

National Emission Standards for Hazardous Air Pollutants
(NESHAP) for the Aerospace Manufacturing and Rework Industry -
Background Information for Promulgated Standards

ADDENDUM

January 1998



N E S H A P



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Emission Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

January 1998

ENVIRONMENTAL PROTECTION AGENCY

National Emission Standards for Hazardous Air Pollutants from
the Aerospace Manufacturing and Rework Industry --
Background Information for Promulgated Standards

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1. The final National Emission Standards for Hazardous Air Pollutants (NESHAP) will regulate emissions of hazardous air pollutants from cleaning operations; primer, topcoat, and chemical milling maskant application operations; depainting operations; and handling and storage of waste at aerospace manufacturing and rework facilities. Only those operations that are part of major sources under section 112(d) of the Clean Air Act as amended in 1990 will be regulated.
2. Copies of this document have been sent to the following Federal Departments: Labor, Health and Human Services, Defense, Transportation, Agriculture, Commerce, Interior, and Energy; the National Science Foundation; and the Council on Environmental Quality; members of the State and Territorial Air Pollution Program Administrators; the Association of Local Air Pollution Control Officials; EPA Regional Administrators; and other interested parties.
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1.0 SUMMARY

On September 1, 1995, the U. S. Environmental Protection Agency (EPA) promulgated national emission standards for hazardous air pollutant (HAP) emissions from major sources in the aerospace industry (60 FR 45948). These final standards implemented section 112(d) of the Clean Air Act as amended in 1990 (the Act). On October 29, 1996, the EPA proposed amendments to the final rule and release of a draft control techniques guideline (CTG) document (61 FR 55842). There were 18 comment letters (see Table 1-1) submitted by 19 different commenters, which consisted primarily of trade associations, component suppliers and State and local air pollution control agencies. In addition, comments were received from one general aviation facility, private environmental organizations, and U.S. Government agencies. Summarizes of the comments, and the EPA's responses, are presented in this document. This comment summary and the Agency's responses served as the basis for the revisions (amendments) made to the final NESHAP. This document is an addendum to Volume II of "National Emission Standard for Hazardous Air Pollutants (NESHAP) for the Aerospace Industry - Background Information for Promulgated Standards," July 1995, EPA Document No. EPA/R-97-003b (Docket A-92-20, item III-B-1). This report also includes a discussion of the changes made to the draft CTG in finalizing the CTG document.

The proposed amendments requested comment regarding corrections to several references in the rule; revisions and additions to definitions; clarification of the applicability of the cleaning operations standards; clarification of the applicability of the rule to space vehicles; addition of standards for Type I chemical milling maskants; revision of standards for new and existing sources using dry particulate filters to control emissions from topcoat and primer application and repainting operations; addition of a test method for determining the filtration efficiency of dry particulate filters; addition of an exemption for certain water-reducible coatings; addition of an

essential use exemption for cleaning solvents; clarification of compliance dates; clarification of the applicability of new source MACT to spray booth standards; clarification of the requirements for new and existing primer and topcoat application operations; clarification of monitoring requirements for dry particulate filter usage; addition of Appendix A to this subpart containing definitions for specialty coatings, and addition of a cross reference to requirements in the General Provisions in Subpart A of part 63. The EPA announced in the same Federal Register notice the availability of a draft CTG document for control of volatile organic compound (VOC) emissions from aerospace manufacturing and rework facilities for public review and comment. This document was prepared to assist States in analyzing and determining reasonably available control technology (RACT) for stationary sources of VOC emissions located within ozone national ambient air quality standard nonattainment areas.

TABLE 1-1. LIST OF COMMENTERS ON THE PROPOSED AMENDMENTS
TO THE AEROSPACE NESHAP

2.0 COMMENTS

2.1 REGULATORY TEXT/CITED REFERENCES

Comment: Three commenters (VI-B-52, VI-B-61, and VI-B-57) stated that § 63.743(d)(1) needs to be modified (reworded) to make the first sentence a complete sentence as follows:

"The owner or operator may ...".

Response: The Agency agrees with the commenters and has added introductory language to § 63.743(d)(1) in the final amendments.

Comment: Commenter VI-B-52 noted that § 63.741(f) lists the specific exemptions from coverage by this rule, but does not mention exemptions listed in the various definitions. The commenter stated that to be complete, the exemptions in § 63.742 (definitions) should be included in the language used in § 63.741.

Response: The Agency agrees with the commenter. The amended rule contains the suggested language.

Comment: Commenter VI-B-52 stated that Table 1.--Summary of Subpart GG of 40 CFR Part 63, references a Table 3 under the "Description" of "Affected source". The commenter noted that the correct reference should be to Table 1 to subpart GG--General Provisions Applicability to Subpart GG.

The commenter also stated that the citation to 63.743(a) is confusing and suggested that the citation be eliminated.

The commenter also stated that the same Table 1 refers to Table 4 under "Cleaning Operations" as providing exemptions from certain housekeeping requirements. The commenter noted that the correct reference should be § 63.744, Table 1.

Response: The EPA agrees with the commenter and has revised Table 1. Summary of Subpart GG of 40 CFR Part 63 to reflect the appropriate changes. Since this table was included as part of the preamble when the final rule was published in the Federal Register, it will be corrected and made available on the TTN.

(The EPA has also prepared an informational brochure summarizing the aerospace NESHAP requirements which will also be made available via the TTN.)

Comment: Commenter VI-B-61 suggested clarification to table references. The EPA needs to revise the table numbering sequence in the rule. Most of the tables will be referenced often in compliance reports and Title V operating permits and applications. It would be much less confusing to have only one Table 1 in the entire rule, instead of designating the first table in each section as Table 1.

Response: The Agency has prepared the amendments to the final rule following guidelines governing the publication of regulations in the *Federal Register*. These guidelines specify the numbering format of tables and figures in regulations.

Comment: Commenter VI-B-64 recommended adding some descriptive language to table headings for filter efficiency requirements.

Response: The Agency agrees with the commenter that descriptive headings aid in the clarity of the filter efficiency requirements. The amended regulation contains these descriptive headings for each of the four tables added to § 63.745.

2.2 TYPOGRAPHICAL ERRORS

Comment: Several commenters noted typographical errors in the proposed amendments and in the final rule. These comments are as follows:

Four commenters (VI-B-52, VI-B-57, VI-B-61 and VI-B-63) noted that § 63.751(c)(2) has a typographical error. It should read "... system and read and record the water ...".

Two commenters (VI-B-61 and VI-B-57) noted the following typographical corrections:

§ 63.746(b)(3) ----- delete the word material(s)

§ 63.744(b)(1) ----- change reference to Table 1 § 63.750(g)(5) -----

change to 63,747

§ 63.750(g)(9)(i) ----- change reference "(g)(2) or (3)" to "(g)(2) or (4)"

Response: The Agency agrees with the commenters on all of these typographical errors except for the missing decimal (63,747) in § 63.750(g)(5) which could not be found in the final rule text published in the Federal Register. However, the typographical error was found on the TTN version. The amended rule contains the corrected text for all of the noted typographical errors.

2.3 DEFINITIONS (NONSPECIALTY COATINGS)

Comment: Two commenters (IV-B-52 and VI-B-63) commented on the proposed definition of antique aerospace vehicle or component. Commenter VI-B-52 suggested revising the definition as follows: means an aircraft or component thereof as defined by 14 CFR part 45, or those nonflight worthy aircraft intended for permanent display, or used for static manufacturing technology demonstrations. Commenter VI-B-63 indicated that the definition of "antique aircraft" in 14 CFR 45.22 does not include nonflight worthy aircraft displayed at many aircraft museums, military squadrons, and manufacturing facilities. Therefore, the commenter supports the definition in the amendments.

Response: The EPA believes that the passage to which commenter IV-B-63 refers actually concerns "exhibition" rather than "antique" aircraft. It was not EPA's intent to add an exemption for exhibition aircraft that do not meet the "antique aircraft" definition. In addition, EPA believes that it is not necessary to expand the scope of the "antique aircraft" definition, but the Agency has clarified the definition as including aircraft built at least 30 years ago that are not currently flightworthy. Therefore, EPA is promulgating the following slightly modified (i.e., clarified) definition of antique aircraft:

Antique aerospace vehicle or component means an aircraft or component thereof that was built at least 30 years ago. An antique aerospace vehicle would not routinely be in commercial or military service in the capacity for which it was designed.

Comment: Commenter VI-B-52 stated that in the definition of cleaning solvent, the parenthetical reference to water or acetone is confusing and should be deleted.

Response: The Agency agrees with the suggested change and has removed the parenthetical statement in the amended rule. Comment: Commenter VI-B-52 noted that

in the definition of chemical milling maskant, listed examples should be made identical to the listed names for these maskants found in appendix A to subpart GG.

Response: The Agency agrees with the commenter. The amended rule contains this language.

Comment: Commenter VI-B-63 stated that the Agency should revise the definition of "aerospace facility" to reflect what the commenter stated as their interpretation of what Congress intended for MACT to only apply to the confines of the set of activities that make up the MACT category, not at those sources that were "major" through an accumulation of unrelated emissions.

Response: The Agency believes that this comment was appropriately addressed in the response to comments for the promulgated NESHAP and refers the commenter to section 3.1 of the National Emission Standard for Hazardous Air Pollutants for the Aerospace Manufacturing and Rework Industry - Background Information for Promulgated Standards, July 1995, (Document No. EPA/R-97-003b) which contains the comment summary for the promulgated rule.

Comment: Commenter VI-B-63 stated that the definition for chemical milling maskant should exempt chemical milling maskants used for two different types of chemical milling applications. The commenter recommended deleting the wording that limits the exemption to an individual part or subassembly: "~~...must be used on an individual part or subassembly with...~~"

Response: The EPA did not find any reference to this issue when maskants were discussed in the section 114 responses or during any of the roundtable meetings. However, the EPA did not intend to create an extra burden for existing plating shops using the same maskant tanks for two different types of chemical milling applications. The proposed definition and associated maskant limits would require the addition of a new maskant tank to meet the low VOC maskant limit and another tank to meet the critical use applications. This may result in an increase

in emissions since the surface area of the maskant in the tanks would double. The EPA agreed that the commenter's changes are reasonable because the purpose of the NESHAP is to reduce HAP emissions. The final rule amendments have incorporated this change to the definition of chemical milling maskant.

Comment: Commenter VI-B-63 suggested changing the flush cleaning definition in § 63.742 by adding "Cleaning operations in a tank or vat subject to other NESHAP are not included." Tank cleaning operations are covered in other NESHAP such as the Halogenated Solvent Cleaning NESHAP and should be specifically excluded from the aerospace NESHAP.

