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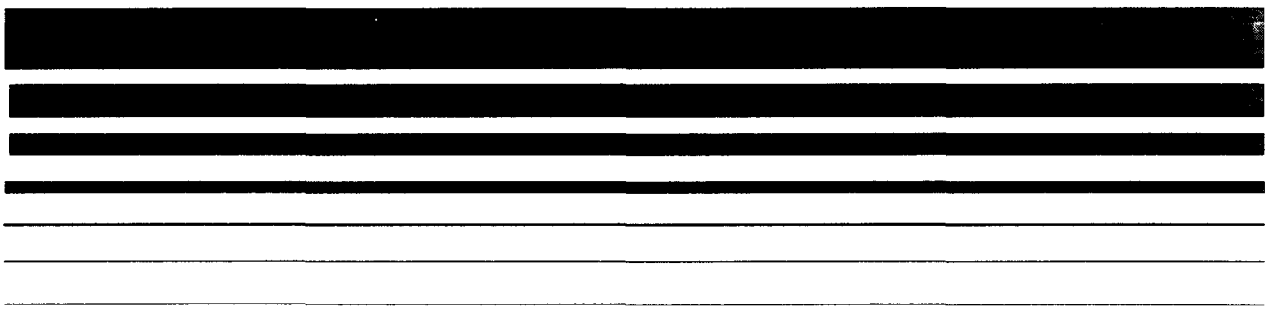
National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning- Background Information for Final Standards



NESHAP

EPA-453/R-94-071

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS HALOGENATED SOLVENT CLEANING - BACKGROUND INFORMATION FOR FINAL STANDARDS

Summary of Public Comments and Responses

Emission Standards Division

U.S. Environmental Protection Agency
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

November 8, 1994

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1.0 SUMMARY

On November 29, 1993, the Environmental Protection Agency (EPA) proposed national emission standards for hazardous air pollutants (NESHAP) for halogenated solvent cleaning (58 FR 62566) under authority of section 112 of the Clean Air Act (Act). Public comments were requested on the proposal in the Federal Register. There were 57 commenters composed mainly of States, solvent cleaning machine users, solvent cleaning machine vendors, and industry trade associations.

All of the comments that were submitted, along with responses to these comments, are summarized in this document. The summary of comments and responses serves as the basis for the revisions made to the standards between proposal and promulgation.

1.1 SUMMARY OF CHANGES SINCE PROPOSAL

A. Significant Changes

Several changes have been made since the proposal of these standards. The majority of the changes have been made to clarify portions of the rule that were unclear to the commenters. Other changes include adding additional control combinations, reducing the monitoring frequencies, extending reporting deadlines, extending the compliance period, and adding an equation that allows cleaning machines that do not have a solvent vapor/air interface area to comply with the standard by meeting a solvent emission limit based on cleaning capacity. A summary of the major changes is presented below.

(1) Several comments were made about the complexity of the rule, with many commenters offering suggested changes to clarify different sections. Many of these recommendations have been incorporated into the final rule. For example, the

standards for batch cold cleaning machines have been moved to a separate section, the operator test has been included as appendix B, and a table summarizing the applicability of the General Provisions to this rule has been included in appendix C.

(2) The applicability section of the rule has been clarified to ensure that the standard regulates only those solvents originally intended for inclusion; namely, methylene chloride (MC), perchloroetylene (PCE), 1,1,1-trichloroethane (TCA), trichloroethylene (TCE), chloroform (C), and carbon tetrachloride (CT). Throughout the rest of this document, the term "halogenated HAP solvent," refers solely to these 6 solvents. Several commenters were concerned that, as proposed, the rule could be interpreted to regulate non-halogenated solvents contaminated by trace amounts of halogenated solvent. The EPA never intended for these solvents to be included in these standards.

(3) An equation has been added to the final rule to allow solvent cleaning machines that do not have a solvent vapor/air interface area to comply with these standards. Several new cleaning machines are currently being developed by industry that cannot install the equipment control devices included in this final rule, do not have an idling mode, and do not have a solvent vapor/air interface area to relate to the solvent emission limit. The equation and table in the rule allow owners or operators of halogenated solvent cleaning machines without a solvent vapor/air interface area to comply with the standard by meeting a solvent emission limit based on cleaning capacity that is equivalent to the overall solvent emission limit for machines with a solvent vapor/air interface.

(4) The list of equipment combinations has been modified to remove overlapping controls and to add carbon adsorbers to the control combinations. There are multiple control combinations available for meeting the rule, many of which are pollution prevention measures. Many of these options also

reduce worker exposure. However, some sources may rely on lip exhausts instead in order to meet OSHA requirements. Use of a lip exhaust without any controls, while reducing worker exposure on the one hand, would dramatically increase the overall emissions to air. Thus, if lip exhausts are used on solvent cleaning machines, the rule requires carbon adsorption controls (which have been added explicitly as a control option in the final rule). Although the lip exhaust-carbon adsorption combination reduces worker exposure and overall emissions to air, it may impose additional cost and burden on sources as well as on the environment for a number of reasons. First, carbon adsorption units are generally more expensive than other controls listed in the options. Second, these units may present cross-media impacts such as effluent discharges if not properly operated and maintained, and spent carbon beds that have to be disposed of as hazardous waste. Thus, when making decisions about what controls to install on halogenated solvent cleaning machines to meet the requirements of this rule, all of these factors should be weighed and pollution prevention measures are encouraged wherever possible.

The EPA acknowledges that data show little additional emission reduction by the use of a working-mode cover in the presence of reduced room draft (RRD). Therefore, these controls are no longer included in the same control combination.

(5) Some changes have also been made to the compliance and reporting schedules. The initial notification report deadline for existing sources has been extended from 90 to 270 days after promulgation. This overrides the 120 day deadline in the final part 63 General Provisions. The initial statement of compliance report deadline for new and existing sources has been extended from 30 days to 150 days after the compliance date to allow time for owners or operators to determine compliance with the 3-month rolling average emission limit. This is consistent with the General Provisions. The

compliance time for existing sources has been extended from 2 to 3 years. This extension has been provided to allow sources the maximum flexibility in complying with these standards, including allowing time to consider alternative cleaning technologies. This change is consistent with the General Provisions [§ 63.6(b)(3)]. The exceedance report schedule has been changed to include a biannual exceedance report if there is not an exceedance. This change is consistent with the General Provisions[§ 63.10(e)].

(6) Several commenters stated that the rule was complex and difficult to understand. They stated that additional guidance should be provided, particularly for small businesses. The EPA agrees that additional guidance would be helpful and has developed a brochure summarizing the rule, and will be developing a guidance manual that is scheduled for publication in early 1995. This guidance manual will include a detailed summary of the rule, example forms that can be used for reporting and recordkeeping, and additional assistance for evaluating alternative cleaning technologies.

(7) Several commenters recommended that the EPA reduce the monitoring frequency of the emission control equipment. The EPA evaluated the monitoring frequencies and has added a provision to the final rule that allows the hoist monitoring frequency to decrease from monthly to quarterly if, the owner or operator has operated the hoist for one year without an exceedance in the hoist speed. The EPA has also changed the reduced room draft (RRD) monitoring frequency from weekly to quarterly with weekly monitoring of the parameters used to obtain the RRD.

(8) Several comments were received on the batch cold cleaning machine equipment requirement provisions. A number of commenters reported the use of TCA, MC, and TCE in noncarburetor batch cold cleaning machine operations. The commenters stated that the proposed water layer control option was not always possible for these cleaning machines, particularly when TCA or TCE solvents are used. In order to

address this issue, alternative control equipment options were added to the final rule to allow for the use of an increased freeboard ratio and cover, or remote-reservoir and cover, in lieu of a water layer and cover. Owners or operators complying with these alternative options must comply with work practice requirements. The final rule also allows an owner or operator of a batch cold cleaning machine to use alternative control equipment, if demonstrated to be equivalent to the equipment requirements cited in the final rule and approved by the Administrator.

(9) Several commenters requested revisions to the proposal preamble. The EPA does not revise proposal preambles but issues a promulgation preamble that does not include the background information presented at proposal. Any clarifications or requests for changes made by commenters are therefore addressed in this document.

1.2 SUMMARY OF IMPACTS OF PROMULGATED ACTION

These standards will reduce nationwide emissions of hazardous air pollutants (HAP) from halogenated solvent cleaning machines by 77,400 Mg/yr (85,300 tons per year), or 61 percent in 1997 compared to the emissions that would result in the absence of the standards. No adverse secondary air impacts, water, or solid waste impacts are anticipated from the promulgation of these standards.

The national annual energy usage due to the installation of the required control devices is expected to increase from 12.9 million KWH/yr to 66.9 million KWH/yr, which is equivalent to approximately 29.3 thousand barrels of oil.

The implementation of this regulation is expected to result in an overall annual national net savings of $19 million. This includes a net annualized savings from installation of control devices of $30.5 million and a total monitoring, reporting, and recordkeeping cost of $11.6 million. These savings will come from the significant decrease in solvent emissions and, therefore, solvent

consumption, which outweigh the overall cost of air pollution control equipment and monitoring and recordkeeping costs.

The economic impact analysis has not been revised for promulgation because the changes in costs are not expected to have any effect on the results of the analysis. While the estimated annual costs for the regulation have increased since proposal, there are still cost savings for most affected entities. Only entities with small or medium-sized cleaning machines will not have cost savings, and the costs for the selected regulatory alternatives for these entities have changed very little since proposal. Since those entities that do not have cost savings were the only ones analyzed in the proposal, and these costs have changed little, the results from the economic impact analysis at proposal should still hold for promulgation.

2.0 SUMMARY OF PUBLIC COMMENTS

A total of 57 letters commenting on the proposed standards and the background information document (BID) for the proposed standards were received. Since no one requested a public hearing on the proposed standards, no public hearing was held. A list of the commenters, their affiliations, and the EPA docket number assigned to their correspondence is given in table 2-1.

For the purpose of orderly presentation, the comments have been categorized under the following topics:

- Selection of pollutants and source categories for regulation.
- Emission control options.
- Regulatory alternatives.
- Benefits analysis/economics.
- Proposed standards.
- Modification and reconstruction considerations.
- Monitoring requirements.
- Recordkeeping and reporting requirements.
- Operating permit program.
- Clarifications.
- Miscellaneous.

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS

Docket number[a,b]	Commenter and affiliation
IV-D-01	Mr. Frank Penque, Jr. Industrial Engineer Greif Bros. Corporation 501 John James Audubon Parkway Amherst, New York 14228
IV-D-02	Mr. Courtney Garland, P.E. State of Arkansas Department of Pollution Control and Ecology, Air Division 8001 National Drive Little Rock, Arkansas 72219-8913
IV-D-03	Ms. Katy Wolf, Ph.D. Executive Director Institute for Research and Technical Assistance 2800 Olympic Boulevard, Suite 101 Santa Monica, California 90404
IV-D-04	Mr. Keith Duval Manager, Rule Development Section Ventura County Air Pollution Control District 702 County Square Drive Ventura, California 93003
IV-D-05	Mr. Peter T. E. Gebhard, III President SEREC Corporation Post Office Box 28129 Providence, Rhode Island 02908
IV-D-06	Mr. I. N. Vaughan Manager City of Huntsville Division of Natural Resources 305 Church Street Huntsville, Alabama 35801
IV-D-07	Mr. Bill Lanier Bowden Industries 1004 Oster Drive, N.W. Huntsville, Alabama 35816

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONTINUED)

Docket number[a,b]	Commenter and affiliation
IV-D-08	Ms. Catherine R. M. Ehlhardt Senior Project Engineer Environmental Affairs Division Eli Lilly and Company Lilly Corporate Center Indianapolis, Indiana 46285
IV-D-09	Mr. John W. Walton, P.E. State of Tennessee Department of Environment and Conservation 401 Church Street, 9th Floor L & C Annex Nashville, Tennessee 37243-1531
IV-D-10	Mr. Peter E. Voytek, Ph.D. Vice-President Halogenated Solvents Industry Alliance 2001 L Street, N.W., Suite 506 Washington, D.C. 20036
IV-D-11	J. Ohlmann, P.E. Corporate Environmental Technology and Compliance Grumman Corporation Mail Stop: D08-GHQ Bethpage, New York 11714-3580
IV-D-12	Mr. Ferd. J. Chmielnicki Detrex Corporation Post Office Box 5111 Southfield, Michigan 48086-5111
IV-D-13	Mr. Gerald W. Lancour, Director Safety, Health and Environmental Affairs-MDC McDonnell Douglas Post Office Box 516 Saint Louis, Missouri 63166-0516
IV-D-14	Mr. Desi M. Chari Environmental Affairs Program Manager Safety-Kleen 1000 North Randall Road Elgin, Illinois 60123-7857

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONTINUED)

Docket number[a,b]	Commenter and affiliation
IV-D-15	Mr. Charles D. Malloch Director, Regulatory Management Monsanto Company 800 North Lindbergh Boulevard St. Louis, Missouri 63167
IV-D-16	Mr. B. C. Carmine, P.E. Manager, Air Resources Division The Light Company Houston Lighting and Power Post Office Box 1700 Houston, Texas 77251-1700
IV-D-17	Mr. J. H. O'Brien Staff Vice President Environmental Affairs Lockheed Corporation 4500 Park Granada Boulevard Calabasas, California 91399-0330
IV-D-18	Mr. Wayne H. Jochmann Aluminum Company of America Post Office Box 3567 Davenport, Iowa 52808
IV-D-19	Mr. Robert W. Schenker General Electric Company Corporate Environmental Programs 3135 Easton Turnpike Fairfield, Connecticut 06431
IV-D-20	Mr. Donald Theiler Mr. Robert Colby STAPPA/ALAPCO 444 North Capitol Street, N.W. Washington, D.C. 20001
IV-D-21	Mr. Robert P. Strieter Chairman, Air Toxics Subcommittee The Coalition for Clean Air Implementation 607 Fourteenth Street, NW., Suite 800 Washington, D. C. 20005-2011

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONTINUED)

Docket number[a,b]	Commenter and affiliation
IV-D-22	Billie J. McGarvey Facilities Engineering Division National Aeronautics and Space Administration Headquarters Washington, D.C. 20546-0001
IV-D-23	Mr. Paul J. Yaroschak Department of the Navy Office of the Assistant Secretary (Installations and Environment) Washington, D.C. 20360-5000
IV-D-24	Mr. Douglas I. Greenhaus National Automobile Dealers Association 8400 Westpart Drive McLean, Virginia 22102
IV-D-25	Ms. Natalie Zlotin Air Pollution Control District County of San Diego 9150 Chesapeake Drive San Diego, California 92123-1096
IV-D-26	Mr. John F. Feeley Director of Environmental Affairs Risdon Corporation One Risdon Street Naugatuck, Connecticut 06770
IV-D-27	Ms. Barbara H. Morin Department of Environmental Management Division of Air Resources State of Rhode Island and Providence Plantations 291 Promenade Street Providence, Rhode Island 02908-5767
IV-D-28	Mr. Brian L. Taranto Exxon Chemical Americas Environmental Affairs Department Post Office Box 3272 Houston, Texas 77253-3272

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONTINUED)

Docket number[a,b]	Commenter and affiliation
IV-D-29	Ms. Margaret L. Corbin Air Pollution Engineer Puget Sound Air Pollution Control Agency 110 Union Street, Suite 500 Seattle, Washington 98101-2038
IV-D-30	Ms. Lisa J. Thorvig Minnesota Pollution Control Agency Air Quality Division 520 Lafayette Road, North St. Paul, Minnesota 55155-4194
IV-D-31	Mr. Toby A. Threet The Dow Chemical Company Legal Department 2030 Dow Center Midland, Michigan 48674-2030
IV-D-32	Ms. Linda J. Liszewski Manager Environmental Issues Eastman Kodak Company 343 State Street Rochester, New York 14650
IV-D-33	Mr. Michael J. Bradley Executive Director Northeast States for Coordinated Air Use Management 129 Portland Street Boston, Massachusetts 02114
IV-D-34	Mr. Marty Olberding Vulcan Chemicals Technical and Environmental Services Post Office Box 530390 Birmingham, Alabama 35253-0390
IV-D-35	Mr. William O'Sullivan, P.E. State of New Jersey Department of Environmental Protection and Energy, CN 027 Air Quality Regulation Program Trenton, New Jersey 08625-0027

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONTINUED)

Docket number[a,b]	Commenter and affiliation
IV-D-36	R. W. Curtis Specialist Engineering American Airlines, Maintenance and Engineering Center Post Office Box 582809 Tulsa, Oklahoma 74158-2809
IV-D-37	Mr. Richard K. Ketler Senior Attorney Air Transport Association of America 1301 Pennsylvania Avenue, N.W. Suite 1100 Washington, D.C. 20004-1707
IV-D-38	Mr. Edward Cruthcley Henlopen Manufacturing Co., Inc. Valley Buffing Division 401 Park Road Watertown, Connecticut 06795
IV-D-39	Ms. Julia A. Hatcher Latham and Watkins [on behalf of the American Electronics Association] 1001 Pennsylvania Avenue, N.W. Suite 1300 Washington, D.C. 20004
IV-D-40	Mr. Steve Risotto Center for Emissions Control 2000 L Street, Northwest, Suite 730 Washington, D. C. 20036
IV-D-41	Mr. Benjamin W. Shaw South Coast Air Quality Management District 21865 East Copley Drive Diamond Bar, California 91765-4182
IV-D-42	Mr. Brian Bateman Bay Area Air Quality Management District Toxics Evaluation Section 939 Ellis Street San Francisco, California 94109

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONTINUED)

Docket number[a,b]	Commenter and affiliation
IV-D-43	Mr. Michael I. Dougherty 3M Specialty Chemicals Division Environmental and Regulatory Affairs 1101 Fifteenth Street, N.W. Washington, D.C. 20005
IV-D-44	Mr. Philip J. Ostrowski Occidental Chemical Corporation Post Office Box 344 Niagara Falls, New York 14302-0344
IV-D-45	Mr. Kenneth G. Ford, P.E. Thiokol Corporation 2475 Washington Boulevard Ogden, Utah 84401-2398
IV-D-46	Mr. Mark T. Chiado Sundstrand Corporation Post Office Box 7003 Rockford, Illinois 61125-7003
IV-D-47	Mr. Samuel B. Nelson Richter Precision Incorporated Post Office Box 159 East Petersburg, Pennsylvania 17520
IV-D-48	Ms. Connie Ericson Manager, Regulatory Affairs Mitchell Energy & Development Corp. Post Office Box 4000 The Woodlands, Texas 77387-4000
IV-D-49	Mr. Thomas M. Allen Division of Air Resources New York State Department of Environmental Conservation 50 Wolf Road Albany, New York 12233
IV-D-50	Win Sabatka President Finishing Equipment Inc. 3640 Kennebec Drive St. Paul, Minnesota 55122

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONTINUED)

Docket number[a,b]	Commenter and affiliation
IV-D-51	Ms. Hannah Kimball Manager, Environmental Policy and Operations The Boeing Company Post Office Box 3707 Seattle, Washington 98124-2207
IV-D-52	Billie J. McGarvey Director, Facilities Engineering Division National Aeronautics and Space Administration Headquarters Washington, DC 20546-0001
IV-D-53	Mr. John Yavorsky, Ph.D., P.E. Ambient Engineering Inc. [on behalf of National Manufacturing Company, Inc.] 180 Highway 34 Matawan, New Jersey 07747
IV-D-54	Mr. Raymond F. Pelletier Director Office of Environmental Guidance Department of Energy Washington, DC 20585
IV-D-55	Mr. Joe J. Mayhew Assistant Vice-President Environmental and Policy Analysis Chemical Manufacturers Association 2501 M Street, NW Washington, DC 20037
IV-D-56	Mr. Bob Olson Corporate Sales Manager Finishing Equipment Inc. 3640 Kennebec Drive St. Paul, Minnesota 55122

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES: HALOGENATED SOLVENT CLEANERS (CONCLUDED)

Docket number[a,b]	Commenter and affiliation
IV-D-60	Ms. Linda J. Liszewski Eastman Kodak Company 343 State Street Rochester, New York 14650

[a]The docket number for the Halogenated Solvent Cleaners docket is A-92-39.
[b]Docket items IV-D-57, IV-D-58, and IV-D-59 are not comments specifically related to this rule.

2.1 SELECTION OF POLLUTANTS AND SOURCE CATEGORIES FOR REGULATION

Comment: One commenter (IV-D-42) stated that it was unclear why wipe cleaning operations were excluded from the proposed NESHAP. The commenter recommended that some minimum handling, storage, and recordkeeping requirements for these operations be included in the proposed regulation. However, the commenter felt that these operations should be exempt from title V permits and the General Provisions.

Response: The EPA listed halogenated solvent cleaning machines as the source category to regulate based on the available data on these operations. ("Documentation for Developing the Initial Source Category List," EPA-450/3-91-030, July 1992.) There was insufficient data to support the inclusion of wipe cleaning operations. Therefore, these sources were not included in the NESHAP evaluation.

Wipe cleaning operations might be listed as an HAP area source as a result of an urban air toxics study currently being conducted by the EPA. If the category is listed, standards will be evaluated for these sources including required handling, storage, and recordkeeping requirements.

An alternative control technology document (ACT) for VOC emissions was developed by the EPA to address industrial cleaning solvents, including wipe cleaning operations. This document EPA-453/R-94-015, finalized in February 1994, summarizes a potential approach to identify and manage the emissions from these operations.

2.1.1 Pollutants

Comment: Several commenters (IV-D-08; IV-D-10; IV-D-21; IV-D-28; IV-D-31; IV-D-32; IV-D-39; IV-D-43; IV-D-55) stated that the applicability and designation of source section (§ 63.460) of the proposed rule is unclear. They felt the wording might be misconstrued to cover halogenated solvents not intended by the EPA.

Several commenters (IV-D-08; IV-D-10; IV-D-21; IV-D-31; IV-D-32; IV-D-55) stated that the EPA should clarify this

ambiguity by limiting the applicability of the regulation to methylene chloride (MC), perchloroethylene (PCE), 1,1,1-trichloroethane (TCA), trichloroethylene (TCE), chloroform (CF), and carbon tetrachloride (CT).

Two commenters (IV-D-08; IV-D-10) stated that the rule should only apply to the solvents listed because the EPA's analysis was done on only 4 solvents. One commenter (IV-D-08) stated that the 4 halogenated solvents included in the analysis and other covered solvents may have very different properties. If other solvents are included, the commenter (IV-D-08) recommended that the EPA make separate MACT or GACT determinations for them. Another commenter (IV-D-40) stated that they did not know of any companies that currently use CT or CF for solvent cleaning, whereas the preamble implies that they are used to a "limited extent."

Several commenters (IV-D-06; IV-D-20; IV-D-28) recommended that it be clarified that the NESHAP applies only to cleaning machines that use halogenated solvents that are hazardous air pollutants (HAP's) under section 112(k).

