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Friday  
March 27, 1998

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**Part II**

**Environmental  
Protection Agency**

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**40 CFR Parts 9 and 63  
Aerospace Manufacturing and Rework  
Facilities; National Emission Standards  
for Hazardous Air Pollutants and Control  
Techniques Guideline Document for  
Source Categories; Final and Proposed  
Rules**

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 9 and 63**

[AD-FRL-5978-4]

RIN 2060-AE02

**National Emission Standards for Hazardous Air Pollutants and Control Techniques Guideline Document for Source Categories: Aerospace Manufacturing and Rework Facilities**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule and release of final control techniques guideline (CTG) document.

**SUMMARY:** This action finalizes several amendments to the national emission standards for hazardous air pollutants (NESHAP) for aerospace manufacturing and rework facilities proposed in the **Federal Register** on October 29, 1996 (61 FR 55842). The amendments include: 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; addition of a test method for determining the filtration efficiency of dry particulate filters; 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 an exemption for certain water-reducible coatings; addition of an exemption from inorganic HAP requirements for hand-held spray

can applications; addition of an essential use exemption for cleaning solvents; clarification of compliance dates; clarification of the applicability of new source MACT to spray booths; clarification and addition of emissions averaging provisions; revision of the requirements for new and existing primer and topcoat application operations; clarification of monitoring requirements for dry particulate filter usage; revision of the standard for repainting operations; addition of a cross reference to requirements in the General Provisions in subpart A of part 63; addition of appendix A to this subpart containing definitions for specialty coatings; miscellaneous changes to the proposed amendatory language; and minor technical corrections, including correction of the OMB tracking number in 40 CFR part 9 (Section 9.1), that were not part of the October 29, 1996 proposal. Today's action takes final action on all of these amendments.

**EFFECTIVE DATE:** March 27, 1998.

**ADDRESSES:** *Control Techniques Guideline.* Copies of the final CTG may be obtained from the U. S. EPA Library (MD-35), Research Triangle Park, NC 27711; telephone (919) 541-2777.

An electronic version of documents from the Office of Air and Radiation (OAR) are available through EPA's OAR Technology Transfer Network Web site (TTNWeb). The TTNWeb is a collection of related Web sites containing information about many areas of air pollution science, technology, regulation, measurement, and prevention. The TTNWeb is directly accessible from the Internet via the World Wide Web at the following

address, "http://www.epa.gov/ttn". Electronic versions of this preamble and rule are located under the OAR Policy and Guidance Information Web site, "http://www.epa.gov/ttn/oarpg/", under the Recently Signed Rules section. If more information on the TTNWeb is needed, contact the Systems Operator at (919) 541-5384.

**FOR FURTHER INFORMATION CONTACT:** For information concerning this notice and analyses performed in developing this rule, contact Ms. Barbara Driscoll, Policy Planning and Standards Group, Emission Standards Division (MD-13), U. S. Environmental Protection Agency, Research Triangle Park, NC 27711; telephone number (919) 541-0164. For implementation issues (guidance documents), contact Ms. Ingrid Ward, Program Review Group, Information Transfer and Program Integration Division (MD-12), U. S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone number (919) 541-0300. For information concerning applicability and rule determinations, contact your State or local representative or the appropriate EPA regional representative. For a listing of EPA regional contacts, see the following **SUPPLEMENTARY INFORMATION** section.

**SUPPLEMENTARY INFORMATION:**

**Regulated Entities**

Entities potentially regulated by this action are owners or operators of facilities that are engaged, either in part or in whole, in the manufacturing or rework of commercial, civil, or military aerospace vehicles or components and that are major sources as defined in § 63.2 of this part. Regulated categories include:

Category	Examples of regulated entities
Industry .....	Facilities that are major sources of hazardous air pollutants and manufacture, rework, or repair aircraft such as airplanes, helicopters, missiles, rockets, and space vehicles.
Federal Government .....	Federal facilities that are major sources of hazardous air pollutants and manufacture, rework, or repair aircraft such as airplanes, helicopters, missiles, rockets, and space vehicles.

This table is not intended to be exhaustive, but rather it provides a guide for readers regarding entities that EPA is now aware could potentially be regulated by this action. Other types of entities not listed in the table could also be regulated. To determine whether your facility [company, business, organization, etc.] is regulated by this action, you should carefully examine the applicability criteria in § 63.741 of the NESHAP for aerospace manufacturing and rework facilities promulgated in the **Federal Register** on September 1, 1995 (60 FR 45948). If you

have questions regarding the applicability of this action to a particular entity, contact the appropriate regional representative:

**Region I**

NESHAP (MACT) Coordinator, U.S. EPA Region I, John F. Kennedy Federal Building, One Congress Street, Boston, MA 02203-001, (617) 565-3438

**Region II**

Umesh Dholakia or Yue-On Chiu, U.S. EPA Region II, 290 Broadway Street,

New York, NY 10007-1866, (212) 637-4023 (Umesh), (212) 637-4065 (Yue-On)

**Region III**

Bernard Turlinski, U.S. EPA Region III, 841 Chestnut Building, Philadelphia, PA 19107, (215) 566-2150

**Region IV**

Leonardo Ceron, U.S. EPA Region IV, Atlanta Federal Center, 61 Forsyth Street SW, Atlanta, GA 30303-3104, (404) 562-9129

**Region V**

Emmett Keegan, U.S. EPA Region V, 77 West Jackson Boulevard, Chicago, IL 60604-3507, (312) 886-0678

**Region VI**

Elvia Evering, U.S. EPA Region VI, First Interstate Bank Tower, @ Fountain Place, 1445 Ross Avenue, 12th Floor, Suite 1200, Dallas, TX 75202-2733, (214) 665-7575

**Region VII**

Richard Tripp, U.S. EPA Region VII, Air Toxics Coordinator, 726 Minnesota Avenue, Kansas City, KS 66101, (913) 551-7566

**Region VIII**

Heather Rooney, U.S. EPA Region VIII, Air Toxics Coordinator, 999 18th Street, Suite 500, Denver, CO 80202-2466, (303) 312-6971

**Region IX**

Nikole Reaksecker, U.S. EPA Region IX, Air Division-6, 75 Hawthorne Street, San Francisco, CA 94105, (415) 744-1187

**Region X**

Andrea Wullenweber, U.S. EPA Region X, Air Toxics Coordinator, 1200 Sixth Avenue, Seattle, WA 98101, (206) 553-8760

These amendments to the rule will not change the basic control requirements of the rule or the level of health protection it provides. The rule requires new and existing major sources to control emissions of hazardous air pollutants to the level reflecting application of the maximum achievable control technology.

In addition, the EPA announces the availability of a final control techniques guideline (CTG) document for control of volatile organic compound (VOC) emissions from aerospace manufacturing and rework facilities. This document has been prepared in accordance with section 183(b)(3) of the Clean Air Act Amendments of 1990 (the "Act") 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. The final document recommends RACT for industries included in, but not limited to, 10 Standard Industrial Classification (SIC) codes: SIC 3720, Aircraft and Parts; SIC 3721, Aircraft; SIC 3724, Aircraft Engines and Engine Parts; SIC 3728, Aircraft Parts and Equipment; SIC 3760, Guided Missiles, Space Vehicles, and Parts; SIC 3761, Guided Missiles and Space Vehicles;

SIC 3764, Space Propulsion Units and Parts; SIC 3769, Space Vehicle Equipment; SIC 4512, Scheduled Air Transportation; and SIC 4581, Airports, Flying Fields, and Services.

(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 following list of affected industries was developed as a cross-reference to the above SIC codes: NAICS 336411, Aircraft Manufacturing; NAICS 336412, Aircraft Engine and Engine Parts Manufacturing; NAICS 336413, Other Aircraft Part and Auxiliary Equipment Manufacturing; NAICS 336414, Guided Missile and Space Vehicle Manufacturing; NAICS 336419, Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing; NAICS 481111, Scheduled Passenger Air Transportation; and NAICS 481112, Scheduled Freight Air Transportation.)

The information presented below is organized as follows:

- I. Background
  - A. Public Comment on the October 29, 1996 Proposal
  - B. Judicial Review
- II. Summary of Major Comments and Changes to the Proposed Amendments to the Rule
  - A. Corrections to References
  - B. Definitions
  - C. Cleaning Operations
  - D. Applicability to Space Vehicles
  - E. Standards for Type I Maskants
  - F. Test Method for Determining Filtration Efficiency
  - G. Standards for Dry Particulate Filters
  - H. Exemption for Waterborne Coatings
  - I. Exemption From Inorganic HAP Requirements for Hand-Held Spray Can Applications
  - J. Essential Use Exemption for Cleaning Solvents
  - K. Compliance Dates
  - L. Requirements for New Affected Sources (Spray Booths)
  - M. Emissions Averaging
  - N. Requirements for New and Existing Primer and Topcoat Application Operations
  - O. Monitoring Requirements for Dry Particulate Filter Usage
  - P. Depainting Operations
  - Q. Applicability of General Provisions
  - R. Specialty Coatings
  - S. Miscellaneous Changes
  - T. Technical Corrections
- III. Control Techniques Guideline
- IV. Administrative Requirements
  - A. Docket
  - B. Paperwork Reduction Act
  - C. Executive Order 12866
  - D. Regulatory Flexibility Act
  - E. Submission to Congress
  - F. Unfunded Mandates Reform Act

**I. Background**

National emission standards for hazardous air pollutants for aerospace manufacturing and rework facilities were proposed under Section 112(d) of the Clean Air Act Amendments of 1990 (the "Act") in the **Federal Register** on June 6, 1994 (59 FR 29216). Public comments were received regarding the standards and the final NESHAP was promulgated in the **Federal Register** on September 1, 1995 (60 FR 45948). After promulgation of the final rule, several issues were raised by various industry representatives and affected parties. Based on discussions with the commenters, the Agency proposed actions to amend §§ 63.741, 63.742, 63.743, 63.744, 63.745, 63.746, 63.747, 63.749, 63.750, 63.751, 63.752 and 63.753 of subpart GG of 40 CFR part 63. These sections deal with applicability, definitions, general standards, cleaning operations, topcoat and primer application operations, depainting operations, chemical milling maskant application operations, compliance dates and determinations, test methods and procedures, monitoring requirements, recordkeeping requirements, and reporting requirements. These changes provide additional flexibility to the regulated community and in several instances, clarify/correct errors in the regulatory text.

*A. Public Comment on the October 29, 1996 Proposal*

Eighteen comment letters were received on the October 29, 1996 **Federal Register** document that proposed changes to the rule. The proposed changes covered a variety of issues and many of the comment letters were supportive of the amendments. A few other comment letters also included suggested editorial revisions to further clarify some aspects of the proposed amendments or to address oversights in the proposed amendments. The EPA considered these suggestions and, where appropriate, made changes to the proposed amendments. The significant issues raised and the changes to the proposed amendments are summarized in this preamble. More detailed responses are provided in an addendum to the background information document (BID) volume II which can be found in Docket A-92-20, document No. EPA 453/R-97-003b. Some of the comment letters also included numerous issues not covered in the October 29, 1996 proposal. The EPA reviewed and responded to each of these in the addendum to the BID; any resulting changes to the final rule will

be proposed in a future **Federal Register** notice.

### B. Judicial Review

Under section 307(b)(1) of the Act, judicial review of today's amendments to the NESHAP for aerospace manufacturing and rework facilities is available only on the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this final rule. Under section 307(b)(2) of the CAA, the requirements that are subject to today's notice may not be challenged later in civil or criminal proceedings brought by the EPA to enforce these requirements.

## II. Summary of Major Comments and Changes to the Proposed Amendments to the Rule

### A. Corrections to References

In the September 1995 promulgated rule, there were several references to § 63.751(b)(7)(iii), which only existed in an earlier draft of the promulgated rule. The EPA proposed the following revisions in October 1996: § 63.751(b)(6)(ii)(A) of the promulgated rule references (b)(7)(iii)(A)(3), but should reference paragraph (b)(6)(iii)(A)(2); § 63.751(b)(6)(iii) references (b)(7)(iii)(A), and (b)(7)(iii)(B) or (C), but should reference paragraphs (b)(6)(iii)(A), and (b)(6)(iii)(B) or (C); § 63.751(b)(6)(iii)(A)(2) references (b)(7)(iii)(A)(1), but should reference paragraph (b)(6)(iii)(A)(1); § 63.751(b)(6)(iii)(D) references (b)(7)(iii)(B) or (C), but should reference paragraph (b)(6)(iii)(B) or (C). There were no comments on these proposed revisions.

### B. Definitions

The October 29, 1996 **Federal Register** notice contained several definitions to be added to § 63.742 and several to be revised, based on additional information submitted to the Agency after promulgation of the final rule. These changes are summarized below.

The definition of cleaning solvent in the promulgated rule stated that "cleaning solvent" did not include solutions that contained "no" HAP or VOC. Many aqueous cleaners contain negligible amounts of HAP or VOC. The EPA wants to encourage the use of these aqueous cleaners. Therefore, in October 1996 the EPA proposed the following language to exclude cleaners containing de minimis levels of HAP or VOC from the definition of cleaning solvent: "Cleaning solvent means a liquid material used for hand-wipe, spray gun,

or flush cleaning. This definition does not include solutions that contain HAP and VOC below the de minimis levels specified in § 63.741(f) (e.g., water or acetone)." The EPA also proposed to change the applicable portion of § 63.741(f) to read: "The requirements of this subpart also do not apply to primers, topcoats, chemical milling maskants, strippers, and cleaning solvents containing HAP and VOC at a concentration less than 0.1 percent for carcinogens or 1.0 percent for noncarcinogens, as determined from manufacturer's representations." One commenter 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 an exemption to apply. The commenter recommended using "and/or" which is unacceptable because it would create an exemption when both HAP and VOC were present, but only one was below the specified level. It is not the Agency's position that both HAP and VOC need be present for the exemption described in § 63.741(f) to apply.

The proposed definition also contained a parenthetical reference to water or acetone as examples of substances that might be present at a de minimis level. One commenter stated the parenthetical reference to water or acetone is confusing and should be deleted. The EPA agreed and has revised the definition as follows:

*Cleaning solvent* means a liquid material used for hand-wipe, spray gun, or flush cleaning. This definition does not include solutions that contain HAP and VOC below the de minimis levels specified in § 63.741(f).

The Agency also proposed adding a definition for antique aerospace vehicle or component so that these vehicles and components would be exempted from the regulation. One commenter supported the proposed definition. Another commenter suggested revising the definition to include those nonflight worthy aircraft intended for permanent display, or used for static manufacturing technology demonstrations. The commenter indicated that the definition in 14 CFR 45.22 is limited to operational, flight worthy aircraft used in exhibitions (motion pictures, television productions or air shows). The EPA believes that the passage to which the commenter 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 because the Agency interprets the definition as including aircraft built at least 30 years ago that are not currently flightworthy. Therefore, EPA is promulgating the definition of antique aircraft as set forth in the proposal with some clarification (i.e., simplification) as follows:

*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.

Due to the proposed addition of a standard for Type I chemical milling maskants, EPA proposed revising the definition for chemical milling maskant. One commenter noted that in the proposed definition, listed examples should be made identical to the listed names for these maskants found in appendix A to subpart GG. Another commenter raised the issue of exempting chemical milling maskants used for two different types of chemical milling applications. The commenter stated the same maskant can be used in aluminum chemical milling and titanium chemical milling, but these applications are not used on the same part or subassembly. A maskant used for both aluminum chemical milling and titanium chemical milling could not meet the low VOC content limits. In an existing plating shop which uses the same maskant tanks for two 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 might result in an increase in emissions since the surface area of the maskant in the tanks would double. The EPA agreed that the commenters' changes are reasonable because the purpose of the rule is to reduce HAP emissions and that adding a new maskant tank would likely increase HAP emissions in the aggregate. The definition has been revised as follows:

*Chemical milling maskant* means a coating that is applied directly to aluminum components to protect surface areas when chemical milling the component with a Type I or Type II etchant. Type I chemical milling maskants are used with a Type I etchant and Type II chemical milling maskants are used with a Type II etchant. This definition does not include bonding maskants, critical use and line sealer maskants, and seal coat maskants. Additionally, maskants that must be used with a combination of Type I or Type II etchants and any of the above types of maskants (i.e., bonding, critical use and line sealer, and seal coat) are also exempt from this subpart. (See also Type I and Type II etchant definitions.)

To further clarify the types of chemical milling maskants that are covered by the final rule, the Agency is providing the following separate definitions for Type I and Type II etchants:

*Type I etchant* means a chemical milling etchant that contains varying amounts of dissolved sulfur and does not contain amines.

*Type II etchant* means a chemical milling etchant that is a strong sodium hydroxide solution containing amines.

A commenter provided example scenarios in which the current definition of self-priming topcoat is overly restrictive. 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. The Agency did not agree that the described scenarios are likely to present any problems in determining the appropriate coating category. However, the Agency did agree that removing the last sentence from the definition which stated: "The coating is not subsequently topcoated with any other product formulation" does clarify the definition of self-priming topcoat and makes it more consistent with the definition of topcoat.

Based on additional information received from industry, the EPA proposed in October 1996 to change or add the following definitions:

*Aircraft transparency* means the aircraft windshield, canopy, passenger windows, lenses, and other components that are constructed of transparent materials.

*Chemical milling maskant application operation* means application of chemical milling maskant for use with Type I or Type II chemical milling etchants.

*Closed-cycle depainting system* means a dust-free, automated process that removes permanent coating in small sections at a time, and maintains a continuous vacuum around the area(s) being depainted to capture emissions.

*High volume low pressure (HVLP) spray equipment* means spray equipment that is used to apply coating by means of a spray gun that operates at 10.0 psig of atomizing air pressure or less at the air cap.