Response: The EPA reviewed the definitions and requirements associated with the Halogenated Solvent Cleaning (vapor degreasing) NESHAP (59 FR 61801, December 2, 1994). Based on this review and discussions with project work assignment manager, there is little chance of any overlap with the aerospace flush cleaning definition or requirements. No changes were made to the definition of "flush cleaning."

Comment: Commenter VI-B-63 suggested changing the definition of "self-priming topcoat" by removing the last sentence which currently reads: "~~The coating is not subsequently topcoated with any other product formulation.~~" The commenter described two scenarios where the application of such coatings would not fit the definition. The commenter further stated that self-priming topcoats should be recognized as topcoats and the topcoat VOC/HAP limits should apply, not the primer limits.

Response: Self-priming topcoats are recognized as a type of topcoat with a VOC/HAP limit of 420 g/L -- same as the limit for topcoats in the NESHAP and CTG. The Agency does not agree that the described scenarios are likely to present any problems for facility owners and/or operators or enforcement personnel to determine the appropriate coating category and applicable

limit. However, the Agency does agree that removing the suggested wording will clarify the definition of self-priming topcoat and make it more consistent with the definition of topcoat. Furthermore, since the limit for topcoats is identical to the limit for self-priming topcoats, there is no impact to the user or the environment.

Comment: Commenter VI-B-63 stated that the definition of "spot stripping" relies upon the term "technical feasibility" which is vague and must be assessed on a case-by-case basis. The commenter added that the U.S. Department of Defense has rewritten the definition to avoid the need to rely on this elusive concept. This definition allows the 50 gallons for military aircraft to be used where required and avoid the murkiness of the technical feasibility definition approach when applied to spot stripping."

"Spot stripping means the depainting of an area where it is not technically feasible to use a nonchemical depainting technique on an aerospace vehicle subject to a limit of 26 gallons of chemical stripper for commercial aircraft and 50 gallons for military aircraft based on the number of vehicles serviced per year."

Response: The Agency disagrees with the commenter that the definition of "spot stripping" is unnecessarily vague. The Agency believes that the inclusion of the application limits in the definition does not add clarity to the regulation but would require the regulated community to search in multiple locations for the limits found in these standards. The Agency elects to maintain the existing definition of "spot stripping" contained in the final rule.

2.4 DEPAINTING/CHEMICAL STRIPPING

Comment: Commenter VI-B-50 questioned if an entire aircraft could be stripped with methylene chloride if the spot stripping limits are not exceeded.

Response: By definition in the final aerospace NESHAP, spot stripping means the depainting of an area where it is not technically feasible to use a nonchemical depainting technique. Depainting information provided by all segments of the aerospace industry has shown that this typically only occurs on a few areas (e.g., edges or recessed areas) of each airplane. Those areas can then be stripped with methylene chloride or any other stripper (up to the allowable annual limit per airplane). Therefore, there are no currently known situations where the entire aircraft could be stripped with methylene chloride (or any other HAP-containing chemical stripper) at a facility subject to the aerospace NESHAP without violating the NESHAP requirements.

Comment: Commenter VI-B-50 requested clarification between spot stripping and depainting operations.

Response: By definition in the final aerospace NESHAP: "depainting" means the removal of a permanent coating from the outer surface of an aerospace vehicle or component, whether by chemical or nonchemical means. For nonchemical means, this definition excludes hand and mechanical sanding, and any other nonchemical removal processes that do not involve blast media or other mechanisms that would result in airborne particle movement at high velocity; and "spot" stripping means the depainting of an area where it is not technically feasible to use a nonchemical depainting technique.

Comment: Commenter VI-B-50 questioned if regulations promulgated by the U.S. Federal Aviation Administration (FAA) would take precedence over the aerospace NESHAP.

Response: The EPA and FAA both recognize that there is a potential for conflict involving regulations concerning the use of HAP-containing chemical strippers. Many of the aircraft manufacturers have made the necessary revisions to their maintenance manuals to allow

non-HAP materials to be used for depainting (chemical strippers). Once the necessary information regarding alternate/compliant chemical strippers is approved and distributed to the regulated community via revised/updated maintenance manuals and/or advisory circulars, the potential conflict will be eliminated.

Comment: Five commenters (VI-B-52, VI-B-57, VI-B-58, VI-B-63 and VI-B-66) raised issues related to the spot stripping and decal removal allowance. Two commenters (VI-B-52 and VI-B-57) noted that after a preliminary review of chemical strippers used by the industry, it was determined that at least 7 out of 10 qualified strippers used by the industry have densities higher than the density apparently used by EPA to arrive at the proposed 190 and 365 pounds. Methylene chloride, which (the commenter understood) EPA was intending to allow for use in spot stripping and decal removal, also has a higher density. Therefore, the proposed 190/365 pounds is more restrictive than the original 26/50 gallons previously allowed in the final rule. The commenter does not believe the proposed change will provide more flexibility as stated in the preamble.

Commenter VI-B-63 stated that the proposed change in § 63.746(b)(3) of the amendments potentially reduces the amount of stripper allowed to be used per military aircraft per year. The final rule allowed for the use of 50 gallons of organic HAP containing stripper per military aircraft depainted per year. The proposed limit allows for only 365 pounds of organic HAP material per military aircraft depainted per year. One stripper used for depainting has a specific gravity of 1.19 and an organic HAP content of 84 percent. For 50 gallons of stripper, this calculates to 417 pounds of HAP material. Different types of strippers are used for different applications, based on the type of coating which is being removed. The various types of strippers have different percentages of HAP constituents. Allowances need to be made for the use of the

appropriate stripper for the job. The commenter prefers the 50 gallons limit versus the limit expressed in pounds. If the limit is expressed in pounds, then it should be 420 pounds (based on specific gravity calculations).

Commenter VI-B-52 stated that based on the discussion in the BID (July 1995) regarding facilities using 26/50 gallons of HAP-containing stripper per aircraft, there is some confusion over the NESHAP language and the terms of the exemption -- volume of organic HAP-containing chemical strippers per aircraft and not per facility.

Commenter VI-B-57 stated that the proposed amendments do not make it clear that the mass limit on HAP containing chemical stripping agents is based on the amount of HAP, not HAP-containing compounds. It would be clearer if the word "material(s)" is removed from each weight limit.

Commenter VI-B-58 stated that the decal removal exemption for commercial aircraft of 26 gpy is based on the amount of stripper required for the spot stripping and decal removing on the largest commercial aircraft. The same exemption is available for depainting general aviation aircraft which are, at most, half the size of a commercial aircraft. Therefore, even the existing regulation allows facilities to use approximately twice the amount of stripper needed to spot strip and remove decals from general aviation aircraft.

This commenter stated that the proposed revisions to this rule would expand this exemption considerably. Three strippers currently used in industry contain 178, 167, and 123 pounds of HAP per 26 gallons of stripper respectively, 12 to 67 pounds less than the 190 pounds proposed by EPA. Assuming that 13,000 general aviation aircraft are depainted each year, an increase in methylene chloride emissions of 12 to 67 pounds per aircraft would result in a total yearly increase in methylene chloride emissions between 156,000 pounds and 871,000 pounds.

The commenter encouraged EPA to abandon the proposed revision to the depainting exemption. However, if EPA does revise the depainting exemption, it should reduce the allowance for general aviation aircraft depainting operations to the "lowest amount necessary".

Commenter VI-B-66 stated that the proposed amendments would revise the limits for use of materials containing HAP for spot stripping and decal removal from gallons of stripper per aircraft to pounds of HAP. The commenter agrees that this change will provide greater flexibility to owners and operators in selecting materials for difficult stripping operations. The commenter further believes that this change will promote innovation in the development of effective stripping formulations.

Response: Various commenters have presented their views on this proposed change in different ways, depending on their perspective and interests. The depainting requirements are to be met facility wide and the spot stripping allowance is an annual average (per aircraft) limit the facility must also comply with. With regards to the emission estimates provided by commenter VI-B-58, the EPA does not believe many (e.g., less than 10 percent) general aviation aircraft are reworked/depainted at major source facilities subject to the NESHAP requirements. The promulgated standard included the spot stripping and decal removal allowance using terms of volume (gallons) of organic HAP-containing chemical strippers. The proposed allowance was meant to be equivalent in terms of actual HAP emissions to the atmosphere and was based on assumptions documented in the BID and/or the docket concerning average or typical HAP contents and densities of chemical strippers being used by the aerospace industry. The proposed limits also provide greater flexibility to the owner or operator of a new or existing depainting operation in selecting materials to perform spot stripping and decal removal.

Based on the submitted comments and the technical arguments both for and against the different units for the spot stripping and decal removal allowance, the EPA decided to include both types of units and allow sources to decide which units they want to use and document their

decision in their initial notification and/or operating permit application. The EPA agrees with the commenter raising the issue/confusion involving the term "material(s)" and has deleted it in the final amendment text.

Comment: Two commenters (VI-B-52 and VI-B-61) stated concern that the existing language could be read to prohibit the use of this exemption by facilities that do not utilize non-HAP or nonchemical depainting methods. This is inconsistent with industry's understanding that the exemption was intended to allow facilities, regardless of any other depainting operations that may be conducted, to use small quantities of HAP-containing strippers exclusively for spot stripping and decal removal.

Response: The commenter is correct that the intent of this exemption is to allow for the limited use of HAP-containing chemical strippers for spot stripping or decal removal at any aerospace manufacturing or rework operation. The Agency has modified the existing text in § 63.746(b)(3) by deleting the phrase "complying with paragraph (b)(1)".

Comment: Two commenters (VI-B-57 and IV-B-61) proposed the following change to § 63.746(a): "~~This subpart section~~ does not apply to an aerospace manufacturing or rework facility that depaints six or less completed aerospace vehicles in a calendar year."

Response: The Agency agrees with the commenter. The final amendments incorporate this language.

Comment: Commenter VI-B-49 noted an apparent error in the proposed revision of Equation 20. If one follows this equation, the resulting units for C are not pounds of HAP per aircraft.

Response: The Agency agrees with the commenter. The numerical values resulting from Equation 20 (as proposed) will be accurate, however, the units do not cancel correctly. Units are accurately determined in revised Equation 20 (Equation 21 in the final amendments) and the definition of Dhi has been revised in the final amendments.

Comment: Commenter VI-B-49 stated that the proposed standard for the spot stripping allowance should read "no more than 365 pounds ...".

Response: The Agency also noted this inconsistency in the proposed changes to § 63.749(f)(3)(ii)(A) and has corrected the wording in the final amendments.