Response: The applicability section of the rule has been clarified to reflect the intent of the halogenated solvent cleaning NESHAP. The NESHAP regulates each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing MC, PCE, TCE, TCA, CT, or C, or any combination of these halogenated HAP solvents, in a total concentration greater than 5 percent by weight, as a cleaning and/or drying agent. The analysis was based on MC, PCE, TCA, and TCE because these solvents are the predominant halogenated HAP solvents used in these cleaning machines. Because these solvents are the predominant halogenated HAP solvents used in these cleaning machines, the EPA believes that the control and cost evaluation based on these solvents is representative of the entire category. Although currently CT, C, and other halogenated HAP solvents are not typically used in these cleaning machines, provisions are included in the NESHAP to ensure that adequate controls

are in-place if they are used. No separate analysis or MACT determination is required for these other halogenated HAP solvents because the chosen MACT level of control would not differ.

The EPA has added a minimum total solvent content concentration of 5 percent by weight. By this definition, a solvent cleaning machine must use a solvent that contains at least 5 percent of halogenated HAP solvents by weight, in order to be a regulated source under this NESHAP. This level was established to ensure that the standard does not apply to those cleaning machines that use recycled solvents, such as napthas or Stoddard solvents, that may have been contaminated with halogenated compounds. These solvents were never intended to be included in this NESHAP.

Comment: Many commenters (IV-D-14; IV-D-15; IV-D-19; IV-D-21; IV-D-28; IV-D-31; IV-D-32; IV-D-39; IV-D-40; IV-D-48; IV-D-55) stated that the EPA should set a *de minimis* level for the halogenated solvent content of the solvents. The recommended *de minimis* levels ranged from trace quantities to a level of 5 percent.

One commenter (IV-D-32) stated that the term "blend" used in § 63.460 allows no latitude to accommodate situations where a solvent mixture may contain a very small, even trace amount of halogenated solvent. The commenter maintained that this situation can easily occur as a result of cross-contamination when different types of solvent cleaners are used on the same parts or as the result of shared conveyance systems. The commenter warned that solvent mixtures that are not the focus of this standard, such as those that contain Stoddard solvents, may be pulled into the regulation. The commenters suggested that solvents with a halogenated solvent content below the *de minimis* level would not be considered halogenated solvents and therefore would be exempt from the rule. Another commenter (IV-D-21) stated that the EPA should limit the rule only to those 6 solvents so that any listed detectable HAP

that may be found in a solvent as a contaminant would not be construed as a blend using a halogenated solvent as a cleaning solvent.

One commenter (IV-D-14) supplied an example exemption that was cited in the context of the Ozone-Depleting Substances (ODS) labeling rule which specifically excludes products in which trace quantities of a controlled substance remain as a residue or impurity due to a chemical reaction, and where the controlled substance serves no useful purpose in or for the product itself from regulation. The commenter stated that if the EPA does not make this clarification, many of their customers will require that only virgin solvent be supplied for their parts washers and they will have to dispose of the waste solvent instead of recycling it.

Another commenter (IV-D-21) requested that a *de minimis* threshold level be established for each identified chemical. The commenter strongly recommended that any established *de minimis* level should be no more stringent than those required by law to be reported by chemical manufacturers. Two commenters (IV-D-15; IV-D-21) stated that the reportable thresholds are prescribed by the Occupational Safety and Health Act (OSHA) 1910.1200 - Hazard Communication Standard, which establishes a one percent (1 percent) ingredient disclosure limit for non-carcinogens and a one-tenth percent (0.1 percent) limit for suspected carcinogens.

Three commenters (IV-D-28; IV-D-39; IV-D-55) recommended that the level be at least 1 percent halogenated HAP's. One commenter (IV-D-55) stated that this level is necessary to account for impurities in solvents used as replacements for halogenated solvents. The commenter stated that these replacement solvents may contain 0 to 1 percent halogenated HAP's as impurities.

One commenter (IV-D-31) recommended a level of 2 percent. One commenter (IV-D-40) recommended a 5 percent level.

Response: The EPA concurs that it is undesirable for this rule to regulate solvents that have become contaminated with small amounts of halogenated HAP solvent. The EPA did not intend to discourage the recycling of solvent. Therefore, as mentioned previously, the EPA has clarified the applicability section of the rule by adding a minimum halogenated HAP solvent content concentration of 5 percent by weight. The EPA has determined that a level of 5 percent is sufficient to exclude recycled solvents that have been contaminated with halogenated HAP solvent. These solvents were never intended to be included in this NESHAP.

Comment: One commenter (IV-D-19) mentioned that the EPA has begun development of *de minimis* thresholds for certain halogenated solvents for draft regulations on constructed, reconstructed, and modified major sources. The commenter recommended that the EPA establish such levels based on the percentage of halogenated solvent used in the cleaning mixture.

Response: The commenter is referring to *de minimis* levels established under section 112(g) of the CAA. These levels were established for the specific intent of 112(g) and are not applicable to any other standard. As discussed above, a minimum halogenated HAP solvent content was added to ensure that only those solvents intended for regulation are covered by the final standards.

Comment: One commenter (IV-D-31) requested that the EPA clarify in the preamble that CFC-113 is subject to a production phaseout under other CAA mandated regulations. The commenter suggested that the following statement be incorporated in the preamble to the final rule:

> "However, CFC-113 is not a recommended alternative. Like TCA, CFC-113 has been implicated as causing stratospheric ozone depletion, and is also being phased out under other EPA regulations under title VI of the CAA."

Response: The EPA's Significant New Alternative Policy (SNAP) program addresses the phase out of CFC-113. The final

SNAP program was published in the Federal Register on March 18, 1994 (59 FR 13044). The SNAP program presents acceptable alternatives to CFC-113 for use in solvent cleaning operations. The EPA is also preparing a guidance document to the halogenated solvent cleaning NESHAP. One section of this document will assist owners or operators of halogenated solvent cleaning machines in the selection of acceptable alternative solvents that can be used for their cleaning needs.

2.1.2 Halogenated Solvent Cleaning Machines

Comment: Ten commenters (IV-D-15; IV-D-20; IV-D-21; IV-D-31; IV-D-33; IV-D-34; IV-D-53; IV-D-54; IV-D-55; IV-D-60) commented on the lack of a size cutoff for the proposed standards. One commenter (IV-D-33) supported the EPA's decision to regulate all sources regardless of size. However, the commenter was concerned that the burden would be too great on small sources that already have adequately controlled residual emissions using different control equipment or practices prescribed in this proposed regulation.

One commenter (IV-D-20) stated that one option would be to exempt solvent cleaning machines that have solvent interfaces of 1.0 square meter (m^2) or less, because control of such small sources would not necessarily provide substantial environmental benefits. Another commenter (IV-D-34) requested that the EPA consider exempting very small cleaning machines (e.g., less than one gallon capacity) from the requirements of the NESHAP.

One commenter (IV-D-54) stated that the EPA should consider a *de minimis* threshold of solvent substitution beyond which a source would no longer be a significant emitter of halogenated HAP's and would also qualify for the source category exemption.

Another commenter (IV-D-31) recommended that the EPA exempt small units from the regulation and only require that a cover or an enclosed reservoir be in place when the unit is

not in use, without requiring additional recordkeeping and reporting requirements. The commenter reasoned that this would provide incentive for users to reduce their system below the threshold quantity or surface area.

One commenter (IV-D-53) recommended that the EPA set a solvent emissions *de minimis* level of 3 lb/hr (1.36 kg/hr). Cleaning machines below this level would be exempt from the rule.

Two commenters (IV-D-15; IV-D-55) requested that a halogenated HAP solvent quantity (threshold) be included as a secondary screen for determining applicability, where if the quantity is equal to or above the threshold level the regulation would apply to them. The commenters suggested that 10,000 lb/yr (4,540 kg/yr), which is approximately 27 lb/day (12 kg/day), be used.

Another commenter (IV-D-60) stated that the *de minimis* level should be high enough so that small and seldomly used cleaning machines are exempted from the rule, but low enough so that 90 percent of area sources are covered by the standard.

Response: The EPA believes that the cost effectiveness associated with regulating halogenated HAP solvent cleaning machines is reasonable. There is insufficient evidence to justify exempting a subset of small halogenated HAP solvent cleaning machines from regulation. Small halogenated solvent cleaning machines [i.e., solvent-vapor air interface smaller than (11 ft^2)], in aggregate, are significant contributors to national HAP emissions.

The derivation of *de minimis* levels is required by law under 112(g). These levels are risk-based, and are therefore different from the performance-based 112(d) MACT standards. The EPA does not believe that a de minimis emission rate or exemption based on solvent consumption is appropriate for this source. There is no justification to regulate a batch vapor cleaning machine using a halogenated HAP solvent at one

facility and not regulate a similar cleaning machine at another facility based only on differences in frequency of use or cleaning machine size. If an owner or operator has already installed controls, they could choose to comply with the overall solvent emission limit standard, thereby reducing their reporting and recordkeeping burden.

Comment: One commenter (IV-D-21) requested that the proposed rule be revised to incorporate an exemption for certain insignificant sources, such as research operations and other non-production operations, stating that this type of exemption is consistent with the provisions of the Federal Operating Permit Program, under Title V, which allows exemptions for insignificant sources.

Response: The EPA is required by the Act [section 112(c)(7)] to establish a separate category covering research or laboratory facilities, as necessary to assure the equitable treatment of such facilities. There is nothing inherently different about research and laboratory facilities that would justify a separate category or exemption. The proposed and final regulation for halogenated solvent cleaning machines provide for equitable treatment of all halogenated HAP solvent cleaning machine sources, by not exempting sources, such as the ones described by the commenter.

Comment: Five commenters (IV-D-28; IV-D-31; IV-D-40; IV-D-48; IV-D-54) felt that the standards for batch cold cleaning machines should be reevaluated. One commenter (IV-D-54) requested that the EPA establish a *de minimis* size for batch cold cleaning machines (e.g., less than 50 gallons), below which a machine would be exempt from all subpart T requirements. One commenter (IV-D-40) recommended adding an exemption to the definition of cold cleaning machines and solvent cleaning machines for very small cold cleaning machines (less than one gallon (3.8 liters) capacity, or less than 1.1 ft^2 (0.1 m^2) in surface area) from the NESHAP requirements.

One commenter (IV-D-48) stated that they disagreed with the extension of emission control standards and reporting requirements to batch cold cleaning machines because these machines typically use nonhalogenated solvents. The commenter stated that this requirement will result in excessive filing requirements for industry and file management for regulatory agencies and will negate any incentive for an operator to practice source reduction by substituting for HAP solvents.

Response: The EPA does not believe that it is appropriate to establish exemptions for cold cleaning machines. There is insufficient evidence to justify exempting a subset of small cold cleaning machines from the regulation. Small cold cleaning machines using halogenated HAP solvents, in aggregate, could be significant contributors to national HAP emissions. The EPA concurs that the emission control standards and reporting requirements of this NESHAP should not be extended to batch cold cleaning machines that use solvents not covered by this rule. Batch cold cleaning machines using nonhalogenated HAP solvents are not covered under the proposed or final NESHAP. The EPA has established a minimum halogenated HAP solvent content concentration of 5 percent. This halogenated HAP solvent content requirement will ensure that cleaning machines using solvents containing a minimal concentration of halogenated HAPs, which were never intended to be regulated, are not regulated under this NESHAP.

Comment: Five commenters (IV-D-08; IV-D-25; IV-D-28; IV-D-31; IV-D-34) discussed the scope of the batch cold cleaning machine definitions. One commenter (IV-D-34) stated that cold cleaning machines encompass a wide variety of specialized machines designed to clean small and specialized parts, and are not limited to carburetor cleaning machines. Another commenter (IV-D-25) stated that the proposed standards for batch cold cleaning machines are inappropriate for remote-reservoir cleaning machines. The commenter felt it was unclear whether the proposed standards are intended for remote-reservoir cleaning machines. One commenter (IV-D-08)

suggested that the EPA combine the definitions of carburetor cleaning machine and batch cold cleaning machine and regulate only those machines that fit into the description now appearing under the definition of carburetor cleaning machines. Under this approach, other solvent cleaning operations not intended to be regulated by the EPA would not be confused with those the EPA intended to regulate under the NESHAP.

Four commenters (IV-D-28; IV-D-31; IV-D-55; IV-D-60) stated that batch cold cleaning machines should be defined more narrowly. Three commenters (IV-D-28; IV-D-55; IV-D-60) suggested that the definitions of "carburetor cleaning machine" and "cold cleaning machine" are unclear and imply that the NESHAP would apply to any container of any size, whether or not it incorporates any mechanical mechanism for moving parts or solvents. Two commenters (IV-D-28; IV-D-55) recommended that a size or throughput cutoff be included for the batch cold cleaning device or equipment to which the NESHAP would apply. Three commenters (IV-D-28; IV-D-31; IV-D-55) stated that the rule should not apply to containers that do not incorporate all the components of a typical carburetor cleaner. One commenter (IV-D-60) recommended that the EPA clarify the definition of cold cleaning machine to include only discrete cleaning machines and exclude other cleaning operations that do not use specialized equipment or that are performed incidental to a particular industry's process operation.

Two commenters (IV-D-55; IV-D-60) stated that the rule should not apply to halogenated HAP solvents that are circulated through process equipment for the cleaning of process equipment.

Response: As stated at proposal, the EPA's intent is to regulate emissions of the six listed halogenated HAP solvents from all batch cold cleaning machines. At proposal, the EPA was not aware of any existing noncarburetor batch cold cleaning machines using one of these halogenated HAP solvents.

Therefore, the proposed standards applied to all batch cold cleaning machines, but were based on controls for carburetor cleaning machines. Since proposal, the EPA has received comment indicating that there are other noncarburetor cold cleaning machines that use halogenated HAP solvents. The EPA has amended the final rule to include definitions for remote-reservoir and other noncarburetor immersion batch cold cleaning machines. Batch cold cleaning machines are defined in the final rule as including both immersion (including carburetor cleaning machines) and remote-reservoir cold cleaning machines, with the applicability of the rule applying to batch cold cleaning machines that use one of the six covered halogenated HAP solvents.

The EPA agrees that the rule should not apply to halogenated HAP solvents that are circulated through process equipment. The proposed and final rule do not apply to cleaning machines that use halogenated HAP solvents that are circulated through process equipment for cleaning.

Comment: Due to the low emissions from batch cold cleaners and the fact that they are well controlled at baseline, one commenter (IV-D-24) requested that batch cold carburetor cleaning machines be classified as area sources.

Response: The EPA agrees that batch cold cleaning machines are well controlled at baseline and by themselves are area sources, which is why GACT rather than MACT was applied to these area sources. However, if a machine is located at, and contributing to HAP emissions at a major source, it is classified as part of that major source. Therefore the EPA has classified these sources as area and major sources.

Comment: One commenter (IV-D-33) suggested that the regulation would be less confusing if the EPA subcategorized the sources by small [less than 13 ft^2 (1.21 m^2)], and large [greater than 13 ft^2 (1.21 m^2)] batch vapor cleaning machines, in-line solvent cleaning machines, and batch cold cleaning machines.

Response: The EPA established the four size subcategories for batch vapor cleaning machines during initial regulatory development activities. The sizes, based on known cleaning machines, were used to evaluate control options and impacts. There is no added benefit to regrouping the cleaning machines at this point in time.

The EPA is currently preparing a guidance document to help explain the final rule and assist owners or operators of halogenated HAP solvent cleaning machines in complying with the final rule.

Comment: One commenter (IV-D-33) stated that they do not believe that there is sufficient basis to remove any subcategories proposed by the EPA from the final rule based on the delisting criteria in section 112(c)(9) of the Act. The commenter stated that it would not be possible for the EPA to determine that "no source within the category" can be delisted because a site-specific assessment of one degreaser cannot be used to represent a subcategory of machines that have such high variability in emissions. The commenter does not believe it is appropriate to compare the nation-wide exposure estimates and other population-based risk estimates used in the source category listing process to the acceptable risk criteria for listing a subcategory established in section 112(c)(9) of the Act. The commenter (IV-D-33) suggested that the EPA develop a guidance document that describes the approach being used to evaluate delisting petitions according to the statutory requirements of section 112(c)(9) of the Act.

Response: The EPA concurs with the commenter that there is insufficient basis to remove any of the source subcategories proposed and has therefore retained all of the proposed subcategories in the final rule. The EPA also agrees that it is more difficult to go through the delisting process than the listing process. The EPA is developing a guidance document that describes the approach being used to evaluate delisting petitions according to the statutory requirements of

section 112(c)(9) of the Act. A draft of this document is scheduled to be completed by fall of 1994.

Comment: One commenter (IV-D-23) stated that the proposed NESHAP should not apply to halogenated solvent cleaning machines on ships. The commenter stated that the proposed rule is linked in a number of essential provisions to stationary sources (either major or area), which precludes application to ships under existing definitions and applying this rule to mobile sources is not practical.

The commenter also stated that solvent cleaning machines on ships have an insignificant potential for emissions since there are existing economic incentives to avoid emissions and existing standards that minimize emissions. The commenter added that there would be a heavy burden on both the Navy and the regulating agency if the EPA tries to adapt the NESHAP to these mobile sources.

Response: The EPA has considered this comment and decided not to require compliance with these standards by ships at this time. The Agency will be considering the generic issue of applicability of MACT or GACT standards to ships at some time in the future. Obviously, because they do not remain in one location ships present complex issues concerning compliance with Clean Air Act requirements. At the same time, it is clear that many large ships contain operations that fit within the general applicability framework for MACT standards. These operations are not related to whether or not the ships are regulated as mobile sources. All these factors will be considered when the EPA makes a determination concerning whether to require ships to comply with MACT standards.

Comment: One commenter (IV-D-04) was concerned that halogenated solvents may also be used to dry parts and suggested that standards should be written to cover those operations.

Response: The EPA concurs with the commenter that there is nothing inherently different about a machine that is used

to dry parts as opposed to clean parts. The rule has been clarified to include machines used to dry parts.

Cold Cleaners Using Halogenated Solvents

Comment: Several commenters (IV-D-06; IV-D-22; IV-D-25; IV-D-42) presented examples of batch cold cleaners using halogenated solvents. One commenter (IV-D-06) stated that several electronics manufacturing facilities in their jurisdiction had used TCA cold cleaners until very recently to clean printed circuit boards for which manual touch-up work was required. These cleaning machines did not utilize a water blanket as an emission control measure. These manufacturers have currently eliminated the use of TCA. One commenter (IV-D-22) stated that many NASA and contractor operations have vapor degreasers or batch cold cleaning systems that use TCA as a solvent.

Three commenters (IV-D-25; IV-D-42; IV-D-60) stated that batch cold cleaning machines other than carburetor cleaners use halogenated solvents. One commenter (IV-D-42) gave an example of small solvent sinks used in semiconductor manufacturing that often use TCA. Another commenter (IV-D-25) stated that a cursory review of permits in San Diego County indicates that at least 15 percent of batch cold cleaning machines use halogenated solvents. The third commenter (IV-D-60) stated that they have cold cleaning machines that use a halogenated solvent blend. The cleaning machines vary from discrete, custom designed assemblies with specialized solvent lines and exhausts, to a sink with a solvent hood. During cleaning, the parts are flushed with solvent from a remote reservoir. When cleaning is complete, all remaining used liquid solvent is drained to a solvent recovery loop. Solvent emissions during the working mode are collected using a lip exhaust (on custom designed units) or a solvent hood (on simple sink operations) and routed either to the atmosphere or to an appropriate control device, such as a carbon adsorber. Parts movement is controlled using a hoist.

Response: The EPA acknowledges that there are existing batch cold cleaning machine operations using halogenated HAP solvents where the requirement of a water layer would be impractical. Therefore, the EPA has included additional batch cold cleaning machine equipment requirement options to control emissions in the final rule. Additional equipment options include an increased freeboard ratio and cover, or remote-reservoir design and cover, in lieu of a water layer and cover. The EPA has also added work practice requirements for owners or operators choosing these alternative controls.

2.2 EMISSION CONTROL OPTIONS

2.2.1 Solvent Cleaning Machine Control Technologies

2.2.1.1 General

Comment: One commenter (IV-D-12) disagreed with the statement in the preamble that implied that halogenated solvent loss rates are typically lowest during the downtime mode as compared to idling and working modes. However, the commenter supplied no information or data to support this statement.

Response: Based on the available data, the EPA maintains that emission rates from solvent cleaning machines are typically the lowest during the downtime mode. However, the total solvent losses during the downtime mode may exceed the idling and working losses depending upon the operating schedule employed by an owner or operator. Section 2.3 of the Background Information Document (Docket Number A-92-39, Document Number II-A-15) provides a discussion of the basis for the idling, working and downtime emission rates.

2.2.1.2 Freeboard refrigeration devices

Comment: Six commenters (IV-D-12; IV-D-29; IV-D-31; IV-D-36; IV-D-40; IV-D-42) discussed the requirement for freeboard refrigeration devices (FRD) to achieve a required air blanket temperature. Two commenters (IV-D-12; IV-D-40) stated that requiring the temperature in the center of the air blanket to be 20 degrees below room ambient temperature is not achievable and results will vary from solvent to solvent. One

commenter (IV-D-12) presented the differences in the boiling points for MC and PCE. The commenter stated that it was unrealistic to expect the temperature in the center of the vapor blanket to be the same for all solvents. Another commenter (IV-D-31) suggested that the amount of cooling that the EPA has proposed would make it impossible to generate solvent vapor.

Two commenters (IV-D-31; IV-D-36) stated that it may be very difficult to maintain a temperature at the center of the air blanket that is exactly 20 degrees below the ambient room temperature. One commenter (IV-D-36) recommended that, to allow flexibility, the phrase "is 20 degrees below the ambient room temperature" should be changed to "is at least 20 degrees below the ambient room temperature."

One commenter (IV-D-42) recommended that the FRD requirement in the rule be consistent with the FRD requirement in the CTG, namely 40 degrees F or 30 percent of the solvent boiling point on a degree F basis. Another commenter (IV-D-31) stated that the units should be in degrees F, as it is not possible to depress the temperature 20 degrees C. Two commenters (IV-D-31; IV-D-36) recommended that, as an alternative to a blanket temperature requirement, the rule specify an acceptable temperature range for the refrigerant in the expansion coil (perhaps -10 to +2 degrees C). If the specification must be in terms of air blanket temperature, the commenter recommended that the EPA specify that the Fahrenheit scale is used, or specify 10 degrees Celsius.

One commenter (IV-D-29) recommended that the requirement that the temperature at the center of the air blanket is 20 degrees below the ambient temperature should be eliminated because it is difficult to implement and enforce. The commenter also expressed concern that the inspector would be exposed to HAP's during inspection.