*Specialty coating* means a coating that, even though it meets the definition of a primer, topcoat, or self-priming topcoat, has additional performance criteria beyond those of primers, topcoats, and self-priming topcoats for specific applications. These performance criteria may include, but are not limited to, temperature or fire resistance, substrate compatibility, antireflection, temporary protection or marking, sealing, adhesively joining substrates, or enhanced corrosion protection. Individual specialty coatings are defined in appendix A to this subpart and in the CTG for Aerospace Manufacturing and Rework Operations (Document No. EPA 453/R-97-004).

*Waterborne (water-reducible) coating* means any coating that contains more than 5 percent water by weight as applied in its volatile fraction.

No comments were received on these proposed definitions.

Section 63.741(f) has also been modified to include § 63.742 (Definitions) in the list of additional specific exemptions from regulatory coverage.

### C. Cleaning Operations

Under the promulgated rule, the standards for cleaning operations could be read to apply to all cleaning operations at a facility, not only to cleaning operations that involve aerospace vehicles, components, or coating equipment. In order to clarify the applicability of the standards for cleaning operations, the Agency proposed to revise § 63.741(c) to limit the applicability of the final rule to the manufacture or rework of aerospace vehicles or components. Other nonaerospace activities (e.g., general facility cleaning) are not subject to the requirements of this rule. No comments were received on this issue and EPA is promulgating the revisions as proposed.

The EPA proposed to replace the word "solvent" with the defined term "cleaning solvent" for clarity and consistency in § 63.744, paragraphs (a), (b), (c), and (e). The EPA has also changed the cleaning rag storage requirement by rewording the first sentence of § 63.744(a)(1) as follows:

Place cleaning solvent-laden cloth, paper, or any other absorbent applicators used for cleaning in bags or other closed containers upon completing their use.

As originally promulgated, this NESHAP required that cleaning rags be stored immediately after use. In October 1996, EPA proposed to remove the word "immediately" from the sentence to make the rule more consistent from a temporal standpoint with the storage requirements contained in the California SIP-approved rules that were the basis for this requirement. No comments were received on these revisions. Accordingly, EPA decided to promulgate this change.

In addition, the EPA has changed the requirements for flush cleaning to cover the situation in which an operator is cleaning multiple items at the same station, without leaving the station. The change to § 63.744(d) is as follows: " \* \* \* empty the used cleaning solvent each time aerospace parts or assemblies, or components of a coating unit (with the exception of spray guns) are flush cleaned \* \* \* ." This change will better carry out the Agency's intent

in regulating flush cleaning. No comments were received on this change.

Based on information from industry, the EPA proposed a modification to the exemption in § 63.744(e)(10). The revised text reads as follows:

Cleaning of aircraft transparencies, polycarbonate, or glass substrates.

No comments were received on this revision.

### D. Applicability to Space Vehicles

Space vehicles (i.e., vehicles designed to travel beyond the limit of the earth's atmosphere) are specifically exempted from the requirements of this rule, except for the standards for depainting operations. The EPA proposed (1) removing the reference to these vehicles in § 63.741(f) and (2) adding an additional specific exemption in a new paragraph, § 63.741(h), to clarify the exemption. The EPA proposed § 63.741(h) as follows:

Regulated activities associated with space vehicles designed to travel beyond the limit of the earth's atmosphere, including but not limited to satellites, space stations, and the Space Shuttle System (including orbiter, external tanks, and solid rocket boosters), are exempt from the requirements of this subpart, except for depainting operations found in § 63.746.

One commenter concurred with this revision as an important clarification of the applicability of the rule for aerospace organizations. The EPA decided to promulgate this change to the final rule.

### E. Standards for Type I Maskants

The EPA proposed to establish an emission limitation for Type I maskants and to include Type I maskants within the definition of chemical milling maskants. Pursuant to section 114 of the Act, information regarding maskants was requested from nine companies that own or operate aerospace manufacturing and rework facilities. Information was requested for all types of maskants, including total quantity used, formulation data, VOC and organic HAP content as received and as applied, substrate category and the composition of the metal alloy on which the maskant is applied, a listing of the type of parts or specific aircraft surfaces on which the maskant is used, VOC and HAP emissions from maskant application operations, and type(s) of controls (if any). The information received on Type I maskants was used to calculate a MACT floor. The MACT floor was determined to be the weighted (by usage volume) average HAP emissions from the sources, 622 grams per liter [g/L] (5.2 pounds per gallon [lb/gal]).

The EPA proposed revising § 63.747(c) to include organic HAP and VOC content limits of 622 grams per liter (g/L) (5.2 pounds per gallon [lb/gal]) as the standard for uncontrolled Type I chemical milling maskants. The EPA proposed revising paragraphs (c)(1) and (2) to specify that the organic HAP and VOC limits of 160 g/L (1.3 lb/gal) apply only to Type II chemical milling maskants. One commenter supported EPA's proposed limits and stated the proposed Type I 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.

Due to the addition of a standard for Type I chemical milling maskants, EPA also proposed removing the definition of Type I maskants from the list of specialty coatings in appendix A of this subpart and revising the definition for chemical milling maskant in § 63.742 of the promulgated rule. No comments were received on deletion of the definition for Type I maskants from Appendix A, and comments received on the definition for chemical milling maskant are discussed under definitions in Section II.B of this preamble.

*F. Test Method for Determining Filtration Efficiency*

The Agency proposed a test method, Method 319, for the determination of filtration efficiency for paint overspray arresters (also referred to as particulate filters). The Agency proposed that this method be used by filter manufacturers to certify their filter efficiency. Commenters raised several issues related to the technical validity of proposed Method 319 and who could run the test. Based on these comments, the Agency has modified § 63.750(o) to state that this method can be used by filter manufacturers or distributors, paint/depainting booth suppliers, or owners or operators of affected sources to certify the efficiency of their filters for meeting the dry particulate filter requirements in today's amendments.

The EPA also proposed filter efficiency tables (Tables 1, 2, 3, and 4 of § 63.745) and one commenter recommended adding descriptive language to the table headings. The EPA added "for existing sources" or "for new sources" to each of the table headings in response to the comment.

TABLE 1 OF § 63.745.—TWO-STAGE ARRESTOR; LIQUID PHASE CHALLENGE FOR EXISTING SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, µm
>90 .....	>5.7
>50 .....	>4.1
>10 .....	>2.2

TABLE 2 OF § 63.745.—TWO-STAGE ARRESTOR; SOLID PHASE CHALLENGE FOR EXISTING SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, µm
>90 .....	>8.1
>50 .....	>5.0
>10 .....	>2.6

TABLE 3 OF § 63.745.—THREE-STAGE ARRESTOR; LIQUID PHASE CHALLENGE FOR NEW SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, µm
>95 .....	>2.0
>80 .....	>1.0
>65 .....	>0.42

TABLE 4 OF § 63.745.—THREE-STAGE ARRESTOR; SOLID PHASE CHALLENGE FOR NEW SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, µm
>95 .....	>2.5
>85 .....	>1.1
>75 .....	>0.70

Three commenters raised several issues related to test Method 319 and disagreed with specifics of the test method. All of the issues are addressed in the Agency's documented responses in Section 2.9 of the Addendum to the BID (Volume II), Document No. EPA 453/R-97-003b. In summary, Method 319 will retain use of oleic acid and potassium chloride (KCl) challenge aerosols. 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.

The method has been revised to allow additional flexibility for alternate duct configurations. The 180 degree 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). Additionally, the NESHAP retains equal requirements for "paint overspray arrestors" under § 63.745 Primer and Topcoat Application Operations, and "particulate" filters under § 63.746 Depainting Operations.

*G. Standards for Dry Particulate Filters*

The Agency proposed to revise MACT requirements for the control of inorganic particulates from certain primer, topcoat, and depainting operations. Based on a review of the available data, the EPA proposed requiring existing sources using particulate filters in depainting as well as topcoat and primer operations, in which any of the coatings contain inorganic HAP, to meet the filtration efficiency established for the two-stage system that was tested. Specifically, the Agency proposed requiring owners or operators of existing sources to use particulate filters that are certified under § 63.750(o) to meet or exceed the efficiency data in Tables 1 and 2 of § 63.745 (developed from the two-stage filter testing). The Agency has modified this language to indicate certification must be consistent with § 63.750(o); therefore, this method can be used by filter manufacturers or distributors, paint/depainting booth suppliers, and/or owners or operators of affected sources to certify the efficiency of their filters.

The Agency also proposed that new sources meet the filtration efficiency data points for the three-stage system that was tested. Specifically, the Agency proposed requiring owners or operators of new sources to use particulate filters that are certified under § 63.750(o) to meet or exceed the efficiency data in Tables 3 and 4 of § 63.745 (developed from the three-stage filter testing). These new filtration requirements reflect a performance based standard rather than specified equipment, thus allowing more flexibility for affected sources to comply with the NESHAP.

One commenter believed that test Method 319 is flawed and therefore questioned the filter efficiency limits

developed using testing based on Method 319. The Agency disagrees with the commenter and believes the filter efficiency limits to be technically based as equivalent to MACT. The test method is based on several years of work performed for EPA and culminated in testing of the two- and three-stage paint arrestors determined to represent MACT for the aerospace industry.

In announcing these revised MACT requirements for particulate emissions, the Agency realizes that there are unique circumstances in which owners and 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 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)(2)(iv) of the September 1, 1995 promulgated rule which are found in § 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.

#### H. Exemption for Waterborne Coatings

The EPA proposed that any waterborne coating for which the manufacturer's supplied data demonstrate that the coating meets the organic HAP and VOC content limits for its coating type as specified in the regulation be exempt from many of the organic HAP and VOC related requirements of this regulation. If the manufacturer's supplied data indicate that the waterborne coating meets the organic HAP and VOC content emission limits for its coating type, as specified in §§ 63.745(c) and 63.747(c), then the owner or operator would not be required to demonstrate compliance for these coatings using the test method specified in § 63.750(c). However, the owner or operator would still be required to maintain purchase records and manufacturer's supplied data sheets for exempt coatings. Owners or operators of facilities using waterborne

coatings would also be required to handle and transfer these coatings in a manner that minimizes spills, apply these coatings using one or more of the specified application techniques, and comply with inorganic HAP emission requirements. This exemption was added as § 63.741(i) as follows:

Any waterborne coating for which the manufacturer's supplied data demonstrate that organic HAP and VOC contents are less than or equal to the organic HAP and VOC content limits for its coating type, as specified in §§ 63.745(c) and 63.747(c), is exempt from the following requirements of this subpart: §§ 63.745(d)-(e), 63.747(d)-(e), 63.749(d) and (h), 63.750(c)-(h) and (k)-(m), 63.752(c) and (f), and 63.753(c) and (e). A facility shall maintain the manufacturer's supplied data and annual purchase records for each exempt waterborne coating readily available for inspection and review, and shall retain these data for 5 years.

Section 63.741(f) was also modified to include § 63.741(i) in the list of additional specific exemptions from regulatory coverage.

The Agency proposed this exemption to streamline and simplify the requirements for owners and operators of facilities using these coatings and to encourage the use of waterborne coatings which may result in lower emissions than other coating types. No comments were received on this issue and EPA decided to promulgate this change.

#### I. Exemption From Inorganic HAP Requirements for Hand-Held Spray Can Applications

Two commenters noted that the final rule created a point of confusion over the absence of an exemption from inorganic HAP requirements for the use of hand-held spray cans used outside a paint booth or hangar (i.e., touch-up operations). The Agency noted that such an exemption currently exists under § 63.745(f)(3)(v) for primers and topcoats containing organic HAP or VOC, and the requirements for touch-up operations would also provide an exemption for these activities when conducted outside of the hangar or paint booth. However, the Agency agreed with the commenters that potential confusion could result in the absence of a clear exemption under the inorganic HAP requirements. Therefore, the Agency has added the following paragraph (x) to the list of operations in § 63.745(g)(4) not subject to the requirements of paragraphs 63.745 (g)(1) through (g)(3):

(x) The use of hand-held spray can application methods.

#### J. Essential Use Exemption for Cleaning Solvents

In accordance with the Montreal Protocol on Substances that Deplete the Ozone Layer ("Montreal Protocol"), EPA has granted essential use allowances for limited applications of ozone depleting substances (ODS's). The EPA proposed that an essential use exemption be added to this rule for cleaning operations that have been identified as essential uses. The proposed language has been revised slightly for greater consistency with the stratospheric ozone regulations. The exemption was added as § 63.744(e)(13) as follows:

Cleaning operations identified as essential uses under the Montreal Protocol for which the Administrator has allocated essential use allowances or exemptions in 40 CFR 82.4.

One commenter concurred with EPA on this added exemption and EPA decided to promulgate this change.

#### K. Compliance Dates

The EPA wishes to clarify an inconsistency between the preamble to the final rule and the regulation. The preamble to the final aerospace NESHAP states, "Owners or operators of new commercial, civil, or military aerospace OEM and rework operations with initial startup after September 1, 1998 will be required to comply with all requirements upon startup." This statement is incorrect. The text of the promulgated regulation correctly states that new sources, with initial startup on or after September 1, 1995, must comply with all requirements upon startup. In October 1996, the EPA also proposed to clarify that the deadline for approval of an alternate control device is 120 days prior to the compliance date. This clarification, mistakenly omitted from the published final rule, is now reflected in § 63.743(c). No comments were received on this issue and, thus, EPA decided to promulgate this change.

#### L. Requirements for New Affected Sources (Spray Booths)

The Agency has clarified the requirements for new affected sources. An affected source is an emission unit, process, or operation identified in the NESHAP that is part of the entire facility, but is not necessarily a major source. In today's action the Agency is clarifying its intent that for inorganic HAP emissions, each spray booth or hangar that contains a primer or topcoat application operation subject to § 63.745(g) or a depainting operation

subject to § 63.746(b)(4) is considered an affected source and has added this description under § 63.741(c). To avoid any inconsistency, the Agency has also added the words "For organic HAP or VOC emissions" at the beginning of § 63.741(c) (2), (3), and (4). If such an affected source is constructed or reconstructed after October 29, 1996, then that spray booth or hangar must comply with the applicable inorganic HAP control requirements. Construction or reconstruction of a new spray booth or hangar at a facility with an existing coating or repainting operation will not cause the existing operation to be subject to any other new source standards; only the new spray booth or hangar will be subject to the applicable new source requirements for inorganic HAP and will need to comply upon the effective date of the requirements or startup, whichever is later. The EPA is also making this clarification in § 63.749(a), the compliance dates and determinations section of the final rule.

In addition, EPA also clarified that § 63.5(b)(3) of the General Provisions, which requires advance notice and approval by the Agency prior to construction or reconstruction of a major affected source, shall apply to the construction or reconstruction of a new spray booth or hangar at a facility for an existing coating or repainting operation only if the booth or hangar has the potential to emit 10 tons/yr or more of an individual inorganic HAP or 25 tons/yr or more of all inorganic HAP combined. Owners or operators of an existing coating or repainting operation who construct or reconstruct a new booth or hangar that emit or have the potential to emit less than 10/25 tons/yr of inorganic HAP's will only be required to submit an annual notification on or before March 1 of each year. This annual notification shall include all of the information required in § 63.5(b)(4) for each such booth or hangar constructed or reconstructed in the prior calendar year, except that the information shall be limited to the inorganic HAP's from the new booth or hangar. Of course, any owner or operator that constructs or reconstructs a new spray booth or hangar at a facility at which there is no existing coating or repainting operation will be required to comply with all of the applicable notice and advance approval requirements of § 63.5.

#### *M. Emissions Averaging*

Under the September 1, 1995 promulgated rule the averaging of emissions was permitted to occur within coating types (i.e., topcoats, primers, or maskants). The EPA also

indicated at that time in the 1995 background information document that EPA would be investigating options with respect to implementing a broad-based averaging scheme as a compliance option for the Aerospace NESHAP. Based on additional discussion in roundtable meetings, the EPA proposed in the October 29, 1996 amendments to consolidate the language dealing with the averaging of emissions as it applies to the aerospace industry. Paragraphs 63.745(e)(2) and 63.747(e)(2) were consolidated into a new § 63.743(d), which, if promulgated as proposed, would have permitted averaging across coating types.

In response to the October 1996 proposal, the EPA received two comments that supported the changes to the averaging provisions. One commenter indicated that introductory text was needed to clarify the intent of § 63.743(d), which is where the averaging provisions are now located. The EPA agrees with the commenter and has added introductory language to § 63.743(d). Another commenter wanted the averaging provisions to be expanded to include controlled operations (i.e., those with control devices). The EPA believes that as currently allowed, the averaging of uncontrolled coatings will encourage development and use of lower HAP and VOC content coatings in the aerospace industry. In order to preserve the environmental benefit of pollution prevention, EPA will not extend the averaging system to include controlled coatings.

With regards to an expanded emissions averaging scheme, the EPA looked at various ways to expand the averaging provisions in the September 1995 promulgated rule so as to allow averaging between certain coating types. 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 creates inherent difficulties in making equitable comparisons/calculations of actual emissions from coating categories with different limits. In order to include effective emissions averaging provisions for different coating categories (e.g., 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 these amendments to the aerospace rule.

#### *N. Requirements for New and Existing Primer and Topcoat Application Operations*

The September 1, 1995 promulgated NESHAP requires owners or operators of primer and topcoat application operations who wish to use an alternative application method (other than HVLP or electrostatic spray) to demonstrate that the emissions generated during the initial 30-day period, the period of time required to apply primer to five completely assembled aircraft, or a time period approved by the permitting agency are less than or equal to the emissions generated using HVLP or electrostatic spray application methods. Since promulgation, the Agency has received comments from industry concerning the test method for alternative spray equipment application requiring actual production trials. Those concerns involved the use of ineffective application equipment on actual production parts or assemblies which could lead to product quality and safety issues with significant cost to the manufacturer. The Agency has acknowledged those concerns and provided additional flexibility to owners or operators of primer and topcoat application operations seeking to use alternative application methods.