Comment: Commenter VI-B-63 stated that § 63.746(b)(1) of the final rule and the proposed amendments does not recognize that many repaint technologies emit small quantities of organic HAP. The intent of EPA is better achieved by disallowing materials which contain organic HAP. Users should be able to rely upon the MSDS as a common set reference to determine compliance for the purpose of this section of the rule. Recommendation --> In § 63.746(b)(1), change: "... subject to this subpart shall ~~emit no~~ not apply materials which contain organic HAP ... as identified in the MSDS."

Response: The EPA's primary interest in this NESHAP is to reduce HAP emissions to the atmosphere. While the commenter's proposed change would result in equivalent (if not slightly greater) emission reductions, the EPA does not want to prevent facilities from using control devices if appropriate for specific applications. Thus, the Agency decided to leave the promulgated standards for repainting operations as is.

Comment: Commenter VI-B-66 recommended that, in the absence of more favorable provisions for the repainting of small corporate aircraft and other general aviation, the standards be further revised to allow the use of HAP-based stripper formulations beyond spot stripping and decal removal for these smaller aircraft. This change would address the unique challenges faced by firms maintaining these aircraft, while providing significant incentive for reductions in HAP emissions. Moreover, the change could help to provide a more level "playing field" for these facilities who must compete with smaller firms that will not be covered by the standard. Available data suggest that firms covered by the standard account for only 10 to 20 percent of the companies maintaining general aviation.

Response: This issue goes back to the repainting allowance for certain types of aircraft and what is reasonable in terms of an allowance for spot stripping and decal removal. The EPA developed the 26/50 gallon allowance based on input from the large commercial rework facilities and the Air Force on their technical estimates of the relative amount of exterior surfaces of their aircraft requiring spot repair (stripping) and/or decal removal. Based on the relative exterior surface areas for GA aircraft, there is no compelling technical argument to expand the allowance for GA rework facilities into a repainting limit.

2.5 MISCELLANEOUS NESHAP ISSUES

Comment: Commenter VI-B-66 supports EPA's proposal to establish a VOC and HAP limit of 622 g/L for uncontrolled Type I maskants, based on information collected as part of a section 114 request. The proposed limit recognizes that some chemical etching applications require the use of solvent-based maskants, while still achieving a significant reduction in VOC and HAP emissions from masking operations.

Response: The Agency appreciates the commenter's support on this issue.

Comment: Commenter VI-B-52 stated that in the preamble of the proposed amendments, Section F. Test Method for Determining Filtration Efficiency should be clarified so that the filter efficiency tests may be performed by someone other than the owner or operator of the source.

Response: Several commenters mentioned this issue in both the preamble and proposed amendatory language of the regulation. It was not the Agency's intent to limit who could perform the filter efficiency tests. The amendatory text has been modified to clarify this requirement in the final amendments.

Comment: Commenter VI-B-52 stated that under § 63.753, EPA should clarify that the required semiannual reporting may be combined with the semiannual reporting requirements of Title V Operating Permit reports as long as all the required information is provided.

Response: The Agency understands the related issues to this specific comment and encourages sources and States to work together in streamlining reporting requirements. However, it is not appropriate to necessarily combine requirements within the regulatory text of the NESHAP.

Comment: Commenter VI-B-57 requested the removal of the requirements for ozone depleting substances from § 63.744. There is no legal basis for including a requirement that hydrocarbon-based cleaning compounds contain no ozone depleting substances. The control of HAP and ozone-depleting substances are under two entirely separate programs with two separate time lines.

Response: The Agency agrees with the commenter and has deleted the reference to ozone depleting substances in Table 1 of § 63.744.

Comment: Commenter VI-B-64 complimented EPA for including a reasonable de minimis quantity for VOC and HAP containing products.

Response: The Agency appreciates the comment.

Comment: Two commenters (VI-B-63 and VI-B-66) remarked on the applicability of the NESHAP cleaning requirements. Commenter VI-B-63 stated that the NESHAP applies to the use of hand-wipe, spray gun, and flush cleaning operations conducted in connection with nonaerospace activities. The aerospace NESHAP cleaning requirements should only apply to aerospace operations. While the preamble stated that the NESHAP only applies to aerospace operations, the rule itself was not changed to make it clear that this is the application of the rule. Commenter VI-B-66 supported the proposal to limit the standards for cleaning operations to the manufacture and rework of aerospace vehicles and components.

Response: This was specifically addressed in the recently proposed amendments to the rule (see § 63.741(c) on page 55853 in the October 29, 1996 Federal Register notice) and the final amendatory language reflects the revised language which is consistent with that recommended by the first commenter.

Comment: Commenter VI-B-63 did not agree with EPA under § 63.744 Cleaning operations: To require bagging or containerizing of VOC-containing wipe materials will be an enforcement nightmare for facilities and enforcement agencies. No matter how you define "immediately after use" there will always be different interpretations of the term "immediate". The commenter recommended deleting the wording in § 63.744(a)(1) and replacing with: "Storage and disposal of all VOC-containing solvents, used in the cleaning of aerospace vehicles and components, shall be in nonabsorbent nonleaking containers, which shall be kept closed, except when filling or emptying. It is recommended that cloth and paper moistened with VOC-containing solvents be stored in closed, nonadsorbent, nonleaking containers."

Response: This issue was addressed in the recent proposed amendments and the revised language is more consistent with the storage requirements in the California SIP-approved rules that were the basis for this requirement.

Comment: Commenter IV-B-63 stated that not all HAP's are VOC's, nor are all VOC's HAP's. If the "and" is used, then one could read § 63.741(f) to require both VOC's and HAP's to be present for this exemption to be acceptable. The intent was for the exemption to apply if either HAP, or VOC, or both were present below the specified concentrations. The commenter suggested the following de minimis HAP/VOC exemption clarification: "The requirements of this

subpart also do not apply to primers, topcoats, chemical milling maskants, strippers, and cleaning solvents containing HAP and/or VOC at a concentration less than ..."

Response: The Agency does not agree with the commenter on what was intended for the exemption. It is not the Agency's position that both HAP and VOC need be present for an exemption to apply. The Agency believes the term "HAP and VOC" correctly identifies those situations where the requirements of this subpart do not apply. If a cleaning solvent contains VOC at a concentration above the specified 0.1 percent and HAP at a concentration below the 0.1 percent, the exemption does not apply. If the suggested "and/or" were used, the exemption could be applied to this scenario.

Comment: Commenter VI-B-63 stated that § 63.743(b) of the final rule restates and strengthens the requirement in the General Provisions for "maintenance plans." The development of such a comprehensive plan for particulate filters would represent an excessive burden to the industry without a commensurate environmental benefit. Particulate filtering systems are generally not prone to start up and shut down malfunctions as required for the plans. It is more appropriate to let the State or local regulatory agency determine which level of enforcement is best for them to meet the requirements. Manufacturers specifications or some other negotiated method could then be used. Therefore, in § 63.743(b), add the following: "Startup, shutdown, and malfunction plan: Plan requirements shall be delineated in the appropriate Title V operating permit."

Response: The Agency agrees with the commenter in that particulate filtration systems are not prone to startup/shutdown problems and addressed this issue in the recently proposed amendments. Section 63.743(b) states: "Dry particulate filter systems operated per the manufacturer's instructions are exempt from a startup, shutdown, and malfunction plan."

Comment: Commenter VI-B-63 stated that § 63.745(g)(2)(v)(C)-Continuous monitoring, would require installation of costly, "real-time" monitoring equipment. Currently, the commenter is aware of visual "sight glass" pressure drop indicators on filtration equipment. The commenter believes that an inspection of all "sight glass" indicators once each shift would be sufficient to ensure proper equipment operations. In addition, this is consistent with the pressure drop requirements identified in § 63.752(d). The commenter recommends that § 63.745(g)(2)(v)(C) be revised as follows: change " monitor once per shift the pressure drop across the filter; and"

Response: The Agency agrees with the commenter's viewpoint on what is reasonable monitoring to ensure proper equipment operations and tried to address the general issue of "continuous monitoring" in the recent amendments (see II.M of the preamble, page 55851 in the October 29, 1996 Federal Register notice). The Agency has added text to § 63.745(g)(2)(iv)(C) and (g)(2)(v) to be consistent with the other recent clarifications such as § 63.751(c)(1) involving monitoring requirements.

Comment: Commenter VI-B-63 stated that sources which commenced construction prior to promulgation of the final rule should be allowed to comply with the requirements for existing sources because, at the time of construction, there was no proposed or final rule requiring the implementation of 3-stage or equivalent filters. In the final rule and proposed supplemental notice, sources which commenced construction between the dates of the proposed and final rules are required to comply with the inorganic HAP emission requirements for new sources. The final rule and the proposed supplemental notice requirements for new sources are far more restrictive than those in the proposed rule. The supplemental notice proposes less restrictive requirements for sources which commenced construction between the final rule and the proposed supplemental notice than for those between the proposed and final rule. Reconstruction of sources which commenced construction prior to September 1, 1995 should be required to meet the requirements for existing sources.

Response: This issue was also raised at the March industry roundtable meeting and was addressed in the recently proposed amendments to the aerospace NESHAP (see II.K of the proposed preamble, page 55851 in the Federal Register notice published on October 29, 1996). The Agency realizes that there are unique circumstances in which owners or operators have commenced construction or reconstruction of a new spray booth or hangar after the proposed regulation (June 4, 1994) and have had to comply with the requirements in the promulgated rule (September 1, 1995). For these owners or operators of aerospace manufacturing or rework operations who have commenced construction or reconstruction of a new spray booth or hangar for inorganic HAP depainting operations, primer, or topcoat operations after June 4, 1994 but prior to October 29, 1996, the EPA has provided the flexibility to meet either the requirements for new sources under § 63.745(g)(2)(ii) of the amendments to the final regulation found in today's notice or the requirements for new sources under § 63.45(g)(iv) of the September 1, 1995

promulgated rule which are found at § 63.745(g)(2)(iii) in the amended rule. Sources that commenced construction prior to June 4, 1994 are still required to meet the existing source requirements for depainting operations and painting (topcoat or primer application) operations found in the final amended rule.

Comment: Commenter VI-B-63 stated that Section II.M of the preamble of the proposed amendments includes alternative particulate control technologies that demonstrate equal or better performance at the three sizes specified in the new sources table. If the other references to filters do not also include the "equivalent" alternative technologies as part of the reference, the disconnect could turn into a paperwork trap anytime a different technology is installed. The commenter recommends all references to filters allow alternative particulate control technologies that demonstrate equal or better performance at the three sizes specified in the new sources table.

Response: While the Agency agrees with commenter's assertion that equivalent alternative technologies need to be allowed and documented within the NESHAP requirements, the Agency also believes that there are existing mechanisms within the General Provisions which address this issue. (See alternative test method definition in 63.2). The owner and/or operator will need to get the alternative test method approved regardless.

