to run. The agency is concerned with how well the CE results compare from run to run.

1.16 Comment: In Method 204D, section 8.1.2, the specification of Method 2 for determining flow rate of the fugitive exhaust streams is inappropriate because the minimum velocity requirement specified in Method 204 is below Method 2's measurement capabilities.

Response: The fugitive exhaust streams would have flow rates in excess of 60 m/minute and therefore Method 2 is appropriate. The 60 m/minute minimum requirement is for the NDO's for which Method 204 does not require individual measurements but a calculated average velocity.

1.17 Comment: In Method 204D, section 8.2.3, the background concentrations should be weighted by flow rate unless no difference in VOC concentration is detected between measurement points.

Response: The background concentrations are measured at the NDOs and the flow rates are assumed to be the same.

1.18 Comment: Method 204D, section 8.2.4, and Method 204E, section 8.4, the methods need to make it explicit that if on site gas chromatography (GC) is used as an alternative to flame ionization analyzers (FIA) than GC must be used to measure the VOC concentration of the other gas or liquid steams.

Response: The Agency agrees that further explanation is needed to explain that if a facility is conducting a gas/gas test and chooses to use the alternative GC procedure, it must use the GC procedure for both the captured and fugitive stream. If a facility wishes to conduct a liquid/gas test using a GC, the facility must use Method 204F for the liquid steam. A GC is not an acceptable alternative to the FIA in Method 204A.

1.19 Comment: Methods 204D and 204E should be combined with provisions specific to a TTE or building enclosure (BE) since the methods are virtually identical.

Response: The EPA agrees that the two methods have a lot in common but feels that it would be too confusing to combine the methods.

1.20 Comment: In Method 204E, section 8.1.1, the method should allow the use of low velocity apparatus when the velocities of the forced draft openings are below the acceptable range of Method 2 or 2A.

Response: The EPA agrees that low velocity apparatuses should be used when the velocities are below the acceptable range of Method 2 or 2A. However, the EPA does not feel that would be the case with the forced draft openings and therefore specify the use of Method 2 or 2A.

1.21 Comment: In Method 204E, section 8, the method should require a correction for background VOC concentrations.

Response: Method 204E is for measuring the fugitive emissions from a BE. The air entering the NDO will be the ambient air and therefore there is no background concentration to measure.

1.22 Comment: In Method 204F, section 3, the discussion dealing with trade names and units of concentration is out of place in this section.

Response: The EPA agrees with the commenter and the material was moved to section 4.

1.23 Comment: In Method 204F, section 4, the mercury manometer shown in Figure 204F-1 is not in the list of required apparatus.

Response: The mercury manometer is listed and described in section 4.2.8.

Commenter IV-D-02

2.1 Comment: In Method 204, section 5.1, additional guidance should be given on the type of situations where alternate determinations may be appropriate concerning the four equivalent diameter criteria. The commenter feels that the equivalent diameter determination is biased high for slot type openings and that some sources will not be able to meet the TTE criteria due to physical constraints.

Response: The EPA feels that the alternate determinations should be handled on a case-by-case basis by the regulatory agency because every coating line is different. The EPA does not feel that equivalent diameter determination is biased high for slot type openings. The EPA has always acknowledged that a small number of facilities will not be able to meet the TTE criteria due to physical contracts, however the EPA has outlined several other options for determining CE in the guidance document entitled “Guideline for Determining Capture Efficiency” dated January 9, 1995.

2.2 Comment: In Method 204, section 5.3, limiting the area of the NDOs on the basis of the surface area of the enclosure is inappropriate because the required air volume is dependent on the source emission rate and the CE. The commenter suggested that a more appropriate criteria to determine the allowable NDO area would use the source emission rate and estimated CE, while the surface area of the enclosure could be a co-factor.