The October 1996, proposed amendments to the final NESHAP in § 63.750(i)(2)(ii) allowed owners or operators an alternative approach whereby the proposed application method is tested against either HVLP or electrostatic spray application methods in a laboratory or pilot production area, using parts and coatings representative of the process(es) in which the alternative method is to be used. Under this alternative, 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. The Agency intended to make the laboratory test an additional option instead of replacing the production evaluation in the final rule. Therefore, since no comments were received on the proposed revision to § 63.750(i)(2)(ii), the Agency decided to promulgate this change by designating the proposed § 63.750(i)(2)(ii) as § 63.750(i)(2)(iii). For consistency, this change has also been made to § 63.749 (d)(3)(iii)(B) and (d)(4)(iii)(B).

#### *O. Monitoring Requirements for Dry Particulate Filter Usage*

The Agency proposed to clarify the monitoring requirements for owners or operators of repainting and painting



operations using dry particulate filters and HEPA filters to comply with this NESHAP. The EPA proposed to add language to § 63.751(c)(1) to clarify that owners or operators are required to read and record monitoring (i.e., pressure drop) data only once per shift.

One commenter requested that the phrase "continuously monitor" in § 63.745(g)(2)(v) be changed to "monitor once per shift" to avoid confusion with the Agency's clarification of monitoring requirements in other sections of the final rule. Past experience with such control systems indicates that reading the designated operating parameter once per shift is sufficient for this system to be considered continuously monitored. The Agency believes that the systems should be continuously monitored by some mechanism, but that reading and recording the data should be required only once per shift. Therefore, the EPA has changed the cited text in § 63.745(g)(2)(iv)(C) and (g)(2)(v) to match monitoring requirements in other sections of the final rule.

#### P. *Depainting Operations*

Based on numerous comments on the depainting operation standard, the EPA proposed a clarification to § 63.746. The promulgated standard was presented in terms of volume (gallons) of organic HAP-containing chemical strippers per aircraft. Because the NESHAP is specific to HAP, in October 1996 the EPA proposed changing the units of the standard and stating the requirements in terms of weight (pounds) of organic HAP per aircraft. The proposed standard was meant to be equivalent in terms of actual HAP emissions to the atmosphere and was based on assumptions concerning typical HAP contents of chemical strippers. The proposed limits allowed 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 comments involving 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 operators to decide which units they want to use and document their decision in their initial notification and/or operating permit. Accordingly, the EPA is promulgating the spot stripping and decal removal allowance in § 63.746(b)(3) as follows:

Each owner or operator of a new or existing depainting operation shall not, on an annual average basis, use more than 26 gallons of organic-HAP containing chemical strippers or alternatively 190 pounds of organic HAP per commercial aircraft depainted; or more

than 50 gallons of organic HAP-containing chemical strippers or alternatively 365 pounds of organic HAP per military aircraft depainted for spot stripping and decal removal.

One commenter noted an apparent error in the proposed revision of Equation 20 and provided corrected definitions for the revised terms in the corrected equation. The EPA has incorporated those corrections in the final rule, as well as provided both equations to calculate the average annual volume of organic HAP-containing chemical stripper (Equation 20) or average annual weight of organic HAP (newly designated Equation 21) used for spot stripping and decal removal.

Accordingly, the EPA has also revised Equation 21 in § 63.750(j)(3) as follows:

$$C = \frac{\sum_{i=1}^n \left( V_{si} D_{hi} \left( \sum_{i=1}^m W_{hi} \right) \right)}{A} \quad \text{Eq. 21}$$

Where:

C=annual average weight (lb per aircraft) of organic HAP (chemical stripper) used for spot stripping and decal removal.

m=number of organic HAP contained in each chemical stripper, as applied.

n=number of organic HAP-containing chemical strippers used in the annual period.

$W_{hi}$ =weight fraction (expressed as a decimal) of each organic HAP (i) contained in the chemical stripper, as applied, for each aircraft depainted.

$D_{hi}$ =density (lb/gal) of each organic HAP-containing chemical stripper (i) used in the annual period.

$V_{si}$ =volume (gal) of organic HAP-containing chemical stripper (i) used during the annual period.

A=number of aircraft for which depainting operations began during the annual period.

Another commenter noted a typographical error in the proposed revision to the spot stripping and decal removal allowance in § 63.749(f)(3)(ii)(A). The Agency has incorporated the corrected text into the final amendment.

#### Q. *Applicability of General Provisions*

The EPA proposed in October 1996 the addition of Table 1: General Provisions' Applicability to subpart GG, in order to clarify the applicability of the General Provisions to this rule. Table 1 is referenced in § 63.741 and is located at the end of the final rule text. No comments were provided on this issue.

#### R. *Specialty Coatings*

In appendix A to this subpart, the EPA proposed to revise the last sentence of the definition of adhesive bonding primer to state: "There are two categories of adhesive bonding primers: primers with a design cure at 250°F or below and primers with a design cure above 250°F." This revision is a clarification that was omitted in the final rule.

Two commenters suggested that the specialty coating definitions be reviewed and one of the commenters further suggested that the following specialty coating categories be added:

*Bearing coating*—a coating applied to an antifriction bearing, a bearing housing, or the area adjacent to such a bearing in order to facilitate bearing function or to protect base material from excessive wear. A material shall not be classified as a bearing coating if it can also be classified as a dry lubricative material or a solid film lubricant.

*Dry lubricative material*—a coating consisting of lauric acid, cetyl alcohol, waxes, or other non-cross linked or resin-bound materials which acts as a dry lubricant.

*Caulking and smoothing compounds*—semi-solid materials which are applied by hand application methods and are used to aerodynamically smooth exterior vehicle surfaces or fill cavities such as bolt hole accesses. A material shall not be classified as a caulking and smoothing compound if it can also be classified as a sealant.

These coating categories have been used by the San Diego and/or South Coast (California) Air Quality Management Districts in their aerospace coating regulations. Therefore, the Agency has incorporated these definitions into appendix A to subpart GG (and has also incorporated the suggested definitions and the corresponding VOC limits into the final CTG document). The Agency has also deleted the definitions for conformal coatings, protective oils/waxes, and space vehicle coatings from appendix A to subpart GG to be consistent with the CTG. Other commenters found typographical errors or areas for clarification involving the definitions of "electric or radiation-effect coating," "pretreatment coatings," and "wet fastener installation coating" which have been corrected in these final amendments.

#### S. *Miscellaneous Changes*

The EPA also made a number of minor changes to several sections of the October 1996 proposal based on public comments. One commenter requested the removal of the prohibition on use of ozone-depleting substances from § 63.744. The control of HAP and ozone-depleting substances are under two

separate programs; hence, the EPA has deleted the reference to ozone-depleting substances in Table 1 of § 63.744.

Another commenter noted that the table numbering in proposed § 63.750(o) was incorrect. The Agency has corrected the text to state “\* \* \* found in Tables 1 and 2, or 3 and 4 of § 63.745 for existing and new sources respectively.”

Two commenters noted there should be a reference to the term “H<sub>i</sub>” in § 63.750(k) since § 63.749(h)(3)(i) cites this section for the method to determine H<sub>i</sub>. The Agency has clarified § 63.750(k) by adding the term H<sub>i</sub> to the stated definition at the end of the paragraph.

#### T. Technical Corrections

The following amendments are technical corrections that were not part of the October 29, 1996 proposal. These changes are being made as part of today's action as a matter of efficiency in rulemaking. Furthermore, these changes are noncontroversial and do not substantively change the requirements of the rule. By promulgating these technical corrections directly as a final rule, the EPA is foregoing an opportunity for public comment on a notice of proposed rulemaking. Section 553(b) of title V of the United States Code and section 307(b) of the CAA permit an agency to forego notice and comment when “the agency for good cause finds (and incorporates the finding and a brief statement of reasons therefore in the rules issued) that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest.” The EPA finds that notice and comment regarding these technical corrections are unnecessary due to their noncontroversial nature and because they do not change the requirements of the final rule. The EPA finds that this constitutes good cause under 5 U.S.C. § 553(b) for a determination that the issuance of a notice of proposed rulemaking is unnecessary.

##### 1. Clarification of the Definition of Coating

The word “protective” was added to the definition of “coating” in § 63.742 to be consistent with other surface coating regulations and CTG's.

##### 2. Addition of the Definition of Recovery Device

Two commenters requested that the term “dedicated solvent recovery device” be defined in the rule so that proper test procedures may be followed. The Agency has included the following definition for “recovery device” in § 63.742 which is based on the definition from the HON:

*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 separator 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.

##### 3. Correction of Cited Reference to Table 1 of this Section in § 63.744(a), (b)(1), and (d)

The numbering format for several tables in the promulgated rule was erroneous and confusing. The table reference in § 63.744(a), (b)(1), and (d) has been corrected to read: “Table 1 of this section.”

##### 4. Clarification of Requirements in § 63.744(c)

Several questions have been raised related to spray gun cleaning using water as the cleaning solvent. Language was added to the introductory text at the end of § 63.744(c) stating that spray gun cleaning operations using cleaning solvent solutions that contain HAP and VOC below the de minimis levels specified in § 63.741(f) are exempt from the subsequent requirements in paragraphs (c)(1) through (c)(4).

##### 5. Clarifications to § 63.745(e) and (f)

All references to topcoat(s) or topcoat application operations include self-priming topcoats. The parenthetical phrase “(including self-priming topcoats)” was added to all applicable paragraphs in § 63.745 (e) and (f) for clarification and consistency with § 63.745(c)(3) and (c)(4). In § 63.745(f)(1), the reference to application techniques specified in paragraphs (f)(1)(i) through (f)(1)(viii) has been corrected to read “(f)(1)(i) through (f)(1)(ix).”

##### 6. Clarification to § 63.746(a)

The words “or rework” were added to the last sentence in § 63.746(a) to clarify that all aerospace facilities (manufacturing or rework) that repaint six or less completed aerospace vehicles in a calendar year are exempt from this section.

##### 7. Clarification of Language in § 63.746(c)(1)

The wording in § 63.746(c)(1) was changed to three separate paragraphs (paragraphs (c) (2) and (3) were added) to clarify the procedures to be used in determining compliance with the

control efficiency (≥95 percent) for new control systems. The language has been clarified to describe how the control efficiencies are determined involving the capture and destruction or removal efficiencies and may take into account the volume of chemical stripper used (relative to baseline applications) and is consistent with the example provided.

##### 8. Correction of Equation to Determine the Composite Vapor Pressure in § 63.750(b)(2)

A summation sign was added in front of the second term of the denominator (involving “W<sub>c</sub>”) of the equation used to determine the composite vapor pressure of hand-wipe cleaning solvents.

##### 9. Correction of OMB Tracking Number

In compliance with the Paperwork Reduction Act (PRA), this technical correction amends the table that lists the Office of Management and Budget (OMB) control numbers issued under the PRA for this final rule.

The EPA is today amending the table in 40 CFR part 9 (Section 9.1) of currently approved information collection request (ICR) control numbers issued by OMB for various regulations. The affected regulations are codified at 40 CFR part 63 subpart GG, sections 63.752 and 63.753 (recordkeeping and reporting requirements, respectively). The correct OMB control (tracking) number for this final rule is 2060-0314.

This ICR was previously subject to public notice and comment prior to OMB approval. As a result, EPA finds that there is “good cause” under section 553(b)(B) of the Administrative Procedure Act (5 U.S.C. 553(b)(B)) to amend this table without prior notice and comment. Due to the technical nature of the table, further notice and comment would be unnecessary.

### III. Control Techniques Guideline

Today's action includes the final issuance of the control techniques guideline (CTG) whose availability in draft form was announced in the **Federal Register** on October 29, 1996 (61 FR 55842). There were several comments involving the draft CTG submitted with other comments on the proposed NESHAP amendments. Most of those comments involved specialty coating category definitions and their associated VOC limits. One commenter who suggested adding three new coating category definitions (discussed previously in section Q) also raised several other concerns involving the proposed definitions and/or associated limits for clear coatings, lacquers, and specialized function coatings. Since the specialty coating limits are meant to

reflect baseline levels nationwide, and will have no significant impact on emission reductions, the EPA has decided to maintain the proposed definitions and associated limits for these coating categories.

Under the Clean Air Act, as amended in 1990 (the "Act"), State implementation plans (SIP's) for ozone nonattainment areas (except marginal areas) must be revised to require reasonably available control technology (RACT) for sources for which the EPA publishes a CTG between November 15, 1990 and the date an area achieves attainment status (the Act, § 182(b)(2), (c), (d), (e)). The EPA has defined RACT as "the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility" (44 FR 53761, 53762, September 17, 1979).

The CTG's review current knowledge and data concerning the technology and costs of various emissions control techniques. The CTG's are intended to provide State and local air pollution authorities with an information base for proceeding with their own analyses of RACT to meet statutory requirements.

Each CTG contains a "presumptive norm" for RACT for a specific source category, based on the EPA's evaluation of the capabilities and problems general to the category. Where applicable, the EPA recommends that States adopt requirements consistent with the presumptive norm. However, the presumptive norm is only a recommendation. States may choose to develop their own RACT requirements on a case-by-case basis, considering the emission reductions needed to achieve the national ambient air quality standards and the economic and technical circumstances of the individual source.

This CTG is issued pursuant to Clean Air Act § 183(b)(3), which requires issuance of a CTG to reduce VOC emissions from aerospace coatings and solvents. It addresses RACT for control of VOC emissions from aerospace manufacturing and rework facilities. Volatile organic compound emissions from primer, topcoat, and "specialty" coating applications, maskant applications, sealing, adhesives, and cleaning operations are addressed. Emission limits for processes also addressed in the NESHAP are identical to the NESHAP limits. Those revisions to the NESHAP amendments described in this preamble and relevant to the CTG have been incorporated into the final CTG document. Many of the steps in aerospace manufacturing and rework

operations involve the use of organic solvents and are sources of VOC emissions. The sources, mechanisms, and control of these VOC emissions are described in the CTG.

The coating category VOC limits, application techniques, and equipment requirements identified as RACT in the CTG were assumed to represent RACT requirements 1 year after the major sources have met the NESHAP (MACT) requirements, and therefore, will be effective on September 1, 1999. (The NESHAP compliance date for existing sources is September 1, 1998). The EPA estimates that State and local regulations developed pursuant to this CTG will affect about 2,869 facilities. Since the only new requirements in the CTG (requirements that are not included in the NESHAP) concern sealants, adhesives, and specialty coatings, which represent only about 3 percent of all VOC emissions from aerospace operations, the additional costs and emission reductions resulting from the CTG will be negligible. Further information on costs is presented in the CTG document and in the July 1995 BID on the NESHAP for Aerospace Manufacturing and Rework Facilities.

#### IV. Administrative Requirements

##### A. Docket

The docket is an organized and complete file of all of the information submitted to or otherwise considered by the EPA in the development of this rulemaking. The docket is a dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and the involved industries to readily identify and locate documents so that they can effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and promulgated standards and the EPA responses to significant comments, the content of the docket will serve as the record in case of judicial review (except for interagency review materials) (section 307(d)(7)(A) of the Act).

##### B. Paperwork Reduction Act

The amendments do not impose any new information collection requirements and result in no change to the currently approved collection. The Office of Management and Budget (OMB) has approved the information collection requirements contained in the NESHAP for aerospace manufacturing and rework facilities under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and has assigned OMB control No. 2060-0314.

(EPA ICR No. 1687.03). A copy of the Information Collection Request (ICR) may be obtained from Sandy Farmer, Regulatory Information Division; EPA; 401 M Street, S.W., (Mail Code 2137); Washington, D.C. 20460 or by calling (202) 260-2740.

Burden means the total time, effort, or financial resources expended by person to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data searches; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulation are listed in 40 CFR Part 9 and 48 CFR Chapter 15.

Today's amendments should have no impact on the information collection burden estimates made previously. Today's action does not impose any additional information collection requirements. The reduced recordkeeping associated with cleaning solvents used for nonaerospace manufacturing/rework activities represents a 6 percent reduction in the burden estimated for the final rule. Consequently, the ICR has not been revised for purposes of today's action.

##### C. Executive Order 12866

Under Executive Order (E.O.) 12866 (58 FR 51735 [October 4, 1993]), the EPA is required to determine whether a regulation is "significant" and therefore subject to OMB review and the requirements of this E.O. to prepare a regulatory impact analysis (RIA). The E.O. defines "significant regulatory action" as one that is likely to result in a rule that may (1) have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or

planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the E.O.

Pursuant to the terms of Executive Order 12866, it has been determined that this action is not a "significant regulatory action" within the meaning of the E.O.

Under E.O. 12866, the final CTG document for aerospace manufacturing and rework facilities is not considered a "regulatory action," defined as "any substantive action by an agency \* \* \* that promulgates or is expected to lead to the promulgation of a final rule or regulation." This CTG document is not a regulatory action by EPA, rather it provides information to States to aid them in developing rules.

D. Regulatory Flexibility Act

The EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with this final rule. The EPA has also determined that this rule will not have a significant impact on a substantial number of small entities. This final rule makes minor amendments to the Aerospace NESHAP, including changes to definitions, applicability provisions, and several minor changes to the standards (emission limits) and the monitoring, recordkeeping, and reporting requirements. In addition, this notice includes a standard for Type I chemical milling maskants and a test method for determining filtration efficiency of dry particulate filters. The overall impact of these amendments is a net decrease in requirements on all entities affected by this rule, including small entities. Therefore these amendments will not have a significant economic impact on a substantial number of small entities.