Comment: Commenter VI-B-48 questioned if the effective date to be considered a new source is September 1, 1995 or when the aerospace NESHAP first appeared in the Federal Register in June 1994.

Response: The effective date is June 6, 1994.

Comment: Commenter VI-B-48 questioned if converting a waterwash to a dry particulate filter system would result in the dry system being considered as a new source for primer and topcoat application operations.

Response: If the conversion cost more than half of the fixed capital cost estimated for constructing an entirely new dry system, then the converted dry system would be considered a new source for regulatory compliance issues. The NESHAP requirements in § 63.753(a)(1) refer to the recordkeeping and reporting requirements of the General Provisions, 40 CFR part 63, subpart A.

Comment: Commenter VI-B-48 questioned if the reconstruction of an existing hangar (used for primer and topcoat application operations) would cause it to be considered a new source upon completion.

Response: If the primers or topcoats used in the hangar contain inorganic HAP, then the new or reconstructed spray booth or hangar will be subject to the applicable new source requirements for inorganic HAP. New construction or reconstruction of a new spray booth or hangar at a facility for an existing coating or depainting operation will not cause the existing operation to be subject to any other new source standards.

Comment: Commenter VI-B-48 questioned if reconstruction or relocation of an existing booth in a facility mean that the booth would be considered a new source.

Response: If an existing booth is simply relocated within the same source (i.e., facility or building), there would be no regulatory significance. For reconstruction of an existing booth, see the two previous comments and responses.

Comment: Commenter VI-B-62 concurred with the Agency's clarification of the applicability section by removing the reference to space vehicles in § 63.741(f) and adding a new § 63.741(h) which states regulated activities associated with space vehicles are exempt from the requirements of this subpart, except for depainting operations found in § 63.748. The commenter stated that this revision reflected an important clarification of the applicability of the rule for aerospace organizations.

Response: The Agency appreciates the commenter's concurrence on this issue. The proposed language has been revised slightly for greater consistency with the stratospheric ozone regulations. The exemption was added to the final rule as § 63.744(e)(13).

Comment: Commenter VI-B-62 concurred with the addition of § 63.744(e)(13). The commenter noted that this addition acknowledges critical materials which have been granted Essential Use Waiver under the CAAA Title VI and the Montreal Protocol, and recognizes the exemption from the rule for the continued use of those critical materials.

Response: The Agency appreciates the commenter's concurrence on this issue.

Comment: Commenter VI-B-53 stated that the Agency should provide flexibility in the regulation to allow a broader averaging approach. Specifically, averaging between controlled and uncontrolled primers, topcoats, and chemical milling maskants should be allowed.

Response: This issue was raised previously and EPA tried to evaluate the impacts of various averaging schemes and develop a compliance strategy that incorporated averaging across emission points. Unfortunately, a workable solution to this overall issue of allowing a broader averaging approach was never developed.

In designing emissions trading and averaging systems, EPA believes that it is important to consider the effect that trading or averaging is likely to have on facilities' actual emissions, as well as the effect on facilities' maximum allowable emissions. A workable scheme for averaging across coating types was not developed because the format of the coating limits in the rule as originally promulgated (September 1, 1995) creates inherent difficulties for making accurate and equitable emissions comparisons. In order to include effective emissions averaging provisions for different coating categories (i.e., primers, topcoats, and maskants) or other emission sources, the format of the entire rule would have to be overhauled. Such changes are now beyond the scope of the work involved in finalizing the amendments to the aerospace rule and cannot be justified in terms of potential advantages to industry (e.g., affected facilities) and/or the environment.

Comment: Commenter VI-B-63 stated in § 63.750(I)(2)(i), alternative application methods of primers or topcoats should be allowed where manufacturers have demonstrated equivalency with HVLP/electrostatic transfer efficiency. This process of 30-day period using HVLP and then using alternative method for same time and process is not appropriate. If a manufacturer is able to demonstrate new technology equivalent to HVLP, it must be available to users without long, drawn out testing. Only where users are developing their own technology should this detailed testing be required. Recommendation: Change evaluation period from 30 to 4 days.

Response: Any time period specified in the evaluation of alternative equipment or test methods is certainly subjective to the amount of actual painting that is done. For large facilities, coating operations are typically conducted every day and in many cases, around-the-clock. However, for many of the smaller facilities and particularly rework facilities, coating operations may only be conducted one or two shifts per week. The EPA decided that 30 days is a reasonable

compromise for all types and sizes of facilities to demonstrate equivalency and also provided additional flexibility for qualifying other application methods. In the final rule, § 63.750(i)(2)(i) states "For the process or processes for which the alternative application method is to be used, the total organic HAP and VOC emissions shall be determined for an initial 30-day period, the period of time required to apply coating to five completely assembled aircraft, or a time period approved by the permitting agency."

Based on other comments related to this section of the final rule, the EPA has provided additional flexibility for those sources wanting to use an alternative application method from primers and topcoats by adding (revising) paragraphs § 63.750(i)(2)(iii) and (iv) as follows:

(iii) Test the proposed application method against either HVLP or electrostatic spray application methods in a laboratory or pilot production area, using parts and coatings representative of the process(es) where the alternative method is to be used. The laboratory test will use the same part configuration(s) and the same number of parts for both the proposed method and the HVLP or electrostatic spray application methods.

(iv) Whenever the approach in either paragraph (i)(2)(ii) or (i)(2)(iii) is used, the owner or operator shall calculate both the organic HAP and VOC emission reduction using equation 19.

2.6 NOT RELEVANT TO PROPOSED AMENDMENTS

Comment: Commenter VI-B-52 referenced § 63.744(e) and the CTG stating the EPA should modify the cleaning operations requirements to include an exemption from the need for a closed container when "cleaning the nozzle tips of automated spray equipment systems, except for robotic systems." In Rule 1171-Solvent Cleaning Operations, the South Coast Air Quality Management District (SCAQMD) has included an exemption from the need for a closed container when "cleaning of the nozzle tips of automated spray equipment systems, except for robotic systems." This exemption was added because automated spray equipment cannot be easily assembled, and these guns may occasionally need to be quickly cleared of paint residue with a minimum disruption of production. Being able to quickly spray solvent through the gun, which will solve the operating problem, has thus been allowed by the SCAQMD. A similar exemption should be included in this section of the NESHAP.

Automated spray equipment is not generally programmable, i.e., it is typically set up on a moving track to spray when a part is positioned in front of it and to shut off when no part is

sensed. A robotic system, on the other hand, can be programmed to move away from the parts to spray cleaning solvent into some type of closed container. The "dumb" automatic reciprocator has no such capability, since it is rigidly fixed to its support structure. When such a gun needs to be cleaned, without being disassembled, it can only spray solvent into the open air of the booth. Thus, this simpler type of automated automatic equipment needs an exemption from atomized open air spraying, unlike a fully robotic system which can be positioned to spray into a nearby closed container.

Response: The commenter referenced SCAQMD Rule 1171 as having recently including this exemption in their rule. Having reviewed the most recent version of Rule 1171, the EPA agrees with the commenter and will propose the change in the next supplemental notice to the NESHAP.

Comment: Two commenters (VI-B-52 and VI-B-63) raised the issue of pumpless waterwash systems, stating the EPA had been previously petitioned to modify the waterwash particulate control system requirements to allow for use of existing waterwash systems which do not utilize flowing water (a pumpless system) to remove particulate emissions from the exhaust air stream in spray coating application or dry media blast depainting operations. To accomplish this, several areas of the rule should be changed: §§ 63.742, 63.745(g)(2)(v), 63.751(c)(2), 63.751(d), 63.752(d)(2) and (3), and 63.752(e)(7).

Response: This comment was included in the comments made after the original rule was proposed -- see BID II, page 7-43. The response at the time was "The EPA has adopted a provision that allows the use of waterwash booths for particulate control from depainting operations. The EPA has included the following provisions in the final rule for waterwash booths: (1) if the water path fails the visual continuity/flow characteristics check, or the flow meter requirements show a disruption in flow, or the booth manufacturer's maintenance procedures have not been performed as scheduled, the operation must be shut down immediately and corrective action taken; and (2) the operation shall not be resumed until the waterwash flow is within the limit(s) specified by the booth manufacturer."

In followup discussions with the commenters, the EPA has learned that there are at least two types of pumpless waterwash systems currently being used by aerospace facilities. There is no readily identifiable operating parameter that is common to both types of systems. Therefore,

the EPA decided to use the generic approach as suggested by one of the commenters and will propose the change(s) in the next supplemental notice to the NESHAP.

Comment: Two commenters (VI-B-60 and VI-B-65) stated § 63.750(g)(1) uses the term "dedicated solvent recovery device", but it is not defined in the rule. The EPA needs to define this term so the owner or operator and any enforcement agency know what a dedicated solvent recovery device is so that proper test procedures may be followed and proper enforcement of this aspect of the rule accomplished.

Response: The Agency has included the following definition (based on the definition from the Hazardous Organic NESHAP or HON) for "recovery device" in the amendments to the final aerospace rule:

Recovery device means an individual unit of equipment capable of and normally used for the purpose of recovering chemicals for fuel value, use, or reuse. Examples of equipment that may be recovery devices include absorbers, carbon adsorbers, condensers, oil-water separators, or organic-water separators or organic removal devices such as decanters, strippers, or thin-film evaporation units.

A dedicated solvent recovery device refers to such control equipment (as described/defined above) that is specific to a given process or control system.

Comment: Two commenters (VI-B-60 and VI-B-65) stated § 63.753(c)(iv)(A) indicates that if a carbon adsorber is used, each owner or operator shall indicate each rolling period when the overall control efficiency of the control system is calculated to be less than 81 percent, the initial material balance calculation, and any exceedances as demonstrated through the calculation. However, only part (g)(1) of the "Test methods and procedures" section requires a material balance to be accomplished over a 7- to 30-day period. The remaining parts of (g) where a carbon adsorber may be used [parts (2) through (6)] appear only to require that the capture and control efficiency of the carbon adsorber be equal or greater than the 81 percent, with no material balance or any rolling period involved. The EPA needs to clarify this apparent inconsistency in requirements of when a material balance and a "rolling period" are needed.

Response: The EPA went back and reviewed the various reporting requirements associated with control devices. Having done this, the Agency does not agree with the commenter that the reporting requirements should be consistent regardless of the compliance approach. Not all compliance approaches lend themselves to rolling averages and not all

control/monitoring equipment provide the same types of data. In fact, § 63.749(g)(1) includes language that allows sources to use a liquid-liquid HAP or VOC material balance over 7- to 30-day periods in lieu of demonstrating compliance using the methods in § 63.749(g)(2),(3), or (4).