Response: The EPA's rational for requiring the NDOs to be no more than 5 percent of the TTE surface area was to force the TTE to be a pretty good size relative to necessary openings, so that it would not otherwise artificially improve the performance of the hoods, which it is trying to measure.

2.3 Comment: In Method 204, section 5.4, the commenter agreed with the 200 fpm minimum face velocity requirement.

Response: No response is necessary.

2.4 Comment: In Method 204, Figure 204-1 needs to be expanded to address capture efficiencies less than 80 percent since lower values are allowed in the current Reasonably Available Control Technology rules.

Response: The EPA agrees that further guidance is needed and has added an equation to section 7.2 to help in estimating the ventilation rate at different capture efficiencies.

2.5 Comment: In Method 204, sections 7.3 and 7.5, the first sentence needs to be rewritten to clarify what is monitored and where to monitor it.

Response: The EPA agrees and the sentence has been revised.

2.6 Comment: In Method 204, section 7.4, second sentence, the "shall" should be changed to "should" and in the last sentence the phrase "poor capture efficiency" implies a criteria is not met instead of the original CE estimate was incorrect.

Response: The EPA agrees to change the "shall" to "should" and delete the phrase "or poor capture efficiency".

2.7 Comment: In Method 204, section 8.2, clarify the term A_T as total surface area.

Response: The EPA agrees and the sentence has been revised.

2.8 Comment: In Method 204, section 8.3, the method requires that the volumetric flow rates be corrected to standard

temperature which will yield a theoretical face velocity rather than an actual value at existing conditions. Is this EPA's intent?

Response: The method does not require the actual velocity at each NDO to be measured, but allows the facility to calculate an average face velocity through all the NDO be at least 200 fpm. However, since the volumetric flow rate measurements of each gas stream used in this calculation are taken under different conditions, it is important to standardize these measurements

2.9 Comment: In Methods 204A-F, additional guidance is needed to determine what is one complete production cycle. During production runs there may be periods of down time to adjust settings or correct mechanical problems. How would these situations be handled? If they are to be included in the test period, what percent of the total test time would be allowed before a run would be invalid?

Response: This issue needs to be handled at the regulatory level. Individual State rules vary as to how down time and malfunctions are handled.

2.10 Comment: In Methods 204A-F, section 3, the description of test areas as highly explosive is inaccurate. The materials use are generally flammable. Design criteria for safe operations are prescribed by organizations such as National Fire Protection Association.

Response: When the concept of the TTE first came out, some people in the coating and printing industry complained about the potential for explosions if a TTE were erected in their facility. Over time as more enclosures have been used the safety issue has decreased greatly, however EPA felt is was important to remind people to carefully evaluate the materials and design of the enclosures.

2.11 Comment: In Method 204A, section 11, the estimated uncertainty of 12 percent for the VOC fraction seems too high.

Response: The EPA went back and reviewed the method evaluation report and discovered that the 12 percent is an error. The estimated uncertainty for this method is 4.0 percent. The method has been revised to correct this error.

2.12 Comment: In Method 204B, section 10, the uncertainty for the term C_B is not mentioned. Has this term been taken into consideration when estimating the uncertainty for G.

Response: No, C_B was not taken into consideration when estimating the uncertainty for G. The uncertainty for C_B would be similar to C_G, however, since C_B is so small compared to C_G, its effect on G would minimal.

2.13 Comment: In Methods 204B-D, the equation for C_B is only an approximation for the average background concentration.

Response: The equation for calculating the average background concentration is an approximation in the fact that a limited number of measurements are taken for the calculation. However, the room air should be well mixed and therefore representative of the true conditions.

2.14 Comment: In Method 204F, the method does not contain an estimate of the uncertainty.

Response: Method 204F was submitted by industry and did not contain an uncertainty estimate, however it should be approximately the same as Method 204A.

Commenter IV-D-03

3.1 Comment: The commenter recommends that the EPA include the Data Quality Objective (DQO) and Lower Confidence Limit (LCL) test methods in the final rulemaking.