E. Submission to Congress

Under 5 U.S.C. 801(a)(1)(A) as added by the Small Business Regulatory Enforcement Fairness Act of 1996, EPA submitted a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the General Accounting Office prior to publication of the rule in today's Federal Register. This rule is not a "major rule" as defined by 5 U.S.C. 804(2).

F. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995

("Unfunded Mandates Act") (signed into law on March 22, 1995) requires that the Agency prepare a budgetary impact statement before promulgating a rule that includes a Federal mandate that may result in expenditure by State, local, and Tribal governments, in aggregate, or by the private sector, of \$100 million or more in any 1 year. Section 203 requires the Agency to establish a plan for obtaining input from and informing, educating, and advising any small governments that may be significantly or uniquely affected by a proposed intergovernmental mandate. Section 204 requires the Agency to develop a process to allow elected state, local, and Tribal government officials to provide input in the development of any proposal containing a significant Federal intergovernmental mandate.

Under section 205 of the Unfunded Mandates Act, the Agency must identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a budgetary impact statement must be prepared. The Agency must select from those alternatives the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule, unless the Agency explains why this alternative is not selected or the selection of this alternative is inconsistent with law. The EPA has determined that these amendments do not include a Federal mandate that may result in expenditure by State, local, and Tribal governments, in aggregate, or by the private sector, of \$100 million or more in any 1 year. Small governments will not be uniquely impacted by these amendments. Therefore, the requirements of the Unfunded Mandates Act do not apply to this action.

List of Subjects

40 CFR Part 9

Environmental protection, Reporting and recordkeeping requirements.

40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Reporting and recordkeeping requirements.

Dated: March 10, 1998.

Carol M. Browner, Administrator.

For reasons set out in the preamble, parts 9 and 63 of title 40, chapter I, of the Code of Federal Regulations are amended as follows:

PART 9—[AMENDED]

1. The authority citation for part 9 continues to read as follows:

Authority: 7 U.S.C. 135 et seq., 136–136y; 15 U.S.C. 2001, 2003, 2005, 2006, 2601–2671; 21 U.S.C. 331j, 346a, 348; 31 U.S.C. 9701; 33 U.S.C. 1251 et seq., 1311, 1313d, 1314, 1318, 1321, 1326, 1330, 1342, 1344, 1345 (d) and (e), 1361; E.O. 11735, 38 FR 21243, 3 CFR, 1971–1975 Comp. p. 973; 42 U.S.C. 241, 242b, 243, 246, 300f, 300g, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–1, 300j–2, 300j–3, 300j–4, 300j–9 1857 et seq., 6901–6992k, 7401–7671g, 7542, 9601–9657, 11023, 11048.

2. In § 9.1 the table is amended by revising the entry "63.752–63.753" to read as follows:

§ 9.1 OMB approvals under the Paperwork Reduction Act.

Table with 5 asterisks above and below, and a table with 2 columns: 40 CFR citation and OMB control No. Row: 63.752–63.753 ..... 2060–0314

PART 63—[AMENDED]

3. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401 et seq.

Subpart GG—[Amended]

4. Section 63.741 is amended by revising paragraph (b), paragraph (c) introductory text, paragraphs (c)(2), (c)(3), (c)(4), and the last three sentences of paragraph (f); and adding paragraphs (c)(7), (h), (i), and (j) to read as follows:

§ 63.741 Applicability and designation of affected sources.

\* \* \* \* \*

(b) The owner or operator of an affected source shall comply with the requirements of this subpart and of subpart A of this part, except as specified in § 63.743(a) and Table 1 of this subpart.

(c) Affected sources. The affected sources to which the provisions of this subpart apply are specified in paragraphs (c)(1) through (7) of this section. The activities subject to this subpart are limited to the manufacture or rework of aerospace vehicles or components as defined in this subpart. Where a dispute arises relating to the applicability of this subpart to a specific activity, the owner or operator shall demonstrate whether or not the activity is regulated under this subpart.

\* \* \* \* \*

(2) For organic HAP or VOC emissions, each primer application operation, which is the total of all primer applications at the facility.

(3) For organic HAP or VOC emissions, each topcoat application operation, which is the total of all topcoat applications at the facility.

(4) For organic HAP or VOC emissions, each depainting operation, which is the total of all depainting at the facility.

\* \* \* \* \*

(7) For inorganic HAP emissions, each spray booth or hangar that contains a primer or topcoat application operation subject to § 63.745(g) or a depainting operation subject to § 63.746(b)(4).

\* \* \* \* \*

(f) \* \* \* These requirements also do not apply to parts and assemblies not critical to the vehicle's structural integrity or flight performance. The requirements of this subpart also do not apply to primers, topcoats, chemical milling maskants, strippers, and cleaning solvents containing HAP and VOC at concentrations less than 0.1 percent for carcinogens or 1.0 percent for noncarcinogens, as determined from manufacturer's representations.

Additional specific exemptions from regulatory coverage are set forth in paragraphs (e), (g), (h), (i) and (j) of this section and §§ 63.742, 63.744(a)(1), (b), (e), 63.745(a), (f)(3), (g)(4), 63.746(a), (b)(5), 63.747(c)(3), and 63.749(d).

\* \* \* \* \*

(h) Regulated activities associated with space vehicles designed to travel beyond the limit of the earth's atmosphere, including but not limited to satellites, space stations, and the Space Shuttle System (including orbiter, external tanks, and solid rocket boosters), are exempt from the requirements of this subpart, except for depainting operations found in § 63.746.

(i) Any waterborne coating for which the manufacturer's supplied data demonstrate that organic HAP and VOC contents are less than or equal to the organic HAP and VOC content limits for its coating type, as specified in §§ 63.745(c) and 63.747(c), is exempt from the following requirements of this subpart: §§ 63.745(d)-(e), 63.747(d)-(e), 63.749(d) and (h), 63.750(c)-(h) and (k)-(m), 63.752(c) and (f), and 63.753(c) and (e). A facility shall maintain the manufacturer's supplied data and annual purchase records for each exempt waterborne coating readily available for inspection and review and shall retain these data for 5 years.

(j) This subpart does not apply to rework operations performed on antique aerospace vehicles or components.

5. Section 63.742 is amended by revising the definitions for "aircraft transparency," "chemical milling maskant application operation," "cleaning solvent," "coating," "high volume low pressure (HVLP) spray equipment," and "specialty coating"; by removing the parenthetical text from the end of the definition of "Type II etchant"; by removing the last sentence from the definition of "self-priming topcoat"; and by adding in alphabetical order definitions for "antique aerospace vehicle or component," "closed-cycle depainting system," "recovery device," "Type I etchant," and "waterborne (water-reducible) coating" to read as follows:

**§ 63.742 Definitions.**

\* \* \* \* \*

*Aircraft transparency* means the aircraft windshield, canopy, passenger windows, lenses, and other components which are constructed of transparent materials.

*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.

\* \* \* \* \*

*Chemical milling maskant* means a coating that is applied directly to aluminum components to protect surface areas when chemical milling the component with a Type I or Type II etchant. Type I chemical milling maskants are used with a Type I etchant and Type II chemical milling maskants are used with a Type II etchant. This definition does not include bonding maskants, critical use and line sealer maskants, and seal coat maskants. Additionally, maskants that must be used with a combination of Type I or II etchants and any of the above types of maskants (i.e., bonding, critical use and line sealer, and seal coat) are also exempt from this subpart. (See also Type I and Type II etchant definitions.)

*Chemical milling maskant application operation* means application of chemical milling maskant for use with Type I or Type II chemical milling etchants.

\* \* \* \* \*

*Cleaning solvent* means a liquid material used for hand-wipe, spray gun, or flush cleaning. This definition does not include solutions that contain HAP and VOC below the de minimis levels specified in § 63.741(f).

*Closed-cycle depainting system* means a dust-free, automated process that

removes permanent coating in small sections at a time and maintains a continuous vacuum around the area(s) being depainted to capture emissions.

*Coating* means a material that is applied to the surface of an aerospace vehicle or component to form a decorative, protective, or functional solid film, or the solid film itself.

\* \* \* \* \*

*High volume low pressure (HVLP) spray equipment* means spray equipment that is used to apply coating by means of a spray gun that operates at 10.0 psig of atomizing air pressure or less at the air cap.

\* \* \* \* \*

*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.

\* \* \* \* \*

*Specialty coating* means a coating that, even though it meets the definition of a primer, topcoat, or self-priming topcoat, has additional performance criteria beyond those of primers, topcoats, and self-priming topcoats for specific applications. These performance criteria may include, but are not limited to, temperature or fire resistance, substrate compatibility, antireflection, temporary protection or marking, sealing, adhesively joining substrates, or enhanced corrosion protection. Individual specialty coatings are defined in appendix A to this subpart and in the CTG for Aerospace Manufacturing and Rework Operations (EPA 453/R-97-004).

\* \* \* \* \*

*Type I etchant* means a chemical milling etchant that contains varying amounts of dissolved sulfur and does not contain amines.

\* \* \* \* \*

*Waterborne (water-reducible) coating* means any coating that contains more than 5 percent water by weight as applied in its volatile fraction.

\* \* \* \* \*

6. Section 63.743 is amended by revising paragraphs (a) introductory text, (b) introductory text, and (c), and by adding paragraphs (a)(10) and (d) to read as follows:

**§ 63.743 Standards: General.**

(a) Except as provided in paragraphs (a)(4) through (a)(10) of this section and in Table 1 of this subpart, each owner

or operator of an affected source subject to this subpart is also subject to the following sections of subpart A of this part:

\* \* \* \* \*

(10) For the purposes of compliance with the requirements of § 63.5(b)(4) of the General Provisions and this subpart, owners or operators of existing primer or topcoat application operations and repainting operations who construct or reconstruct a spray booth or hangar that does not have the potential to emit 10 tons/yr or more of an individual inorganic HAP or 25 tons/yr or more of all inorganic HAP combined shall only be required to notify the Administrator of such construction or reconstruction on an annual basis. Notification shall be submitted on or before March 1 of each year and shall include the information required in § 63.5(b)(4) for each such spray booth or hangar constructed or reconstructed during the prior calendar year, except that such information shall be limited to inorganic HAP's. No advance notification or written approval from the Administrator pursuant to § 63.5(b)(3) shall be required for the construction or reconstruction of such a spray booth or hangar unless the booth or hangar has the potential to emit 10 tons/yr or more of an individual inorganic HAP or 25 tons/yr or more of all inorganic HAP combined.

(b) *Startup, shutdown, and malfunction plan.* Each owner or operator that uses an air pollution control device or equipment to control HAP emissions shall prepare and operate in accordance with a startup, shutdown, and malfunction plan in accordance with § 63.6. Dry particulate filter systems operated per the manufacturer's instructions are exempt from a startup, shutdown, and malfunction plan. A startup, shutdown, and malfunction plan shall be prepared for facilities using locally prepared operating procedures. In addition to the information required in § 63.6, this plan shall also include the following provisions:

\* \* \* \* \*

(c) An owner or operator who uses an air pollution control device or equipment not listed in this subpart shall submit a description of the device or equipment, test data verifying the performance of the device or equipment in controlling organic HAP and/or VOC emissions, as appropriate, and specific operating parameters that will be monitored to establish compliance with the standards to the Administrator for approval not later than 120 days prior to the compliance date.

(d) Instead of complying with the individual coating limits in §§ 63.745 and 63.747, a facility may choose to comply with the averaging provisions specified in paragraphs (d)(1) through (d)(6) of this section.

(1) Each owner or operator of a new or existing source shall use any combination of primers, topcoats (including self-priming topcoats), Type I chemical milling maskants, or Type II chemical milling maskants such that the monthly volume-weighted average organic HAP and VOC contents of the combination of primers, topcoats, Type I chemical milling maskants, or Type II chemical milling maskants, as determined in accordance with the applicable procedures set forth in § 63.750, complies with the specified content limits in §§ 63.745(c) and 63.747(c), unless the permitting agency specifies a shorter averaging period as part of an ambient ozone control program.

(2) Averaging is allowed only for uncontrolled primers, topcoats (including self-priming topcoats), Type I chemical milling maskants, or Type II chemical milling maskants.

(3) Averaging is not allowed between primers and topcoats (including self-priming topcoats).

(4) Averaging is not allowed between Type I and Type II chemical milling maskants.

(5) Averaging is not allowed between primers and chemical milling maskants, or between topcoats and chemical milling maskants.

(6) Each averaging scheme shall be approved in advance by the permitting agency and adopted as part of the facility's title V permit.

7. Section 63.744 is amended by revising the text of paragraph (a) introductory text, and paragraphs (a)(1), (a)(2), (b) introductory text, (b)(1), (c)(1)(ii), (c)(2), (c)(4), (d), (e)(1), (e)(2), (e)(9), (e)(10), and (e)(11) and by removing the period at the end of paragraph (e)(12) and replacing it with "; and"; by adding a sentence to (6) introductory text, and paragraph (e)(13); and by redesignating Table 3 as Table 1 and revising it and transferring it from paragraph (a) to the end of this section as follows:

**§ 63.744 Standards: Cleaning operations.**

(a) *Housekeeping measures.* Each owner or operator of a new or existing cleaning operation subject to this subpart shall comply with the requirements in these paragraphs unless the cleaning solvent used is identified in Table 1 of this section or contains HAP and VOC below the de minimis levels specified in § 63.741(f).

(1) Place cleaning solvent-laden cloth, paper, or any other absorbent applicators used for cleaning in bags or other closed containers upon completing their use. Ensure that these bags and containers are kept closed at all times except when depositing or removing these materials from the container. Use bags and containers of such design so as to contain the vapors of the cleaning solvent. Cotton-tipped swabs used for very small cleaning operations are exempt from this requirement.

(2) Store fresh and spent cleaning solvents, except semi-aqueous solvent cleaners, used in aerospace cleaning operations in closed containers.

\* \* \* \* \*

(b) *Hand-wipe cleaning.* Each owner or operator of a new or existing hand-wipe cleaning operation (excluding cleaning of spray gun equipment performed in accordance with paragraph (c) of this section) subject to this subpart shall use cleaning solvents that meet one of the requirements specified in paragraphs (b)(1), (b)(2), and (b)(3) of this section. Cleaning solvent solutions that contain HAP and VOC below the de minimis levels specified in § 63.741(f) are exempt from the requirements in paragraphs (b)(1), (b)(2), and (b)(3) of this section.

(1) Meet one of the composition requirements in Table 1 of this section;

\* \* \* \* \*

(c) \* \* \* Spray gun cleaning operations using cleaning solvent solutions that contain HAP and VOC below the de minimis levels specified in § 63.741(f) are exempt from the requirements in paragraphs (c)(1) through (c)(4) of this section.

(1) \* \* \*

(ii) If leaks are found during the monthly inspection required in § 63.751(a), repairs shall be made as soon as practicable, but no later than 15 days after the leak was found. If the leak is not repaired by the 15th day after detection, the cleaning solvent shall be removed, and the enclosed cleaner shall be shut down until the leak is repaired or its use is permanently discontinued.

(2) *Nonatomized cleaning.* Clean the spray gun by placing cleaning solvent in the pressure pot and forcing it through the gun with the atomizing cap in place. No atomizing air is to be used. Direct the cleaning solvent from the spray gun into a vat, drum, or other waste container that is closed when not in use.

\* \* \* \* \*

(4) *Atomizing cleaning.* Clean the spray gun by forcing the cleaning solvent through the gun and direct the resulting atomized spray into a waste

container that is fitted with a device designed to capture the atomized cleaning solvent emissions.

(d) *Flush cleaning.* Each owner or operator of a flush cleaning operation subject to this subpart (excluding those in which Table 1 or semi-aqueous cleaning solvents are used) shall empty the used cleaning solvent each time aerospace parts or assemblies, or components of a coating unit (with the exception of spray guns) are flush cleaned into an enclosed container or collection system that is kept closed when not in use or into a system with equivalent emission control.

(e) \* \* \*

(1) Cleaning during the manufacture, assembly, installation, maintenance, or testing of components of breathing oxygen systems that are exposed to the breathing oxygen;

(2) Cleaning during the manufacture, assembly, installation, maintenance, or testing of parts, subassemblies, or assemblies that are exposed to strong oxidizers or reducers (e.g., nitrogen tetroxide, liquid oxygen, or hydrazine);  
\* \* \* \* \*

(9) Cleaning of metallic and nonmetallic materials used in honeycomb cores during the manufacture or maintenance of these

cores, and cleaning of the completed cores used in the manufacture of aerospace vehicles or components;

(10) Cleaning of aircraft transparencies, polycarbonate, or glass substrates;

(11) Cleaning and cleaning solvent usage associated with research and development, quality control, and laboratory testing;  
\* \* \* \* \*

(13) Cleaning operations identified as essential uses under the Montreal Protocol for which the Administrator has allocated essential use allowances or exemptions in 40 CFR 82.4.

Cleaning solvent type	Composition requirements
Aqueous .....	Cleaning solvents in which water is the primary ingredient (≥80 percent of cleaning solvent solution as applied must be water). Detergents, surfactants, and bioenzyme mixtures and nutrients may be combined with the water along with a variety of additives, such as organic solvents (e.g., high boiling point alcohols), builders, saponifiers, inhibitors, emulsifiers, pH buffers, and antifoaming agents. Aqueous solutions must have a flash point greater than 93 °C (200 °F) (as reported by the manufacturer), and the solution must be miscible with water.
Hydrocarbon-based .....	Cleaners that are composed of photochemically reactive hydrocarbons and oxygenated hydrocarbons and have a maximum vapor pressure of 7 mm Hg at 20 °C (3.75 in. H <sub>2</sub> O at 68 °F). These cleaners also contain no HAP.