Comment: Two commenters (VI-B-57 and VI-B-61) stated that the reference to section 112(l) of the Clean Air Act noted in § 63.744(b)(3) -- Alternative volume reduction demonstration for hand-wipe solvents, appears to be misplaced. Requiring approval of each individual plan to undergo the complicated approval procedures of 112(l) is unwarranted and contrary to the intent of 112(l). Additionally, the EPA should delete the requirement for demonstrating that the 60 percent volume reduction provides emission reductions equivalent to the solvent composition or vapor pressure compliance options. It would be impossible for a facility to make such a demonstration. In promulgating the 60 percent reduction standard, EPA has already established a level of reduction that is equivalent to the other options.

Response: With regards to the cited reference to section 112(l), the Agency agrees with the commenters and is proposing amendatory language to remove all references to section 112(l). The Agency agrees with the commenters in that the language describing how the equivalency is to be demonstrated is confusing. Therefore, the proposed amendments to the final rule includes new language stating "The baseline shall be calculated using data from 1996 and 1997, or as otherwise agreed upon by the Administrator or delegated State Authority."

Comment: Commenter VI-B-57 stated that the references made to SIC codes do not include SIC code 4512: Scheduled Air Transportation. Because most airlines operate under this SIC code, the commenter recommended its inclusion in the list of example SIC codes.

Response: This is not a regulatory issue, but will be taken into account in those informational documents describing the affected industry. Table 1 in the preamble to the final rule included a listing of affected SIC codes and will also be revised accordingly. As of January 1, 1997, a new numerical coding system for classifying industries has been implemented by the U.S. Census Bureau. The new system is called the North American Industrial Classification System (NAICS). The NAICS codes have up to six digits whereas the SIC codes are four digits. This allows the ability to group industries into more sectors while allowing the identification of more

industry types. The table on the following page summarizes/cross-references the SIC and NAICS codes likely to be affected by the aerospace NESHAP.

AEROSPACE SIC TO NAICS CROSS-REFERENCE TABLE

SIC	Definition	NAICS	Definition
3721	Aircraft		
3724	Aircraft Engines and Engine Parts	336411	Aircraft Manufacturing
3728	Aircraft Parts and Auxiliary Equipment NEC (except fluid power aircraft subassemblies)	336412	Aircraft Engine and Engine Parts Manufacturing
		336413	Other Aircraft Part and Auxiliary Equipment Manufacturing
3728	Aircraft Parts and Auxiliary Equipment NEC (fluid power aircraft subassemblies)	332912	Fluid Power Valve and Hose Fitting Manufacturing
3761	Guided Missiles and Space Vehicles	336414	Guided Missile and Space Vehicle Manufacturing
3764	Guided Missile and Space Vehicle Propulsion Units and Propulsion Unit Parts	336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing
4512	Air Transportation, Scheduled (freight)	481112	Scheduled Freight Air Transportation
4581	Airports, Flying Fields, and Airport Terminal Services (airplane cleaning and janitorial services)	481111	Scheduled Passenger Air Transportation
		56172	Janitorial Services
4581	Airports, Flying Fields, and Airport Terminal Services (aircraft servicing and repairing)	48819	Other Support Activities for Air Transportation
4581	Airports, Flying Fields, and Airport Terminal Services (airfreight handling at airports, hangar operations, airport terminal services, aircraft storage, airports, and flying fields)	488119	Other Airport Operations
4581	Airports, Flying Fields, and Airport Terminal Services (private air traffic control)	488111	Air Traffic Control

Comment: Two commenters (VI-B-57 and VI-B-61) offered comments on the exemption for hand-held spray can applications in § 63.745(g)(4). Even though there is an exemption for hand-held spray can applications for topcoats and primers. ~~However,~~ there is no similar exemption for control of inorganic HAP emissions. Though hand-held spray cans used outside a paint booth or hangar would typically be exempt in any event for touchup operations, a specific spray can exemption is needed for purposes of clarity and to avoid confusion.

Response: The exemption for hand-held spray can applications was inserted under section 63.745(f)(3)(v) based on comments to the original (June 1994) proposed rule stating only small emission reductions would result from their regulation and that such applications are already exempt under SCAQMD Rule 1124. The hand-held spray can exemption could be perceived as unnecessarily restrictive to only address organic HAP emissions. The Agency agrees that the exemption should also be applicable to inorganic HAP emissions and added an exemption for the use of hand-held application methods under 63.745(g)(4)(x).

Comment: Two commenters (VI-B-57 and VI-B-61) noted there should be a reference to the term "H_i" in § 63.750(k) since

§ 63.749(h)(3) (i) cites this section for the method to determine "H_i."

Response: The Agency agrees with the commenter and has revised § 63.750(k) to read as follows: "... determine the mass of organic HAP emitted per unit volume of coating (chemical milling maskant) i as applied (less water), H_i (lb/gal)." This clarification is included in the final amendments to the NESHAP.

Comment: Commenter VI-B-53 stated that the Agency should allow for alternative methods for monitoring/recordkeeping/ reporting (MRR) as long as equivalent public health protection can be demonstrated.

Response: The EPA agrees with the commenter. Table 1 to Subpart GG incorporates by reference the applicable sections of the General Provisions Subpart A. This includes the relevant sections of 63.8(f), Use of an Alternative Monitoring Method, and 63.10(f), Waiver of Recordkeeping and Reporting Requirements. Both of these sections contained within the General Provisions allow the source to request an alternative(s) and specify the conditions that source must meet for approval of any alternative(s) by the Administrator (or a delegated state).

Comment: Commenter VI-B-63 recommended that under § 63.741 Applicability: To extend MACT controls to those sources that were "major" through the accumulation of unrelated emissions is unjustified on policy grounds. Therefore, it is recommended that the definition of "affected source" be changed to reflect only aerospace facilities that are major sources.

Response: In general, the Agency disagrees with the commenter and refers the commenter to the July 21, 1995 D.C. Circuit Court decision, National Mining Association, vs. U.S. Environmental Protection Agency, where the NMA challenged EPA's definition of major sources. The Court's decision reaffirmed EPA's implementation of the definition of major source which requires the aggregation of all hazardous air emissions within a plant site.

However, the Agency has provided guidance on the implementation of Section 112 standards with regard to major source determinations at Federal military installations (see the letter from John Seitz to the EPA Regional Air Director, dated August 2, 1996). In summary, this guidance allows for case-specific determinations regarding common control for separate military entities at the same military installation.

Comment: Commenter VI-B-63 requested military operations be exempted from NESHAP requirements during hostilities or war, or when national security is an issue.

Response: The EPA does not believe there is any technical justification for including such an exemption for the applicability of the final rule. Section 112(i)(4) of the Clean Air Act contains a "Presidential Exemption," which allows the President to exempt any source from compliance with a NESHAP for a period of up to 2 years if the President determines that the technology to implement the standard is not available and that the exemption is in the national security interests of the U.S. This provision would likely be broadly construed to allow the President to respond to emergencies such as war or national security issues. Because this exemption is provided by statute, there is no need to write an exemption into the text of the regulation.

Comment: Commenter VI-B-63 requested the definition of "aerospace vehicle or component" be revised to exclude purely military components such as weapon systems, military surveillance equipment, guns, etc.

Response: The EPA does not believe there is any technical justification for the suggested revision.

Comment: Commenter VI-B-63 recommended adding the following definition: "*Critical to flight performance* means those portions of the aircraft that are needed to fly the aircraft (e.g., wings, fuel tanks, cockpit)" because the term is used in the final rule and a definition is needed; otherwise it is too ambiguous.

Response: The EPA does not believe there is any technical justification for adding this new term to the definitions list.

Comment: Commenter VI-B-63 recommended adding the following definition for military aircraft: "Military aircraft means an aircraft produced under a Department of Defense (DoD) contract."

Response: The EPA does not believe there is any technical justification for adding this new term to the definitions list.

Comment: Commenter VI-B-63 recommended revising the definition for "nonchemical based depainting equipment" by adding the following clarification (see underlined text):

Nonchemical based depainting equipment means any depainting equipment or technique, including, but not limited to, media blasting equipment, that can depaint an aerospace vehicle or component in the absence of a liquid or paste chemical stripper. This definition does not include mechanical sanding or hand-sanding.

The commenter stated their proposed language provides the technically proper distinction between the liquid or paste chemical strippers and those (e.g., CO₂, SiO₂, acrylic, polyester) which work in a mechanical way.

Response: The EPA does not believe there is any technical justification for revising the existing definition for "nonchemical based depainting equipment" to provide the technically proper distinction between mechanical and chemical strippers. The Agency believes such a distinction is implicitly understood within the context of the existing definition.

Comment: Commenter VI-B-63 recommended changing the third sentence of the existing definition of "primer" to read as follows: "Inorganic coatings and coating that are defined as specialty coatings are not included under this definition." The commenter stated that inorganic coatings are not covered under this regulation and the current definition for primer also describes conversion coatings.

Response: Because NESHAP include both organic and inorganic HAP and some primers contain both types of HAP, the Agency does not think there is sufficient technical justification to modify the existing definition. All of the specialty coating definitions were developed with input from industry representatives attending the roundtable meetings.

Comment: Commenter VI-B-63 recommended adding a provision to allow the aerospace NESHAP to evolve and remain valid as new materials, techniques, and technologies are introduced into the aerospace industry. Therefore, in § 63.743(e), add the following: "As new materials, techniques, and technologies evolve, particular materials, techniques, and technologies called out in individual paragraphs may be obsolete, removed from service, or supplanted by advances to the state of the art. When the superiority of such advances has been established in practice, the Administrator shall issue a universal determination that the new material, technique, or technology may be substituted for the requirement specified in any paragraph under these rules. Until such determination is made, substitution of advanced materials, techniques, or technologies may be negotiated by the Administrator's representative on a case-by-case basis."

Response: This issue is not specific to the aerospace NESHAP or any other NESHAP for that matter. Accordingly, § 63.6 (General Provisions) provides regulatory guidance on this issue.

Comment: Commenter VI-B-63 stated that residue or contamination in potential leak path areas described in § 63.743(e)(2) could also result in catastrophic system failure. Therefore, add the words "including surfaces which are potential leak paths" at the end of § 63.744(e)(2).

Response: The Agency tried to follow-up on this issue with the listed contact person identified by the commenter. The Agency did not receive any additional information or technical justification (explanation) in response to its request for clarification of this issue. Since data/information are not presently available to serve as a basis for amending the final regulation, the EPA has decided to maintain the existing text for the listed exempt cleaning operations.