Response: The DQO and LCL approaches discussed in the EPA guidance document entitle “Guidelines for Determining Capture Efficiency” date January 9, 1995 are not test methods but statical approaches for evaluating the quality of the data obtained from a CE testing program. The statistical approaches allow the facility to use any test method they choose. However, if someone chooses to use a temporary or permanent total enclosure, there needs to be one standard version that everyone can follow and that is the reason why Methods 204, 204A-F are being finalized.

3.2 Comment: The commenter feels the minimum sampling time of 3 hours is excessive and that it is not necessary to sample the entire production cycle to obtain a representative sample. The sampling program should be designed such that it can be accomplished within 2 work days under normal circumstances.

Response: The EPA does not feel that a minimum 3 hour sample run is excessive. Historically, test data has shown that the longer the test runs the more consistent the data. It can be very difficult to get accurate liquid coating usage data after

only an hour or two. In addition, many production runs are up and down and it is hard to get representative data with the shorter run times.

3.3 Comment: The commenter believes that the EPA should allow the use of Material Safety Data Sheets (MSDS) instead of Methods 204A or 204F because the information can be more easily obtained. The commenter stated that the MSDS data is of comparable or better quality citing the probably uncertainty of ±12.2 percent listed in Method 204A. It was also noted that Method 204F did not provide an estimated probably uncertainty.

Response: The EPA went back and reviewed the method evaluation report and discovered that the 12.2 percent is an error. The probable uncertainty for this method is 4.5 percent. The method has been revised to correct this error. Method 204F was submitted by industry and did not contain an probable uncertainty, however it should be approximately the same as Method 204A.

The MSDS data is not an acceptable alternative to Methods 204A and 204F for a couple of reasons. First, the concentration of the individual components are usually given as a range of percentages. Also the MSDS sheets do not take into consideration what happens during curing. Some VOCs form as the coating cure and these are never listed on the MSDS sheet. While some VOCs listed on the MSDS sheet may polymerize during curing and therefore are never released into the atmosphere.

3.4 Comment: In Method 204, sections 5.5 and 6.1, several references are incorrect.

Response: The EPA agrees that several references in those sections are incorrect. The method has been revised to correct these errors.

Commenter IV-D-04

4.1 Comment: The commenter did not have any specific comments concerning Methods 204, 204A-F but commented that the CE protocols endorsed by EPA are unworkable when applied to automotive paint spray booths. The commenter went on to state that the trade association is working with EPA to incorporate alternative procedures that they feel are appropriate to automotive manufacturing operations.

Response: No response is necessary.

Commenters IV-D-05 and IV-D-06

5.1 Comment: In Methods 204A-F, section 1.1, replace the phrase “surface coating and printing operations” with “operations for which the state implementation plan (SIP) requires an explicit determination of capture efficiency.” The commenter feels that the mention of printing in the applicability section will inappropriately send a message to State environmental agencies that these test procedures are both appropriate and necessary for all printing operations.

Response: The EPA does not feel the suggested changes are appropriate. Methods 204A-F were developed to be used by the surface coating and printing industries. These methods are being promulgated as example SIP methods which means it is up to the States to decide if they want to require these methods. The EPA has released a guidance document on CE which provides States and industry with several different approaches for determining CE.

5.2 Comment: In Methods 204, 204A-F, the EPA needs to clarify the applicability of the proposed methods in situations such as the source is uncontrolled, the source can demonstrate overall control with a liquid/liquid material balance.

Response: As stated in section 1.1 of the methods, these procedures are applicable in the determination of CE. The applicability to different source configurations should be addressed in the regulations not the methods.

5.3 Comment: In Methods 204A-F, section 1.3, revise to allow the use of 1 hour sampling periods instead of 3 hours.

Response: The EPA does not feel that a minimum 3 hour sample run is excess. Historically, test data has shown that the longer the test runs the more consistent the data. It can be very difficult to get accurate liquid coating usages data after only an hour or two. In addition many production runs are up and down and it is hard to get representative data with the shorter run times.