Response: The FRD requirement has been changed in the final rule to be consistent with the FRD requirement in the CTG. Specifically, the FRD must achieve a chilled air blanket

temperature, measured at the center of the cleaning machine, that is no greater than 30 percent of the solvent's boiling point (degrees F). This requirement accounts for the differences in solvent boiling points and therefore should be more achievable. In addition, the requirement no longer specifies that a particular temperature be maintained and, therefore, allows for fluctuations in temperature, provided that the temperature never exceeds 30 percent of the solvent's boiling point. Lastly, the temperature is specified in degrees Fahrenheit.

A FRD requirement defined in terms of the refrigerant temperature, as recommended by commenter IV-D-31, would be difficult to establish and enforce. Ensuring that the refrigerant is at a proper cooling temperature does not ensure that the FRD will adequately cool the air in the freeboard. For example, a FRD might have only one very thin coil that circulates properly cooled refrigerant but is incapable of properly cooling the air in the freeboard. Therefore, if one were to regulate a FRD on the basis of refrigerant temperature, one would also have to specify the size and number of cooling coils, etc. This type of requirement was rejected based on its complexity, monitoring cost, and lack of enforceability. However, under the general provisions, a facility could always propose such a requirement to the Administrator.

The FRD requirement that has been written into the final rule can be easily monitored using a temperature probe. The probe can be lowered into an open top vapor cleaning machine. For enclosed open top vapor cleaning machines and in-line cleaning machines, the probe can be placed in the parts basket and moved into position using the hoist. These tests will not disturb the vapor layer and the inspector will not be exposed to any additional HAP emissions.

2.2.1.3 Cover

Comment: One commenter (IV-D-40) stated that hinged covers should be deleted from the definition of a cover

because they contribute to solvent losses when opened and closed.

Response: The EPA agrees and has removed hinged covers from the definition of a cover in the final rule.

Comment: Three commenters (IV-D-11; IV-D-31; IV-D-51) stated that there are a number of other mechanical devices available that achieve the same type of emissions control as a biparting cover. These include slotted covers and complete enclosure of the cleaning machine during the cleaning phase. One commenter (IV-D-11) requested that the EPA revise the proposed cover requirement to read: "...Biparting cover or equivalent to allow cover to be closed during the cleaning phase..." Another commenter (IV-D-31) requested that the cover requirements be revised to allow the use of slotted covers, manual covers that can be closed during working, or any equivalent device.

One commenter (IV-D-31) stated that the definition of biparting cover should be changed by removing the word "automatic" to permit the use of manually operated biparting covers.

Response: The requirement in the final rule has been changed from a "biparting cover" to a "working-mode cover." A definition of a "working-mode cover" has been added to the final rule. The definition includes bi-parting covers and other equivalent covers or procedures that allow the cover to be closed while parts are in the cleaning machine. In addition, the definition of a "biparting cover" has been expanded to include manual biparting covers.

Comment: One commenter (IV-D-51) stated that, because bi-parting covers on large cleaning machines frequently break down in the open position, in practice they provide no additional emission reduction over roll-top or horizontal covers, which break down less frequently. The commenter requested that roll top and horizontal covers be considered equivalent to bi-parting covers for larger cleaning machines.

Response: If a biparting cover is being used as part of the compliance determination, the owner or operator of the solvent cleaning machine must maintain the cover in good repair or be in violation of the standard. As stated previously, the requirement for a "biparting cover" has been changed to a "working-mode cover" which includes biparting covers and other equivalent covers or procedures that allow the cover to be closed while parts are in the cleaning machine. In addition, the expanded definition of bi-parting cover would include manual bi-parting covers.

2.2.1.4 Reduced room draft

Comment: Several commenters (IV-D-10; IV-D-30; IV-D-31; IV-D-34; IV-D-40; IV-D-41; IV-D-51) questioned the technical basis and selected level for the RRD requirement. Four commenters (IV-D-10; IV-D-31; IV-D-34; IV-D-40) stated that reducing the room draft to 15.2 meters per minute (mpm) (50 feet per minute [fpm]) or less cannot be achieved in most metal cleaning facilities without completely enclosing the equipment. One commenter (IV-D-40) questioned whether the costs for an enclosure were included in the EPA's analysis. The commenter added that, if an enclosure is used, the monitoring of the air flow above the freeboard would become impractical due to inaccessibility.

One commenter (IV-D-34) recommended that the EPA consider a higher level for the RRD requirement and more clearly define what would be acceptable technology for attaining RRD. Another commenter (IV-D-40) recommended that the EPA consider a requirement that the room draft be reduced to 50 percent of the "typical" air flow.

Another commenter (IV-D-31) stated that the EPA should either increase the allowable velocity of air movement to an attainable figure, and exclude situations where a cover is in place, or delete the concept of RRD from the rule. The commenter suggested that, in the absence of statistically significant data, the EPA should consider any air velocity below 50 mpm (164 fpm) to be unattainable. The commenter felt

that further study would be required to determine an achievable figure.

One commenter (IV-D-41) stated that the RRD velocity should be reduced from 15.2 mpm (50 fpm) to 9.1 mpm (30 fpm), as measured parallel to the plane of the degreaser opening, unless the additional air flow is required to meet OSHA requirements.

One commenter (IV-D-51) stated that allowances should be made to account for vapor cleaning operations in clean rooms. A constant downdraft of 30 mpm (100 fpm) of highly filtered air is maintained in these rooms to prevent airborne contaminants from affecting product quality.

Response: The RRD requirement is based on emission tests. These tests showed that by reducing room drafts to 15.2 mpm (50 fpm), emission rates can be significantly reduced. For instance, by RRD from 30 mpm (100 fpm) to 15.2 mpm (50 fpm), both working and idling emissions are reduced by approximately 50 percent. Further discussion of RRD is found in chapter 3 of the proposal BID (Docket A-92-39, Docket Number II-A-13).

While the tests conducted by the EPA used an enclosure to reduce drafts across the machine, the rule was written to allow compliance flexibility for the facility. The EPA has determined that a variety of methods can be used to reduce drafts over solvent cleaning machines. These techniques include, but are not limited to, redirecting air vents and/or fans, moving the solvent cleaning machine to an area with less cross-ventilation, closing windows, or enclosing the machine. To maintain the flexibility of the rule, the EPA has not specified the specific methods that must be used to achieve a RRD. The owner or operator may use any method as long as the requirements for RRD are met and maintained.

The final rule has been clarified by specifying that an enclosure is a method of achieving a RRD. The EPA's cost analysis included the cost of an enclosure, as described in Document No. II-B-22 of Docket No. A-92-39. If the cleaning

machine is enclosed, the monitoring of the air flow is measured within the confines of the enclosure.

The EPA recognizes that a cover and RRD control emissions from a solvent cleaning machine in a similar manner. This was taken into consideration when determining the control efficiencies for the control combinations in the final rule.

The RRD requirement of 15.2 mpm (50 fpm) has been retained in the final rule. The EPA believes that this RRD can be reasonably attained and provides good control of solvent emissions. Owners or operators are not required to use a RRD to comply with the rule. Additional control options have been added to the final rule that do not include RRD.

Owners or operators with solvent cleaning machines in clean rooms may choose to comply with another compliance option if they feel that the RRD requirement cannot be implemented.

Comment: Seven commenters (IV-D-27; IV-D-30; IV-D-31; IV-D-33; IV-D-40; IV-D-49; IV-D-54) were concerned that the RRD could be in conflict with federal and State regulations on ventilation, such as OSHA, or with consensus standards such as those developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). One commenter (IV-D-33) recommended that the RRD requirement be removed from the control combinations and be replaced with effective general ventilation requirements.

Several commenters (IV-D-27; IV-D-40; IV-D-49; IV-D-54) were concerned that the RRD control strategy would increase occupational exposure by reducing room ventilation. One commenter (IV-D-27) believed that the degreasing shops would not be able to distinguish between too much and adequate room ventilation. One commenter (IV-D-54) stated that it is unlikely that the RRD requirement can be met by cleaners with lip exhausts or other ventilation systems required for industrial hygiene purposes. The commenter (IV-D-54) recommended that the EPA provide flexibility in the RRD requirement in situations where ventilation is needed to

protect workers. Another commenter (IV-D-49) stated that there may be other industrial operations emitting HAP's in the workroom that require effective general ventilation to protect workers. The commenter stated that most industrial establishments are designed to have an air change every 5 minutes as per industrial ventilation requirements. The commenter recommended that the owner or operator be able to elect to use a lip type local exhaust ventilation system and a carbon adsorber in order to comply with the RRD requirement.

One commenter (IV-D-30) stated that, because of the complex monitoring associated with the RRD control option, it should not be included unless it is an important factor in reducing emissions.

Response: No data have been provided by the commenters that show that reducing the room draft across a solvent cleaning machine increases worker exposure. If an enclosure is used to achieve a RRD, the owner or operator may maintain the exterior ventilation at any level, provided it does not disturb the air within the cleaning machine. The final rule does not encourage the use of a lip exhaust, and if the RRD requirements cannot be met, an owner or operator can choose to comply with the idling emission limit or the overall solvent emission standard.

If a high level of ventilation is required due to other operations in the vicinity of the cleaning machine, the owner or operator could move the machine to another part of the facility or enclose the machine. If the owner or operator does not wish to implement a RRD, the owner or operator may choose other control options that do not include a RRD. The owner or operator can choose to comply with the idling emission limit or the overall solvent emission standard, which do not necessarily require a RRD. The EPA has concluded that RRD is an important factor in reducing emissions. In the proposed rule, owners or operators were required to monitor the RRD windspeed on a weekly basis regardless of the technique used. In the final rule, there are separate

monitoring requirements for owners or operators that achieve a RRD by controlling room parameters and those that use an enclosure. Owners or operators achieving a RRD by controlling room parameters must measure the windspeed on a quarterly basis and monitor the room parameters on a weekly basis. Owners or operators achieving a RRD using an enclosure must monitor the windspeed within the enclosure on a monthly basis.

Comment: One commenter (IV-D-31) stated that the RRD requirements should not limit the owner/operator to one set of operating conditions as long as the wind speed remains within acceptable levels, as determined by monitoring during the changed conditions.

Response: An owner or operator complying with the RRD requirement by controlling room parameters must establish these parameters in their compliance report. The parameters must then be monitored weekly along with quarterly measurement of the windspeed above the cleaning machine. An owner or operator must notify the EPA in writing if they choose to change one of these parameters. Any change in the parameters without prior notification would be a violation of the standard.

An owner or operator not wishing to maintain room parameters to achieve a RRD may choose to comply with the RRD using an enclosure. If an owner or operator does not wish to use a RRD to comply with the standard, the owner or operator may comply with the rule through a control option that does not require RRD or through the idling emission or the overall solvent emission standard.

2.2.1.5 Lip exhaust

Comment: Five commenters (IV-D-01; IV-D-10; IV-D-22; IV-D-27; IV-D-41) commented on the requirement that all lip exhausts on solvent cleaning machines must be vented to carbon adsorbers (CAD's). Three commenters (IV-D-01; IV-D-10; IV-D-27) expressed concern about the relationship between the lip exhaust requirement and the ability to meet OSHA regulations. One commenter (IV-D-01) was concerned about the

requirement in § 63.462(a)(6) of the proposed standard that "No lip exhaust shall be used unless all collected solvent vapors are routed through a carbon adsorber." The commenter (IV-D-01) stated that their company had installed lip exhausts on their vapor degreasers when they converted from the use of TCA to TCE in order to meet OSHA's 50 part per million (ppm) permissible exposure limit (PEL). The commenter stated that, although they had a below-freezing chiller, they could not meet the PEL so they installed a lip exhaust.

Other commenters (IV-D-10 and IV-D-27) agreed that requiring CAD's may discourage the use of a lip exhaust system and may cause OSHA compliance problems for some facilities. The commenters acknowledged that OSHA does not require a lip exhaust, but it is one of several engineering controls that could be employed to meet the OSHA limits. Therefore, there are many existing operations that currently employ lip exhausts to meet OSHA limits. The commenters expressed concern that worker exposure could be increased if the NESHAP discourages the use of a lip exhaust.

Two commenters (IV-D-22; IV-D-41) stated that the venting of lip exhausts to CAD's should not be required for all units. One commenter (IV-D-22) stated that requiring all lip exhausts to be vented to a CAD would place an undue financial burden on infrequently used small and medium batch cleaners in the aerospace industry. The commenter (IV-D-22) recommended that the venting of lip exhausts to CAD's be addressed on a case-by-case basis, based on the level of solvent use. Another commenter (IV-D-41) requested that solvent cleaning machines that have minimal emissions be allowed to operate lip exhausts that are not vented to CAD's.

Response: One commenter (IV-D-01) provided solvent cleaning machine emission data from instantaneous readings from colorimetric detector tubes. The PEL is a time-weighted average concentration for a normal 8-hour workday and a 40-hour work week, to which most workers may be repeatedly exposed, day after day, without adverse effect. Insufficient

information was supplied by the commenter to determine whether the 8-hour time weighted average (TWA) level would exceed 50 ppm. This would depend on the number of work loads processed and hours of operation of the cleaning machine. Further information on the operations and equipment design would be required to determine whether, without the lip exhaust, the cleaning machine would comply with the OSHA PEL. The short-term exposure limit (STEL) of 200 ppm was not exceeded, based on data provided. A STEL is defined as a 15-minute time-weighted average exposure concentration that should not be exceeded at any time during a workday even if the 8-hour time-weighted average is within the PEL threshold limit value.

The proposed and final rules require that if a lip exhaust is used to comply with the equipment standard or the idling emission limit, that all collected solvent vapors be routed through a CAD. The alternative standard does not contain this requirement. It is not the EPA's intent to increase worker exposure. It is also not the EPA's intent to increase and reroute HAP emissions to the atmosphere. Therefore, the EPA has revised the final rule to include CAD as an option in the equipment control combination options. This change recognizes a lip exhaust/CAD system as an acceptable method to control emissions. A carbon adsorber can also be used in conjunction with an enclosure. An owner or operator may also choose to comply with the alternative standard.

Comment: Two commenters (IV-D-27; IV-D-40) commented on the proper operation of a lip exhaust. One commenter (IV-D-40) stated that it is important that lip exhausts be placed above the cover, so that the cover closes below the lip exhaust inlet level. Another commenter (IV-D-27) stated that a properly sized lip exhaust would not disturb the solvent cleaning machine's vapor layer.

Response: In the final rule the EPA has clarified that the lip exhaust must be located above the cover, so that the

cover closes below the lip exhaust level. The data available to the EPA, as discussed in chapter 3 of the BID, show that even a properly designed lip exhaust induces a draft across the cleaning machine and pulls solvent vapor out of the freeboard area. This draft can disturb the vapor zone and will increase diffusion of solvent from the vapor zone to the freeboard area. The EPA is not aware of any data supporting the claim that lip exhausts do not disturb the vapor zone.

2.2.1.6 Carbon adsorber

Comment: Nine commenters (IV-D-04; IV-D-10; IV-D-27; IV-D-31; IV-D-33; IV-D-40; IV-D-41; IV-D-42; IV-D-49) were concerned that the use of CAD's was discouraged in the proposed rule. One commenter (IV-D-10) stated that discouraging the use of CAD may cause compliance problems for those facilities that already have CAD's in place. One commenter (IV-D-31) stated that emission reduction credit should be given for the level of emission control achieved by CAD's on existing in-line cleaners. Another commenter (IV-D-33) felt the EPA should allow States to continue to require CAD's.

Several of the commenters (IV-D-27; IV-D-31; IV-D-33; IV-D-40; IV-D-41) stated that CAD's are a viable and cost effective means of achieving emission reductions and should not be discouraged from use. One commenter (IV-D-33) added that the EPA should include CAD's as a control technique in conjunction with a lip exhaust system because they reduce worker exposure to solvent vapors.

One commenter (IV-D-04) stated that a CAD control efficiency standard and test method should be added to the rule. One commenter (IV-D-42) recommended that a 90 percent efficiency standard for CAD's be written into the regulation. Another commenter (IV-D-40) stated that the EPA should revise the proposed standards to include provisions to allow owners and operators to use existing CAD systems, provided the systems are operated within specified parameters. One

commenter (IV-D-33) recommended that the EPA reanalyze the MACT floor to include CAD's.

One commenter (IV-D-41) stated that, even though there are multi-media impacts with CAD's, these do not offset their advantages in many cases. One commenter (IV-D-31) stated that although some CAD technologies have the potential to produce solvent contaminated regeneration water, there are other CAD technologies that do not present that concern, such as vacuum regeneration on activated carbon. This method does not produce any contaminated steam condensate and has an extended carbon bed life. The commenter (IV-D-31) requested that a statement be added to the preamble stating that the EPA did not intend to discourage any CAD technology that effectively minimizes concern for cross-media impacts.

One commenter (IV-D-33) stated that to reduce the water impacts from CAD's, they should only be used to control dilute HAP emissions, where the adsorber would be steamstripped infrequently. Another commenter (IV-D-49) stated that CAD's used to control toxic organic emissions from most common vapor degreasers would not be expected to be stripped frequently with steam, nor to generate much contaminated wastewater. The commenter added that if CAD's are to be used in conjunction with a lip local exhaust system, a MACT control level of 50 ppm should be required in order to control HAP's, such as TCE, which is considered to be a suspect carcinogen.

Response: Carbon adsorbers used in conjunction with lip exhausts have been added to the equipment standard of the final rule. A control efficiency of 40 percent for the working mode and 40 percent for the idling mode was established for CAD's used in conjunction with lip exhausts. For the purposes of determining control combinations, the efficiency of a CAD during idling was set at 0 percent. This control efficiency was used because an idling-mode cover is required in all control equipment combinations, and a lip exhaust routed to a CAD would be located above the cover.

The MACT floor does not need to be re-evaluated to consider CAD's. As stated in the proposal preamble, the MACT floor was established based on a survey in which vendors reported the controls that were sold with solvent cleaning machines. No CAD's were reported in this survey.

The EPA did not intend to discourage any CAD technology that effectively minimizes cross-media impacts. The air stream entering CAD systems from a solvent cleaning machine will typically contain dilute HAP emissions, as indicated by commenter IV-D-49. Therefore, most CAD's installed on solvent cleaning machines would be stripped infrequently.

An exhaust concentration limit of 100 ppm of any halogenated HAP solvent has been established in the final rule as a monitored parameter. The EPA set this halogenated HAP solvent concentration as an indicator of proper CAD maintenance and operation, concentrations above this level would indicate a saturated carbon bed, requiring desorption. If this level is exceeded, more frequent desorption is required. This maximum allowable concentration level is measured in the exhaust from a CAD to the atmosphere and not the indoor air. Therefore, the EPA has not set a MACT control level of 50 ppm for CAD. An owner or operator is referred to the method in the final rule to aid in the determination of their CAD exhaust concentration.

2.2.1.7 Automated parts handling system

Comment: One commenter (IV-D-41) requested that the automated parts handling system speed requirement be changed from 3.3 mpm (10.8 fpm) to 3.4 mpm (11.2 fpm) to make this rule consistent with the SCAQMD's rule 1122.

Response: The hoist speed requirement has been changed from 3.3 mpm (10.8 fpm) to 3.4 mpm (11.2 fpm) to make the requirement consistent with the SCAQMD's rule 1122. The final value is the approximate equivalent to 3.35 mpm (11 fpm), the basis for the SCAQMD's rule.

Comment: One commenter (IV-D-04) stated that it should be clarified in the definition for an automated parts handling

system whether the system can be manually operated (e.g., a chain hoist) or must be motorized.

Response: An automated parts handling system must be able to consistently move parts within the confines of the cleaning machine at a maximum speed of 3.4 mpm (11 fpm). The EPA feels that this is best achieved using a motorized system. Non-motorized systems may be used if the owner or operator has demonstrated in the compliance report, to the satisfaction of the Administrator, that the system limits the speed of parts movement within the confines of the cleaning machine to 3.3 mpm (10.8 fpm) or less.

Comment: One commenter (IV-D-22) stated that the automated parts handling system is not applicable or appropriate for many operations of batch cleaning machines in the aerospace industry. The commenter indicated that the automated parts handling system is best suited for cleaning machines that are in a production line. The commenter recommended that the requirement for an automated parts handling system be addressed on a case-by-case basis within the aerospace industry.

Response: As stated in the rule in the definition of an automated parts handling system, automated parts handling systems include, but are not limited to, hoists and conveyors. The hoist required by the rule for open top vapor cleaning machines can be any system that limits the speed of the parts, as they move within the confines of the machine, to 3.4 mpm (11 fpm). Hoists can be easily installed for use in most batch solvent cleaning operations. Since the commenter does not provide information on the design of their machines, the EPA cannot evaluate the applicability of a hoist on their machines.

As an alternative, an owner or operator of a solvent cleaning machine can choose to comply with the alternative standard. The alternative standard has no automated parts handling system requirement.

The EPA believes that a case-by-case examination of the automated parts handling system requirement is unnecessary and would impose excessive burdens on the regulating authority.

Comment: Two commenters (IV-D-42; IV-D-50) provided comments on the costs and savings associated with automated parts handling systems. One commenter (IV-D-42) was concerned that the automated parts handling system requirement for all batch vapor solvent cleaning machines is too burdensome for small sources and that substantial justification for this requirement needs to be provided. One commenter (IV-D-50) supported the automated parts handling requirement in the proposed rule by stating that the manual cycling of parts is not suitable because cycle times are not consistent. The commenter added that automatic handling provides significant economic advantages in saving labor and provides much improved employee working conditions.

Response: The costs of all the controls required by the equipment standard have been evaluated and considered to be reasonable. However, an owner or operator of a solvent cleaning machine can choose to comply with the alternative standard, which has no automated parts handling system requirement. The automated parts handling requirement has been maintained for the equipment standard and the idling standard in the final rule.

2.2.1.8 Super-heated vapor

Comment: Five commenters (IV-D-12; IV-D-34; IV-D-40; IV-D-50; IV-D-56) provided comments on the applicability and design requirements of super-heated vapor (SHV). Three commenters (IV-D-12; IV-D-34; IV-D-40) expressed concern about the applicability of SHV technology. One commenter (IV-D-34) stated that the practicality of retrofitting SHV is still unproven. Two commenters (IV-D-50; IV-D-56), both representing the same vendor of SHV technology, indicated that, due to new developments with the technology, SHV is currently available for retrofitting on existing cleaning machines. The cleaning machine to be retrofitted must be in

good operating condition, have automated operation, and meet the other basic equipment requirements as proposed in the MACT control combinations.

Two commenters (IV-D-34; IV-D-40) stated that SHV is unrealistic for solvents with a higher boiling point such as PCE, which would require a minimum vapor temperature of 360 degrees F (1.5 times the boiling point). One commenter (IV-D-56), representing a vendor of SHV technology, stated that the requirement that the super-heated vapor zone be 1.5 times the boiling point of the solvent should be changed. The commenter indicated that the proper temperature would be a minimum of 10 degrees Fahrenheit above the boiling point of the solvent. The commenter noted that it only takes a slight increase in temperature difference between parts and the solvent boiling point before the parts will no longer condense solvent.