Comment: Commenter VI-B-63 stated that in § 63.744(b)(2) of the final rule, the term "composite vapor pressure" is incorrect. The formula in § 63.750(b) very definitely calculates a partial vapor pressure of organic VOC's. It does not calculate a total vapor pressure of the composite mixture. A statement of applicability should have been inserted. The NESHAP should clearly state that the vapor pressure requirement of 45 mm Hg is a calculated, hypothetical, ideal mixture value of a true single phase ideal solution that represents only the VOC components and it is not a true vapor pressure value. Furthermore, it should state that it is not valid for emulsions, multi-phase solvent mixtures, and solvents that have more than 5 percent nonvolatiles. Recommendation --> In § 63.744(b)(2), change: "Have a ~~composite~~partial vapor pressure of 45 mm Hg ..."

Response: While the Agency agrees with the commenter's technical argument, we believe the term is understood in terms of demonstrating compliance with the NESHAP requirements.

Comment: Commenter VI-B-63 recommended changing § 63.744(e)(11) to read as follows: "Cleaning and solvent usage associated with research and development, quality control, production testing, and laboratory testing."

Response: Production testing can result in significant emissions if the test cycle involves large scale operations. Therefore, the Agency does not agree with the recommended change to the existing exemption for cleaning and solvent usage.

Comment: Commenter VI-B-63 stated the listed compliance method in § 63.745 of the final rule is to comply with the standard and this does not make sense. The methods used to comply with § 63.747(e) also need to be further defined.

Response: The Agency does not agree; the listed compliance methods in § 63.745(e) are directly related to the specified coating limits and there are multiple compliance options that may be utilized to meet the limits or control system requirements. Similarly, the listed compliance methods in § 63.747(e) are directly related to the specified chemical milling maskant limits that were developed as part of the MACT floor and there are multiple compliance options that may be utilized to meet the limits or control system requirements.

Comment: Commenter VI-B-63 stated § 63.745(g)(2) of the final rule requires the owner or operator to shut down the operation if the pressure drop is outside the limit(s) specified by the manufacturer. The commenter believed the immediate shut down requirement is too severe and that the language should be softened to require shut down only if repair operations can not be accomplished within 24 hours. This would allow the current application procedure to be completed thereby avoiding the need to depaint and repaint due to the shutdown in the middle of an application. The commenter recommended changing the first sentence in § 63.745(g)(3), to read: "... shut down the operation immediately after the aircraft undergoing the painting operation is complete and take corrective action."

Response: The requirement to shut down the painting process immediately if the spray booth controls are not working properly is not unreasonable if you consider the relative amount of HAP emissions that could be emitted from spray coating operations. The Agency recommends that the commenter read § 63.6 in developing their own corrective action response as part of their facility (source) specific operation and maintenance plan.

Comment: Commenter VI-B-63 referenced § 63.750(a) composition and (b) vapor pressure determination in describing several existing and potential problems in trying to get vapor pressure and average molecular weight data for petroleum based hydrocarbons or cleaning solvents that have a refined petroleum cut component. The commenter detailed several example scenarios where problems are likely to develop in trying to obtain accurate information on hydrocarbon content of cleaning solvents. The commenter recommended the following changes in § 63.750(a): ~~The data shall identify all components of the cleaning solvent and shall demonstrate that one of the approved composition definitions is met.~~ In § 63.750(b), eliminate the marked sentence in paragraph 2: ...using manufacturer's supplied data ~~or a gas~~

~~chromatographic analysis in accordance with ASTM E 260-91 (incorporated by reference as specified in § 63.14 of subpart A of this part) and by...~~

Response: The commenter's argument is not compelling enough to justify changing the NESHAP requirements. Several of the industry suppliers and end-users attended and participated in the aerospace roundtable meetings and were integral contributors and reviewers of the requirements in the final rule. Knowing this, along with no other comments raised on this issue, leads the EPA to believe that aerospace facilities and their cleaning solvent suppliers have resolved (or are working on resolving) this issue.

Comment: Commenter VI-B-63 asked why § 63.752(b)(4) requires monthly cleaning solvent usage records at each operation and a list of the processes for the several exempt cleaning operations. The commenter stated such requirements are wasteful and serve no practical utility or benefit to the environment and recommended it be deleted.

Response: The Agency included the recordkeeping requirements to provide enforcement officials with some information on the relative amounts of these cleaning solvents used in the various exempt cleaning operations. With several process steps and types of cleaning operations exempted, it would be very easy for a facility to include nonexempt cleaning operations and use nonapproved/noncompliant cleaning solvents.

This issue was also raised in comments to the original proposed NESHAP (June 6, 1994) and the EPA changed the recordkeeping requirements from daily to monthly in response to those comments (see 13.6.1 in BID Volume II). The issue of "practical enforceability" for such recordkeeping requirements was based on the best information available at the time.

Comment: Commenter VI-B-63 stated the listing of aircraft parts in § 63.752(e)(4) and the listing of aircraft parts removed prior to depainting in § 63.753(d)(1)(viii) do not, in any way, enhance the environmental recordkeeping requirements. Parts may be removed from an aircraft at one location and then shipped to another for repair. If EPA decides to keep these requirements, a few issues need to be addressed. First, how do we handle variations of the same model? Do we need a list for each sub model? The second issue concerns low volume aircraft. Do you want a list kept for sister service plans? These requirements are labor intensive for little or no gain. The commenter recommended deleting these requirements.

Response: The Agency included the recordkeeping requirements to provide enforcement officials with some information on the relative number of parts removed from each type of aircraft prior to depainting operations. The final rule states that this listing requirement applies to each type of aircraft, not each individual aircraft. For most facilities, this minimizes the paperwork burden significantly. As to the commenter's issue of sub models, the Agency's interest is in depainting operations and emissions. If the same parts, subassemblies, and assemblies are normally removed for all aircraft with the same model number, a single listing for that "type" of aircraft would be sufficient. The commenter's second issue concerning low volume aircraft is specifically addressed in § 63.752(e)(4) which states: "Prototype, test model or aircraft that exist in low numbers (i.e., less than 25 aircraft of any one type) are exempt from this requirement."

This issue was also raised in comments to the original proposed NESHAP (June 6, 1994) and the EPA continues to believe that monthly records are a reasonable requirement for practical enforceability (see 13.8 in BID Volume II) of the NESHAP.

Comment: Commenter VI-B-63 asked about EPA's intention on the "reduction of monitoring data" in § 63.751(f). Is the intent that raw data need not be recorded, even when the raw data are used to determine a "reduced" parameter which is required to be recorded? As specified in § 63.751(f)(2), all emission data has to be converted into units specified in the NESHAP for reporting purposes.

Response: Common sense should apply. If the raw data are used to determine the parameter to be recorded, there should be some documented supporting data for those person(s) reviewing and/or approving the information to determine if the parameter was determined/calculated properly.

Comment: Commenter VI-B-63 raised several concerns with "application problems" stating the NESHAP application requirements are ambiguous and create several uncertainties as to which NESHAP is relevant to specific shop functions. The following example needs clarification:

-- aerosol can (or pump spray container) application of a volatile "cleaning solvent" under pressure. There are several issues to be considered in determining how/if/which standard is applicable. The commenter also provided additional details involving other examples using different parts that the cleaning solvent is applied to.

Response: The EPA spent significant time and resources developing an emission standard which it believes to be enforceable. Numerous State and local regulatory agencies were involved in the development of the standard. The EPA believes that the standard, as promulgated, provides affected sources and State and local agencies with enforceable requirements. Specific questions on application issues such as the ones raised by the commenter should be taken up with the appropriate region or delegated State authority.

Comment: Commenter VI-B-63 asked what constitutes equivalent emission control? Consider a situation where a base used a small ultrasonic cleaning tank (five gallons) containing cleaning solvent to clean aircraft instrument parts. Does § 63.744(d) require the base to pour in five gallons of solvent, turn on the ultrasonics, wait a half hour to degas, clean the part for three minutes, and then pour it all back into a closed can? Consider all the solvent lost in the pouring back and forth. If the base has a lid on the tank, is this "equivalent emission control?"

Maybe the approach should be to target total emissions from any cleaning tank or cleaning line (machine or manual). Losses from either evaporation or drag-out should be the target. Vapor pressure limits provide significant controls on evaporation, only if the unevaporated portion does not enter the environment. Drag-out or carry-over of cleaner enters the environment either in a rinse waste stream, evaporation from the rinse process (if a hot rinse), or just plain evaporation from the part. The loss from the latter is fixed by the carry-over, not the vapor pressure.

Response: The Agency does not agree that the described situation (i.e., solvent cleaning process) would be subject to the flush cleaning requirements in § 63.744(d). Such operations are more likely to be covered under the degreasing NESHAP.

Comment: Commenter VI-B-63 stated many cleaning solvent manufacturers refuse to give information on the exact components of their proprietary products. These components can have a substantial effect on the vapor pressure of component solvents which is not reflected in the formula. Section 63.750(a) requires detailed composition reporting, but does not provide a de minimis reporting level.

Response: De minimis levels on the HAP content of cleaning solvents were included in the proposed and final amendments to the NESHAP and are specified in § 63.741(f).

Comment: Commenter VI-B-63 noted that the formula in § 63.750(b) does not apply to emulsions, multi-phase products, and solutions having a large amount of nonvolatile surfactants, detergents, emulsifiers and/or wetting agents, or to nonideal mixtures. We suggest that a scientifically valid test method be developed to clarify the rule.

Response: Based on the information collected from industry sources and the related discussion at the roundtable meetings, the Agency does not think this is a major technical issue, nor does it think such issues will have a significant impact on the facilities that will have to comply with the NESHAP or the resulting emissions. The EPA believes that the standard, as promulgated, provides affected sources and State and local agencies with enforceable requirements. Additionally, § 63.7(f) provides the owner or operator of an affected source with the flexibility to use any alternative test method they want as long as it is submitted and approved by the appropriate region or delegated State authority.

Comment: Commenter VI-B-63 suggested an allowable equivalent test method to measure the vapor pressure of mixtures where the vapor pressure and molecular weight of one or more components are unknown, or where the mixture is nonideal, or where the manufacturer claims proprietary composition.

An appropriate test method may have to be developed, since existing vapor pressure measurement methods are based on pure liquids in which the vapor pressure does not change as a proportion of the sample is vaporized. In the case of cleaning solvent mixtures, the vapor pressure will decrease significantly as a portion of the sample is vaporized. The effect is major for the "contact cleaners" in aerosol cans. The liquid on the surface, or on a wiping cloth, is significantly different in composition from the "in-can" composition reported by the manufacturer.

One feasible test concept would be to analyze the initial vapor for composition. Based on the assumption of ideal behavior of the vapor (as a gas at low pressure, which is a more valid assumption than that of a liquid) and that current GC/MS instruments can deal with and identify the components in very small samples, partial pressures of the components could be calculated and the partial pressures of the VOC's in the vapor summed up to obtain the initial total VOC partial pressure.