5.4 Comment: In Methods 204A-F, the EPA needs to clarify the necessity and applicability of audit samples. It was suggested that the language be revised to state that audit samples only need to be run if the Agency deems such auditing as required.

Response: The EPA position is that audit samples should be conducted at all compliance test <u>if</u> audit samples are available for the method utilized during the compliance test.

5.5 Comment: In Method 204, section 8.4 should be revised to be consistent with the Aerospace NESHAP concerning the verification of air flow direction.

Response: The EPA agrees with the comment and the method has been revised to reflect these changes.

5.6 Comment: In Methods 204A-E, section 5.1 and Method 204F, section 5.3, dilutions systems calibrated using Method 205 should be allowed without approval of the Administrator.

Response: The EPA agrees that calibration gas can be prepared using dilution systems calibrated using Method 205 without approval of the Administrator and the methods have been revised.

5.7 Comment: Methods 204A-204F need to be revised to not automatically invalidate the CE results if the drift check is in excess of the proposed 3 percent calibration drift requirement. In such situations the method should allow the FIA to be recalibrated and which ever calibration results in the "worst case" results be reported.

Response: The EPA agrees with the comment and the methods have been revised.

5.8 Comment: In Methods 204A-E, section 5.1.1 and Method 204F, section 5.3.1, the methods need to be revised to allow for the use of hydrogen in air if appropriate adjustments are made to eliminate the oxygen synergism effect.

Response: The Agency agrees that alternative mixtures should be allowed if the user can demonstrate to the administrator that there is no oxygen synergism effect. The method has been revised to allow alternative mixtures.

5.9 Comment: In Methods 204A and 204F, should be revised to allow the use of Method 24 or 24A as an alternative to the FIA technique.

Response: Methods 204A and 204F relate the liquid measurements to the gas measurement by calibrating the FIA with the liquid samples. Methods 24 and 24A will not do this, therefore Methods 24 and 24A are not acceptable alternatives to Methods 204A and 204F for determining the liquid input when conducting a TTE CE test.

5.10 Comment: In Methods 204, 204A-F the term "fugitive

emissions" is used in a manner inconsistent with the definition contained in 40 CFR 51.165(a)(1)(ix). The word "fugitive" should be changed to "uncaptured."

Response: The Agency agrees and the methods have been revised to change "fugitive" to "uncaptured."

5.11 Comment: In Methods 204A and 204F, the required accuracy of the input weight determinations should be changed to allow the balance/digital scales to weigh within 2 pounds instead of the proposed 0.2 pounds.

Response: The Agency feels that it is very important to get an accurate measurement of the amount of coating used during a test and that scales that read to within 2 lbs are not accurate enough in most test situations. However, after reviewing this issue, the Agency also feels that the 0.2 lb limit may be too restricted in some situations. Therefore, the method has been revised to read "within 0.2 lbs or 1.0 percent of the total weight of VOC liquid used."

5.12 Comment: In Method 204B, sections 4.2.2 and 4.2.3, the method should be revised to allow the use of a presumed molecular weight of 29.0 and an estimated moisture content instead conducting Methods 3 and 4, respectively. The commenter feels this is justified since most sources conducting these tests operate under ambient atmospheric conditions.

Response: The Agency does not agree with the commenter. Most facilities have direct fired ovens which do not operate under ambient atmospheric conditions and therefore need to conduct Methods 3 and 4. The method allows an estimated molecular weight to be used if approved by the Administrator.

LIST OF COMMENTERS

Docket A-91-70

Docket Item Number	Commenter/Affiliation
IV-D-01	G. Lew, Chief, Engineering And Laboratory Branch, California Environmental Protection Agency 2020 L Street P.O. Box 2815 Sacramento, CA 95814-2815
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