Another commenter (IV-D-50), representing the same vendor of SHV technology, stated that SHV has been effective on machines using fluorocarbons, TCA, TCE, MC and PCE.

One commenter (IV-D-12) had several comments on SHV:

(1) a control efficiency should be listed for SHV;

(2) super-heated vapor should not be described as an idling emission control device because it is utilized for drying parts during the working mode;

(3) hot vapor recycle should not be defined as a cleaning technology because it is employed in vapor degreasers to remove or evaporate entrapped solvent after parts are cleaned;

(4) the definition for SHV systems should exclude the phrase "more than 1.5 times greater than the solvent boiling point" because thermal decomposition can occur when temperatures exceed 1.5 the atmospheric boiling point of the solvent; and

(5) super-heated vapor should only be utilized when rotation or part orientation does not allow entrapped solvent to be removed.

Response: A vendor of SHV technology (IV-D-50; IV-D-56) has stated that SHV is currently available for retrofitting and therefore control combinations containing SHV may be available for existing machines.

The EPA has addressed SHV applicability concerns by modifying the SHV requirements in the final rule as recommended by commenters IV-D-50 and IV-D-56. The requirement that the SHV system heat the solvent vapor to 1.5 times the solvent's boiling point has been removed. The final rule states that the SHV system must heat the solvent vapor to at least 10 degrees Fahrenheit above the solvent's boiling point. Using this SHV requirement, commenters IV-D-50 and IV-D-56 stated that SHV is effective on cleaning machines using fluorocarbons, TCA, TCE, MC, and PCE.

Super-heated vapor has a control efficiency of 50 percent during the working mode and 0 percent during the idling and downtime modes. Contrary to commenter IV-D-12, SHV was not described in the proposed rule as an idling control device. As required in § 63.465(a)(3) of the proposed rule, the monitoring of the SHV temperature is done during the idling mode when there is no disturbance of the vapor zone due to parts movement. This monitoring requirement is not meant to imply that SHV controls idling emissions.

The reference to hot vapor recycle as a cleaning technology has been removed from the hot vapor recycle definition in the final rule.

Comment: Two commenters (IV-D-31; IV-D-34) asked whether all technologies using SHV would be considered equally effective by the proposed standards. One commenter (IV-D-31) stated that super-heated vapors are a source of turbulence and, in some cases, are injected into the vapor zone with considerable velocity. Because of this, a SHV system can actually increase emissions. One commenter (IV-D-34) stated that non-disruptive radiative heating is the best method of super-heating. The commenter stated that the EPA should clarify whether hot vapor recycle (HVR) is an acceptable means

of employing SHV under the rule. If it is, the commenter would be concerned that the hot vapor recycle could actually increase emissions due to vapor zone disturbance.

Response: All technologies using SHV that meet the SHV requirements specified in the final rule are considered to be equally effective. The EPA has not identified any data that show that active SHV systems, which circulate solvent vapor in the vapor zone, increase solvent emissions. However, it is reasonable to expect that this could occur in some situations.

Hot vapor recycle systems that meet the SHV requirements in the final rule can be used to comply with the equipment standard.

2.2.1.9 Increased freeboard height

Comment: Two commenters (IV-D-31; IV-D-34) stated that in order to raise the freeboard of an in-line cleaner, the entrance and exit port must be extended in order to compensate for longer incline runs. They stated that this would have the effect of increasing the overall length, as well as the height, of the machine. The commenters stated that this would have a dramatic economic impact on operations limited by existing facility space. One commenter (IV-D-34) stated that the agency should consider this impact in its economic analysis and the proposal to require all existing in-line cleaners to comply with a 1.0 freeboard ratio should be re-evaluated. Another commenter stated that the requirement to increase the freeboard ratio to 1.0 is more appropriate for new in-line cleaners than for existing in-line cleaners. The commenter (IV-D-31) stated that the EPA should provide other compliance options, such as carbon adsorption, that are realistically attainable for in-line cleaning machines.

Response: The EPA added additional in-line cleaning machine equipment control combinations in the final rule that do not include an increased freeboard height.

2.2.1.10 Dwell time

Comment: Several commenters (IV-D-20; IV-D-29; IV-D-30; IV-D-35) recommended removing the dwell as a control option.

One commenter (IV-D-30) stated that the dwell time should be removed because it seems to be a very unreliable control method. Three commenters (IV-D-20; IV-D-29; IV-D-35) recommended eliminating the dwell time option because it is difficult for industry to implement and enforce.

Response: Available test data show that the dwell-time technique can reduce working emissions by 30 percent. These test data are presented in section 3.10 of the technical memorandum titled, "Summary of Emission Reductions for Selected Control Techniques for Halogenated Solvent Cleaners" (Docket Number A-92-39, Document Number II-B-19).

When a hoist is used, a dwell can be implemented relatively easily. This is especially the case for machines that have programmable hoists. If an owner or operator does not wish to use the dwell-time control technique, the equipment standard provides other control options. In addition, owners or operators have the option to comply with the idling emission limit or the alternative standard, neither of which require the dwell-time control technique.

Comment: Two commenters (IV-D-37; IV-D-40) referred to the dwell determination procedure in § 63.464(c) of the proposed rule, and stated that it would be impractical to determine dwell times for each of the thousands of different part combinations that are cleaned each day. One commenter (IV-D-37) recommended that the EPA state in the rule that the drip and dwell time determinations may be based on operator judgement considering the type and quantity of parts being cleaned. The other commenter (IV-D-40) recommended that the EPA specify a dwell time. The commenter suggested that the dwell time could be specified as a number of seconds (e.g., 15, 30, 45) after the last liquid contact. The commenter recommended that, in the case of in-line cleaners, the equipment manufacturer may specify a minimum dwell that the EPA could require operators to follow.

One commenter (IV-D-40) stated that the dwell time is considered the amount of time the part is held above, not in, the vapor zone.

Response: The provisions for calculating the proper dwell time are based on the proper cleaning time that the owner or operator should already have established. If one ideal cycle time has been determined for a group of load types, then the same dwell time can be used for these loads. The EPA has added a provision to the final rule that allows an owner or operator to determine the dwell time for the most complex part (i.e., the maximum dwell) and then use this dwell time for all parts. The EPA will not specify a dwell time, but will maintain the flexibility of the proposed dwell requirement in the final rule.

The EPA has defined the dwell time correctly in the proposed rule and has included this definition in the final rule. The dwell time is defined as the technique of holding parts within the freeboard area but above the vapor zone of the solvent cleaning machine. The commenter (IV-D-40) may have been confusing this definition with the method of determining the appropriate dwell time. The proper dwell time is equal to 35 percent of the time for the part or parts basket to cease dripping once placed in the vapor zone.

2.2.1.11 Sump cool-down coils

Comment: One commenter (IV-D-12) mentioned that solvent sump cool-down coils, though not considered in the EPA's proposed rule, can significantly reduce downtime emissions.

Response: Very limited data were available on the control efficiency of sump cooling devices. Therefore, they were not included in the rule. However, the rule does not preclude their use to comply with the overall solvent emission limit standard. In addition, the equivalent methods of control section of the rule allows an owner or operator to demonstrate that sump cooling devices are equivalent to a control specified in the equipment standard.

2.2.1.12 Waterlayer (cold cleaning machines)

Comment: Many commenters (IV-D-08; IV-D-31; IV-D-34; IV-D-40; IV-D-42; IV-D-44; IV-D-54; IV-D-60), stated that a water layer cannot be used on non-carburetor batch cold cleaners. The reasons include: the parts that are being cleaned are water sensitive (such as iron parts or electronic components); the cleaner design makes a water layer impractical (such as an enclosed "glove box" solvent spray cleaner); or the solvent being used is miscible in water or is reactive in water (such as TCA).

One commenter (IV-D-45) stated that they have water intolerant parts and are currently evaluating switching to a cold cleaning system. The commenter is concerned about the water cover requirement for batch cold cleaners in § 63.462(g)(2) of the proposed rule and proposed that a cold solvent rinse variation be added to the cold solvent cleaning option. The commenter offered to provide data from their evaluation of cold cleaners and requested the opportunity to comment on what the EPA decides regarding this issue.

Another commenter (IV-D-25) stated that the provisions of § 63.462(g) of the proposed rule do not represent GACT for all batch cold cleaners using halogenated solvents. The commenter stated that the nature of some operations would make it difficult to have a closed, tightly fitted cover at all times except during parts entry and removal as required in § 63.462(g)(1) of the proposed rule.

The commenters recommended that the EPA provide flexibility in the batch cold cleaning machine requirements to allow the use of other controls in lieu of a water layer. One commenter (IV-D-31) recommended that a water layer should only be required for carburetor cleaners. The commenter (IV-D-31) suggested that a tightly fitting cover, or remote reservoir be required for non-carburetor cold batch cleaners. One commenter (IV-D-08) asked the EPA to consider an exemption from the use of a water layer in batch cold solvent cleaning machines in situations where residual water cannot be

tolerated. One commenter (IV-D-54) asked the EPA to accept the enclosed "glove box" cleaner as GACT or develop emission standards for cold cleaners based on a solvent mass balance. Two commenters (IV-D-34; IV-D-40) asked the EPA to add the combination of a cover and an extended freeboard to the batch cold cleaner compliance options. One commenter (IV-D-25) recommended that the rule allow a freeboard ratio of at least 0.75 as an alternative to the water layer.

Another commenter (IV-D-60) stated that the proposed standards for cold cleaning machines that were fashioned after the carburetor cleaning machine would not readily apply to their batch cold cleaning machines because their cleaning system uses solvent flushing and a remote reservoir. The commenter recommend that the EPA eliminate the mandatory requirement for a water layer and allow for "enclosing" the device as an alternative to "covering". The commenter provided recommended language for this change.

Response: The EPA acknowledges that a water layer cannot be used in batch cold cleaning machines that clean parts that are water sensitive; where the solvent used is miscible in, or reactive with, water; or where the cleaning machine design makes a water layer impractical. Therefore, the EPA has included flexibility in the batch cold cleaning machine control equipment requirements in the final rule. As previously discussed, the use of a remote-reservoir and cover, or a freeboard ratio of 0.75 and a cover, in lieu of a water layer have been included in the final rule as alternative options for batch cold cleaning machines. The final rule also allows for the use of alternative control equipment to those included in the final rule if approved by the Administrator.

2.2.2 Control Combinations

Comment: One commenter (IV-D-40) stated that the combined control efficiency formula [$E_{eff} = E_1 + E_2 - (E_1E_2)$] does not accurately predict emission reductions for control equipment combinations.

Response: The commenter provided no data or reasoning that would allow the EPA to assess the validity of this comment. The EPA feels that this equation is a proper method of calculating the efficiency of multiple controls acting in series. The formula has been checked using actual test data and has been found to be a reasonable representation.

Comment: One commenter (IV-D-33) stated that it would be useful for the EPA to present the analysis that was performed to develop the control combinations in tables 1 and 2 of the regulation. The commenter would like to determine whether certain control combinations achieve the same control efficiency. The commenter stated that further comments on the control combinations is dependent on this information.

Response: The development of the control combinations is described in section 4.2 of the Background Information Document (Docket Number A-92-39, Document Number II-A-15). The control combinations have been revised based on public comments. Specifically, CAD has been added to the analysis and redundant controls have been removed.

Comment: One commenter (IV-D-34) stated that the EPA may be relying too heavily on super-heated vapor (SHV) technology in its control combination options for large open top vapor solvent cleaning machines.

Response: The EPA does not agree that it is relying too heavily on SHV technology in its control combination options for large open top vapor solvent cleaning machines. Two equipment options exist for large open top vapor cleaning machines that do not contain SHV. In addition, an owner or operator can choose to comply with the idling emission limit or the alternative standard, which do not have a SHV requirement.

Comment: One commenter (IV-D-51) recommended increasing the flexibility of the rule by adding the following control combination for batch vapor cleaning machines: FRD, 1.0 FBR, horizontal cover, hoist at 3 mpm (10 fpm), and RRD 15.2 mpm (50 fpm).

Response: The control combination of a hoist at 3.4 mpm (11 fpm), idling-mode cover, FRD, 1.0 FBR, and RRD, was included in the analysis of control combinations when developing regulatory alternatives for the final rule. A small or medium batch vapor cleaning machine with these controls could comply with the rule using control option 5 or 6 in table 1 of the final rule. A large or very large batch vapor cleaning machine with these controls could comply with the rule using control option 6 in table 2 of the final rule.

Comment: One commenter (IV-D-42) asked why the proposed rule has fewer control options for small units than there are for large units.

Response: The difference in the number of control combinations between small and large open top vapor cleaning machines was a result of the control combination analysis. At proposal, four control combinations were found to achieve the MACT level of control for small cleaning machines, whereas 7 controls achieved the MACT level of control for large machines. In the final rule, there are 10 control options for small and medium solvent cleaning machines and 7 control options for large and very large cleaning machines. This increase in the number of control options for small and medium solvent cleaning machines is the result of lowering the MACT level of control for these subcategories and including carbon adsorbers.

2.2.2.1 Biparting cover and reduced room draft

Comment: Several commenters (IV-D-10; IV-D-32; IV-D-34; IV-D-40) stated that RRD and a cover are redundant. One commenter (IV-D-10) recommended that the RRD control be removed from all combinations that also include a cover. This would give metal cleaning operations the flexibility to choose control options that do not include RRD. One commenter (IV-D-32) referred to the Background Information Document (BID) to support their conclusions.

Response: The EPA agrees that the combined efficiency formula overstates the emission reduction when a RRD and a

bi-parting cover are used in the same control combination. Therefore, RRD a bi-parting cover are no longer included in the same combination. Removing the control combinations that contained both RRD and a bi-parting cover resulted in a reduction of the MACT level of control for small and medium solvent cleaning machines from 60 percent to 50 percent. This increased the number of control options available to owners and operators of these cleaning machines from 4 to 10.

2.2.2.2 Super-heated vapor and freeboard refrigeration devices

Comment: Two commenters (IV-D-31; IV-D-32) felt that a SHV device and FRD were not a viable combination. One commenter (IV-D-32) stated that the combination of a SHV device and a FRD is technically impractical and has the added risk of being excessively costly and energy dependant. Furthermore, because super-heated vapor is a new technology, the commenter doubted whether the control combination would be available for installation. One commenter (IV-D-31) stated that they suspected that the control combination of a SHV system and a FRD would not achieve the desired results in many instances.

Response: No data has been provided to the EPA to indicate that the combination of a SHV system and a FRD is not viable. On the contrary, suppliers of SHV recommend that additional cooling capacity through the use of a super-cooled primary condenser be added to the solvent cleaning machine when retrofitting a SHV system (Docket Number A-92-39, Document Number II-E-23 and II-E-24). The EPA believes that a FRD could provide such additional cooling capacity. Therefore, combinations containing both SHV and FRD have not been removed from the rule.

A vendor of SHV systems has indicated to the EPA that SHV is currently available on new solvent cleaning machines and for retrofitting on existing solvent cleaning machines (Docket Number A-92-39, Document Number IV-D-56). Therefore, SHV is

considered to be an available technology and has not been removed from the rule.

2.2.2.3 Freeboard refrigeration device and primary cooling cools

Comment: One commenter (IV-D-27) was concerned that if the EPA stated in the rule that cooling coils are redundant with a refrigerated condensing system some facilities may disconnect their cooling coils. The commenter suggested that the standard should state that the primary cooling coils should be used even if a refrigerated system is present.

Response: When citing the example discussed by the commenter (IV-D-27), the EPA was referring to a super-cooled primary condenser and an FRD (both a primary condenser and an FRD must achieve a chilled air blanket temperature that is no greater than 30 percent of the solvent's boiling point). Data show that a limited additional emission reduction is achieved, when an FRD is added to a cleaning machine using a super-cooled primary condenser. The rule requires that the primary condensing coils be operated according to the manufacturer's recommendations.

In-line cleaners

Comment: One commenter (IV-D-25) stated that requiring controls in § 63.462(c)(1)(i) of the proposed rule that reduce convection and diffusion losses from in-line cleaning machines is excessive. The commenter stated that the emission controls for in-line cleaners should focus on the reduction of solvent losses from parts movement since in-line cleaners are enclosed except for typically small parts inlet and exit openings.

Response: In-line cleaning machines typically have two openings, and therefore drafts can pass through the machine and increase solvent emissions. The requirements for a 1.0 FBR and FRD in § 63.462(c)(1)(i) of the proposed rule and the cover requirement in § 63.462(a)(1) and § 63.462(d)(1) of the proposed rule would help reduce the convection and diffusion losses associated with drafts passing through the openings in the cleaning machine. The required provision

remains in the final rule to ensure adequate design of all in-line cleaning machines.

The control of working losses is addressed in the rule. There are several requirements to control solvent losses from parts movement that are applicable to all in-line cleaning machines complying with § 63.462 of the proposed rule. Examples are the hoist speed requirements in § 63.462(a)(3) limiting hoist speed and the work practice requirement in § 63.462(d)(5) that requires parts to be orientated so that solvent drains from them freely.

Comment: One commenter (IV-D-31) stated that the combination of a freeboard ratio of 1.0 and a FRD should be added as a compliance option for new in-line cleaning machines.

Response: The combination of a 1.0 freeboard ratio and a FRD achieves an overall emission reduction of 50 percent on an in-line cleaning machine. MACT for new in-line cleaning machines is 60 percent overall control. Therefore, the commenter's proposed control option does not achieve the MACT level of control for new in-line cleaning machines and has not been added to the final rule. However, if a cleaning machine with a combination of a 1.0 freeboard ratio and a FRD can meet the overall emission limit standard, this combination can be used to comply with the rule.

2.2.3 Alternative Cleaning Technologies

Comment: Eight commenters (IV-D-03; IV-D-10; IV-D-20; IV-D-29; IV-D-35; IV-D-40; IV-D-49; IV-D-54) discussed potential impacts of switching to alternative control technologies. One commenter (IV-D-10) presented a number of examples where cleaning technology alternatives cited in the preamble presented potential application, health, or environmental problems.

Two commenters (IV-D-20; IV-D-29) were concerned with a switch to an alternative solvent that may not be presently classified as a toxic air contaminant, but may cause toxic health effects, global warming impacts, or stratospheric ozone

depletion effects [e.g., hydrochlorofluorocarbons (HCFC's)]. The commenters believe that if the EPA does not prohibit facilities from switching to an HCFC, CFC-113, or another alternative solvent, many facilities may switch to another, possibly equally damaging chemical, to escape burdensome regulation under the NESHAP.

Three commenters (IV-D-03; IV-D-10; IV-D-40) were concerned that the proposal preamble referred to HCFC's as potential alternatives to the chlorinated solvents in cleaning machine operations. Two commenters (IV-D-03; IV-D-10) stated that HCFC's are not viable alternatives since they will be phased out because of their potential to deplete stratospheric ozone. The third commenter (IV-D-03) recommended that OAQPS coordinate with the EPA's Global Change Division, in its Significant New Alternatives Policy (SNAP) for the latest information on potential alternatives to the chlorinated solvents used in cleaning machine operations.

One commenter (IV-D-40) stated that under the proposed SNAP program, HCFC's are not generally considered acceptable substitutes to MCF and CFC-113 in solvent cleaning, except for certain precision applications. The commenter (IV-D-40) stated that the alternative processes listed on page 62526 of the proposed preamble are unlikely to be viewed as alternatives to halogenated solvent cleaning. Many are still in development and most are limited in their ability to clean oils and greases. All are significantly more expensive than halogenated solvent cleaning.

One commenter (IV-D-35) suggested that the exemption of alternative solvents that are VOC's is not beneficial in areas where ground-level ozone is a problem. These alternative solvents may cause other detrimental health and environmental effects, despite not being listed as HAP's. The commenter suggested that the consequences of using such alternative solvents be evaluated and appropriate control required.

Two commenters (IV-D-03; IV-D-54) stated that the rule should provide incentives for the substitution of halogenated

solvents with alternative cleaning technologies. One commenter (IV-D-03) stated that these alternative methods should be designated as MACT and a cost analysis performed. Another commenter (IV-D-54) stated that, if a source makes a complete switch from halogenated solvent cleaners to alternative cleaners or cleaning technologies, it should be immediately exempt from the halogenated solvent cleaners source category. Another commenter (IV-D-49) supported the pollution prevention strategy of using alternative cleaning technologies to replace halogenated solvents as the primary means of minimizing these toxic emissions.

Response: The EPA recognizes that alternative cleaning technologies are potential substitutes for halogenated solvent cleaning technologies. As stated in the proposal preamble, the EPA did not mandate a switch from halogenated solvents to an alternative solvent or technology for the following reasons:

1. Controls exist that can significantly and efficiently reduce the emissions of halogenated solvents from solvent cleaning machines. These controls can reduce emissions to a level more stringent than the MACT floor for these units.

2. Determination of an acceptable alternative cleaning technology is site- and application-specific and can take years. Not all of the applications are known, and it is uncertain whether an acceptable alternative technology exists for every application.

3. While HAP use could be eliminated or reduced, discharges of HAP to wastewater or air could be increased. Because the switch from a halogenated solvent cleaning machine system to an alternative solvent system is application specific, the relative impacts of making a total switch cannot be confidently assessed.

Before proposal of these standards, alternative cleaning agents and technologies were fully evaluated as potential control options. The EPA agrees that a number of the cited alternative cleaning technologies may have associated

application, health, or environmental problems. No new data were provided during the public comment period to change this position. Therefore, the EPA has concluded that mandating facilities to switch from the use of a halogenated HAP solvent to an alternative nonhalogenated HAP solvent that may have potential adverse environmental impacts is not warranted under this NESHAP.

The EPA has extended the compliance time for the rule from 2 years to 3 years. This will give owners or operators of solvent cleaning machines more time to evaluate alternatives to halogenated HAP solvent cleaning.

The EPA will be developing a guidance document to the final rule that will include a discussion on the EPA's Global Change Division's Significant New Alternatives Policy (SNAP) and the Solvent Alternatives Guide (SAGE). The document will offer guidance on where to obtain the best alternative cleaning options for particular cleaning needs. The document will also include a list of those solvents that are not viable replacement options because they will be phased out due to their potential to deplete stratospheric ozone.

The EPA agrees that an owner or operator of a halogenated solvent cleaning machine that switches to an alternative nonhalogenated solvent technology should not have to comply with the NESHAP. The proposal and final rule applicability pertains to the owners and operators of solvent cleaning machines that use halogenated HAP solvents. If alternative solvents are used that are not halogenated HAP's the rule does not apply. However, the EPA does not agree that people are likely to change from the use of halogenated HAP solvents solely to escape this rule. This rule is not sufficiently burdensome to cause this and will actually result in a cost savings for many facilities.