Response: Based on the information collected from industry sources and the related discussion at the roundtable meetings, the Agency does not think this is a major technical issue,

nor does it think such issues will have a significant impact on the facilities that will have to comply with the NESHAP or the resulting emissions. The EPA believes that the standard, as promulgated, provides affected sources and State and local agencies with enforceable requirements. Additionally, § 63.7(f) provides the owner or operator of an affected source with the flexibility to use any alternative test method they want as long as it is submitted and approved by the appropriate region or delegated State authority.

Comment: Commenter VI-B-63 mentioned that in § 63.742, the semiaqueous cleaning solvent definition, there are industrial cleaning materials and processes that do not fit the definition, but which do reduce emissions. This problem needs to be acknowledged and addressed. The problem occurs when using an AXAREL 52 a semiaqueous (as stated by DuPont, the manufacturer) cleaning solvent. The cleaning tank contains 100 percent AXAREL 52 and no water and is open. The rinse tank is all water, in which the drag-out of the AXAREL 52 is removed from the part. The AXAREL 52 floats to the surface in this tank and is skimmed off. This process does not fit the NESHAP definition, but fits the § 63.744(d) description as an exception.

Response: Based on the information provided by the commenter, it appears that even though AXAREL is defined by DuPont as a semiaqueous, it does not meet the definition in the NESHAP (i.e., a solution in which water is a primary ingredient--at least 60 percent water) and therefore does not meet the exclusion of semiaqueous cleaning solvents mentioned in § 63.744(d).

Comment: Commenter VI-B-48 asked what the visual continuity check for waterwash system mean? Is there some guideline or is it subjective to the person responsible for monitoring the system? Any small break in the water curtain would pass overspray up the stack.

Response: The Agency does not have the necessary information to provide guidelines on visual continuity checks. Such criteria should be included as part of the source's operating and maintenance (O/M) plan or operating permit application and submitted to the proper authorities for review/approval. Additionally, § 63.8(f) provides the owner or operator of an affected source with the flexibility to use any alternative monitoring method they want as long as it is submitted and approved by the appropriate region or delegated State authority.

Comment: Commenter VI-B-48 asked if maintenance procedures for waterwash systems includes having to record and note (on a daily basis) any chemical additives necessary for a waterwash operation along with the required visual continuity/flow characteristics check?

Response: The Agency does not have the necessary information to provide guidance on waterwash systems and the necessary/required recordkeeping requirements. Such criteria should be included as part of the source's operating and maintenance (O/M) plan or operating permit application and submitted to the proper authorities for review/approval.

2.7 SPECIALTY COATING DEFINITIONS

Comment: Two commenters (VI-B-52 and VI-B-63) questioned the last sentence of the definition of "Electric or radiation-effect coating" as being unclear. Did the EPA intend to exempt "classified" coatings from the provisions of this subpart and not from the definition itself?

Suggested wording was provided by the commenters.

Response: The Agency agrees that the word "as" needs to be added to the definition. The revised definition in Appendix A of the amended final rule is:

Electric or radiation-effect coating - A coating or coating system engineered to interact, through absorption or reflection, with specific regions of the electromagnetic energy spectrum, such as the ultraviolet, visible, infrared, or microwave regions. Uses include, but are not limited to, lightning strike protection, electromagnetic pulse (EMP) protection, and radar avoidance. Coatings that have been designated as "classified" by the Department of Defense are exempt.

Comment: Commenter VI-B-63 requested that self-priming topcoats be included in § 63.745(f)(2) of the final rule to be consistent with the NESHAP rules.

Response: The Agency agrees with the commenter and has added parenthetical text in the final amendments clarifying that self-priming topcoats are included as topcoats.

Comment: Commenter VI-B-63 stated that pretreatment coatings defined in appendix A to subpart GG includes coatings used on composite radomes for adhesion and ease of stripping. The epoxy primer is more difficult to remove, which results in damage to the radome when removing the coating system. The pretreatment coating definition needs to be modified to allow for the use of this coating on composites. If the pretreatment coating definition is not changed, then a low VOC primer may be required. This change to a low VOC epoxy primer could result in excessive damage to the radomes as the coating system is removed. Recommend that the definition be changed to: *Pretreatment coating* means an organic coating that contains at least

0.5 percent acids by weight and is applied directly to metal or composite surfaces to provide surface etching, corrosion resistance, adhesion, and ease of stripping.

Response: The Agency agrees with the commenter in that pretreatment coatings are used on composites and has modified the definition as suggested.

2.8 CTG ISSUES

Comment: Commenter VI-B-56's Southern California operations have identified a small number of extrudable/rollable/brushable sealants currently in use that have VOC contents > 240 g/L. Of most concern is Courtaulds Aerospace Products PR-1436-G E-2 corrosion inhibiting sealant which is used, in a brush on application, on the commenter's 747 program. (The other materials are low enough usage to qualify for low usage exemptions.) The PR-1436 product has 268 g/L VOC and the expected usage for 1996 at facilities in Southern California is 95 gallons. In order to continue using this material as the commenter has for the past 10 years, the commenter requested that the allowable VOC limit for extrudable/rollable/brushable sealants be increased to 300 g/L.

Response: Since the specialty coating limits are meant to reflect baseline levels and will have no significant impact on emission reductions, the Agency raised the VOC limit to 280 g/L (2.3 pounds/gallon) in the final CTG document. The 280 g/L limit was selected (instead of the 300 g/L) based on the commenter's data as to what is being used and is readily available.

Comment: Two commenters (VI-B-53 and VI-B-59) expressed concern with the excessively broad definitions for certain specialty coatings and their VOC limits in the CTG. Commenter VI-B-53 requested that EPA clarify the specialty coatings definitions to ensure consistent field implementation. In addition, commenter VI-B-59 stated several specialty coatings used by the aerospace companies located in San Diego County are not included in the proposed model rule (in the CTG).

Commenter VI-B-59 also raised several other concerns involving: Clear Coating (VOC limit 720 g/L) - Considering that there are clear coatings available for application to metals or previously coated colored surfaces that comply with a general VOC limit for topcoats of 420 g/L, the District recommends that this definition be narrowed to allow only specific types of clear coatings with some precisely defined, unique specified properties to be qualified under this category. Otherwise, it should be deleted from the proposal.

Lacquer (VOC limit 830 g/L) - The proposed definition is a textbook definition of lacquers which simply states that these coatings are polymer solutions rather than emulsions or dispersions. There is no mention of any special requirements which would justify the VOC limit being higher than the one used in other industries. The District recommends that this definition be revised by specifying what special properties are required for the aerospace industry or reduce the VOC limit to 680 g/L to be consistent with the current lacquer VOC standards used for wood and architectural coatings.

Specialized Function Coating (VOC limit 890 g/L) - The commenter acknowledged that it is difficult to provide definitions for all specialized coatings used in the aerospace industry. The definition does not specify what "limited application" means and what amount of coatings represents "low volume usage." It also does not identify what constitutes "extremely specific engineering requirements." The suggested language in this definition is too vague and creates a huge loophole in the proposed model rule. The commenter recommended deleting the proposed definition and including an additional provision for small usage coatings. This provision would exempt coatings used in volumes not exceeding the larger of the following: 200 gallons per year for all such coatings, or a specified percentage of volume, as applied, or all aerospace coatings used at a facility. This percentage should be determined on a case-by-case basis and should not represent more than 5 percent of the total emissions from all aerospace coatings applied at the facility.

Commenter VI-B-59 also suggested that the following specialty coatings categories and the corresponding definitions and VOC limits be added to the proposed model rule:

- Bearing Coating (VOC limit 620 g/L),
- Dry Lubricative Materials for nonfastener lubrication (VOC limit 880 g/L), and
- Caulking and Smoothing Compounds (VOC limit 850 g/L).

(Example definitions were also provided for these categories.)

Response: These issues involving various specialty coating definitions and VOC content limits have been the cause of much discussion and disagreement between industry representatives and State and local enforcement agencies. Since the specialty coating limits are meant to reflect baseline levels nationwide and will have no significant impact on emission reductions, the Agency has decided to add the three additional categories suggested by commenter VI-B-59 with the

suggested limits and maintain the proposed definitions and VOC content limits that were included in the draft CTG document. The Agency has not collected sufficient data to determine a volume which represents small usage coatings. Each State or local agency may determine what levels are appropriate for small volume usage of specialty coatings.

Comment: Commenter VI-B-61 suggested the following changes to the CTG hand-wipe solvent cleaning requirements to bring the CTG in conformity with the revised NESHAP: delete the words "nonabsorbent, nonleaking" from the CTG and model rule (so that state regulators are not encouraged to impose standards that are impossible to achieve).

Response: The Agency agrees with the commenter and has made the appropriate changes to the final CTG document to be consistent with the NESHAP.

Comment: Commenter VI-B-62 suggested modifying the presumptive RACT requirements in Section 4.0 of the CTG. Many space program manufacturing and rework operations are located in areas which are currently designated as nonattainment. Since operations in these areas will be subject to both the CTG and the NESHAP requirements, it is important to maintain consistency between the two rules. The NESHAP includes, but exempts, space operations from all restrictions except those for depainting operations. Since the aerospace CTG does not address paint removal, it seems to make sense to include, but exempt, space operations in all CTG requirements in order to avoid confusion as to the applicability of the CTG.

Response: The Agency agrees with the commenter and has modified the appropriate section of the final CTG document.

2.9 METHOD 319

Comment: Three commenters (VI-B-51, VI-B-54, and VI-B-55) raised several issues related to proposed Method 319. The proposed Method 319 is very similar to another test method EPA published as a proposed test method in 1993 and cited as a reference in the proposed Method 319. Commenter VI-B-55 commented on that test method in a letter dated November 22, 1993 (a copy of that letter was attached) and stated those same comments are equally applicable to the proposed Method 319. Commenter VI-B-55 disagreed that Method 319 is a valid test to evaluate the performance of paint overspray filters stating it is technically flawed as was the 1993 proposed test method.

Response: The proposed test method is based on several years of work performed for EPA and began with an exploratory study, QA level IV, to determine the general magnitude at which respirable-sized overspray particles may penetrate paint arrestors. This study was performed under Cooperative Agreement (No. CR 817083-01-0) with EPA and was completed in early 1994. The test methodology was based on that successfully used for several years to quantify the aerosol penetration of ventilation filters performed under a series of Cooperative Agreements with EPA at QA level III and under a research contract with the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). Building on the experience gained on the exploratory program and the ventilation filter programs, a QA level II program was undertaken in 1994-1995 to measure the filtration efficiency of five types of paint arrestors for a liquid-phase challenge aerosol.