8. Section 63.745 is amended by revising paragraphs (e)(1), (e)(2), (f) introductory text, (f)(1) introductory text, the first sentence of (f)(2), (g)(2)(i), (g)(2)(ii), and (g)(2)(iii); removing paragraph (g)(2)(iv); redesignating paragraphs (g)(2)(v) and (g)(2)(vi) as (g)(2)(iv) and (g)(2)(v), respectively; revising the newly designated paragraphs (g)(2)(iv) and (g)(2)(v); removing the word "and" at the end of paragraph (g)(4)(viii); revising the punctuation "." at the end of paragraph (g)(4)(ix) to read "; and"; and adding paragraph (g)(4)(x) to read as follows:

**§ 63.745 Standards: Primer and topcoat application operations.**

\* \* \* \* \*

(e) \* \* \*

(1) Use primers and topcoats (including self-priming topcoats) with HAP and VOC content levels equal to or less than the limits specified in paragraphs (c)(1) through (c)(4) of this section; or

(2) Use the averaging provisions described in § 63.743(d).

(f) *Application equipment.* Except as provided in paragraph (f)(3) of this section, each owner or operator of a new or existing primer or topcoat (including self-priming topcoat) application operation subject to this subpart in which any of the coatings contain organic HAP or VOC shall comply with the requirements specified in paragraphs (f)(1) and (f)(2) of this section.

(1) All primers and topcoats (including self-priming topcoats) shall be applied using one or more of the application techniques specified in paragraphs (f)(1)(i) through (f)(1)(ix) of this section. \* \* \*  
\* \* \* \* \*

(2) All application devices used to apply primers or topcoats (including self-priming topcoats) shall be operated according to company procedures, local specified operating procedures, and/or the manufacturer's specifications, whichever is most stringent, at all times.  
\* \* \*

\* \* \* \* \*

(g) \* \* \*

(2) \* \* \*

(i) For existing sources, the owner or operator must choose one of the following:

(A) Before exhausting it to the atmosphere, pass the air stream through a dry particulate filter system certified using the methods described in § 63.750(o) to meet or exceed the efficiency data points in Tables 1 and 2 of this section; or

TABLE 1.—TWO-STAGE ARRESTOR; LIQUID PHASE CHALLENGE FOR EXISTING SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, μm
>90 .....	>5.7
>50 .....	>4.1
>10 .....	>2.2

TABLE 2.—TWO-STAGE ARRESTOR; SOLID PHASE CHALLENGE FOR EXISTING SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, μm
>90 .....	>8.1
>50 .....	>5.0
>10 .....	>2.6

(B) Before exhausting it to the atmosphere, pass the air stream through a waterwash system that shall remain in operation during all coating application operations; or

(C) Before exhausting it to the atmosphere, pass the air stream through an air pollution control system that meets or exceeds the efficiency data points in Tables 1 and 2 of this section



and is approved by the permitting authority.

(ii) For new sources, either:

(A) Before exhausting it to the atmosphere, pass the air stream through a dry particulate filter system certified using the methods described in § 63.750(o) to meet or exceed the efficiency data points in Tables 3 and 4 of this section; or

TABLE 3.—THREE-STAGE ARRESTOR; LIQUID PHASE CHALLENGE FOR NEW SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, µm
>95 .....	>2.0
>80 .....	>1.0
>65 .....	>0.42

TABLE 4.—THREE-STAGE ARRESTOR; SOLID PHASE CHALLENGE FOR NEW SOURCES

Filtration efficiency requirement, %	Aero-dynamic particle size range, µm
>95 .....	>2.5
>85 .....	>1.1
>75 .....	>0.70

(B) Before exhausting it to the atmosphere, pass the air stream through an air pollution control system that meets or exceeds the efficiency data points in Tables 3 and 4 of this section and is approved by the permitting authority.

(iii) Owners or operators of new sources that have commenced construction or reconstruction after June 6, 1994 but prior to October 29, 1996 may comply with the following requirements in lieu of the requirements in paragraph (g)(2)(ii) of this section:

(A) Pass the air stream through either a two-stage dry particulate filter system or a waterwash system before exhausting it to the atmosphere.

(B) If the primer or topcoat contains chromium or cadmium, control shall consist of a HEPA filter system, three-stage filter system, or other control system equivalent to the three stage filter system as approved by the permitting agency.

(iv) If a dry particulate filter system is used, the following requirements shall be met:

(A) Maintain the system in good working order;

(B) Install a differential pressure gauge across the filter banks;

(C) Continuously monitor the pressure drop across the filter and read and record the pressure drop once per shift; and

(D) Take corrective action when the pressure drop exceeds or falls below the filter manufacturer's recommended limit(s).

(v) If a waterwash system is used, continuously monitor the water flow rate and read and record the water flow rate once per shift.

\* \* \* \* \*

(4) \* \* \*

(x) The use of hand-held spray can application methods.

9. Section 63.746 is amended by revising the last sentence of paragraph (a) introductory text, (b)(1), (b)(3), (b)(4)(i), (b)(4)(ii), (b)(4)(iii)(C), (b)(4)(iv), the second sentence of paragraph (b)(4)(v), and (c)(1); and adding paragraphs (c)(2) and (c)(3) to read as follows:

**§ 63.746 Standards: Depainting operations.**

(a) \* \* \* This section does not apply to an aerospace manufacturing or rework facility that depaints six or less completed aerospace vehicles in a calendar year.

\* \* \* \* \*

(b)(1) *HAP emissions—non-HAP chemical strippers and technologies.* Except as provided in paragraphs (b)(2) and (b)(3) of this section, each owner or operator of a new or existing aerospace depainting operation subject to this subpart shall emit no organic HAP from chemical stripping formulations and agents or chemical paint softeners.

\* \* \* \* \*

(3) Each owner or operator of a new or existing depainting operation shall not, on an annual average basis, use more than 26 gallons of organic HAP-containing chemical strippers or alternatively 190 pounds of organic HAP per commercial aircraft depainted; or more than 50 gallons of organic HAP-containing chemical strippers or alternatively 365 pounds of organic HAP per military aircraft depainted for spot stripping and decal removal.

(4) \* \* \*

(i) Perform the depainting operation in an enclosed area, unless a closed-cycle depainting system is used.

(ii)(A) For existing sources pass any air stream removed from the enclosed area or closed-cycle depainting system through a dry particulate filter system, certified using the method described in § 63.750(o) to meet or exceed the efficiency data points in Tables 1 and 2

of § 63.745, through a baghouse, or through a waterwash system before exhausting it to the atmosphere.

(B) For new sources pass any air stream removed from the enclosed area or closed-cycle depainting system through a dry particulate filter system certified using the method described in § 63.750(o) to meet or exceed the efficiency data points in Tables 3 and 4 of § 63.745 or through a baghouse before exhausting it to the atmosphere.

(iii) \* \* \*

(C) Continuously monitor the pressure drop across the filter, and read and record the pressure drop once per shift; and

\* \* \* \* \*

(iv) If a waterwash system is used, continuously monitor the water flow rate, and read and record the water flow rate once per shift.

(v) \* \* \* If the water path in the waterwash system fails the visual continuity/flow characteristics check, as recorded pursuant to § 63.752(e)(7), or the water flow rate, as recorded pursuant to § 63.752(d)(2), exceeds the limit(s) specified by the booth manufacturer or in locally prepared operating procedures, or the booth manufacturer's or locally prepared maintenance procedures for the filter or waterwash system have not been performed as scheduled, shut down the operation immediately and take corrective action. \* \* \*

\* \* \* \* \*

(c) \* \* \*

(1) All organic HAP emissions from the operation shall be reduced by the use of a control system. Each control system that was installed before the effective date shall reduce the operations' organic HAP emissions to the atmosphere by 81 percent or greater, taking into account capture and destruction or removal efficiencies.

(2) Each control system installed on or after the effective date shall reduce organic HAP emissions to the atmosphere by 95 percent or greater. Reduction shall take into account capture and destruction or removal efficiencies, and may take into account the volume of chemical stripper used relative to baseline levels (e.g., the 95 percent efficiency may be achieved by controlling emissions at 81 percent efficiency with a control system and using 74 percent less stripper than in baseline applications). The baseline shall be calculated using data from 1996 and 1997, which shall be on a usage per aircraft or usage per square foot of surface basis.

(3) The capture and destruction or removal efficiencies are to be



determined using the procedures in § 63.750(g) when a carbon adsorber is used and those in § 63.750(h) when a control device other than a carbon adsorber is used.

10. Section 63.747 is amended by revising paragraphs (c)(1), (c)(2) and (e)(2) to read as follows:

**§ 63.747 Standards: Chemical milling maskant application operations.**

\* \* \* \* \*

(c) \* \* \*

(1) Organic HAP emissions from chemical milling maskants shall be limited to organic HAP content levels of no more than 622 grams of organic HAP per liter (5.2 lb/gal) of Type I chemical milling maskant (less water) as applied, and no more than 160 grams of organic HAP per liter (1.3 lb/gal) of Type II chemical milling maskant (less water) as applied.

(2) VOC emissions from chemical milling maskants shall be limited to VOC content levels of no more than 622 grams of VOC per liter (5.2 lb/gal) of Type I chemical milling maskant (less water and exempt solvents) as applied, and no more than 160 grams of VOC per liter (1.3 lb/gal) of Type II chemical milling maskant (less water and exempt solvents) as applied.

\* \* \* \* \*

(e) \* \* \*

(2) Use the averaging provisions described in § 63.743(d).

11. Section 63.749 is amended by revising paragraphs (a), (b), (d)(3)(iii)(B), (d)(4)(iii), (f)(3)(ii)(A), and (h)(3)(i) to read as follows:

**§ 63.749 Compliance dates and determinations.**

(a) *Compliance dates.* (1) Each owner or operator of an existing affected source subject to this subpart shall comply with the requirements of this subpart by September 1, 1998, except as specified in paragraph (a)(2) of this section. Owners or operators of new affected sources subject to this subpart shall comply on the effective date or upon startup, whichever is later. In addition, each owner or operator shall comply with the compliance dates specified in § 63.6(b) and (c).

(2) Owners or operators of existing primer or topcoat application operations and deapainting operations who construct or reconstruct a spray booth or hangar must comply with the new source requirements for inorganic HAP specified in §§ 63.745(g)(2)(ii) and 63.746(b)(4) for that new spray booth or hangar upon startup. Such sources must still comply with all other existing source requirements by September 1, 1998.

(b) *General.* Each facility subject to this subpart shall be considered in noncompliance if the owner or operator fails to submit a startup, shutdown, and malfunction plan as required by § 63.743(b) or uses a control device other than one specified in this subpart that has not been approved by the Administrator, as required by § 63.743(c).

\* \* \* \* \*

(d) \* \* \*

(3) \* \* \*

(iii) \* \* \*

(B) Uses an alternative application technique, as allowed under § 63.745(f)(1)(ix), such that the emissions of both organic HAP and VOC for the implementation period of the alternative application method are less than or equal to the emissions generated using HVLP or electrostatic spray application methods as determined using the procedures specified in § 63.750(i).

\* \* \* \* \*

(4) \* \* \*

(iii) \* \* \*

(A) Uses an application technique specified in § 63.745 (f)(1)(i) through (f)(1)(viii); or

(B) Uses an alternative application technique, as allowed under § 63.745(f)(1)(ix), such that the emissions of both organic HAP and VOC for the implementation period of the alternative application method are less than or equal to the emissions generated using HVLP or electrostatic spray application methods as determined using the procedures specified in § 63.750(i).

\* \* \* \* \*

(f) \* \* \*

(3) \* \* \*

(ii) \* \* \*

(A) For any spot stripping and decal removal, the value of C, as determined using the procedures specified in § 63.750(j), is less than or equal to 26 gallons of organic HAP-containing chemical stripper or 190 pounds of organic HAP per commercial aircraft depainted calculated on a yearly average; and is less than or equal to 50 gallons of organic HAP-containing chemical stripper or 365 pounds of organic HAP per military aircraft depainted calculated on a yearly average; and

\* \* \* \* \*

(h) \* \* \*

(3) \* \* \*

(i) For all uncontrolled chemical milling maskants, all values of H<sub>i</sub> and H<sub>a</sub> (as determined using the procedures specified in § 63.750 (k) and (l)) are less than or equal to 622 grams of organic

HAP per liter (5.2 lb/gal) of Type I chemical milling maskant as applied (less water), and 160 grams of organic HAP per liter (1.3 lb/gal) of Type II chemical milling maskant as applied (less water). All values of G<sub>i</sub> and G<sub>a</sub> (as determined using the procedures specified in § 63.750 (m) and (n)) are less than or equal to 622 grams of VOC per liter (5.2 lb/gal) of Type I chemical milling maskant as applied (less water and exempt solvents), and 160 grams of VOC per liter (1.3 lb/gal) of Type II chemical milling maskant (less water and exempt solvents) as applied.

\* \* \* \* \*

12. Section 63.750 is amended by revising the equation in paragraph (b)(2); paragraphs (c)(1), (e)(1), equation 7 ("Eq. 7") in (e)(2), (g)(3)(ii), (g)(9)(i), (i)(1), (i)(2)(iii), (j) introductory text, (j)(1), (j)(3), (k) introductory text, (k)(1), (l)(4), and (n)(3); and by adding paragraphs (i)(2)(iv) and (o) to read as follows:

**§ 63.750 Test methods and procedures.**

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*

$$PP_c = \sum_{i=1}^n \frac{(W_i)(VP_i) / MW_i}{\frac{W_w}{MW_w} + \sum_{i=1}^n \frac{W_e}{MW_e} + \sum_{i=1}^n \frac{W_i}{MW_i}}$$

\* \* \* \* \*

(c) \* \* \*

(1) For coatings that contain no exempt solvents, determine the total organic HAP content using manufacturer's supplied data or Method 24 of 40 CFR part 60, appendix A, to determine the VOC content. The VOC content shall be used as a surrogate for total HAP content for coatings that contain no exempt solvent. If there is a discrepancy between the manufacturer's formulation data and the results of the Method 24 analysis, compliance shall be based on the results from the Method 24 analysis.

\* \* \* \* \*

(e) \* \* \*

(1) Determine the VOC content of each formulation (less water and exempt solvents) as applied using manufacturer's supplied data or Method 24 of 40 CFR part 60, appendix A, to determine the VOC content. The VOC content shall be used as a surrogate for total HAP content for coatings that contain no exempt solvent. If there is a discrepancy between the manufacturer's formulation data and the results of the Method 24 analysis, compliance shall be based on the results from the Method 24 analysis.

(2) \* \* \*

$$G_i = \frac{M_{vi}}{(1 - V_{wi}) - V_{xi}} \quad \text{Eq. 7}$$

\* \* \*

(g) \* \* \*  
(3) \* \* \*

(ii) Assume that all HAP emissions from the affected HAP emission point(s) are segregated from gaseous emission points not affected by this subpart and that the emissions can be captured for measurement, as described in paragraphs (g)(2)(ii) (A) and (B) of this section;

\* \* \*

(9) \* \* \*

(i) When either EPA Method 18 or EPA Method 25A is to be used in the determination of the efficiency of a fixed-bed carbon adsorption system with a common exhaust stack for all the individual carbon adsorber vessels pursuant to paragraph (g) (2) or (4) of this section, the test shall consist of three separate runs, each coinciding with one or more complete sequences through the adsorption cycles of all of the individual carbon adsorber vessels.

\* \* \*

(i)(1) *Alternative application method—primers and topcoats.* Each owner or operator seeking to use an alternative application method (as allowed in § 63.745(f)(1)(ix)) in complying with the standards for primers and topcoats shall use the procedures specified in paragraphs (i)(2)(i) and (i)(2)(ii) or (i)(2)(iii) of this section to determine the organic HAP and VOC emission levels of the alternative application technique as compared to either HVLP or electrostatic spray application methods.

(2) \* \* \*

(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) of this section is used, the owner or operator shall calculate both the organic HAP and VOC emission reduction using equation:

$$P = \frac{E_b - E_3}{E_b} \times 100$$

where:

P=organic HAP or VOC emission reduction, percent.  
E<sub>b</sub>=organic HAP or VOC emissions, in pounds, before the alternative application technique was implemented, as determined under paragraph (i)(2)(i) of this section.  
E<sub>a</sub>=organic HAP or VOC emissions, in pounds, after the alternative application technique was implemented, as determined under paragraph (i)(2)(ii) of this section.

\* \* \*  
(j) *Spot stripping and decal removal.* Each owner or operator seeking to comply with § 63.746(b)(3) shall determine the volume of organic HAP-containing chemical strippers or alternatively the weight of organic HAP used per aircraft using the procedure specified in paragraphs (j)(1) through (j)(3) of this section.

(1) For each chemical stripper used for spot stripping and decal removal, determine for each annual period the total volume as applied or the total weight of organic HAP using the procedure specified in paragraph (d)(2) of this section.

\* \* \*  
(3) Calculate the annual average volume of organic HAP-containing chemical stripper or weight of organic HAP used for spot stripping and decal removal per aircraft using equation 20 (volume) or equation 21 (weight):

$$C = \frac{\sum_{i=1}^n V_{si}}{A} \quad \text{Eq. 20}$$

where:

C=annual average volume (gal per aircraft) of organic HAP-containing chemical stripper used for spot stripping and decal removal.  
n=number of organic HAP-containing chemical strippers used in the annual period.

V<sub>si</sub>=volume (gal) of organic HAP-containing chemical stripper (i) used during the annual period.  
A=number of aircraft for which depainting operations began during the annual period.

$$C = \frac{\sum_{i=1}^n \left( V_{si} D_{hi} \left( \sum_{i=1}^m W_{hi} \right) \right)}{A} \quad \text{Eq. 21}$$

where:

C = annual average weight (lb per aircraft) of organic HAP (chemical stripper) used for spot stripping and decal removal.  
m = number of organic HAP contained in each chemical stripper, as applied.

n = number of organic HAP-containing chemical strippers used in the annual period.