Comment: One commenter (IV-D-30) recommended that the EPA use the Puget Sound Air Pollution Control Agency's (PSAPCA's) experience to improve the regulation. The PSAPCA program could be used to develop the contents of, and minimum

standards for, required alternatives analysis. The commenter indicated that the PSAPCA has a regulation that makes it unlawful to operate a vapor degreaser employing a toxic air contaminant unless an analysis has been conducted which demonstrates that no acceptable alternative exists. According to the commenter, this regulation has been very successful in reducing the number of sources using halogenated solvent cleaners. The commenter claimed that the initial review could eliminate the need to undertake the various complicated control, recordkeeping, and reporting requirements by encouraging these sources to use more "environmentally safe" cleaning options. These options could include replacing existing halogenated solvent degreasers with aqueous or semi-aqueous parts washers, aqueous immersion tanks, alkaline cleaners or a combination of these.

Response: The PSAPCA's program has merit. However, the EPA does not have the resources to adopt this program nationally. The EPA's final standard encourages owners or operators to evaluate alternatives. However, since alternatives can have adverse impacts and may not be usable in all cases, the EPA did not mandate the use of alternatives. The Agency is developing a guidance document to aid owners and operators of halogenated solvent cleaning machines in evaluating available alternatives. The EPA has determined that the final standards sufficiently control halogenated HAP emissions for this source.

Comment: Three commenters (IV-D-10; IV-D-31; IV-D-54) expressed concern that the EPA may require alternative technologies for specific applications based on information obtained before the rule is promulgated. One commenter (IV-D-54) stated that a substantial change to the basis of the rule could be disruptive to the planning that has begun based on the proposed rule. Two commenters (IV-D-10; IV-D-31) stated that it would be inappropriate for the rule to require alternative technologies for particular cleaning applications without a separate proposal and opportunity for comment.

One commenter (IV-D-10) agreed with the EPA's position that the NESHAP should not mandate the use of any particular alternative cleaning technology. The commenter stated that the EPA should allow sources affected by the rule as much flexibility as possible in complying with the MACT standards. Another commenter (IV-D-31) stated that the EPA could facilitate the alternative evaluation process by maintaining a nonbinding list of consulting services, available to businesses on request.

Response: The EPA has retained the rule's flexibility and has not mandated the use of any particular alternative cleaning technology. The flexibility of the rule has been increased by the addition of multiple new control combinations and by providing a means of compliance for solvent cleaning machines that do not have a solvent/air interface.

The EPA does not have the ability to continually update and maintain a nonbinding list of consulting services.

Comment: In reference to the discussion in the proposed preamble on no-clean technologies (page 62572), one commenter (IV-D-40) stated that the cleaning of metals can rarely be eliminated, although reducing the amount of cleaning required is often possible. The commenter (IV-D-40) also stated that, contrary to the discussion in the preamble, dry-film lubricants still must be cleaned.

Response: The EPA has noted the clarifications provided by commenter IV-D-40. However, since the promulgation preamble does not contain the background information contained in the proposal preamble, these corrections are acknowledged here.

2.2.4 New Technologies

Comment: Four commenters (IV-D-05; IV-D-21; IV-D-40; IV-D-51) addressed EPA's position on the new solvent cleaning technologies. One commenter (IV-D-21) questioned why the EPA requested comments on new technologies since the EPA is mandated by the statute to establish a standard that is achieved in practice, not a standard that is "under

development" at this time. The commenter indicated that new and innovative technologies may be addressed when emission reductions are confirmed as equivalent and achievable in practice.

One commenter (IV-D-40) recommended that any decision to require new or alternative technologies for specific applications should be subject to public review and comment prior to finalization of the regulation.

Two commenters (IV-D-05; IV-D-51) requested that the rule be expanded to allow owners or operators using vacuum solvent cleaning machines (which have no solvent/air interface) to determine their compliance with the rule. One commenter (IV-D-05) requested that their company's vacuum degreasing and cleaning technology be recognized by the EPA as MACT technology. The commenter believes that data from operations, laboratory analysis, and EPA sponsored testing by the Research Triangle Institute supports their request. The commenter feels that the data show that solvent recovery for their cleaning equipment, not including carbon adsorption, is 96 percent or better. This translates to a solvent usage of less than 0.00205 kilograms (kg) (0.00045 pounds [lbs]) per pound of material cleaned. Additionally, the commenter stated that, since the equipment is "closed-loop," the actual emissions are "zero." The commenter stated that since their cleaning system and its technology are not mentioned in the regulations, its installation would require extensive, and expensive alternative testing detailed in § 63.465 through § 63.467 of the proposed rule. The commenter also stated that because their technology is not included in the definition under § 63.461 or the applicability statement of § 63.460, the proposed rule will discourage the use of their equipment.

Another commenter (IV-D-51) stated that vacuum degreasers emit much less solvent than traditional equipment. The commenter (IV-D-51) stated that these machines are too expensive for general use throughout the commenter's manufacturing areas, but they are well suited for specific

applications because of their cleaning effectiveness and low emissions. The commenter requested that the rule be more clearly written to allow the use of this type of equipment.

Response: The EPA requested comments on new technologies to validate that there were no existing new technologies (in practice) that should be included as part of the MACT analysis. As stated in the proposal preamble, because of the lack of data, and the developmental nature of these new technologies the EPA has not included them in the selection of MACT. A technology can only be included in the MACT floor determination if it is being used in practice in industry.

The proposed and final standards allow the use of new technologies where they can be demonstrated to be equivalent to the MACT control levels delineated for each subcategory. An owner or operator of a vacuum-to-vacuum or chamber cleaning machine should be able to comply with the overall solvent emission limit.

In order to more easily allow vacuum-to-vacuum and chamber cleaning machines to determine compliance with the rule, a table that provides emission equivalency limits for these cleaning machines was added to the alternative standard in the final rule. The table was developed by identifying the relationship between the cleaning capacity and the solvent/air interface area for an open top vapor cleaning machine. This relationship was then used to equate the cleaning capacity volume of a solvent cleaning machine without a solvent/air interface area to a solvent/air interface area. This table will enable cleaning machines that do not have a solvent/air interface to determine their 3-month rolling emission compliance requirement limit.

2.2.5 Fugitive Emission Controls

Comment: One commenter (IV-D-40) stated that room enclosures should be considered as an effective means to collect fugitive emissions and potentially reduce worker exposure. The use of an enclosure may be the only way to

reduce drafts at the top of the freeboard area of the cleaner to the levels proposed by the EPA.

Response: In the equipment standard, an enclosure is an acceptable method of achieving a RRD. A cleaning machine that is in an enclosure with the emissions vented to a regenerative carbon adsorber should be able to comply with the alternative standard.

2.3 REGULATORY ALTERNATIVES

Comment: One commenter (IV-D-04) was concerned that the proposed NESHAP standards for halogenated solvent cleaning machines were less stringent than the EPA's Model VOC RACT guidelines for Solvent Metal Cleaning. The commenter suggested that the NESHAP be at least as stringent as the RACT regulations and that the following requirements be included in the proposed standards:

(1) Degrease only materials that are neither porous nor absorbent.

(2) Repair solvent leaks immediately, or shut down the degreaser.

(3) Hold parts in the vapor zone at least 30 seconds or until condensation ceases, whichever is longer, and allow parts to dry within the degreaser for at least 15 seconds or until visually dry, whichever is longer.

(4) Use no ventilation fans near the degreaser opening.

(5) Provide a permanent, conspicuous label summarizing the operating procedures.

Response: The EPA does not agree that the NESHAP is less stringent than the EPA's Model VOC RACT guidelines for Solvent Metal Cleaning. Equipment control requirements are more stringent in the NESHAP. For example, an increased freeboard ratio requirement for OTVC's in the NESHAP is 1.0, whereas it is 0.75 in VOC RACT guidelines. In addition, the NESHAP work practice reporting and recordkeeping requirements better assure emissions reductions than the EPA's RACT guidelines. The NESHAP has included work practice requirements in the rule that control emissions analogous to some of those controlled

by RACT requirements cited by the commenter (e.g., RRD requirement versus ventilation fan restriction). The final rule has been amended to include a ban on cleaning of materials such as sponges, fabric, wood, and paper products.

2.3.1 MACT Floor

Comment: Three commenters (IV-D-09; IV-D-33; IV-D-42) discussed the Agency's overall approach to establishing the MACT floor for the proposed rule. One commenter (IV-D-09) agreed with the EPA's approach to setting MACT for this category of HAP emitting equipment. One commenter (IV-D-33) stated that they were unable to determine how the EPA calculated the values used for the MACT floor. The commenter suggested that the EPA clearly define their approach in calculating the floor and the MACT standard. One commenter (IV-D-42) stated that a discussion of the specific considerations for the MACT floor determinations should be added to the preamble.

Response: The proposal preamble (58 FR 62566) for the halogenated HAP solvent cleaning machine source discussed that the MACT floor was calculated based on the emissions limitations achieved by the average of the best performing 12 percent of existing cleaning machines. Specifics regarding the MACT floor determination for the halogenated solvent cleaner NESHAP are documented in a memo entitled, "MACT floor determination for solvent cleaning NESHAP." This memorandum was submitted to the docket prior to proposal. This memo can be accessed through Air Docket Number A-92-39, Document Number II-B-21.

Comment: One commenter (IV-D-36) stated that by calculating the MACT floor by averaging the upper 12 percent of the solvent cleaning machines, the EPA has raised the MACT floor above the 88th percentile. The commenter stated that the EPA has taken an overly restrictive view and narrowly read the MACT floor requirements of the Act. The commenter stated that the statute does not require averaging of the emissions limitations achieved by the best performing halogenated

solvent cleaning machine sources above the 88th percentile. The commenter stated that the Act requires averaging of the halogenated solvent cleaning machine test results before plotting them by their relative control efficiency in order to determine an "average" measurement for a particular process. The commenter stated that the EPA's means of calculating the MACT floor may not establish a floor that is related to any particular technology. The commenter recommended that the EPA set the MACT floor at a control efficiency that is at the 88th percentile.

Response: The EPA does not agree with the commenter's argument that the MACT floor should be set at the 88th percentile and does not agree that it has taken an overly restrictive view of the MACT floor requirements.

Section 112(d)(3) of the Act provides that:

Emissions standards promulgated under this subsection for existing sources shall not be less stringent than

(A) the average emission limitation achieved by the best performing 12 percent of existing sources . . . 42 U.S.C. 7412(d)(3). The minimum level of stringency defined by this language has come to be known as the MACT floor. In several Federal Register notices proposing MACT standards the EPA has solicited comment on the appropriate interpretation of section 112(d)(3)(A). Two interpretations were discussed. Under one interpretation, the EPA would look at emission limitations achieved by each of the best performing 12 percent of existing sources, and average those limitations. "Average" would be interpreted to mean a measure of central tendency such as the arithmetic mean or median. Under the second interpretation, the EPA would look at the average emission limits achieved by each of the best performing 12 percent of existing sources, and take the lowest.

The EPA believes that the first interpretation is a better reading of section 112 (d)(3)(A) than the second. A detailed discussion of the reasons for this position are contained in a Federal Register notice relating to the

Hazardous Organic NESHAP (HON) MACT standard, signed by the Administrator on May 27, 1994 and published on June 6, 1994 (59 FR 29196). In summary, that notice states that the most natural reading of the statutory language would have the EPA first determine the emission limitations achieved by sources within the best performing 12 percent, and then average those limitations. In addition, if Congress had intended the second interpretation, language other than that actually used in section 112(d)(3)(A) would have been far more natural. For example, Congress could have said that standards must be no less stringent than "the emission limitation achieved by all sources within the best performing 12 percent."

Therefore, consistent with the position taken in the final HON MACT standard, the EPA has determined the MACT floor for today's rule on the basis of the first interpretation of the floor language of the statutes discussed above.

Comment: One commenter (IV-D-42) stated that there are sources that are better controlled than the general requirements of the rule and that new sources should be required to meet this level of control.

Response: Based on data provided to the EPA on current existing in-practice controls at proposal there were no combinations of controls that achieved an emission reduction greater than the new source MACT in this rule. The EPA evaluated new emerging technology prior to proposal. However, as discussed in the preamble, these technologies are still under development and insufficient data are available to include these technologies in the MACT analysis. Since the EPA has not received sufficient data to corroborate that there are existing sources that are better controlled than the general requirements of the rule, the EPA has not based the final rule on these new technologies. The flexibility of the final rule, however, allows the use of new technologies where they are demonstrated to be equivalent to the control levels of MACT for each solvent cleaning machine subcategory.

Comment: Several commenters (IV-D-21; IV-D-31; IV-D-32; IV-D-35) stated a concern that the EPA did not determine MACT through an analysis of emission control data achieved by existing, operating sources "in practice." Two commenters (IV-D-21; IV-D-31) indicated that the vendor control efficiency and laboratory data used to establish the MACT "floor" is not necessarily representative of the control levels achieved by the industry in practice. One commenter (IV-D-21) warned that vendor's claims may be based upon the performance of control equipment that is new and/or used under the best possible conditions. Since degreasing operations are diverse in design and age, it is unlikely that the information analyzed is representative of what is "achieved in practice" by the degreasing industry as a whole. Another commenter (IV-D-32) stated that other control combinations might represent preferred methods of control. The commenter (IV-D-32) recommended that the EPA revisit the data and analytical methods used to establish the selection of MACT and repropose the rule.

Response: The EPA solicited data through section 114 questionnaires at two different times, at the NAPCTAC meeting in November 1992 prior to proposal, and in the NESHAP proposal. The EPA did not receive any new data. Therefore, the EPA used the best and only available data in their analysis, which are vendor data and data obtained on cleaning machines studied under controlled conditions. The EPA does not require that a performance level be met. An owner or operator of a cleaning machine can meet the equipment standard to comply with the regulation.

2.3.2 MACT versus GACT

Comment: Five commenters (IV-D-10; IV-D-21; IV-D-31; IV-D-33; IV-D-35) stated that the EPA should support the promulgation of GACT standards for area sources. One commenter (IV-D-10) stated that the data collected by the EPA in preparing the NESHAP does not appear to support classifying/designating small and medium cleaning machines as

major sources and, therefore, subject to MACT. The commenter further elaborated that there are a number of economic, technological, or feasibility issues that warrant the use of GACT rather than MACT for small and medium batch vapor cleaning machines. Another commenter (IV-D-35) stated that setting GACT standards for area sources would reduce the reporting burden on small businesses.

One commenter (IV-D-34) stated that small businesses, operating smaller solvent cleaning equipment, would be unfairly burdened with expenses aimed at controlling emissions that are inherently less severe than emissions from larger equipment. The commenter recommended that small and medium vapor degreasers should be designated as area sources. Another commenter (IV-D-40) recommended that small vapor cleaners be designated as area sources. This would allow the EPA to forego a residual-risk analysis on these sources and would allow the EPA to specify a lesser level of control for these sources. One commenter (IV-D-21) requested that the major source versus area source emission determination and technical standard classification (MACT versus GACT) be distinguished separately. The commenter (IV-D-21) then requested that the residual risk analysis apply to only the "major" emission sources.

One commenter (IV-D-40) stated that because many small cleaners are used to a very limited degree, the need for flexibility in regulatory compliance in this category is greater than elsewhere. The commenter stated that reducing the required level of control from 60 to 50 percent of uncontrolled emissions for small sources reduces the cost of the regulation by only 5 to 10 percent, but increases the number of available control equipment combinations from 4 to 18 for existing small sources and from 4 to 28 for new small sources.

Another commenter (IV-D-33) disagrees with the position that if the same control limit is determined for MACT and GACT, the standard should default to GACT in order to avoid

residual risk requirements. The commenter stated that the purpose of GACT is to require less stringent controls on smaller sources that pose less of a threat to public health and the environment and would be subject to severe economic impacts as a result of complying with the federal regulation.

Another commenter (IV-D-35) stated that the EPA should consider the impact of a MACT or GACT designation on the ability of State and local agencies to implement this regulation.

Response: The EPA considered establishing GACT for solvent cleaning machines. As discussed in the proposal preamble, there is no reason for the use of GACT as opposed to MACT for solvent cleaning machines. The use of GACT as opposed to MACT for area sources is not required by the Act. A GACT approach might be warranted if significant adverse economic impacts are expected on small sources, or if there is a technological limitation to installing a control device on smaller emission sources. Although a number of halogenated HAP solvent cleaning machines are expected to be located at small businesses, the use and operation of these cleaning machines does not represent a significant portion of the operating costs for these businesses (0.1 to 9.7 percent). Furthermore, adopting GACT standards for halogenated HAP cleaners would not reduce the reporting burden on small businesses. The reporting requirements are based on what is needed to determine compliance. No data were provided that supported regulating area sources at a lesser control level than major sources. Therefore, MACT has been maintained in the final rule for all of the halogenated solvent cleaner NESHAP subcategories except for batch cold cleaning machines, as proposed.

A MACT or GACT determination is not made based on the impact that a particular determination would have on the regulatory agencies. However, the regulatory agency burden of this rule was evaluated. The EPA concluded that the regulatory agency burden was not unreasonably burdensome given

the potential emission reductions that would result from the implementation of the rule.

2.3.3 Regulatory Alternatives

Comment: One commenter (IV-D-42) stated that there are some requirements that are unnecessarily burdensome for existing sources and cannot be justified on a cost-effectiveness basis. To address this, the commenter recommended that the rule present separate requirements for new and existing sources.

Response: The EPA's analysis did not confirm that there would be an unnecessary burden for existing sources as a result of this rule. Furthermore, the commenter (IV-D-42) did not identify the specific requirements that they believed were unnecessarily burdensome for existing sources. When conducting the regulatory alternative analysis, the EPA evaluated new and existing solvent cleaning machines separately. The EPA chose the most stringent regulatory alternative for each solvent cleaning machine source subcategory for both existing and new cleaning machines, after considering emission reduction, cost, economic, and other environmental impacts. The impacts of the rule on both existing and new sources were determined to be reasonable. The proposal MACT selection is discussed further in section VI.E., Selection of Maximum Achievable Control Technologies of the proposal preamble (58 FR 62566).

Comment: Two commenters (IV-D-20; IV-D-29) stated that the regulation would be much easier to implement and enforce if the EPA determined which additional requirements were necessary to meet their objectives. The commenters believed that the EPA should further evaluate the requirements imposing a higher capital expense to determine if the reduction of hazardous air pollutants outweighs the costs. The EPA could differentiate between small and large cleaning machines by applying only these more extensive requirements to large batch vapor or in-line solvent cleaning machines. The commenters

supported clearly enforceable specific requirements that have been shown to significantly reduce emissions.

Response: The EPA is required to set MACT standards for halogenated solvent cleaners that requires "the maximum degree of reduction in emissions of the HAP . . . that the Administrator, taking into consideration the cost of achieving such emission reduction, and any nonair quality health and environmental impacts and energy requirements, determine is achievable for new or existing sources in the category or subcategory to which such emission standard applies . . ." [the Act section 112(d)(2)]. In complying with this requirement, the EPA evaluated the requirements proposed under the NESHAP, including the cost-effectiveness [cost in $/year/ reduction of HAP (Mg/yr)] of the equipment standard options when determining MACT. Further, the EPA has incorporated a number of options to comply with the NESHAP to allow an owner or operator of a cleaning machine the flexibility to choose the most cost-effective or feasible control option. The cost-effectiveness analysis considered capital costs, monitoring costs, and reporting and recordkeeping costs associated with each of the options. The EPA has re-evaluated the monitoring, reporting, and recordkeeping enforcement requirements included in the proposed rule and has reduced them where possible while still ensuring that the MACT established for halogenated HAP batch vapor and in-line cleaning machines, and GACT established for halogenated HAP batch cold cleaning machines are met.

2.3.3.1 Emission estimates

Comment: One commenter (IV-D-24) stated that, due to the decline in the number of halogenated carburetor cleaning machines, the total nationwide emissions rate is well below the 1,400 Mg/year estimated in the proposal.

Response: No data were submitted that indicated that there were less carburetor cleaning machines or emissions than the estimate presented in the proposal preamble. However, even if emissions from these sources were estimated to be

significantly less, the control requirements in the rule for these cleaning machines would not change.

2.3.3.2 National costs

Comment: One commenter (IV-D-37) asked whether the EPA included the replacement of solvent required by § 63.464(b)(1) of the proposed rule in the estimated national costs of the proposed standards.

Response: The intent of § 63.464(b)(1) of the proposed rule was not to replace the solvent every month, but to assure that the solvent is clean. Clean liquid solvent was defined in the proposed regulation to include "solvent that has been filtered, skimmed, and/or distilled to remove soils (e.g., skimmed of oils or sludge and strained of metal chips)." The EPA has revised the final definition of "clean liquid solvent" to allow for additional methods to ensure that the solvent is clean, and revised § 63.464(b)(1) to clarify that clean liquid solvent does not mean only virgin solvent.

2.3.3.3 Number of cleaning machines

Comment: One commenter (IV-D-40) stated that the EPA's regulatory analysis assumes a lower level of control for existing small and very large vapor cleaning and in-line cleaning machines than the levels used in the calculation of the total number of cleaning machines outlined in the May 26, 1993 memorandum titled, "Estimate of the Number of Halogenated Solvent Cleaners" (Docket Number A-92-39, Document Number II-B-18.

Response: The EPA recognizes that the level of control used for existing small and very large vapor cleaning and in-line cleaning machine levels differ from the levels used in the estimate of the total number of cleaning machines outlined in the May memo. This difference is because the refined control levels used in the regulatory analysis were developed after the number of cleaning machines was estimated. The estimated number of batch vapor cleaning machines was not revised because the EPA determined that the decision would not change if these numbers were recalculated. The differing

control levels have negligible effects on the number of batch vapor cleaning machines (16,100 versus 16,400). The number of in-line cleaning machines is nearly half the number of machines (4,090 versus 8,080) given the control levels used in the EPA's regulatory analysis as compared with those used in the estimate of the number of in-line cleaning machines. This difference would not affect the regulatory options chosen because the incremental cost-effectiveness is not affected by the number of cleaners. The reduced number of in-line cleaning machines would, however, affect (reduce) the national HAP emission reduction estimate associated with control. Since the differing control levels would not affect the regulatory options chosen, the estimated number of cleaning machines used for the regulatory analysis was not revised.

2.3.3.4 Energy impacts

Comment: One commenter (IV-D-54) stated that the EPA should recognize that increased energy use (for additional air pollution control devices) can result in secondary air quality impacts.

Response: The EPA evaluated the increased energy use that would potentially occur as a result of the rule and concluded that the increased energy impacts would be negligible, while the primary benefits of the rule would be significant. Because the increased energy impacts were considered to be negligible, it was determined that it was not necessary to analyze the secondary air quality impacts that might occur from increased energy use.