In 1995, the EPA defined the level of MACT for two- and three-stage paint overspray arrestors. In close cooperation and coordination with EPA, tests of the MACT arrestors were conducted in late 1995 under contract with the Aerospace Industry Association and a commercial manufacturer to define the filtration efficiency of the paint arrestors determined by EPA to represent MACT. These data were then used by EPA to set the minimum filtration efficiency requirements for existing and new facilities.

Comment: Three commenters (VI-B-51, VI-B-54, and VI-B-55) took issue with the use of substitute materials for Method 319. The commenters stated there is no correlation between physical characteristics and paint particles are almost spherical in shape despite the particle size, while KCl and oleic acid do not produce round droplets.

Response: Method 319 will retain use of oleic acid and KCl challenge aerosols. Over the 0.3 to 10 μm diameter size range, collection of paint overspray in arrestors arises primarily from the filtration processes of inertial impaction and interception. Impaction occurs when the inertia of the particle causes it to impact the collection surface of the arrestor (e.g., a fiber of a filter) as the airflow stream line it was following changes course abruptly to flow around the collection surface. Interception occurs when the airflow streamline the particle is following comes within one particle radius of the collection surface resulting in contact between the particle and arrestor. Ideally, when a particle contacts the collection surface, it will be captured. However, if the adhesion between the particle and the collection surface is weak, the particle may be re-entrained

in the airflow and pass through the arrestor. This is often referred to descriptively as "particle bounce." Both impaction and interception are dependent upon the adhesion between the particle and collection surface. The combination of dry collection surfaces and a dry particle will tend to have the least adhesion while having the particle and/or collection surface wet will tend to increase adhesion.

When overspray droplets reach the paint arrestor in a painting facility, they can be wet, tacky, or completely dry. Also, the arrestor itself may be wet from paint collection, tacky, or dry. Thus, the actual condition for the particle-collector interaction can range from dry-dry to wet-wet.

The reason for using oleic acid and potassium chloride (KCl) is to span this range of particle-collector adhesion. The KCl interacts with the arrestor as a dry overspray would, i.e., with relatively low adhesion. The oleic acid interacts with the arrestor as a wet overspray particle would, i.e., with relatively high adhesion. While other liquid- and solid-phase material could have been chosen, oleic acid and KCl were selected because they are safe materials and have properties that are compatible with accurate size measurement by the optical particle counter (OPC) (i.e., they are nonlight-absorbing and have compact shapes of spherical for oleic acid droplets and cubic or cubic clusters for KCl). The use of KCl is consistent with ASHRAE's fractional efficiency standard for ventilation filters (ASHRAE Standard 52.2P). Like Method 219, the ASHRAE method uses KCl to simulate a dry challenge aerosol.

Actual paint was not selected because: (a) paint contains volatile compounds which result in changes in particle size between the upstream and downstream sample probe locations and possibly between the probe location and the particle counter measurement chamber; (b) the multi-component nature of paint droplets (containing suspended pigments and volatile carriers) may lead to inaccurate size measurement by the optical particle counter; (c) the volatile components of paint require greater care by the test laboratory relative to room ventilation and treatment of test duct exhaust; (d) as with oleic acid and KCl, even with actual paint at least two types would be required to provide a liquid-phase and solid-phase challenge aerosol; and (e) the collection efficiency for a given particle due to impaction and interception is not related to the chemical content of the particle but rather to its physical characteristics of phase (liquid or solid) and

aerodynamic diameter. Thus, particles other than actual paint particles may be reliably used so long as they are of equivalent phase and aerodynamic diameter.

By selecting oleic acid and KCl as simulants for wet and dry overspray, the amount of testing needed is reduced because only two challenge materials are used, particle sizing accuracy is maintained, and safety and handling issues associated with volatile paint components are avoided.

It is also important to note that because the efficiency is being determined by the ratio of downstream to upstream concentration measurements made as a function of particle size, the size distribution of the challenge aerosol is not of importance (other than providing sufficient concentration of particles over the measurement range 0.3 to 10 μm). This differs from gravimetric approaches where the size distribution has a strong influence on the weight percent captured by the arrestor.

Comment: Two commenters (VI-B-54 and VI-B-55) stated the NESHAP as proposed, will have a significant economic impact on small businesses in that filter manufacturers will be required to test all of the different filters that are sold to the aerospace industry, particularly if they are required to certify complete filtering systems which include products they do not manufacture or market (i.e., combined multi-stage filtration systems). The commenters went on to explain that they have been working since 1992 to develop a test method, using paint, that will give the fractional efficiency of their filters. Earlier this year, the commenters reached an agreement with an independent commercial testing laboratory and the testing should be commercially available during the first quarter of 1997. The commenter asked if a better method is available, should not the EPA take time and effort to evaluate it?

Response: The NESHAP has been revised such that for a paint arrestor system or subsystem which has been tested by this method, adding additional filtration devices to the system or subsystem shall be assumed to result in an efficiency of at least that of the original system without the requirement for additional testing. Thus, a manufacturer of a "first stage" paint arrestor (i.e., the stage that collects the gross overspray particles and provides "protection" to a subsequent stage or stages) would not be required to test his product so long as it was used in conjunction with a certified downstream arrestor system.

Comment: Commenter VI-B-54 stated that the proposed test method for determining filtration efficiency does not differentiate between "paint overspray arrestor" filters and "particulate" filters. They are very different and if the Agency is to achieve its stated objectives, it must promulgate rules that address the real challenges of the marketplace.

Response: The NESHAP retains equal requirements for "paint overspray arrestors" and "particulate" filters. The Agency acknowledges that filters designed to capture dry particles may differ from those designed exclusively to capture wet particles. However, this does not preclude applying the same filtration specifications to both and, in terms of emission control, it is reasonable to do so. Also, while the paint spray consists of liquid-phase droplets in the immediate vicinity of the object being painted, the overspray may become dry by the time it reaches the arrestors; this will depend on the size of the booth/hangar and the drying speed of the paint droplets. Because of the potential for the overspray to be dry when it interacts with the arrestor, both liquid and solid phase tests are required.

Comment: Commenter VI-B-51 reiterated that an optical particle counter was proposed as a method to measure particle size distribution; and the proposed number of channels is 12. For all practical purposes, 5 to 8 channels are well suited for classifying particle size distribution for filter testing. The problem of particle generation will require more time and effort to generate enough numbers of large particles to satisfy the accurate measurement of the optical particle counter.

Response: The filtration efficiency of paint arrestors (and filters in general) often exhibit rapidly changing efficiency as particle size changes. To maintain sufficient resolution with respect to particle size, the method retains the requirement for a minimum of 12 particle-sizing channels. This specification is also consistent with the requirements of ASHRAE Standard 52.2P.

Comment: Commenter VI-B-51 also raised the issue of aerodynamic diameter. If real paint particles are used in the test, aerodynamic diameter is not necessary. The reason is that aerodynamic is used to account for nonspherical or odd shaped particles; and paint particles are almost spherical. Also, the use of KCl particles, which are not spherical, demands the use of aerodynamic diameter.

Response: The method retains the use of aerodynamic diameter as the means of reporting particle size. For the particle size range from 0.3 to 10 μm diameter, particle impaction is often

the dominant collection mechanism. Because impaction is independent upon the aerodynamic diameter, aerodynamic diameter was chosen as the means of reporting particle size.

Comment: Three commenters (VI-B-51, VI-B-54, and VI-B-55) questioned the test rig used in proposed Method 319 stating:

-- the design of the test duct involving the 180° bend must accelerate the loss of particles to the outside wall of the bend;

-- the blower should not be located after the HEPA filter;

-- the test duct has an unnecessarily long length;

-- the upstream and downstream sampling locations are too far away from the test filter;

and

-- there should be a final filter installed at the exhaust of the test duct.

Response: The method has been revised to allow additional flexibility for alternate duct configurations. The 180° bend in the duct has been made optional thereby allowing use of a straight duct. Also the measurement procedures have been revised to allow the use of two particle counters to allow simultaneous sampling (one sampling upstream and one sampling downstream). The two counters must be closely matched in flow rate and optical design (e.g., the same brand). To compensate for possible bias, and changes in bias, between the two particle counters, each individual arrestor test begins with a 100 percent penetration test (i.e., a no-filter test) followed immediately by the arrestor test. This same 100 percent penetration test also compensates for possible bias resulting from particle losses in the test duct.

Sections 6.1.2 and 6.5 of the amended rule were changed to read as follows:

6.1.2 The configuration and dimensions of the duct can deviate from those of Figure 319-1 provided that the following key elements are maintained: the test duct must meet the criteria specified in Table 319-1; the inlet air is HEPA filtered; the blower is on the upstream side of the duct thereby creating a positive pressure in the duct relative to the surrounding room; the challenge air has a temperature between 50 and 100°F and relative humidity of less than 70 percent; the angle of the upstream transition (if used) to the paint arrestor must not exceed 7°; the angle of the downstream transition (if used) from the paint arrestor must not exceed 30°; the test duct must provide a means for mixing the challenge aerosol with the upstream flow (in lieu of any mixing device, a duct length of 15 duct diameters fulfills this requirement); the test duct must provide a means for mixing any penetrating aerosol with the downstream flow (in lieu of any mixing device, a duct length of 15 duct diameters fulfills this requirement); the test section must provide

a secure and leak-free mounting for single and multiple stage arrestors; and the test duct may utilize a 180° bend in the downstream duct.

6.5 Aerosol Sampling System. The upstream and downstream sample lines must be made of rigid electrically-grounded metallic tubing having a smooth inside surface, and they must be rigidly secured to prevent movement during testing. The upstream and downstream samples lines are to be nominally identical in geometry. The use of a short length (100 mm maximum) of straight flexible tubing to make the final connection to the OPC is acceptable. The inlet nozzles of the upstream and downstream probes must be sharp-edged and of appropriate entrance diameter to maintain isokinetic sampling within 20 percent of the air velocity.

6.5.1 The sampling system may be designed to acquire the upstream and downstream samples using (a) sequential upstream-downstream sampling with a single OPC, (b) simultaneous upstream and downstream sampling with two OPC's, or (c) sequential upstream-downstream sampling with two OPC's.

6.5.2 When two particle counters are used to acquire the upstream and downstream counts, they must be closely matched in flowrate and optical design.

TECHNICAL REPORT DATA

(Please read Instructions on reverse before completing)

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17. KEY WORDS AND DOCUMENT ANALYSIS		
a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air Pollution Aerospace Manufacturing and Rework Hazardous Air Pollutants Cleaning Operations Surface Coating (Painting) Depainting	Air Pollution Control MACT Coating Operations Cleaning Operations	
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