W<sub>hi</sub> = weight fraction (expressed as a decimal) of each organic HAP (i) contained in the chemical stripper, as applied, for each aircraft depainted.

D<sub>hi</sub> = density (lb/gal) of each organic HAP-containing chemical stripper (i), used in the annual period.

V<sub>si</sub> = volume (gal) of organic HAP-containing chemical stripper (i) used during the annual period.

A = number of aircraft for which depainting operations began during the annual period.

(k) *Organic HAP content level determination—compliant chemical milling maskants.* For those uncontrolled chemical milling maskants complying with the chemical milling maskant organic HAP content limit specified in § 63.747(c)(1) without being averaged, the following procedures shall be used to determine the mass of organic HAP emitted per unit volume of coating (chemical milling maskant) i as applied (less water), H<sub>i</sub> (lb/gal).

(1) For coatings that contain no exempt solvents, determine the total organic HAP content using manufacturer's supplied data or Method 24 of 40 CFR part 60, appendix A to determine the VOC content. The VOC content shall be used as a surrogate for total HAP content for coatings that contain no exempt solvent. If there is a discrepancy between the manufacturer's formulation data and the results of the Method 24 analysis, compliance shall be based on the results from the Method 24 analysis.

\* \* \*

(l) \* \* \*

(4) Calculate the volume-weighted average mass of organic HAP emitted per unit volume (lb/gal) of chemical milling maskant (less water) as applied for all chemical milling maskants during each 30-day period using equation 22:

$$H_a = \frac{\sum_{i=1}^n W_{Hi} D_{mi} V_{mi}}{M_{lw}} \quad \text{Eq. 22}$$

\* \* \*

(n) \* \* \*

(3) Calculate the volume-weighted average mass of VOC emitted per unit volume (lb/gal) of chemical milling maskant (less water and exempt solvents) as applied during each 30-day period using equation 23:

$$G_a = \frac{\sum_{i=1}^n (\text{VOC})_{mi} V_{mi}}{M_{\text{lwes}}} \quad \text{Eq. 23}$$

(o) *Inorganic HAP emissions—dry particulate filter certification requirements.* Dry particulate filters used to comply with § 63.745(g)(2) or § 63.746(b)(4) must be certified by the filter manufacturer or distributor, paint/depainting booth supplier, and/or the facility owner or operator using method 319 in appendix A of subpart A of this part, to meet or exceed the efficiency data points found in Tables 1 and 2, or 3 and 4 of § 63.745 for existing or new sources respectively.

13. Section 63.751 is amended by revising the first sentence of paragraph (b)(6)(ii)(A), (b)(6)(iii) introductory text, and the first sentence of paragraph (b)(6)(iii)(A)(2) introductory text and paragraphs (b)(6)(iii)(D), (c)(1), (c)(2) and (d) to read as follows:

**§ 63.751 Monitoring requirements.**

\* \* \* \* \*

- (b) \* \* \*
- (6) \* \* \*
- (ii) \* \* \*

(A) Except as allowed by paragraph (b)(6)(iii)(A)(2) of this section, all continuous emission monitors shall comply with performance specification (PS) 8 or 9 in 40 CFR part 60, appendix B, as appropriate depending on whether VOC or HAP concentration is being measured. \* \* \*

\* \* \* \* \*

(iii) Owners or operators complying with § 63.745(d), § 63.746(c), or § 63.747(d) through the use of a control device and establishing a site-specific operating parameter in accordance with paragraph (b)(1) of this section shall fulfill the requirements of paragraph (b)(6)(iii)(A) of this section and paragraph (b)(6)(iii)(B) or (C) of this section, as appropriate.

(A) \* \* \*

(2) For owners or operators using a nonregenerative carbon adsorber, in lieu of using continuous emission monitors as specified in paragraph (b)(6)(iii)(A)(1) of this section, the owner or operator may use a portable monitoring device to monitor total HAP or VOC concentration at the inlet and outlet or the outlet of the carbon adsorber as appropriate. \* \* \*

\* \* \* \* \*

(D) If complying with § 63.745(d), § 63.746(c), or § 63.747(d) through the

use of a nonregenerative carbon adsorber, in lieu of the requirements of paragraph (b)(6)(iii)(B) or (C) of this section, the owner or operator may replace the carbon in the carbon adsorber system with fresh carbon at a regular predetermined time interval as determined in accordance with paragraph (b)(2) of this section.

\* \* \* \* \*

(c) \* \* \*

(1) Each owner or operator using a dry particulate filter system to meet the requirements of § 63.745(g)(2) shall, while primer or topcoat application operations are occurring, continuously monitor the pressure drop across the system and read and record the pressure drop once per shift following the recordkeeping requirements of § 63.752(d).

(2) Each owner or operator using a waterwash system to meet the requirements of § 63.745(g)(2) shall, while primer or topcoat application operations are occurring, continuously monitor the water flow rate through the system, and read and record the water flow rate once per shift following the recordkeeping requirements of § 63.752(d).

(d) *Particulate filters and waterwash booths—depainting operations.* Each owner or operator using a dry particulate filter or waterwash system in accordance with the requirements of § 63.746(b)(4) shall, while depainting operations are occurring, continuously monitor the pressure drop across the particulate filters or the water flow rate through the waterwash system and read and record the pressure drop or the water flow rate once per shift following the recordkeeping requirements of § 63.752(e).

\* \* \* \* \*

14. Section 63.752 is amended by revising paragraphs (b)(1), (e)(1)(ii), (e)(6), and (f) introductory text; and by removing paragraph (d)(4) to read as follows:

**§ 63.752 Recordkeeping requirements.**

\* \* \* \* \*

(b) \* \* \*

(1) The name, vapor pressure, and documentation showing the organic HAP constituents of each cleaning solvent used for affected cleaning operations at the facility.

\* \* \* \* \*

(e) \* \* \*

(1) \* \* \*

(ii) Monthly volumes of each organic HAP containing chemical stripper used or monthly weight of organic HAP-material used for spot stripping and decal removal.

\* \* \* \* \*

(6) *Spot stripping and decal removal.* For spot stripping and decal removal, the volume of organic HAP-containing chemical stripper or weight of organic HAP used, the annual average volume of organic HAP-containing chemical stripper or weight of organic HAP used per aircraft, the annual number of aircraft stripped, and all data and calculations used.

\* \* \* \* \*

(f) *Chemical milling maskant application operations.* Each owner or operator seeking to comply with the organic HAP and VOC content limits for the chemical milling maskant application operation, as specified in § 63.747(c), or the control system requirements specified in § 63.747(d), shall record the information specified in paragraphs (f)(1) through (f)(4) of this section, as appropriate.

\* \* \* \* \*

15. Section 63.753 is amended by revising paragraphs (a)(1) introductory text and (d)(2)(i) to read as follows:

**§ 63.753 Reporting requirements.**

(a)(1) Except as provided in paragraphs (a)(2) and (a)(3) of this section, each owner or operator subject to this subpart shall fulfill the requirements contained in § 63.9(a) through (e) and (h) through (j), Notification requirements, and § 63.10(a), (b), (d), and (f), Recordkeeping and reporting requirements, of the General Provisions, 40 CFR part 63, subpart A, and that the initial notification for existing sources required in § 63.9(b)(2) shall be submitted not later than September 1, 1997. In addition to the requirements of § 63.9(h), the notification of compliance status shall include:

\* \* \* \* \*

- (d) \* \* \*
- (2) \* \* \*

(i) The average volume per aircraft of organic HAP-containing chemical strippers or weight of organic HAP used for spot stripping and decal removal operations if it exceeds the limits specified in § 63.746(b)(3); and

\* \* \* \* \*

16. Table 1 is added to the end of subpart GG to read as follows:

TABLE 1 TO SUBPART GG OF PART 63—GENERAL PROVISIONS APPLICABILITY TO SUBPART GG

Reference	Applies to affected sources in subpart GG	Comment
63.1(a)(1)	Yes	
63.1(a)(2)	Yes	
63.1(a)(3)	Yes	
63.1(a)(4)	Yes	
63.1(a)(5)	No	Reserved.
63.1(a)(6)	Yes	
63.1(a)(7)	Yes	
63.1(a)(8)	Yes	
63.1(a)(9)	No	Reserved.
63.1(a)(10)	Yes	
63.1(a)(11)	Yes	
63.1(a)(12)	Yes	
63.1(a)(13)	Yes	
63.1(a)(14)	Yes	
63.1(b)(1)	Yes	
63.1(b)(2)	Yes	
63.1(b)(3)	Yes	
63.1(c)(1)	Yes	
63.1(c)(2)	Yes	Subpart GG does not apply to area sources.
63.1(c)(3)	No	Reserved.
63.1(c)(4)	Yes	
63.1(c)(5)	Yes	
63.1(d)	No	Reserved.
63.1(e)	Yes	
63.2	Yes	
63.3	Yes	
63.4(a)(1)	Yes	
63.4(a)(2)	Yes	
63.4(a)(3)	Yes	
63.4(a)(4)	No	Reserved.
63.4(a)(5)	Yes	
63.4(b)	Yes	
63.4(c)	Yes	
63.5(a)	Yes	
63.5(b)(1)	Yes	
63.5(b)(2)	No	Reserved.
63.5(b)(3)	Yes	
63.5(b)(4)	Yes	
63.5(b)(5)	Yes	
63.5(b)(6)	Yes	
63.5(c)	No	Reserved.
63.5(d)(1)(i)	Yes	
63.5(d)(1)(ii)(A)–(H)	Yes	
63.5(d)(1)(ii)(I)	No	Reserved.
63.5(d)(1)(ii)(J)	Yes	
63.5(d)(1)(iii)	Yes	
63.5(d)(2)–(4)	Yes	
63.5(e)	Yes	
63.5(f)	Yes	
63.6(a)	Yes	
63.6(b)(1)–(5)	Yes	§ 63.749(a) specifies compliance dates for new sources.
63.6(b)(6)	No	Reserved.
63.6(b)(7)	Yes	
63.6(c)(1)	Yes	
63.6(c)(2)	No	The standards in subpart GG are promulgated under section 112(d) of the Act.
63.6(c)(3)–(4)	No	Reserved.
63.6(c)(5)	Yes	
63.6(d)	No	Reserved.
63.6(e)	Yes	63.743(b) includes additional provisions for the operation and maintenance plan.
63.6(f)	Yes	
63.6(g)	Yes	
63.6(h)	No	The standards in subpart GG do not include opacity standards.
63.6(i)(1)–(3)	Yes	
63.6(i)(4)(i)(A)	Yes	
63.6(i)(4)(i)(B)	No	§ 63.743(a)(4) specifies that requests for extension of compliance must be submitted no later than 120 days before an affected source's compliance date.
63.6(i)(4)(ii)	No	The standards in subpart GG are promulgated under section 112(d) of the Act.

TABLE 1 TO SUBPART GG OF PART 63—GENERAL PROVISIONS APPLICABILITY TO SUBPART GG—Continued

Reference	Applies to affected sources in subpart GG	Comment
63.6(i)(5)–(12)	Yes	
63.6(i)(13)	Yes	
63.6(i)(14)	Yes	
63.6(i)(15)	No	Reserved.
63.6(i)(16)	Yes	
63.6(j)	Yes	
63.7(a)(1)	Yes	
63.7(a)(2)(i)–(vi)	Yes	
63.7(a)(2)(vii)–(viii)	No	Reserved.
63.7(a)(2)(ix)	Yes	
63.7(a)(3)	Yes	
63.7(b)	Yes	
63.7(c)	Yes	
63.7(d)	Yes	
63.7(e)	Yes	
63.7(f)	Yes	
63.7(g)(1)	Yes	
63.7(g)(2)	No	Reserved.
63.7(g)(3)	Yes	
63.7(h)	Yes	
63.8(a)(1)–(2)	Yes	
63.8(a)(3)	No	Reserved.
63.8(a)(4)	Yes	
63.8(b)	Yes	
63.8(c)	Yes	
63.8(d)	No	
63.8(e)(1)–(4)	Yes	
63.8(e)(5)(i)	Yes	
63.8(e)(5)(ii)	No	The standards in subpart GG do not include opacity standards.
63.8(f)(1)	Yes	
63.8(f)(2)(i)–(vii)	Yes	
63.8(f)(2)(viii)	No	The standards in subpart GG do not include opacity standards.
63.8(f)(2)(ix)	Yes	
63.8(f)(3)–(6)	Yes	
63.8(g)	Yes	
63.9(a)	Yes	
63.9(b)(1)	Yes	
63.9(b)(2)	Yes	§ 63.753(a)(1) requires submittal of the initial notification at least 1 year prior to the compliance date; § 63.753(a)(2) allows a title V or part 70 permit application to be substituted for the initial notification in certain circumstances.
63.9(b)(3)	Yes	
63.9(b)(4)	Yes	
63.9(b)(5)	Yes	
63.9(c)	Yes	
63.9(d)	Yes	
63.9(e)	Yes	
63.9(f)	No	The standards in subpart GG do not include opacity standards.
63.9(g)(1)	No	
63.9(g)(2)	No	The standards in subpart GG do not include opacity standards.
63.9(g)(3)	No	
63.9(h)(1)–(3)	Yes	§ 63.753(a)(1) also specifies additional information to be included in the notification of compliance status.
63.9(h)(4)	No	Reserved.
63.9(h)(5)–(6)	Yes	
63.9(i)	Yes	
63.9(j)	Yes	
63.10(a)	Yes	
63.10(b)	Yes	
63.10(c)(1)	No	
63.10(c)(2)–(4)	No	Reserved.
63.10(c)(5)–(8)	No	
63.10(c)(9)	No	Reserved.
63.10(c)(10)–(13)	No	
63.10(c)(14)	No	§ 63.8(d) does not apply to this subpart.
63.10(c)(15)	No	

TABLE 1 TO SUBPART GG OF PART 63—GENERAL PROVISIONS APPLICABILITY TO SUBPART GG—Continued

Reference	Applies to affected sources in subpart GG	Comment	
63.10(d)(1)–(2)	Yes	The standards in subpart GG do not include opacity standards.	
63.10(d)(3)	No		
63.10(d)(4)	Yes		
63.10(d)(5)	Yes		
63.10(e)(1)	No		
63.10(e)(2)(i)	No		
63.10(e)(2)(ii)	No		
63.10(e)(3)	No		The standards in subpart GG do not include opacity standards.
63.10(e)(4)	No		
63.10(f)	Yes		The standards in subpart GG do not include opacity standards.
63.11	Yes		
63.12	Yes		
63.13	Yes		
63.14	Yes		
63.15	Yes		

17. Appendix A of subpart GG is added to read as follows:

**Appendix A to Subpart GG of Part 63—Specialty Coating Definitions**

**Ablative coating**—A coating that chars when exposed to open flame or extreme temperatures, as would occur during the failure of an engine casing or during aerodynamic heating. The ablative char surface serves as an insulative barrier, protecting adjacent components from the heat or open flame.

**Adhesion promoter**—A very thin coating applied to a substrate to promote wetting and form a chemical bond with the subsequently applied material.

**Adhesive bonding primer**—A primer applied in a thin film to aerospace components for the purpose of corrosion inhibition and increased adhesive bond strength by attachment. There are two categories of adhesive bonding primers: primers with a design cure at 250°F or below and primers with a design cure above 250°F.

**Aerosol coating**—A hand-held, pressurized, nonrefillable container that expels an adhesive or a coating in a finely divided spray when a valve on the container is depressed.

**Antichafe coating**—A coating applied to areas of moving aerospace components that may rub during normal operations or installation.

**Bearing coating**—A coating applied to an antifriction bearing, a bearing housing, or the area adjacent to such a bearing in order to facilitate bearing function or to protect base material from excessive wear. A material shall not be classified as a bearing coating if it can also be classified as a dry lubricative material or a solid film lubricant.

**Bonding maskant**—A temporary coating used to protect selected areas of aerospace parts from strong acid or alkaline solutions during processing for bonding.

**Caulking and smoothing compounds**—Semi-solid materials which are applied by hand application methods and are used to aerodynamically smooth exterior vehicle

surfaces or fill cavities such as bolt hole accesses. A material shall not be classified as a caulking and smoothing compound if it can also be classified as a sealant.

**Chemical agent-resistant coating (CARC)**—An exterior topcoat designed to withstand exposure to chemical warfare agents or the decontaminants used on these agents.

**Clear coating**—A transparent coating usually applied over a colored opaque coating, metallic substrate, or plarcard to give improved gloss and protection to the color coat. In some cases, a clearcoat refers to any transparent coating without regard to substrate.

**Commercial exterior aerodynamic structure primer**—A primer used on aerodynamic components and structures that protrude from the fuselage, such as wings and attached components, control surfaces, horizontal stabilizers, vertical fins, wing-to-body fairings, antennae, and landing gear and doors, for the purpose of extended corrosion protection and enhanced adhesion.

**Commercial interior adhesive**—Materials used in the bonding of passenger cabin interior components. These components must meet the FAA fireworthiness requirements.

**Compatible substrate primer**—Includes two categories: compatible epoxy primer and adhesive primer. **Compatible epoxy primer** is primer that is compatible with the filled elastomeric coating and is epoxy based. The compatible substrate primer is an epoxy-polyamide primer used to promote adhesion of elastomeric coatings such as impact-resistant coatings. **Adhesive primer** is a coating that (1) inhibits corrosion and serves as a primer applied to bare metal surfaces or prior to adhesive application, or (2) is applied to surfaces that can be expected to contain fuel. Fuel tank coatings are excluded from this category.

**Corrosion prevention system**—A coating system that provides corrosion protection by displacing water and penetrating mating surfaces, forming a protective barrier between the metal surface and moisture. Coatings containing oils or waxes are excluded from this category.