2.3.3.5 Environmental impacts

Comment: Two commenters (IV-D-03; IV-D-06) commented on potential water contamination due to the proposed standards. One commenter (IV-D-06), in reference to section V.B. Water and Solid Waste of the proposal preamble, stated that the increased use of refrigerated condensers will cause adverse water impacts. This would result from an increase in the amount of water condensed from the air blanket. It is possible that the increased amount of water condensate will

hasten solvent decomposition due to acidification, thereby shortening the solvent life and necessitating more frequent solvent disposal. After separation, this water will presumably be discharged in the sanitary sewer. The commenter (IV-D-06) added that although the amount of halogenated solvent thereby discharged to publicly owned treatment works (POTW's) is probably small, these compounds are priority pollutants regulated under water regulations and may be a water quality concern. Furthermore, if the EPA proceeds with development of a POTW MACT air emission standard in 1995, local sewer authorities may respond by banning water separator discharges to the sanitary sewer in an effort to achieve source reduction as an alternative to installing emission controls. The EPA's POTW MACT workgroup should be consulted regarding possible impacts of the solvent cleaning machine standard on POTWs, and possible interaction between the solvent cleaning machine MACT and any future POTW MACT standards.

Another commenter (IV-D-03) stated that the EPA should not recommend that users pour decanted water that may be contaminated with halogenated solvents down the sewer. The commenter further stated that the EPA has recently ruled that aqueous-based hazardous waste (such as halogenated solvents dissolved in water) can be evaporated without the requirement for a treatment permit. However, since the EPA has not set standards for such evaporators, a plastic tub may be used as the evaporator and the separator water can be evaporated as it is generated, preventing further sewer contamination.

Response: The EPA has not received any data to support the claim that refrigerated condensers will hasten solvent decomposition. Furthermore, the proposed and final NESHAP do not recommend that users pour decanted water that may be contaminated with halogenated solvent down the sewer. The EPA allows for the use of separator water evaporators if their design meets the definition of a "wastewater treatment unit" under the Resource Conservation and Recovery Act (RCRA).

Tanks that meet the definition of a wastewater treatment unit are exempt from RCRA permitting under 40 CFR sections 264.1(g)(6) and 270.1(c)(2)(v). Therefore, these units would not require RCRA permits, provided they meet the criteria to qualify as wastewater treatment units outlined in 40 CFR section 260.1.

Under the definitions and criteria contained in RCRA, a plastic tub that is not designed to contain an accumulation of hazardous waste would not be considered an acceptable treatment unit for decanted water. The definition of wastewater treatment unit consists of three parts enumerated at 40 CFR section 260.10. First, the evaporator unit must meet the definition of "tank" or "tank system" also found in section 260.10. Second, the evaporator must be receiving and treating or storing an influent wastewater (or wastewater treatment sludge) that is a hazardous waste, which includes all halogenated HAP. Finally, the facility must be subject to sections 307(b) or 402 of the Clean Water Act; this includes wastewater treatment units at facilities that (1) discharge treated wastewater effluent into surface waters or into a Publicly-Owned Treatment Works (POTW) sewer system, or (2) produce no treated wastewater effluent as a direct result of such requirements. Tank as defined in the RCRA regulation, means a stationary device, designed to contain an accumulation of hazardous waste, which is constructed primarily of nonearthern materials (e.g., wood, concrete, steel, plastic) which provide structural support. Tank system means a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system.

Comment: Two commenters (IV-D-12; IV-D-27) discussed the impacts of CAD's. One commenter (IV-D-12) stated that some CAD systems that use steam injection for the regeneration of carbon beds can be provided with special water treatment systems designed to minimize organic contact from the effluent water prior to disposal. These systems minimize the potential impact of CAD's on water quality.

According to one commenter (IV-D-27), CAD's do not produce substantial amounts of contaminated wastewater. This is due to the fact that the inlet air from a properly operated lip exhaust on a degreaser is relatively dilute and the CAD desorption cycle is much longer than those controlling other processes, such as dry cleaning. In addition, many facilities reclaim the solvent from the wastewater and recycle it to the process.

Response: The EPA acknowledges that CAD's do not adversely impact water quality if the unit is properly operated and solvent is reclaimed. The EPA has added CAD's to the list of control options in the equipment standard.

2.4 BENEFITS ANALYSIS/ECONOMICS

Comment: One commenter (IV-D-33) does not support EPA's use of a cost-benefit analysis to justify a more stringent MACT standard than the minimal floor identified in the analysis.

Response: The proposed standard was selected based on the EPA's analysis of the potential emission reduction, and the cost, economic, and other environmental impacts associated with differing levels of control. The EPA did not use the cost-benefit analysis in selecting the MACT standard. The EPA did a preliminary benefits analysis to see if a further cost-benefit analysis might aid the EPA in the selection of MACT. It was determined that a full cost-benefit analysis was not warranted.

Comment: Two commenters (IV-D-31; IV-D-54) stated that the reduction in health risk was overestimated in the benefits analysis. One commenter (IV-D-54) felt that, since halogenated solvent cleaners are widely distributed, the average national population density should have been used instead of the population density of major cities. Another commenter (IV-D-31) stated that the EPA should discard the current benefits analysis, design a protocol with public comment or outside peer review, and recalculate the benefits.

Response: The EPA contends that the reduction in health risk is highly uncertain. The benefit analysis did not assign a subjective value to human life. The analysis values small reductions in risk using empirical studies of the relationship between wages and risks. Constructing a model city with national average population density would be unlikely to reduce the uncertainty for the risk or benefit analysis. Since further refinement of the risk or benefit analysis would be resource intensive and unlikely to reduce the uncertainty, the EPA has chosen not to pursue an analysis beyond the risk characterization already performed.

Comment: One commenter (IV-D-31) stated they were concerned and disagreed with the EPA's decision to count the reduced solvent usage as an economic benefit to the rule. They suggested that the EPA only consider the direct costs and benefits, because one company's "savings" is another company's "loss."

Response: Although solvent producers would experience a reduction in certain solvent product sales, they would also reduce production of those solvents no longer in demand. Initially, producers could experience a reduction in revenue exceeding the reduction in production costs for those solvent product lines no longer in demand. This reduction would result from adjustment difficulties associated with certain production costs (particularly capital costs). However, within a short period of time, a company should experience a reduction in production costs that would equal the reduction in revenues for those solvent product lines. Once these equilibrate, the company profits would be minimally affected. Therefore, the reduced solvent usage attributable to the regulation would cause little change in profits for solvent producers in the long run. Recovery of revenue through other chemical product sales could also offset any reduced revenue from reduced solvent product line sales. Therefore, the final rule analysis maintains reduced solvent usage as an economic benefit.

Comment: Several commenters (IV-D-12; IV-D-27; IV-D-33) were concerned that the EPA has not adequately evaluated the economic burden of this standard on small businesses. One commenter (IV-D-33) said that annual costs may not be sufficient to determine the impact of this regulation, particularly on small businesses that do not have a large profit margin. The commenter suggested that it would be helpful for the EPA to evaluate the costs for each subcategory based on whether it presently has controls or is uncontrolled.

Response: The EPA's economic impacts analysis focused on businesses that own and operate small and medium-sized solvent cleaning machines. The impacts were small enough that a Regulatory Flexibility Analysis (5 U.S.C. 601 et seq.) was not warranted.

The EPA's economic analysis (Docket No. A-92-39, Document No. II-A-14) included more than an estimate of annual costs to determine the possible impacts to affected businesses. The analysis also examined the ability of a small firm to obtain capital to finance additional emissions control. Since the capital costs incurred as a result of investment in control equipment needed for small businesses to meet the standard was less than 10 percent of the businesses' total assets in all 39 affected SIC codes, it was concluded that the assets and earnings of small businesses would not be so adversely affected by the rule that they would require outside financing.

The EPA also evaluated whether there was a potential for small businesses to close because of the proposed rule. The EPA's analysis was based on earnings impacts under a worst-case scenario. This scenario assumed that affected businesses completely absorbed the entire cost of control and could not recover control costs through price increases on their products. This analysis indicated that facilities in only two of thirty-nine standard industrial classification (SIC) codes were at risk of closing as a result of the burden of complying with the regulation. This analysis also

indicated that the number of possible closures in those SIC codes is small (less than 3.4 percent).

Comment: One Commenter (IV-D-50) stated that, even though the EPA's benefit analysis estimated that halogenated solvent cleaning machines cause as many as six cancer cases a year, they believe halogenated solvents actually provide health benefits. The commenter stated that the aircraft industry depends on halogenated solvents for proper cleaning. The commenter pointed out that some alternatives to halogenated solvents are flammable, and others are being used without adequate testing and experience.

Response: The EPA acknowledges that there may be health benefits associated with the use of halogenated HAP solvents as compared with some halogenated solvent alternatives. However, the benefits in health are uncertain and depend on the chosen compliance alternative. The EPA could not estimate the benefits of halogenated HAP solvent use compared to an unknown chosen alternative.

Comment: Two commenters (IV-D-12; IV-D-27) questioned whether the economic impact of the proposed standard was justified. One commenter (IV-D-12) was concerned that existing equipment owners are required to upgrade existing equipment to the proposed standards. The major concern was that the industry is comprised mostly of small businesses that would not be able to meet the financial obligation to make these retrofits, monitoring, and other requirements as listed in the proposed ruling and would therefore affect the economy of the United States, and increase the unemployment ratios across the nation.

One commenter (IV-D-27) was concerned that the costs associated with installing mechanical hoist systems in conjunction with the equipment identified under the control options would be too great a financial strain for very small businesses. The commenter believes that the requirements for control devices should be associated with decreasing health risks. The commenter would like to see an economic analysis

illustrating the impact of the proposed rule on the small businesses.

Response: As mentioned in a previous response, the EPA's economic analysis examined the ability of a small firm to obtain capital to finance additional emissions control. Through this analysis it was determined that the assets of small businesses would not be so adversely affected by the rule that they would require outside financing.

The EPA also evaluated whether there was a potential for small businesses to close because of the proposed rule. The EPA's analysis evaluated impacts on earnings impacts under a worst-case scenario. This scenario assumed that affected businesses completely absorbed the entire cost of control and could not recover control costs through price increases on their products. This analysis indicated that businesses in only two of thirty-nine standard industrial classification (SIC) codes were at risk of closing as a result of the burden of complying with the regulation. This analysis also indicated that the number of possible closures in those SIC codes is small (less than 3.4 percent). The EPA's economic analysis for the proposed rule is available for public viewing through the docket. This document is entitled, "Economic Impact Analysis of the Degreasing NESHAP," Docket No. A-92-39, Document No. II-A-14.

Comment: One commenter (IV-D-12) disagreed with the statement in the preamble that the economic impact would be minimal if the proposed NESHAP is promulgated. They felt that there would be a major impact as a result of owners and operators switching to aqueous cleaners and other alternative cleaning technologies due to the high cost and reporting burdens associated with the standards.

Response: The EPA's economic analysis did not quantify the impacts of switching from the use of halogenated solvents to aqueous or other alternative cleaning technologies. There is little stimulus to substitute halogenated solvent cleaning machines with aqueous cleaning machines or other alternative

cleaning technologies. This is because there would only be a small increase in annual costs associated with controlling existing machines and because businesses would generally be able to finance the necessary capital investments.

Comment: Two commenters (IV-D-20; IV-D-29) asked that the EPA evaluate the impact of the NESHAP on regulatory agencies and determine whether the cost of enforcement is worth the HAP reduction.

Response: The EPA believes that the halogenated HAP solvent reduction is worth the cost of enforcement on regulatory agencies. Under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq., information collection requirements in the proposed rule were evaluated. The only costs that regulatory agencies will incur are costs associated with the review of reported information. The annual cost incurred by regulatory agencies was estimated to be $1.5 million per year for the first 3 years. The regulatory agency cost of the regulation will decrease by approximately 50 percent after the first 2 years of implementation. These cost estimates include time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

2.5 PROPOSED STANDARDS

Comment: Several commenters (IV-D-09; IV-D-13; IV-D-27; IV-D-29; IV-D-30; IV-D-35; IV-D-50) discussed the complexity and flexibility of the proposed standards. One commenter (IV-D-09) commended the EPA for including multiple alternative methods for achieving MACT. Another commenter (IV-D-50) stated that they generally agree with the proposed standards for batch vapor degreasers and feel that they are appropriate. One commenter (II-D-13) requested that the EPA consider incorporating more flexibility into the proposed NESHAP to allow for advances in emission control technology for those operations that cannot be switched to aqueous cleaners and to encourage the development and use of new cost-effective emission reduction technologies. Specifically, the commenter

recommended that the EPA include a provision in the final rule that allows new equipment that is designed to meet or exceed the equivalent emissions limitation of the proposed standard.

Three of the commenters (IV-D-27; IV-D-29; IV-D-35) suggested that the EPA should reduce the flexibility of the rule. One commenter (IV-D-35) recommended that the EPA endorse a single preferred method of control for this source category, followed by acceptable alternatives that can be adopted by the source operator. Another commenter (IV-D-29) recommended requiring a freeboard refrigeration device or super-heated vapor, a biparting cover (batch cleaner only), and the automated parts handling system at a maximum speed of 3.3 mpm (10.8 fpm) (batch cleaner only) for all machines subject to this rule. One commenter (IV-D-27) recommended that the most effective control methods be identified as standard control requirements, with the stipulation that other options would be allowed if equivalency could be demonstrated.

Response: The EPA evaluated the relative benefits of a single compliance alternative or flexible alternatives. The EPA concluded that flexibility was warranted because this approach reduces owner or operator burden by allowing a facility to adopt the most cost effective control strategy for their specific situation. The high level of compliance flexibility found in the proposed rule has been increased in the final rule. The EPA included in both the proposed and final rule, a provision that allows new equipment that is designed to meet or exceed the equivalent emissions limit to comply with rule. The EPA has also added a means for owners or operators of solvent cleaning machines that do not have a solvent/air interface to determine compliance with the final rule. The EPA has also included additional control combinations in the final rule. The EPA retains the position of flexibility of compliance options in the final rule in order to promote innovation and to minimize the burden for owners and operators of existing halogenated solvent cleaning machines.

Comment: One commenter (IV-D-34) was concerned that the EPA has not sufficiently addressed the physical differences between the solvents generally used in degreasing: PCE, TCE, and MC. These differences can result in significant variances in emission rates. The commenter believes that the EPA's data were derived from tests using TCA and thus the NESHAP penalizes operations that use PCE and MC. The commenter pointed out that this discrimination is apparent not only in the emission limits, but in the requirements associated with SHV and freeboard refrigeration, which are more difficult to operate with PCE.

Response: The EPA used data from multiple HAP's (MC, PCE, TCA, and TCE) when looking at the efficiencies of the various controls. However, the EPA has not developed separate standards for different solvents in this rule. Based on available data, and as stated in the BID, the EPA concluded that halogenated HAP emissions are more dependant on operating parameters and control devices than on the solvent used.

The EPA has modified the requirements for SHV and FRD in the final rule. The SHV requirement has been changed to require the solvent vapor to be heated to at least 10 degrees Fahrenheit above the solvent's boiling point. The FRD requirement has been changed to require that the temperature, measured at the center of the air blanket, shall be no greater than 30 percent of the solvent's boiling point. The EPA believes that these changes will make the rule more sensitive to the differences between solvents.

Comment: One commenter (IV-D-18) requested that "Continuous web cold cleaning" be evaluated separately and emission limits or performance standards be developed for that subgroup. They based their request on their continuous web cold cleaning machines, which have PCE as a cleaning agent. Although they believe their existing emission controls reflect the best available emission control technology for their machines, they have emission levels two to three times higher than the proposed limits. Their cleaning machines are

covered, the entrance and exit openings are approximately 6 inches high, have an exhaust system, carbon adsorption beds, and air stripper for condensate from regeneration of carbon adsorber beds, and use squeegee rolls to remove residual PCE from sheet metal prior to exiting the cleaning chamber.

Response: The EPA acknowledges that the "continuous web cleaning process" fits the description for an existing in-line cleaning machine, covered under the halogenated solvent cleaner NESHAP. Under the final rule, owners or operators of existing in-line cleaning machines have the option of complying with the equipment standard in lieu of the emission limit. The equipment standard for existing in-line cleaning machines allows for four different control combinations in conjunction with work practices. The commenter (IV-D-18) can demonstrate compliance with the equipment standard through addition of appropriate controls (e.g., increased freeboard ratio, freeboard refrigeration device, superheated vapor) and by following appropriate work practices. The EPA has also changed the final rule to allow for alternative work practices to those delineated if equivalent control (e.g., use of squeegee rolls in lieu of parts orientation and drainage practices required for parts cleaning) can be demonstrated.

Comment: One commenter (IV-D-55) stated that all the solvent calculation procedures required by §§ 63.462, 63.463, and the test method of the proposed rule, should be modified to only address the use and/or emissions of halogenated solvents that are HAP's. The calculations should be corrected by adding a halogenated HAP concentration factor so that only the actual concentration of halogenated HAP solvent is accounted for.

Response: The calculations in the final rule have been clarified to indicate that only halogenated HAP solvent should be included. This was the intent of the proposed rule.

Comment: Two commenters (IV-D-29; IV-D-42) provided recommended control requirements. One commenter (IV-D-42) stated that freeboard chillers are a reasonable alternative to

increasing the freeboard ratio. This commenter suggested that freeboard chillers or carbon adsorber recovery mechanisms be added to the baseline option requirements in 63.462.

Another commenter (IV-D-29) recommended that existing and new batch vapor or in-line solvent cleaning machines meet all of the following control technology requirements:

(1) A cover that is fully closed at all times except when processing work in the degreaser. The cover shall be closed to the maximum extent possible when parts are being degreased.

(2) A freeboard ratio greater than or equal to 1.0.

(3) A vapor level control device which shuts off the sump heat if the vapor level rises above the height of the primary condenser.

(4) A device which shuts off the sump heat if the sump liquid solvent level drops below the height of the sump heater coils.

(5) When equipped with a lip exhaust, a CAD to which all solvent vapors must be routed.

Response: The EPA has not adopted the commenters' recommended language in the final rule. The EPA has determined that multiple compliance options are warranted for the halogenated solvent cleaning machine source category. These options accomplish an equivalent or greater level of control than suggested by the commenter. Further, the EPA has included operator training in the proposed and final rule to ensure that all operators are aware of and comply with the work practices required to limit emissions from this source.

2.5.1 Equipment Standards

Comment: One commenter (IV-D-49) stated that it is unlikely that an owner or operator will use the complex formulas for determining the net efficiency of multiple control techniques. In addition, the actual efficiencies of these control techniques is highly variable, making the actual emission reduction uncertain. The commenter added that the format of the standard, which includes equipment standards

coupled with work practices, is desirable, but very difficult, if not impossible, to enforce at the field level. Therefore, the commenter suggested that a 50 ppm HAP instantaneous fugitive emission control standard be added to the rule.

Response: The owner or operator that chooses to comply with the equipment standard is not required to calculate the net efficiencies of the multiple control techniques. The owner or operator is required to follow the work practices, basic design requirements, and ensure that the solvent cleaning machine is utilizing one of the control combinations listed.

It is true that the control efficiency of a particular control device can vary under different conditions and therefore there is a degree of uncertainty with the actual emission reduction that is achieved. However, the EPA has based the control efficiencies of the solvent cleaning machine controls on the best data available to the Agency.

The EPA regulatory analysis for the proposed equipment and work practice standards shows that these compliance options are technically effective and cost effective means of achieving halogenated HAP emission reductions. The monitoring section of the rule contains the parameters that must be monitored to ensure the proper functioning of these controls. The EPA believes that these monitoring procedures are neither complex nor difficult to enforce.

The EPA has not set a 50 ppm instantaneous fugitive emission control standard for solvent cleaning machines in the final rule. The statutory authority under section 112 of the Act is performance based but allows equipment standards under the following conditions: (1) if the HAP cannot be emitted through a conveyance device, or (2) if the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations. The control technologies upon which MACT is based would result in different concentrations, depending upon a number of factors. The statutory basis of the standard is technology.

Furthermore, there is insufficient data to derive accurate and/or appropriate concentrations for each of the halogenated solvent cleaner subcategories.

Comment: Two commenters (IV-D-31; IV-D-40) stated that covers should be used during both idling and downtime. One commenter (IV-D-31) recommended that section 63.462(d)(1) be revised to say:

> "The cover(s) to each solvent cleaning machine shall be closed during the idling mode, and during the downtime mode unless either the solvent has been removed from the machine, or maintenance is being performed which requires the cover(s) to be open."

Response: The EPA reevaluated the control combinations between proposal and promulgation based on information received. During this evaluation, the EPA concluded that there is nothing that would prohibit an owner or operator, who is already required to use a cover during the downtime mode, from using the same cover during the idling mode. Therefore, the EPA has amended the final rule to clearly require that the cover or equivalent (includes RRD) shall be in place during the idling mode.

Comment: Two commenters (IV-D-38; IV-D-42) were concerned about the overlap between the NESHAP and existing State programs. One commenter (IV-D-38) stated that the proposed national standards do not include the concept of total enclosure and CAD recommended to the commenter by the Connecticut Department of Environmental Protection. Another commenter (IV-D-42) stated that many solvent cleaning machines in their State have installed CAD systems as BACT to meet State requirements. They felt it would be punitive to require additional controls when these systems control emissions effectively.

Response: Carbon adsorbers have been added to the control combinations in the equipment standard. In addition, enclosures are included in the final rule as a means of achieving RRD. All the control combinations in the equipment standard have been calculated to achieve the MACT level of

control. A CAD or an enclosure alone do not achieve the MACT level of control. However, an owner or operator complying with the alternative standard emission limit is not required to install any specific piece of emission control equipment. If the owner or operator demonstrates that their cleaning machine meets the limit using only a carbon adsorber, then they need not install additional equipment.

Comment: One commenter (IV-D-40) stated that several of the proposed equipment options are not reasonably available to existing cleaning machines. For example, if it is not possible to retrofit batch vapor cleaning machines with super-heated vapor systems, four of the seven equipment options proposed for existing large and very large batch vapor cleaning machines would be unavailable. Further, the design of some in-line cleaning machines limits how much the freeboard ratio can be extended.

Response: Vendors of SHV technology have indicated to the EPA that SHV is currently available for retrofitting onto existing solvent cleaning machines. However, the EPA acknowledges that some of the equipment control options in the rule are not practical for retrofitting to some existing cleaning machines. For this reason, the EPA adopted a number of equipment options, and provided the idling emission limit and the overall solvent emission limit standard with which an owner or operator can choose to comply.

Comment: Two commenters (IV-D-21; IV-D-31) recommended that the language in § 63.462(d)(9) be changed to allow alternatives to the maintenance practices recommended by the equipment manufacturers, provided that the alternatives achieve the same result as the manufacturer's recommendations.