**Critical use and line sealer maskant**—A temporary coating, not covered under other maskant categories, used to protect selected areas of aerospace parts from strong acid or alkaline solutions such as those used in anodizing, plating, chemical milling and processing of magnesium, titanium, high-strength steel, high-precision aluminum chemical milling of deep cuts, and aluminum chemical milling of complex shapes. Materials used for repairs or to bridge gaps left by scribing operations (i.e. line sealer) are also included in this category.

**Cryogenic flexible primer**—A primer designed to provide corrosion resistance, flexibility, and adhesion of subsequent coating systems when exposed to loads up to and surpassing the yield point of the substrate at cryogenic temperatures (–275°F and below).

**Cryoprotective coating**—A coating that insulates cryogenic or subcooled surfaces to limit propellant boil-off, maintain structural integrity of metallic structures during ascent or re-entry, and prevent ice formation.

**Cyanoacrylate adhesive**—A fast-setting, single component adhesive that cures at room temperature. Also known as “super glue.”

**Dry lubricative material**—A coating consisting of lauric acid, cetyl alcohol, waxes, or other non-cross linked or resin-bound materials which act as a dry lubricant.

**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.

**Electrostatic discharge and electromagnetic interference (EMI) coating**—A coating applied to space vehicles, missiles, aircraft radomes, and helicopter blades to disperse static energy or reduce electromagnetic interference.

**Elevated-temperature Skydrol-resistant commercial primer**—A primer applied primarily to commercial aircraft (or commercial aircraft adapted for military use) that must withstand immersion in phosphate-ester (PE) hydraulic fluid (Skydrol 500b or equivalent) at the elevated temperature of 150°F for 1,000 hours.

**Epoxy polyamide topcoat**—A coating used where harder films are required or in some areas where engraving is accomplished in camouflage colors.

**Fire-resistant (interior) coating**—For civilian aircraft, fire-resistant interior coatings are used on passenger cabin interior parts that are subject to the FAA fireworthiness requirements. For military aircraft, fire-resistant interior coatings are used on parts subject to the flammability requirements of MIL-STD-1630A and MIL-A-87721. For space applications, these coatings are used on parts subject to the flammability requirements of SE-R-0006 and SSP 30233.

**Flexible primer**—A primer that meets flexibility requirements such as those needed for adhesive bond primed fastener heads or on surfaces expected to contain fuel. The flexible coating is required because it provides a compatible, flexible substrate over bonded sheet rubber and rubber-type coatings as well as a flexible bridge between the fasteners, skin, and skin-to-skin joints on outer aircraft skins. This flexible bridge allows more topcoat flexibility around fasteners and decreases the chance of the topcoat cracking around the fasteners. The result is better corrosion resistance.

**Flight test coating**—A coating applied to aircraft other than missiles or single-use aircraft prior to flight testing to protect the aircraft from corrosion and to provide required marking during flight test evaluation.

**Fuel tank adhesive**—An adhesive used to bond components exposed to fuel and that must be compatible with fuel tank coatings.

**Fuel tank coating**—A coating applied to fuel tank components to inhibit corrosion and/or bacterial growth and to assure sealant adhesion in extreme environmental conditions.

**High temperature coating**—A coating designed to withstand temperatures of more than 350 °F.

**Insulation covering**—Material that is applied to foam insulation to protect the insulation from mechanical or environmental damage.

**Intermediate release coating**—A thin coating applied beneath topcoats to assist in removing the topcoat in repainting operations and generally to allow the use of less hazardous repainting methods.

**Lacquer**—A clear or pigmented coating formulated with a nitrocellulose or synthetic resin to dry by evaporation without a chemical reaction. Lacquers are resoluble in their original solvent.

**Metalized epoxy coating**—A coating that contains relatively large quantities of metallic pigmentation for appearance and/or added protection.

**Mold release**—A coating applied to a mold surface to prevent the molded piece from sticking to the mold as it is removed.

**Nonstructural adhesive**—An adhesive that bonds nonload bearing aerospace components in noncritical applications and is not covered in any other specialty adhesive categories.

**Optical anti-reflection coating**—A coating with a low reflectance in the infrared and visible wavelength ranges, which is used for anti-reflection on or near optical and laser hardware.

**Part marking coating**—Coatings or inks used to make identifying markings on materials, components, and/or assemblies. These markings may be either permanent or temporary.

**Pretreatment coating**—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.

**Rain erosion-resistant coating**—A coating or coating system used to protect the leading edges of parts such as flaps, stabilizers, radomes, engine inlet nacelles, etc. against erosion caused by rain impact during flight.

**Rocket motor bonding adhesive**—An adhesive used in rocket motor bonding applications.

**Rocket motor nozzle coating**—A catalyzed epoxy coating system used in elevated temperature applications on rocket motor nozzles.

**Rubber-based adhesive**—Quick setting contact cements that provide a strong, yet flexible, bond between two mating surfaces that may be of dissimilar materials.

**Scale inhibitor**—A coating that is applied to the surface of a part prior to thermal processing to inhibit the formation of scale.

**Screen print ink**—Inks used in screen printing processes during fabrication of decorative laminates and decals.

**Seal coat maskant**—An overcoat applied over a maskant to improve abrasion and chemical resistance during production operations.

**Sealant**—A material used to prevent the intrusion of water, fuel, air, or other liquids or solids from certain areas of aerospace vehicles or components. There are two categories of sealants: extrudable/rollable/brushable sealants and sprayable sealants.

**Silicone insulation material**—Insulating material applied to exterior metal surfaces for protection from high temperatures caused by atmospheric friction or engine exhaust. These materials differ from ablative coatings in that they are not "sacrificial."

**Solid film lubricant**—A very thin coating consisting of a binder system containing as its chief pigment material one or more of the following: molybdenum, graphite, polytetrafluoroethylene (PTFE), or other solids that act as a dry lubricant between faying surfaces.

**Specialized function coatings**—Coatings that fulfill extremely specific engineering requirements that are limited in application and are characterized by low volume usage. This category excludes coatings covered in other Specialty Coating categories.

**Structural autoclavable adhesive**—An adhesive used to bond load-carrying aerospace components that is cured by heat and pressure in an autoclave.

**Structural nonautoclavable adhesive**—An adhesive cured under ambient conditions that is used to bond load-carrying aerospace components or for other critical functions, such as nonstructural bonding in the proximity of engines.

**Temporary protective coating**—A coating applied to provide scratch or corrosion protection during manufacturing, storage, or transportation. Two types include peelable protective coatings and alkaline removable coatings. These materials are not intended to protect against strong acid or alkaline solutions. Coatings that provide this type of protection from chemical processing are not included in this category.

**Thermal control coating**—Coatings formulated with specific thermal conductive or radiative properties to permit temperature control of the substrate.

**Touch-up and Repair Coating**—A coating used to cover minor coating imperfections appearing after the main coating operation.

**Wet fastener installation coating**—A primer or sealant applied by dipping, brushing, or daubing to fasteners that are installed before the coating is cured.

**Wing coating**—A corrosion-resistant topcoat that is resilient enough to withstand the flexing of the wings.

18. Appendix A to Part 63 is amended by adding method 319 in numerical order to read as follows:

#### Appendix A to Part 63—Test Methods

\* \* \* \* \*

#### Method 319: Determination of Filtration Efficiency for Paint Overspray Arrestors

##### 1.0 Scope and Application.

1.1 This method applies to the determination of the initial, particle size dependent, filtration efficiency for paint arrestors over the particle diameter range from 0.3 to 10 µm. The method applies to single and multiple stage paint arrestors or paint arrestor media. The method is applicable to efficiency determinations from 0 to 99 percent. Two test aerosols are used—one liquid phase and one solid phase. Oleic acid, a low-volatility liquid (CAS Number 112-80-1), is used to simulate the behavior of wet paint overspray. The solid-phase aerosol is potassium chloride salt (KCl, CAS Number 7447-40-7) and is used to simulate the behavior of a dry overspray. The method is limited to determination of the initial, clean filtration efficiency of the arrestor. Changes in efficiency (either increase or decrease) due to the accumulation of paint overspray on and within the arrestor are not evaluated.

1.2 Efficiency is defined as 1—Penetration (e.g., 70 percent efficiency is equal to 0.30 penetration). Penetration is based on the ratio of the downstream particle concentration to the upstream concentration. It is often more useful, from a mathematical or statistical point of view, to discuss the upstream and downstream counts in terms of penetration rather than the derived efficiency value. Thus, this document uses both penetration and efficiency as appropriate.

1.3 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. (For example, if the final stage of a three-stage paint arrestor system has been tested by itself, then the addition of the other two stages shall be assumed to maintain, as a minimum, the filtration efficiency provided by the final stage alone. Thus, in this example, if the final stage has been shown to meet the filtration requirements of Table 1 of § 63.745 of subpart GG, then the final stage in combination with any additional paint arrestor stages also passes the filtration requirements.)

#### 2.0 Summary of Method.

2.1 This method applies to the determination of the fractional (i.e., particle-size dependent) aerosol penetration of several types of paint arrestors. Fractional penetration is computed from aerosol concentrations measured upstream and downstream of an arrestor installed in a laboratory test rig. The aerosol concentrations upstream and downstream of the arrestors are measured with an aerosol analyzer that simultaneously counts and sizes the particles in the aerosol stream. The aerosol analyzer covers the particle diameter size range from 0.3 to 10  $\mu\text{m}$  in a minimum of 12 contiguous sizing channels. Each sizing channel covers

a narrow range of particle diameters. For example, Channel 1 may cover from 0.3 to 0.4  $\mu\text{m}$ , Channel 2 from 0.4 to 0.5  $\mu\text{m}$ , \* \* \*

By taking the ratio of the downstream to upstream counts on a channel by channel basis, the penetration is computed for each of the sizing channels.

2.2 The upstream and downstream aerosol measurements are made while injecting the test aerosol into the air stream upstream of the arrestor (ambient aerosol is removed with HEPA filters on the inlet of the test rig). This test aerosol spans the particle size range from 0.3 to 10  $\mu\text{m}$  and provides sufficient upstream concentration in each of the optical particle counter (OPC) sizing channels to allow accurate calculation of penetration, down to penetrations of approximately 0.01 (i.e., 1 percent penetration; 99 percent efficiency). Results are presented as a graph and a data table showing the aerodynamic particle diameter and the corresponding fractional efficiency.

#### 3.0 Definitions.

**Aerodynamic Diameter**—diameter of a unit density sphere having the same aerodynamic properties as the particle in question.

**Efficiency** is defined as equal to 1—Penetration.

**Optical Particle Counter (OPC)**—an instrument that counts particles by size using

light scattering. An OPC gives particle diameters based on size, index of refraction, and shape.

**Penetration**—the fraction of the aerosol that penetrates the filter at a given particle diameter. Penetration equals the downstream concentration divided by the upstream concentration.

#### 4.0 Interferences.

4.1 The influence of the known interferences (particle losses) are negated by correction of the data using blanks.

#### 5.0 Safety.

5.1 There are no specific safety precautions for this method above those of good laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

#### 6.0 Equipment and Supplies.

6.1 **Test Facility.** A schematic diagram of a test duct used in the development of the method is shown in Figure 319-1.

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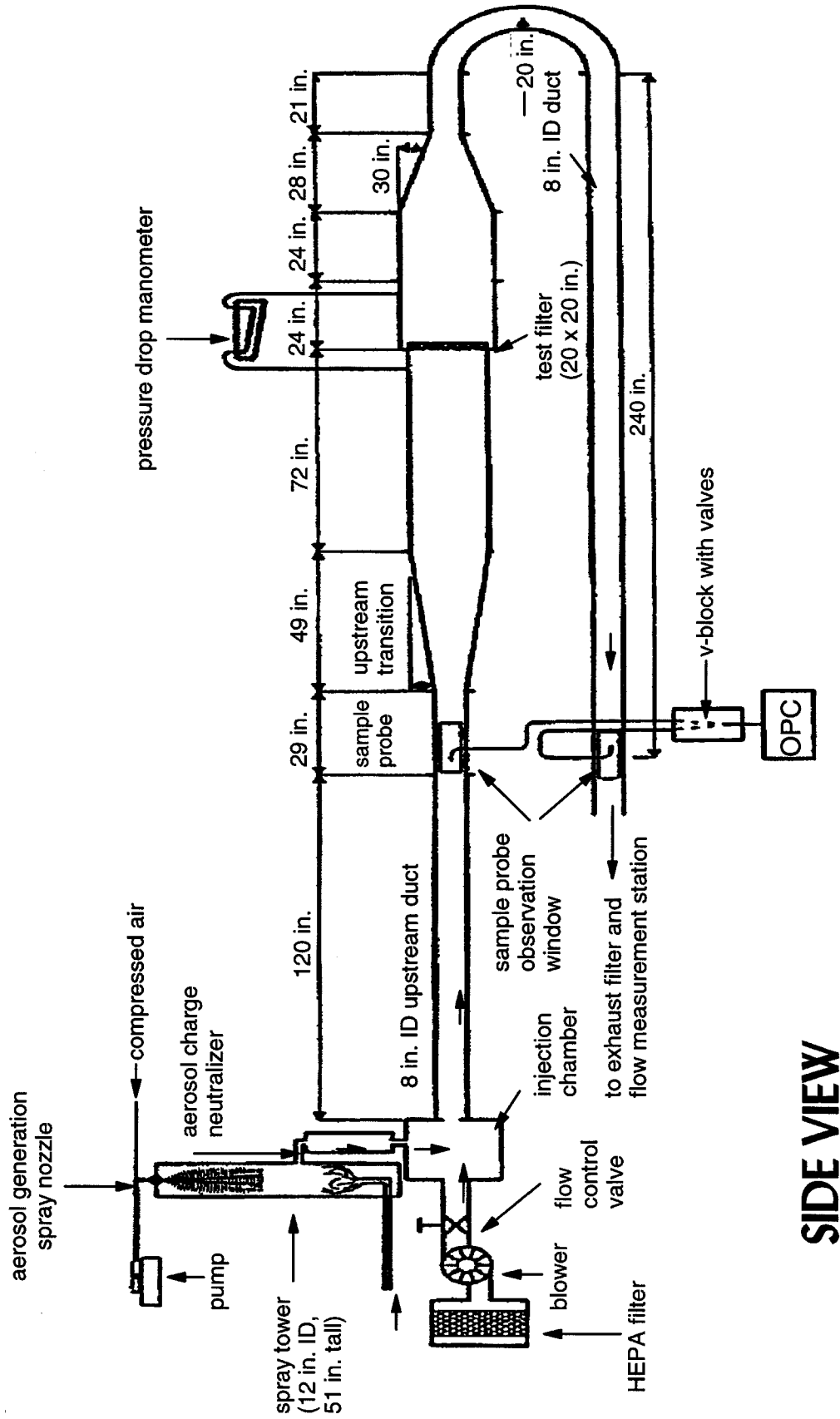


Figure 319-1. Schematic illustration of the fractional efficiency test rig.

6.1.1 The test section, paint spray section, and attached transitions are constructed of stainless and galvanized steel. The upstream and downstream ducting is 20 cm diameter polyvinyl chloride (PVC). The upstream transition provides a 7° angle of expansion to provide a uniform air flow distribution to the paint arrestors. Aerosol concentration is measured upstream and downstream of the test section to obtain the challenge and penetrating aerosol concentrations, respectively. Because the downstream ducting runs back under the test section, the challenge and penetrating aerosol taps are located physically near each other, thereby facilitating aerosol sampling and reducing sample-line length. The inlet nozzles of the

upstream and downstream aerosol probes are designed to yield isokinetic sampling conditions.

6.1.2 The configuration and dimensions of the test 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 a relative humidity of less than 65 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.

TABLE 319-1.—QC CONTROL LIMITS

	Frequency and description	Control limits
OPC zero count .....	Each Test. OPC samples HEPA-filtered air .....	<50 counts per minute.
OPC sizing accuracy check .....	Daily. Sample aerosolized PSL spheres .....	Peak of distribution should be in correct OPC channel.
Minimum counts per channel for challenge aerosol.	Each Test .....	Minimum total of 500 particle counts per channel.
Maximum particle concentration .....	Each Test. Needed to ensure OPC is not overloaded.	<10% of manufacturer's claimed upper limit corresponding to a 10% count error.
Standard Deviation of Penetration .....	Computed for each test based on the CV of the upstream and downstream counts.	<0.10 for 0.3 to 3 µm diameter. <0.30 for >3 µm diameter.
0% Penetration .....	Monthly .....	<0.01.
100% Penetration—KCl .....	Triplicate tests performed immediately before, during, or after triplicate arrestor tests.	0.3 to 1 µm: 0.90 to 1.10. 1 to 3 µm: 0.75 to 1.25. 3 to 10 µm: 0.50 to 1.50.
100% Penetration—Oleic Acid .....	Triplicate tests performed immediately before, during, or after triplicate arrestor tests.	0.3 to 1 µm: 0.90 to 1.10. 1 to 3 µm: 0.75 to 1.25. 3 to 10 µm: 0.50 to 1.50.

6.2 Aerosol Generator. The aerosol generator is used to produce a stable aerosol covering the particle size range from 0.3 to 10 µm diameter. The generator used in the development of this method consists of an air atomizing nozzle positioned at the top of a 0.30-m (12-in.) diameter, 1.3-m (51-in.) tall, acrylic, transparent, spray tower. This tower allows larger sized particles, which would otherwise foul the test duct and sample lines, to fall out of the aerosol. It also adds drying air to ensure that the KCl droplets dry to solid salt particles. After generation, the aerosol passes through an aerosol neutralizer (Kr85 radioactive source) to neutralize any electrostatic charge on the aerosol (electrostatic charge is an unavoidable consequence of most aerosol generation methods). To improve the mixing of the aerosol with the air stream, the aerosol is injected counter to the airflow. Generators of other designs may be used, but they must produce a stable aerosol concentration over the 0.3 to 10 µm diameter size range; provide a means of ensuring the complete drying of the KCl aerosol; and utilize a charge neutralizer to neutralize any electrostatic charge on the aerosol. The resultant challenge aerosol must meet the minimum count per channel and maximum concentration criteria of Table 319-1.

6.3 Installation of Paint Arrestor. The paint arrestor is to be installed in the test duct in a manner that precludes air bypassing the arrestor. Since arrestor media are often sold unmounted, a mounting frame may be

used to provide back support for the media in addition to sealing it into the duct. The mounting frame for 20 in. x 20 in. arrestors will have minimum open internal dimensions of 18 in. square. Mounting frames for 24 in. x 24 in. arrestors will have minimum open internal dimensions of 22 in. square. The open internal dimensions of the mounting frame shall not be less than 75 percent of the approach duct dimensions.

6.4 Optical Particle Counter. The upstream and downstream aerosol concentrations are measured with a high-resolution optical particle counter (OPC). To ensure comparability of test results, the OPC shall utilize an optical design based on wide-angle light scattering and provided a minimum of 12 contiguous particle sizing channels from 0.3 to 10µm diameter (based on response to PSL) where, for each channel, the ratio of the diameter corresponding to the upper channel bound to the lower channel bound must not exceed 1.5.

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 sample 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.

6.6 Airflow Monitor. The volumetric airflow through the system shall be measured with a calibrated orifice plate, flow nozzle, or laminar flow element. The measurement device must have an accuracy of 5 percent or better.

7.0 Reagents and Standards.

7.1 The liquid test aerosol is reagent grade, 98 percent pure, oleic acid (Table 319-2). The solid test aerosol is KCl aerosolized from a solution of KCl in water. In addition to the test aerosol, a calibration aerosol of monodisperse polystyrene latex (PSL) spheres is used to verify the calibration of the OPC.

TABLE 319-2.—PROPERTIES OF THE TEST AND CALIBRATION AEROSOLS

	Refractive index	Density, g/cm <sup>3</sup>	Shape
Oleic Acid (liquid-phase challenge aerosol) .....	1.46 nonabsorbing .....	0.89	Spherical.
KCl (solid-phase challenge aerosol) .....	1.49 .....	1.98	Cubic or agglomerated cubes.
PSL (calibration aerosol) .....	1.59 nonabsorbing .....	1.05	Spherical.

8.0 Sample Collection, Preservation, and Storage.

8.1 In this test, all sampling occurs in real-time, thus no samples are collected that require preservation or storage during the test. The paint arrestors are shipped and stored to avoid structural damage or soiling. Each arrestor may be shipped in its original

box from the manufacturer or similar cardboard box. Arrestors are stored at the test site in a location that keeps them clean and dry. Each arrestor is clearly labeled for tracking purposes.

9.0 Quality Control.  
9.1 Table 319-1 lists the QC control limits.

9.2 The standard deviation ( $\sigma$ ) of the penetration (P) for a given test at each of the 15 OPC sizing channels is computed from the coefficient of variation (CV, the standard deviation divided by the mean) of the upstream and downstream measurements as:

$$\sigma_P = P \sqrt{(CV_{\text{upstream}}^2 + CV_{\text{downstream}}^2)} \quad (\text{Eq. 319-1})$$

For a properly operating system, the standard deviation of the penetration is < 0.10 at particle diameters from 0.3 to 3  $\mu\text{m}$  and less than 0.30 at diameters > 3  $\mu\text{m}$ .

9.3 Data Quality Objectives (DQO).  
9.3.1 Fractional Penetration. From the triplicate tests of each paint arrestor model, the standard deviation for the penetration

measurements at each particle size (i.e., for each sizing channel of the OPC) is computed as:

$$s = \left[ \frac{\sum (P_i - \bar{P})^2}{(n-1)} \right]^{1/2} \quad (\text{Eq. 319-2})$$

where  $P_i$  represents an individual penetration measurement, and P the average of the 3 (n = 3) individual measurements.

9.3.2 Bias of the fractional penetration values is determined from triplicate no-filter and HEPA filter tests. These tests determine the measurement bias at 100 percent penetration and 0 percent penetration, respectively.

9.3.3 PSL-Equivalent Light Scattering Diameter. The precision and bias of the OPC sizing determination are based on sampling a known diameter of PSL and noting whether the particle counts peak in the correct channel of the OPC. This is a pass/fail measurement with no calculations involved.

9.3.4 Airflow. The precision of the measurement must be within 5 percent of the set point.

10.0 Calibration and Standardization.

10.1 Optical Particle Counter. The OPC must have an up-to-date factory calibration. Check the OPC zero at the beginning and end of each test by sampling HEPA-filtered air. Verify the sizing accuracy on a daily basis (for days when tests are performed) with 1-size PSL spheres.

10.2 Airflow Measurement. Airflow measurement devices must have an accuracy of 5 percent or better. Manometers used in conjunction with the orifice plate must be inspected prior to use for proper level, zero, and mechanical integrity. Tubing connections to the manometer must be free from kinks and have secure connections.

10.3 Pressure Drop. Measure pressure drop across the paint arrestor with an inclined manometer readable to within 0.01 in. H<sub>2</sub>O. Prior to use, the level and zero of

the manometer, and all tubing connections, must be inspected and adjusted as needed.

11.0 Procedure.  
11.1 Filtration Efficiency. For both the oleic acid and KCl challenges, this procedure is performed in triplicate using a new arrestor for each test.

11.1.1 General Information and Test Duct Preparation

11.1.1.1 Use the "Test Run Sheet" form (Figure 319-2) to record the test information.

**Run Sheet**

*Part 1. General Information*

Date and Time: \_\_\_\_\_  
Test Operator: \_\_\_\_\_  
Test #: \_\_\_\_\_

Paint Arrestor:  
Brand/Model \_\_\_\_\_  
Arrestor Assigned ID # \_\_\_\_\_  
Condition of arrestor (i.e., is there any damage? Must be new condition to proceed):  
\_\_\_\_\_

Manometer zero and level confirmed?  
\_\_\_\_\_

*Part 2. Clean Efficiency Test*

Date and Time: \_\_\_\_\_  
Optical Particle Counter:  
20 min. warm up \_\_\_\_\_  
Zero count (< 50 counts/min) \_\_\_\_\_  
Daily PSL check \_\_\_\_\_  
PSL Diam: \_\_\_\_\_  $\mu\text{m}$   
File name for OPC data: \_\_\_\_\_  
Test Conditions:  
Air Flow: \_\_\_\_\_  
Temp & RH: Temp \_\_\_\_\_ °F RH \_\_\_\_\_ %

Atm. Pressure: \_\_\_\_\_ in. Hg  
(From mercury barometer)

Aerosol Generator: (record all operating parameters)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Test Aerosol:  
(Oleic acid or KCl) \_\_\_\_\_

Arrestor:  
Pressure drop: at start \_\_\_\_\_ in. H<sub>2</sub>O  
at end \_\_\_\_\_ in. H<sub>2</sub>O  
Condition of arrestor at end of test (note any physical deterioration):  
\_\_\_\_\_  
\_\_\_\_\_

**Figure 319-2. Test Run Sheet**

Other report formats which contain the same information are acceptable.

11.1.1.2 Record the date, time, test operator, Test #, paint arrestor brand/model and its assigned ID number. For tests with no arrestor, record none.

11.1.1.3 Ensure that the arrestor is undamaged and is in "new" condition.

11.1.1.4 Mount the arrestor in the appropriate frame. Inspect for any airflow leak paths.

11.1.1.5 Install frame-mounted arrestor in the test duct. Examine the installed arrestor to verify that it is sealed in the duct. For tests with no arrestor, install the empty frame.

11.1.1.6 Visually confirm the manometer zero and level. Adjust as needed.

11.1.2 Clean Efficiency Test.

11.1.2.1 Record the date and time upon beginning this section.

11.1.2.2 Optical Particle Counter.

11.1.2.2.1 General: Operate the OPC per the manufacturer's instructions allowing a minimum of 20 minutes warm up before making any measurements.

11.1.2.2.2 Overload: The OPC will yield inaccurate data if the aerosol concentration it is attempting to measure exceeds its operating limit. To ensure reliable measurements, the maximum aerosol concentration will not exceed 10 percent of the manufacturer's claimed upper concentration limit corresponding to a 10 percent count error. If this value is exceeded, reduce the aerosol concentration until the acceptable conditions are met.

11.1.2.2.3 Zero Count: Connect a HEPA capsule to the inlet of the OPC and obtain printouts for three samples (each a minimum of 1-minute each). Record maximum cumulative zero count. If the count rate exceeds 50 counts per minute, the OPC requires servicing before continuing.

11.1.2.2.4 PSL Check of OPC Calibration: Confirm the calibration of the OPC by sampling a known size PSL aerosol. Aerosolize the PSL using an appropriate nebulizer. Record whether the peak count is observed in the proper channel. If the peak is not seen in the appropriate channel, have the OPC recalibrated.

11.1.2.3 Test Conditions:

11.1.2.3.1 Airflow: The test airflow corresponds to a nominal face velocity of 120 FPM through the arrestor. For arrestors having nominal 20 in. x 20 in. face dimensions, this measurement corresponds to an airflow of 333 cfm. For arrestors having nominal face dimensions of 24 in. x 24 in., this measurement corresponds to an airflow of 480 cfm.

11.1.2.3.2 Temperature and Relative Humidity: The temperature and relative humidity of the challenge air stream will be measured to within an accuracy of  $\pm 2^\circ\text{F}$  and  $\pm 10$  percent RH. To protect the probe from fouling, it may be removed during periods of aerosol generation.

11.1.2.3.3 Barometric Pressure: Use a mercury barometer. Record the atmospheric pressure.

11.1.2.4 Upstream and Downstream Background Counts.

11.1.2.4.1 With the arrestor installed in the test duct and the airflow set at the proper value, turn on the data acquisition computer and bring up the data acquisition program.

11.1.2.4.2 Set the OPC settings for the appropriate test sample duration with output for both printer and computer data collection.

11.1.2.4.3 Obtain one set of upstream-downstream background measurements.

11.1.2.4.4 After obtaining the upstream-downstream measurements, stop data acquisition.

11.1.2.5 Efficiency Measurements:

11.1.2.5.1 Record the arrestor pressure drop.

11.1.2.5.2 Turn on the Aerosol Generator. Begin aerosol generation and record the operating parameters.

11.1.2.5.3 Monitor the particle counts. Allow a minimum of 5 minutes for the generator to stabilize.

11.1.2.5.4 Confirm that the total particle count does not exceed the predetermined upper limit. Adjust generator as needed.

11.1.2.5.5 Confirm that a minimum of 50 particle counts are measured in the upstream sample in each of the OPC channels per sample. (A minimum of 50 counts per channel per sample will yield the required minimum 500 counts per channel total for the 10 upstream samples as specified in Table 319-1.) Adjust generator or sample time as needed.

11.1.2.5.6 If you are unable to obtain a stable concentration within the concentration limit and with the 50 count minimum per channel, adjust the aerosol generator.

11.1.2.5.7 When the counts are stable, perform repeated upstream-downstream sampling until 10 upstream-downstream measurements are obtained.

11.1.2.5.8 After collection of the 10 upstream-downstream samples, stop data acquisition and allow 2 more minutes for final purging of generator.

11.1.2.5.9 Obtain one additional set of upstream-downstream background samples.

11.1.2.5.10 After obtaining the upstream-downstream background samples, stop data acquisition.

11.1.2.5.11 Record the arrestor pressure drop.

11.1.2.5.12 Turn off blower.

11.1.2.5.13 Remove the paint arrestor assembly from the test duct. Note any signs of physical deterioration.

11.1.2.5.14 Remove the arrestor from the frame and place the arrestor in an appropriate storage bag.

11.2 Control Test: 100 Percent Penetration Test. A 100 percent penetration test must be performed immediately before each individual paint arrestor test using the same challenge aerosol substance (i.e., oleic acid or KCl) as to be used in the arrestor test. These tests are performed with no arrestor installed in the test housing. This test is a relatively stringent test of the adequacy of the overall duct, sampling, measurement, and aerosol generation system. The test is performed as a normal penetration test except the paint arrestor is not used. A perfect system would yield a measured penetration of 1 at all particle sizes. Deviations from 1 can occur due to particle losses in the duct, differences in the degree of aerosol uniformity (i.e., mixing) at the upstream and downstream probes, and differences in particle transport efficiency in the upstream and downstream sampling lines.

11.3 Control Test: 0 Percent Penetration. One 0 percent penetration test must be performed at least monthly during testing. The test is performed by using a HEPA filter rather than a paint arrestor. This test assesses

the adequacy of the instrument response time and sample line lag.

12.0 Data Analysis and Calculations.

12.1 Analysis. The analytical procedures for the fractional penetration and flow velocity measurements are described in Section 11. Note that the primary measurements, those of the upstream and downstream aerosol concentrations, are performed with the OPC which acquires the sample and analyzes it in real time. Because all the test data are collected in real time, there are no analytical procedures performed subsequent to the actual test, only data analysis.

12.2 Calculations.

12.2.1 Penetration.

#### Nomenclature

U = Upstream particle count

D = Downstream particle count

$U_b$  = Upstream background count

$D_b$  = Downstream background count

$P_{100}$  = 100 percent penetration value determined immediately prior to the arrestor test computed for each channel as:

$$P_{100} = \frac{(\bar{D} - \bar{D}_b)}{(\bar{U} - \bar{U}_b)}$$

P = Penetration of the arrestor corrected for  $P_{100}$

$\sigma$  = Sample standard deviation

CV = Coefficient of variation =  $\sigma/\text{mean}$

E = Efficiency.

Overbar denotes arithmetic mean of quantity.

Analysis of each test involves the following quantities:

- $P_{100}$  value for each sizing channel from the 100 percent penetration control test,
- 2 upstream background values,
- 2 downstream background values,
- 10 upstream values with aerosol generator on, and
- 10 downstream values with aerosol generator on.

Using the values associated with each sizing channel, the penetration associated with each particle-sizing channel is calculated as:

$$P = \left\{ \frac{(\bar{D} - \bar{D}_b)}{(\bar{U} - \bar{U}_b)} \right\} / P_{100} \quad (\text{Eq. 319-3})$$

$$E = 1 - P \quad (\text{Eq. 319-4})$$

Most often, the background levels are small compared to the values when the aerosol generator is on.

12.3 The relationship between the physical diameter ( $D_{\text{Physical}}$ ) as measured by the OPC to the aerodynamic diameter ( $D_{\text{Aero}}$ ) is given by:

$$D_{\text{Aero}} = D_{\text{Physical}} \sqrt{\frac{\rho_{\text{Particle}}}{\rho_o} \frac{\text{CCF}_{\text{Physical}}}{\text{CCF}_{\text{Aero}}}} \quad (\text{Eq. 319-5})$$

Where:

$\rho_o$  = unit density of 1 g/cm<sup>3</sup>.

$\rho_{\text{Particle}}$  = the density of the particle, 0.89 g/cm<sup>3</sup> for oleic acid.

$\text{CCF}_{\text{Physical}}$  = the Cunningham Correction Factor at  $D_{\text{Physical}}$ .

$\text{CCF}_{\text{Aero}}$  = the Cunningham Correction Factor at  $D_{\text{Aero}}$ .

12.4 Presentation of Results. For a given arrestor, results will be presented for:

- Triplicate arrestor tests with the liquid-phase challenge aerosol,
- Triplicate arrestor tests with the solid-phase challenge aerosol,
- Triplicate 100 percent penetration tests with the liquid-phase challenge aerosol,
- Triplicate 100 percent penetration tests with the solid-phase challenge aerosol, and
- One 0 percent filter test (using either the liquid-phase or solid-phase aerosol and performed at least monthly).

12.4.1 Results for the paint arrestor test must be presented in both graphical and tabular form. The X-axis of the graph will be a logarithmic scale of aerodynamic diameter from 0.1 to 100  $\mu\text{m}$ . The Y-axis will be

efficiency (%) on a linear scale from 0 to 100.

Plots for each individual run and a plot of the average of triplicate solid-phase and of the average triplicate liquid-phase tests must be prepared. All plots are to be based on point-to-point plotting (i.e., no curve fitting is to be used). The data are to be plotted based on the geometric mean diameter of each of the OPC's sizing channels.

12.4.2 Tabulated data from each test must be provided. The data must include the upper and lower diameter bound and geometric mean diameter of each of the OPC sizing channels, the background particle counts for each channel for each sample, the upstream particle counts for each channel for each sample, the downstream particle counts for each channel for each sample, the 100 percent penetration values computed for each channel, and the 0 percent penetration values computed for each channel.

13.0 Pollution Prevention.

13.1 The quantities of materials to be aerosolized should be prepared in accord with the amount needed for the current tests so as to prevent wasteful excess.

14.0 Waste Management.

14.1 Paint arrestors may be returned to originator, if requested, or disposed of with regular laboratory waste.

15.0 References.

1. Hanley, J.T., D.D. Smith and L. Cox. "Fractional Penetration of Paint Overspray Arrestors, Draft Final Report," EPA Cooperative Agreement CR-817083-01-0, January 1994.
2. Hanley, J.T., D.D. Smith, and D.S. Ensor. "Define a Fractional Efficiency Test Method that is Compatible with Particulate Removal Air Cleaners Used in General Ventilation," Final Report, 671-RP, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., December 1993.
3. "Project Work and Quality Assurance Plan: Fractional Penetration of Paint Overspray Arrestors, Category II," EPA Cooperative Agreement No. CR-817083, July 1994.

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