Response: The rule allows the use of maintenance practices other than those recommended by the equipment manufacturers provided that the owner or operator can demonstrate, to the satisfaction of the Administrator, that the same or better results are obtained.

Comment: One commenter (IV-D-41) supported the inclusion of batch cold cleaning machines in the regulation, provided that they meet the requirements of South Coast Air Quality Management District's (SCAQMD's) Rule 1122. Rule 1122 requires for batch loaded cold cleaners that have:

(1) A freeboard ratio of at least 0.5 if they use low volatility solvents; or

(2) A freeboard ratio of at least 0.75 if they use high volatility solvents or a water cover over the surface of the solvent if the high volatility solvent has low solubility in water.

Response: The EPA acknowledges that additional equipment options should be included in the final rule to account for those batch cold cleaning machines for which a water cover over the surface of the solvent is impractical. The EPA has included a freeboard ratio of 0.75 and a cover, and remote-reservoir and a cover equipment options in the final rule. Work practice requirements have also been added for these alternatives.

Comment: One commenter (IV-D-31) requested that the rule allow the State, as well as the Administrator, to approve equivalent methods of control.

Response: The General Provisions define the Administrator as "the Administrator, or delegated authority." It is maintained in the final rule that the EPA retain the authority to choose whether to delegate the authority for this rule to the State. The EPA has clarified in the final rule that the Administrator will retain the authority to approve of equivalent methods of control. Section 112(l) of the Act states that a program submitted by a State under this subsection may provide for partial or complete delegation of the Administrator's authorities and responsibilities to implement and enforce emissions standards and prevention requirements but shall not include authority to set standards less stringent than those promulgated by the Administrator.

2.5.2 Idling Standards

Comment: Two commenters (IV-D-34; IV-D-40) stated that the EPA had limited data for setting emission limits. One commenter (IV-D-40) stated that setting a reliable idling emission limit for an in-line cleaning machine, with no available test data, is difficult. One commenter (IV-D-34) stated a concern that there is a lack of test data to support the EPA's conclusions and that the proposed limits may be difficult to attain.

One commenter (IV-D-40) stated that the idling emission limits were determined by mathematical calculations, and do not reflect actual reductions. The commenter stated that the idling emission limit for batch vapor cleaning machines should be somewhere between the 0.4 kg/m^2-hr (0.08 lb/ft^2-hr) (based on the available test data) and 60 percent of that figure, or 0.24 kg/m^2-hr (0.05 lb/ft^2-hr). The commenter stated that this emission limit should be verified with test data, and recommended that this limit also be used for in-line cleaners.

Response: The EPA acknowledges that limited data were available to establish this level. The idling emission limit, was calculated by first determining the maximum idling-mode emission reduction that is achieved by the MACT controls. This is 70 percent control for all solvent cleaning machines. The uncontrolled idling-mode emission rates, 0.73 kg/m^2-hr (0.15 lb/ft^2-hr) for batch vapor cleaning machines and 0.34 kg/m^2-hr (0.07 lb/ft^2-hr) for in-line cleaning machines, were then multiplied by one minus the maximum idling-mode emission reduction (i.e., 0.3). For batch vapor cleaning machines, the idling limit is 0.22 kg/m^2-hr (0.045 lb/ft^2-hr). For in-line cleaning machines, the idling limit is 0.10 kg/m^2-hr (0.02 lb/ft^2-hr).

The sixty percent reduction referred to by commenter IV-D-40 is the overall emission reduction, not the reduction in idling emissions.

Comment: Six commenters (IV-D-20; IV-D-27; IV-D-29; IV-D-30; IV-D-33; IV-D-35) stated that the EPA should

eliminate the option for an idling emission limit because it would be difficult for a regulatory agency to implement and even more difficult to enforce. Several commenters (IV-D-20; IV-D-29; IV-D-30; IV-D-33; IV-D-35) stated that more practical procedures are available, such as limiting emissions or applying specific control technologies, that still meet the goals of the title III program. Another commenter (IV-D-27) stated that it is very difficult to document idling emissions from solvent cleaning machines. The commenter noted that the total emission rate limitations are much easier to monitor on an ongoing basis.

Response: The EPA has maintained the idling emission limit in the final rule. The EPA believes that the idling emission limit is as practical to enforce as the equipment standard. Under the idling emission limit, the facility/vendor completes a one-time idling test to establish the equipment parameters that will be monitored and to establish the frequency of monitoring. One test can be used for all vendor and/or facility cleaning machines that have the same model design, solvent vapor/air interface, and controls. Once the test report is approved by the Administrator, the owner or operator conducts monitoring of the equipment specified in the report to determine compliance. Enforcement is conducted by ensuring that the proper controls are maintained, operated, and monitored. Therefore, the enforcement of the idling emission limit and the equipment standard are very similar.

The EPA does not require that an owner or operator comply with the regulation using the idling emission limit. An owner or operator can choose to comply through the equipment standards or the alternative overall solvent emission standard. The idling emission limit is maintained as an option to add flexibility to the rule and to encourage innovation and pollution prevention.

Comment: Two commenters (IV-D-33; IV-D-49) stated that the idling emission limit is impractical to measure and

enforce. However, one commenter (IV-D-33) supported the EPA's objective to provide an option for existing sources to demonstrate compliance with the minimum federal MACT requirements with existing controls. Both commenters (IV-D-33; IV-D-49) suggested that one alternative approach to the idling emissions limit would be to specify a health-based fugitive halogenated solvent emission limit, such as a 50 ppm limit measured 1 cm from the edge of the degreaser tank. One commenter (IV-D-49) stated that the fugitive emission limit should not be exceeded at any time on an instantaneous basis. If the limit cannot be achieved with an effective freeboard ratio and a freeboard refrigeration device, then a lip-type local exhaust system and carbon adsorber should be required. The commenter added that this fugitive emission limit should also apply to batch cold cleaning machines using halogenated solvents. The commenters (IV-D-33; IV-D-49) stated that this fugitive emission limit can be easily measured by an inspector.

Response: The EPA has not adopted a health-based fugitive emission limit as an alternative in the final rule. The EPA is required to set MACT based on the evaluation of control levels that are achievable by a source. The statutory authority under section 112(d) of the Act is performance based but allows equipment standards under the following conditions: (1) if the HAP cannot be emitted through a conveyance device, or (2) if the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations. A risk based format is not practicable due to technological and economic limitations. Furthermore, there is insufficient data available to set performance based fugitive HAP concentration limits for this source. A residual risk assessment will be performed at a later date under the authority of section 112(f) of the Act.

Comment: One commenter (IV-D-31) requested that the EPA amend § 63.462(b)(1)(iii) of the proposed rule to allow idling emissions of 0.5 kg/m^2-hr (0.03 lb/ft^2-hr). The commenter

also suggested that the EPA amend § 63.462(c)(1)(ii) and (c)(2)(ii) of the proposed rule to allow idling emissions of 1.0 kg/m^2-hr (0.2 lb/ft^2-hr). The commenter stated that the proposed idling emission limits appear to be unachievable for both open-top and conveyorized cleaning machines.

Response: The commenter supplied no information or data to support this statement. Therefore, the EPA is unable to reevaluate or make suggested changes to the idling emission rate limits. As discussed previously, an owner or operator is not required to meet these limits. An owner or operator can choose to comply with this rule through the equipment standard or overall solvent emission limit. The idling emission limits are maintained as an option that would allow for new/compliant control equipment not specified in the equipment standard control combinations.

Comment: Two commenters (IV-D-50; IV-D-56), representing the same company, stated that controlling idling emissions will not guarantee that solvent emissions are low. One commenter (IV-D-50) stated that when parts are free draining and production volume is low, solvent emissions can be adequately controlled by reducing air movement, automating parts movement, and proper operation. The commenter pointed out that when parts are not free draining and production volumes are high, the dragout losses must be controlled. The commenter reasoned that the idling emission limit, which only controls idling emissions, would not effectively control dragout losses. As an alternative, the commenter suggested that if dragout losses exceed a certain amount (e.g. 227 kg/month [500 lb/month]) then the elimination or minimization of dragout using a SHV system should be required.

The other commenter (IV-D-56) stated that as currently written, a solvent cleaning machine meeting an idling emission rate of 0.151 kg/m^2-hr (0.031 lbs/ft^2-hr) could use an unlimited amount of solvent. The commenter recommended two ways to correct this "loop-hole" in the idling emission limit:

(1) Limit the working hours of the solvent cleaning machine as part of idling emission compliance, or

(2) Remove the idling emission limit and rely on the alternative standard for low end users of solvent.

Response: The EPA has not required SHV for all owners or operators cleaning parts that are not free draining or with high production volumes and has retained the flexibility of the proposed rule. Super-heated vapor is offered as one of the controls in the equipment standard and could be used to comply with the alternative standard.

The EPA acknowledges that only idling emission losses are controlled by the idling controls (e.g., cover, increased freeboard ratio, freeboard refrigeration device); however, the idling standard alternative includes work practice requirements to limit other losses, such as drag-out losses. The regulation does not ignore the amount of dragout and production. In the equipment standard, dragout is addressed by requiring a hoist at a regulated speed, the proper racking of parts so that solvent drains freely, the dwell control option, and the SHV control option. The ban on the cleaning of materials such as sponges, fabric, wood, and paper addresses carryout emissions. In the equipment standard, the amount of production was taken into account when developing the operating schedules that were used to calculate the overall emission reduction efficiency of the control combinations. Dragout is addressed in the idling standard by the following provisions: (1) Requiring a hoist at a regulated speed and work practices, such as the requirements for the proper racking of parts so that solvent drains freely; (2) the requirement that all condensation and dripping must stop before the part can be removed from the freeboard area; and (3) the requirement that materials such as sponges, fabric wood, and paper shall not be cleaned in the solvent cleaning machine.

In order to meet the alternative standard's limit, the owner or operator would probably need to reduce carryout

losses. The alternative standard is based on a 2 hour working schedule 365 days a year, and therefore addresses production volume.

Idling Test Method

Comment: One commenter (IV-D-50) stated that the 16 hour idling emission test may not necessarily be accurate. The commenter stated that they have conducted hundreds of slant inclinometer tests on dozens of different types and sizes of solvent cleaning machines over 15 years, both in the idling mode and during working. The commenter found that the results of the tests could vary widely due to the following factors:

1. The temperature in the immersion sump will fluctuate with room and condensing coil temperature.

2. The amount or rate of boiling can change significantly and rapidly, especially in a steam heated solvent cleaning machine. Fluctuations in voltage can affect electric sump coils. If the boiling rate is high, the presence of more vaporized solvent in the boiling sump will raise its apparent level. Also, as boiling rate increases, more vapor is present in the vapor zone.

3. One hundred and eighty-nine liters (50 gallons) of TCE, if heated or cooled 10 degrees, represents a change in volume of 1.23 liters (0.325 gallons) or 1.8 kg (4 lbs) from vaporization/condensation. This change can occur in the non-boiling sump. This change either doubles the apparent loss, or perhaps eliminates it entirely, depending on whether the temperature is increased or decreased.

4. Condensing temperatures can vary, causing significant variations in the amount of solvent vapor in the vapor zone.

Any vapor volume change will alter the amount of liquid that seems to be in the liquid sumps. The commenter stated that in order to use the idling emission test recommended by the EPA, it is necessary that room temperature, rate of heating, cooling temperature and barometric pressure remain constant. The commenter believes that slant inclinometer tests are useful, but one must record room temperature, steam

pressure, sump temperature, voltage, cooling temperatures, and barometric pressure.

Response: The EPA acknowledges that the results of an idling emission test could be affected by the operating parameters under which the test is conducted. The EPA does not think it is unreasonable to require owners or operators of tested cleaning machines to maintain measured parameters relatively constant. The EPA has, therefore, maintained the use of a slant inclinometer in the idling emission test.

Comment: Two commenters (IV-D-31; IV-D-34) had the following comments on the proposed test method:

(1) One commenter (IV-D-31) requested that the test method clearly state that the idling emission rate is determined with the cover(s) in place.

(2) One commenter (IV-D-31) requested that EPA's test method 307 should allow use of any suitable tubing, and not require the use of Teflon tubing because it refers to a specific product and company.

(3) One commenter (IV-D-31) requested that the EPA change section 3.4 of Method 307 in appendix A from "(check with manufacturer)" to "(it may be helpful to check with manufacturer)" because of the mandatory nature of the appendix, which would require the tester to check with the manufacturer each time the test was performed.

(4) One commenter (IV-D-34) stated that Method 307 could be made more flexible by allowing the use of a sight glass or sample profile thief, in lieu of incline level indicators, for determining sump liquid levels. The commenter (IV-D-34) also stated that the principle behind the calculation employed in Method 307 could be summarized to aid in clarity.

(5) One commenter (IV-D-40) was concerned that the proposed Test Method 307 may allow TCE and MC to reach explosion limits and would increase worker exposure.

Response: The EPA has not delineated conditions for which a cleaning machine is tested. The conditions are to be determined by the user. The tested conditions, if determined

to be compliant, are then required to be maintained. The final rule requires that all batch vapor cleaning machines have a cover or equivalent in place during the idling mode. Therefore, it would be a violation of the rule if the cover was not in place during the idling test. The EPA has modified the test method to allow for the use of tubing material that will not react with solvent and does not allow solvent vapors to permeate the tubing material, which allows the use of Teflon®.

The EPA did not intend that a tester should be required to check with a manufacturer each time the idling test was performed. Therefore, the phrase "check with manufacturer" in Method 307, appendix A, was revised to read, "it may be helpful to check with the manufacturer."

The EPA would allow for the use of a sight glass or sample profile thief, in lieu of an incline level indicator if the owner or operator demonstrates to the Administrator's satisfaction that these measuring devices are equivalent.

The EPA does not agree with the commenter's concern that the proposed method may allow levels of TCE and MC to reach explosion limits or increase worker exposure. No data were supplied to support this claim. The cleaning machine is run under normal operating conditions. Explosion limits are no more likely to be reached than during normal idling conditions. Furthermore, both MC and TCE have nonexplosive nonflammable properties. Worker exposure is no greater under test conditions than under normal idling conditions. In fact, worker exposure during the idling test is likely to be less than during normal working conditions.

Comment: Three commenters (IV-D-06; IV-D-31; IV-D-40) requested clarification on the provisions for demonstrating compliance with the idling standard. Two commenters (IV-D-06; IV-D-40) commented on the compliance requirements for the idling standards. One commenter (IV-D-06) stated that § 63.467(c)(3)(i) of the proposed rule indicates that the test

must be performed on the same model cleaner as the one at the source, whereas § 63.467(c)(3)(iv)(A) of the proposed rule states that the vendor must supply a statement that "the unit tested is the same as that for which the report is being submitted." The intent of the rule should be clarified to state whether each machine must be tested or whether it is sufficient for the vendor to perform testing on each model. Two commenters (IV-D-34; IV-D-40) stated that the time and frequency of idling compliance testing was unclear. One commenter (IV-D-40) felt it was not clear in the preamble and proposed regulations whether the idling emission rates proposed can be met and how often, or in what manner, operators would be required to demonstrate compliance.

One commenter (IV-D-40) recommended that the EPA simplify the requirements for compliance with the idling emission limit, stating that separate EPA approval of monitoring parameters and frequency appears unnecessary. The commenter stated that vendors may be unwilling to provide a statement to an operator based on vendor data that demonstrates compliance with the idling emission limit without testing the actual equipment, rather than a similar model. Two commenters (IV-D-31; IV-D-34) stated that the EPA should clarify whether the idling mode emission test is a one-time test or whether subsequent testing would be required.

One commenter (IV-D-31) suggested that the EPA allow an idling emission test report from persons or companies other than the vendor [e.g., private testing organization, manufacturer (who may not be the vendor), another company that runs the same model of machine] as an acceptable report. The commenter suggested that the EPA amend § 63.467(c)(3)(i) of the proposed rule by deleting the phrase "the vendor of that solvent cleaning machine," and simply say "others."

Response: The EPA's intent was to allow for the vendor or other third party to perform testing on each of their models. The vendor or other third party could then supply the test results to the owner or operator of a compliant model.

The EPA has clarified in the final rule that the idling emission test report can be performed by persons or companies other than the vendor.

The idling compliance test is a one-time test. Compliance thereafter is determined by monitoring the control parameters that need to be maintained to demonstrate continuous compliance, by keeping records of this monitoring, and by submitting the appropriate reports. A control device monitoring report is required beginning one year after the compliance date. The idling compliance test is to be kept on-site for the lifetime of the cleaning machine. Records of control device monitoring are to be maintained on-site for 5 years. The EPA reserves the right to approve monitoring parameters and the monitoring frequency used to determine compliance with the idling emission limit.

A guidance document to the final halogenated solvent cleaner NESHAP is currently being prepared to aid owners or operators of halogenated solvent cleaning machines in complying with the rule. This guidance document should further assist an owner or operator to comply with the idling emission limit.

Comment: One commenter (IV-D-04) pointed out that the units of the standard are in kilograms/square meters-month (kg/m^2-month) while the equations presented in § 63.464(b) yield emission rates in kilograms of solvent/month (kg/month). The commenter (IV-D-04) suggested that the equation be corrected in the regulation to be consistent with the units of the standard.

Response: The EPA has modified the equation that appeared as equation 1 in the proposed rule to be consistent with the units of the limits that were listed in table 2 of the proposed rule. Specifically, the EPA has divided the right side of the equation by the solvent-air interface area of the cleaning machine (m^2 [ft^2]). The EPA has also modified the equation that appeared as equation 3 in the proposed rule to be consistent with this change.

Comment: One commenter (IV-D-04) stated that equation 307-4 yields an emission rate in grams per cubic meter per hour (m^3/hr), while the emission limit standard is in terms of kilograms per hour per square meter of solvent/air interface (kg/m^2-hr). The commenter (IV-D-04) suggested that this discrepancy be corrected.

Response: The EPA has modified equation 307-4 of the proposed rule so that the units of E are in kg/m^2-hr (lb/ft^2-hr). This makes the equation consistent with the idling emission limits in the standard.

2.5.3 Work Practices

Comment: One commenter (IV-D-54) stated that, to avoid duplication or conflicting requirements, the EPA should either coordinate waste-related issues associated with this rulemaking with expected RCRA decisions, or delete § 63.462(d)(11) of the proposed rule, which requires the waste to be stored in closed containers.

Response: The requirements under RCRA are applicable only to those facilities that are required to obtain a RCRA permit. Not all facilities using halogenated solvent cleaning machines are required to obtain a RCRA permit. Therefore, the requirements in § 63.462(d)(11) of the proposed rule were included to ensure that all owners or operators of solvent cleaning machines handle their solvent wastes properly. These requirements are consistent with the RCRA requirements and have not been removed from the rule.

2.5.3.1 Operator test

Comment: Several commenters (IV-D-20; IV-D-29; IV-D-31; IV-D-33; IV-D-35; IV-D-46; IV-D-54) questioned the enforceability of and need for the operator test in § 63.462(d)(10) of the proposed rule. One commenter (IV-D-46) listed the following problems with the operator test:

(1) A disgruntled employee could purposely "flunk" the test and put the company in violation and subject to fines.

(2) The test method is not specified (oral, written or other).

(3) If the test material is presented in a manner that is inconsistent with the training an employee was given, then the employee could fail the test and place the company in violation and subject to fines.

(4) The consistency of application of the operator test seems very subjective and dependant on the inspector.

Two commenters (IV-D-31; IV-D-33) suggested deleting the EPA's proposed operator test. One commenter (IV-D-31) provided the following reasons:

(1) The test is not identified;

(2) They do not train "all operators" or train them to use "solvent cleaning machines." They train their operators to use the specific machine(s) they will be operating.

(3) An employer does not have control over each employee's ability to answer questions on a particular test at a particular moment.

(4) There will not necessarily be a link between the elements of the test, and the work practices required by the rule. For example there may be no need for any specific employee using the machine to know how to do the dwell calculations.

(5) The number of employees that operate a solvent cleaning machine could be anywhere from 10 to 100 and it could be cost-prohibitive to train them all. The operators of a cleaning machine only need to know how to operate the machine with properly functioning control devices. Lessors, supervisors, engineers, or maintenance workers would need to know how to conduct the required tests to verify that the control devices are functioning properly.

(6) The commenter was concerned that the EPA had not described how it would assure that the test was "a good one."

One commenter (IV-D-36) stated that, since different individuals may be familiar with different aspects of the solvent cleaning machine operation and monitoring, the EPA should allow the different sections of the test to be taken by different individuals.

One commenter (IV-D-21) requested that § 63.462(d)(10) of the proposed rule be revised to reflect that the machine operator, not necessarily the owner, must be familiar with the required work practices for that equipment. The commenter also indicated that the content of the "test" supplied and administered by an inspector is not defined. The commenter pointed out that the preamble stated that the "operator qualification test" would include such information as the "method for calculating correct work practices." The commenter argued that the cleaning machine operator may understand the procedures and work practices without needing to understand the methodology for determining such parameters. The commenter recommended that compliance with the work practice standard, or operator qualifications, be determined through visual observation of the operator while performing the work practice standards.

One commenter (IV-D-35) recommended that the operator test be replaced with a provision that requires copies of operating and maintenance instructions be located at the cleaning machine. Another commenter (IV-D-54) recommended replacing the operator test with a requirement for annual training of operators. The commenter (IV-D-54) recommended placing the following wording in § 63.467 (e)(2) of the proposed rule "...all operators of solvent cleaning machines have received training on the proper operation of solvent cleaning machines and their control devices." The commenter (IV-D-54) stated that the training records and documentation could be maintained at the site and kept available for inspection by the EPA.

Response: The EPA has maintained the operator performance test. The EPA concluded that the intentional failure of the operator test by a solvent cleaning machine operator would be rare and could be contested by the owner of the solvent cleaning machine. This test is a basic test, which an employee given basic training in the operation of the solvent cleaning machine should be able to pass. The final

operator test does not require that an operator of a solvent cleaning machine know how to perform the dwell calculations or other methods for calculating correct work practices. Nothing in this rule precludes the owner or operator from posting the requirements or even the completed test - in the view of all employees. This sign would only need to be covered during the actual testing process.

The EPA has included the actual operator test and answers in the final rule. The EPA believes that the operator test is effective because it includes questions that, if answered correctly, demonstrate an operators knowledge of the proper operation of their particular cleaning machine. Proper operation means operating the cleaning machine in such a way as to minimize halogenated HAP emissions, as specified in the rule. Only those work practices essential for an operator to know are included in the test. It is not necessary to include two different tests. The final rule clarifies that the halogenated solvent cleaning machine operator, and not necessarily the owner, must be familiar with the required work practices for that equipment. The EPA does not believe that visual observance of an operator while performing work practice standards is sufficient to determine whether an operator knows the required work practices.

The EPA considered a number of options to determine compliance with work practices. Operator training in adjunct to labels specifying work practices, and the potential for on-site inspections and testing was determined to be the best means of achieving such a determination.

Comment: One commenter (IV-D-51) stated that the operator qualification test should be administered during in-house training classes rather than during inspections. The commenter stated that if the test is administered at the end of the training class, the test results would provide valuable feedback to the instructor on the effectiveness of the training. The commenter recommended that the training should

consist of an initial training class, followed by annual refresher training.

Response: The owner or operator may administer an operator test during in-house training classes. However, the EPA does not require these classes and an operator would still be required to take the test during inspections. The EPA considered annual testing; however, it was determined that this testing would be too burdensome on owners or operators. The EPA concluded that in-house training was already in-place. The EPA believes that the best method for the EPA to determine compliance without excessive burden to an owner or operator is to test during inspections.

2.5.3.2 Other work practices

Comment: One commenter (IV-D-27) questioned whether the small solvent savings from the solvent transfer requirements in § 63.462(d)(8) of the proposed rule outweighed the costs. The commenter stated that the cost of replumbing would be a significant investment for smaller sources.

Response: The proposed requirements do not require sophisticated plumbing. The solvent transfer requirements only require that solvent be transferred using leakproof tubing and that the solvent is removed or added below the liquid surface. This requirement is in place to avoid solvent losses due to leakage, spills, and splashing.

Comment: One commenter (IV-D-35), in reference to the spraying operations requirements, requested that a statement similar to the following be added to § 63.462 (d)(3) of the proposed rule: "the machine be devoid of any flushing wand which produces any VOC droplets or mist or which delivers a stream of any VOC under a line pressure in excess of 15 pounds per square inch gauge."

Response: Provisions in the proposed and final rules are sufficient to limit emissions from spraying. The EPA has not added the commenter's suggested language to the rule because the commenter has not provided data that show that the additional emission reductions that would result from these

requirements would justify the added costs. However, nothing in this rule would preclude a State or regulatory agency from adding such a requirement.

Comment: Two commenters (IV-D-50; IV-D-54) commented on the requirement in the proposed rule for owners or operators to orient parts or rotate them so that solvent drains properly. One commenter (IV-D-54) stated that the requirement in § 63.462(d) of the proposed rule to tip or rotate parts before removal from the machine may be difficult to implement on certain existing equipment without major modifications. Another commenter (IV-D-50) stated that, even with proper racking and/or rotation, some parts require the use of SHV to reduce the carry out of solvent.

Response: Owners or operators that find the tipping and/or rotating of parts to be difficult or impractical to incorporate into their cleaning operations, may either apply to the Administrator for alternative requirements or choose to comply with the alternative standards. There are several methods of reducing carry out emissions in the rule. Superheated vapor is one of these.

2.5.4 Overall Solvent Emission Limit Standard

Comment: Several commenters (IV-D-06; IV-D-12; IV-D-20; IV-D-30; IV-D-32) voiced concern that the alternative standard may allow some facilities to avoid emission control completely. They stated that a facility could install a large number of solvent cleaning machines with no controls and limit their individual hours of operation on each machine. They would then be in compliance with the standard, without controlling emissions. One commenter (IV-D-06) stated that the value of uncontrolled solvent cleaning machines will significantly decrease after promulgation of this NESHAP and could therefore be purchased cheaply. While this approach would result in an increase in operating costs, it could provide short-term savings due to the lower capital investment.

Another commenter (IV-D-30) stated that the alternative standards should be removed. The commenter stated that the alternative standard is too complex, requires too much effort to show compliance, and it would allow companies to operate poorly for shorter periods rather than controlling emissions properly. The commenter reasoned that while reducing the number of options available to sources may inhibit some of their operating flexibility, this will be outweighed by increased clarity and better compliance with the standard.

As an alternative, several commenters (IV-D-06; IV-D-12; IV-D-20; IV-D-32) recommended that the overall solvent usage be expressed as a rate (i.e., tied to hours of operation of individual degreasing machines). Two commenters (IV-D-20; IV-D-32) recommended that facilities with emissions above a certain threshold value should be unable to choose the alternative standard. Another commenter (IV-D-12) stated that the emission limit could be based on work throughput.

Response: The EPA does not believe that industry would opt to use multiple cleaning machines to avoid regulation under this NESHAP. Such an approach would involve significant additional costs, such as the capital cost of the additional cleaning machines, the cost of the additional floor space, installation and maintenance costs, and utility costs. Even though the total working time of all the machines may be kept the same as before, the idling emissions and downtime emissions will increase, causing an increase in solvent use. This increased solvent usage could be a significant expense. In addition, the owner or operator would experience additional recordkeeping and reporting costs for the added cleaning machines. It seems unlikely that an owner or operator would go through such trouble and expense to avoid being regulated. In addition, if there were to be a demand for uncontrolled cleaners as the commenter suggests, the costs of these units would not likely "decrease significantly." This would only happened if an owner chose to buy a new compliant cleaning machine in-lieu of retrofitting their existing noncompliant

cleaning machine. Since retrofit capital costs are less than purchasing a new cleaning machine, this is an unlikely scenario.

The cost analysis, conducted by the EPA, shows that the rule will actually result in a cost savings for many owners or operators as a result of decreased solvent usage. Therefore, the alternative standard has not been changed.

Comment: One commenter (IV-D-60) recommended that the EPA provide an alternative standard for batch cold cleaning machines similar to the one that is provided for batch vapor and in-line cleaning machines in § 63.463 of the proposed rule.

Response: The EPA does not have sufficient data to establish an alternative standard emission limit for batch cold cleaning machines. The EPA requested additional information on batch cold cleaning machines in the proposed rule. No additional information was received that would assist the EPA in setting an emission limit for batch cold cleaning machines.

Comment: Seven commenters (IV-D-26; IV-D-27; IV-D-31; IV-D-34; IV-D-40; IV-D-50; IV-D-56) felt that the alternative standard emission limits were unreasonable. Four commenters (IV-D-26; IV-D-34; IV-D-40; IV-D-50) stated that solvent emissions are underestimated and larger machines are penalized by assuming that they are operated under the same schedule as smaller machines. Two commenters (IV-D-31; IV-D-40) recommended that the EPA establish per-shift emission limits for cleaners operating more than one shift.

One commenter (IV-D-50) stated that the emissions allowed by the alternative standard are no more than those from a cleaning machine that was idling for one month, thereby ignoring the volume of production and the number of shifts per day that the cleaning machine operates. Out of 20 cleaning machines they have built and that used the following controls: high freeboard, enclosure, automatic handling, parts rotation, a proper condensing system and/or freeboard cooling, no lip

exhaust, and SHV, only 4 could meet the 3-month rolling average limits. The commenter stated that if the 3-month rolling average limit was increased by 50 percent then nine of the cleaning machines would comply, if the limit was increased by 100 percent then 16 would comply. The commenter recommended that the 3-month rolling average emission limit be increased by 100 percent. The commenter offered to provide the EPA data on the size and emissions of the 20 solvent cleaning machines they studied, plus many more machines.

Another commenter (IV-D-56) from the same company stated that if the EPA doubled the alternative standard emission limit, 75 percent of the machines their company manufactures would comply. For example a 4.8 m^2 (52 ft^2) cleaning machine with a 1.0 freeboard ratio, enclosure, SHV, dwell, refrigeration device, automated hoist, and automatic rotation does not meet the proposed alternative standard. The cleaning machine emits solvent at a rate of 0.29 kg/m^2-hr (0.06 lb/ft^2-hr), which is double the proposed 3-month rolling average. The machine processes 1,864 kg (4,100 lbs) of parts per hour averaging 8 loads/hr and is run 16 hours per day. The commenter's concern was that the owners or operators of these machines would be needlessly subjected to excessive monitoring and testing requirements.

One commenter (IV-D-53) stated that their client's small (29" by 35" [0.74 m by 0.89 m]) open-top solvent cleaning machine does not meet the emission limit, despite having been recently permitted by the New Jersey Department of Environmental Protection and Energy (NJDEPE) for emissions of MC at a rate of 0.91 kg/hr (2 lb/hr). The cleaning machine operates 44-hours a week and emits as much as 2.34 kg/m^2-month (55.3 lb/ft^2-month), which exceeds the EPA proposed limit of 0.95 kg/m^2-month (22.49 lb/ft^2-month). The unit has a freeboard ratio of 0.75, cool-down coils, and a hoist with parts rotation.

Another commenter (IV-D-27) stated that several small degreasers which currently comply with their regulations on a

kg/m^2 basis had emissions in excess of the alternative standard. The commenter stated that some of the cleaners that exceeded the alternative standard were considerably smaller than 0.93 m^2 (10 ft^2), operated only one shift per day, five days per week, and used less than a ton of solvent per year.

One commenter (IV-D-34) stated that the alternative overall emission limits would:

(1) Effectively prohibit many operations utilizing large machines from considering this option.

(2) Penalize those operations that maximize the use of their existing equipment.

(3) Create an unnecessary barrier to increased production and business growth for those complying with this option.

Several commenters (IV-D-31; IV-D-34; IV-D-40) recommended that the EPA establish total emission limits that are based on the typical operating schedules and emissions of both batch and in-line cleaners. One commenter (IV-D-40) provided some recommended limits that provide a level of control comparable to that proposed by the EPA for MACT for all vapor cleaner subcategories. The commenter stated that they view the conservative assumptions used to calculate the proposed total emission limits as an unnecessary safeguard against deliberate under-utilization of equipment capacity, particularly for in-line equipment. The higher costs of large and very large batch vapor cleaners makes it unlikely that this equipment would be under-used unless warranted by the workload. Another commenter (IV-D-31) estimated that a hourly emission limit for working emissions should be two to four times the idling emission rate, or approximately 1.5 kg/m^2 (0.31 lb/ft^2 per working hour) for in-line cleaners.

Response: As stated in the preamble, it is expected that this alternate standard will be more difficult to meet for larger machines and machines operating for more than one shift or that clean parts with difficult configurations. It was not

possible to account for these variables when establishing alternative emission limits without making the alternative standard unenforceable or overburdensome.

When establishing the limits for the alternative standard, the EPA considered, but rejected, establishing a limit based on the number of hours or shifts operated. The EPA concluded that providing a limit based on the number of hours or shifts operated was unreasonable for several reasons. Since no capital cost would be involved, a limit per shift would encourage a facility to keep a machine "on" for longer periods, while cleaning no additional parts. A limit per hour or shift would also require that the owner or operator conduct additional reporting and recordkeeping to establish the operating schedule.

If a cleaning machine can not meet the alternative standard as operated, the owner or operator could install additional controls or employ better work practices to meet the alternative standard. Other compliance options, such as the equipment standard and idling emission standard are also available for situations where a cleaning machine cannot meet the alternative standard.

The overall solvent emission limit for batch vapor cleaning machines has been increased in the final rule. This is the result of removing the redundancy in control combinations. The final batch vapor solvent cleaning machine overall solvent emission limit is 150 kg/m^2-month.

Comment: Three commenters (IV-D-38; IV-D-41; IV-D-47) commented on the achievability of the standard. One commenter (IV-D-38) stated that the numerical emission limits are too stringent, unproven, and become effective too soon. However, no data were provided to support these statements. Another commenter (IV-D-47) stated that the emissions limits in the proposed regulations are not reasonable and would cripple or destroy their business. The company uses TCA and, despite controls on the cleaning machines, they still lose as much as two gallons per day per machine. The commenter asked that the

EPA reconsider the regulation until such time that suitable alternatives are available.

The other commenter (IV-D-41) was concerned about the alternative standards proposed in § 63.463 of the proposed rule, but was unable to comment at this time as to whether the emissions levels allowed in the NESHAP will meet SCAQMD's Rule 1401 for new or modified permit units. The commenter requested additional time and copies of the data that were used for the derivation of the emission limits so that they could conduct their own risk assessments to determine equivalency with SCAQMD's Rule 1401.

Response: If the owner or operator cannot meet the alternative standard, the owner or operator can choose to comply with either the equipment standard or the idling emission limit. The EPA has extended the compliance time from 2 years to 3 years to allow owners or operators additional time to determine the most efficient method for complying with the rule.

As requested, the EPA has sent commenter IV-D-41 the data that were used in the derivation of the emission limits. It should be noted that this background information is available to the public in the docket (Docket No. A-92-39). The comment period for the rule was not extended.

Comment: Five commenters (IV-D-06; IV-D-20; IV-D-29; IV-D-40; IV-D-46) discussed the equation presented in § 63.464(b)(3) of the proposed rule. Three commenters (IV-D-06; IV-D-20; IV-D-46) questioned the validity of the emission factor that is used in equation 2 in § 63.464(b)(3) of the proposed rule. One commenter (IV-D-06) stated that the emission factor is excessive because it provides a credit against emissions ranging from over one-third to nearly half of all solvent used in an effort to account for the solvent disposed as solid waste. The commenter stated that the emission factor is unnecessary because halogenated solvent wastes from solvent cleaning machine operations are regulated as hazardous wastes under RCRA and therefore must be

manifested and accounted for. Waste disposal records required under RCRA should be utilized in the NESHAP material balance. The weight of waste is a known quantity and should not be estimated as a fraction of solvent used. The solvent percent, by weight, of the waste should be based either on waste profiles required under RCRA or on a conservative emission factor.

One commenter (IV-D-46) stated that the use of one emission factor for all solvents is questionable because of the wide variety of solvents and cleaning requirements.

Two commenters (IV-D-29; IV-D-40) felt the approach for determining solvent loss was overly complicated. One commenter (IV-D-29) recommended that the test methods should include the following paragraph, if the EPA continues to keep emission limits in the rule:

> "(a) Each owner or operator of a batch vapor or in-line solvent machine choosing to comply with the requirements of the regulation through the emission limits shall demonstrate compliance with the applicable 3-month rolling average monthly emission limit on a monthly basis. Total solvent emissions can be calculated by material balance."

This paragraph would allow an owner or operator to develop their own approach for developing a material balance. Another commenter (IV-D-40) suggested that the formulas in this section should be simplified to make them more understandable.

Response: The EPA reviewed RCRA forms 8700-22 and 8700-22A and determined that the information required on these may not be detailed enough to determine the amount of solvent waste that is removed from a particular solvent cleaning machine. The forms request the quantity of the waste, but not the composition of the waste. For example, a barrel of waste solvent may contain a significant amount of the contaminants that were removed from the parts being cleaned. The forms do not request a breakdown of the content of the waste to that level of detail. In addition, the RCRA forms do not require that the specific sources of the solvent be listed separately.

The information must be for a specific cleaning machine if emissions are to be calculated for each cleaning machine.

However, the EPA acknowledges that an emission factor may not accurately estimate the amount of solvent that is contained in the solid waste for all types of cleaning operations. In addition, the EPA wants to provide each owner or operator the flexibility to choose the estimation method that is the most effective for their operations. Therefore, the EPA has removed the emission factor equation from the final rule, and has added provisions to the rule that allow the owner or operator to calculate the amount of solvent in the solid waste using Method 25d or engineering calculations.

Comment: Four commenters (IV-D-10; IV-D-26; IV-D-31; IV-D-40) stated that older machines may have difficulty achieving the solvent emission limit. The commenters stated that the proposed alternative standard emissions limit assumes that the same level of control can be achieved by installing control equipment on existing, older machines as can be achieved by applying control technology to new machines. The EPA should take the differences between new and existing equipment into account in formulating any alternative emissions limit, as well as in specifying control equipment options that are applicable to all machines. One commenter (IV-D-10) recommended a variable rate that would allow larger and older machines to use the alternative standard.

Response: As stated in the response to a previous comment, the EPA does not expect that every cleaning machine will be able to meet the alternative standard emission limit. This standard was established based on a limited operating schedule. The rule offers owners or operators of cleaning machines the additional flexibility to comply using the equipment standard or the idling emission limit. The EPA believes that a variable rate, allowing larger and older machines to use the alternative standard, would encourage owners or operators of these cleaning machines to continue to use otherwise noncompliant cleaning machines.

The alternative standard emission limits for in-line cleaning machines have not been changed. However, as discussed previously, the overall solvent emission limit for batch vapor cleaning machines has been increased in the final rule. The final overall solvent emission limit for batch vapor cleaning machines is 150 kg/m^2 month.

Comment: One commenter (IV-D-33) agreed that use of an emission limit provides an incentive for innovative emissions control strategies that limit solvent use. However, the commenter argued that the EPA should allow States to implement individual emission limits for each solvent. The commenter stated that the single monthly average does not reflect the relative toxicity of the variety of halogenated solvents being regulated.

Response: There is nothing in the NESHAP that would preclude a State from setting a more stringent standard for each halogenated HAP solvent being regulated. The NESHAP is based on the maximum degree of emission control for all the halogenated HAP solvents being regulated and does not reflect relative toxicity.

Comment: Six commenters (IV-D-27; IV-D-31; IV-D-40; IV-D-46; IV-D-47; IV-D-54) commented on the requirement to have only clean solvent in the machine before determining solvent consumption (§ 63.464(b)(1) of the proposed rule). Two commenters (IV-D-40; IV-D-46) stated that the requirement to empty and clean the cleaner every month seems to conflict with the EPA's waste minimization objectives. Two commenters (IV-D-06; IV-D-20) did not see the purpose for this requirement and recommended deleting the requirement.

One commenter (IV-D-31) stated that the EPA should not require unnecessary cleaning of solvent, and should add flexibility to the timing of determining that solvent is clean, and to the methods that may be used to clean solvent. The commenter suggested that the EPA require verification of "clean" solvent monthly, where if the solvent is still within acceptable specifications for use, it would not require

cleaning and that the cleaning methods not be limited to filtering, skimming, and/or distillation. The commenter suggested that the definition of "clean liquid solvent" be revised as follows:

> "Clean liquid solvent means fresh unused solvent or used solvent that has been cleaned of soils (e.g., skimmed of oils or sludge, strained of metal chips.)"

Another commenter (IV-D-37) stated that the period for calculating the average emissions under the alternative standard should be extended to avoid the necessity for premature solvent replacement.

One commenter (IV-D-37) stated that the solvent in large vapor degreasing machines at some airline maintenance facilities is replaced every three to five months, and that the proposed standard would require replacement of the solvent on a monthly basis, incurring an additional cost to the operator/owner. The commenter also stated that, with more frequent changes, total emissions would increase as a consequence of repeated draining, transportation, and disposal of only partially spent solvent.

One commenter (IV-D-46) stated that the cleaning machines at their facilities are emptied only when the solvent is "too dirty" to clean parts to specification. The commenter (IV-D-46) also stated that the more frequent solvent transfers required in this section of the rule will create additional labor and solvent costs.

One commenter (IV-D-54) stated that in § 63.464(b)(1) of the proposed rule the EPA should clarify that "clean solvent" means solvent that still retains adequate capacity to clean materials, rather than requiring replacement with fresh solvent. Another commenter (IV-D-27) stated that equation (1) in § 63.464(b)(2) of the proposed rule is confusing because "clean liquid solvent" would not generally be removed from the solvent cleaning machine.

Response: The EPA did not intend for "clean liquid solvent" to mean fresh unused solvent, and thereby require

solvent replacement. It was EPA's intention for "clean liquid solvent" to mean solvent that is free of soils as was specified in the proposed definition of "clean liquid solvent." This requirement is included so that the amount of solvent remaining in the tank is not overestimated due to accumulated soils. To avoid confusion, the distinction between "fresh unused solvent" and "clean liquid solvent" has been clarified in the final rule.

Methods of removing soils from the solvent include, but are not limited to, skimming, straining, and filtering. The definition of "clean liquid solvent" has been expanded, as recommended by commenter IV-D-31, to allow for the use of other methods for cleaning the solvent.

Some cleaning machines have screens in the sump bottoms that collect the soils. To clean the solvent with this type of system, the owner or operator would simply need to remove the soils on the screen.

Comment: Two commenters (IV-D-27; IV-D-54) stated that if separate emission factors are to be specified in equation 2 in § 63.464(b)(3)(1) of the proposed rule for small, medium, large and very large cleaning machines, the size cutoffs for those classifications should be defined at this point in the standard.

Response: The EPA has removed the terms small, medium, large, and very large cleaning machines from the final regulation. As discussed previously, the emission factors have been removed from the final rule.

Comment: Four commenters (IV-D-04; IV-D-21; IV-D-31; IV-D-54) discussed the timing of the monthly solvent emission calculation. Two commenters (IV-D-04; IV-D-54) recommended that in § 63.464(b) of the proposed rule the phrase "the first day of every month" be changed to "the first normal working day of every month." Two commenters (IV-D-21; IV-D-31) requested that the EPA change the timing requirement proposed in § 63.464(b) and (b)(1) from "on the first day of every month," to merely a monthly requirement.

Response: The phrase, "the first day of every month", in § 63.464(b) of the proposed rule, has been changed to, "the first operating day of every month."

Comment: One commenter (IV-D-28) suggested that since the NESHAP would regulate the emissions of halogenated solvents that are HAP's (per preamble page 58 FR 62566 and section 112 of the CAA), the standards in § 63.462(b)(1)(ii), (b)(2)(ii), (c)(1)(ii) and (c)(2)(ii) of the proposed rule should address the emissions of halogenated HAP's rather than non-HAP's. The commenter recommended that a HAP concentration factor be incorporated to correct the calculations required by § 63.463 of the proposed rule and the emissions calculation in Method 307 to account for actual HAP concentrations in halogenated solvent mixtures containing both HAP's and non-HAP's.

Response: The applicability section of the rule has been clarified by stating that only halogenated HAP solvents are regulated by the rule. The equations in the rule have also been clarified by indicating that only the halogenated HAP components of solvent blends should be included in the calculations.

Comment: One commenter (IV-D-21) stated that the quantity of solvent purchased in a given month will not necessarily reflect the solvent usage for a given cleaning machine. One commenter stated that they use a bulk solvent storage system for filling cleaning machines and that the pipe distribution system to the cleaning machines does not meter the amount of solvent added to each individual solvent cleaning machine. Both commenters (IV-D-21; IV-D-36) stated that a specific procedure for measuring solvent additions would need to be developed at most facilities in order to accurately calculate solvent emissions. One commenter (IV-D-21) stated that the development of such a procedure would result in greater compliance costs and additional recordkeeping methods than projected by the EPA. The commenter requested that the EPA revise the monthly

requirement to allow for quarterly facility-wide solvent consumption recordkeeping and reporting for those operations regulated under the final rule.

Response: The EPA does not consider the procedure for measuring solvent additions to be too burdensome to maintain as a monthly requirement. Monthly measurement is required for owners and operators complying with the overall solvent emission limit to monitor compliance.

The EPA has built flexibility into the regulation by including the equipment standard and the idling emission limits. Therefore, an owner or operator need not choose the alternative standards.

2.6 MODIFICATION AND RECONSTRUCTION CONSIDERATIONS

Comment: Two commenters (IV-D-33; IV-D-39) stated that 112(g) does not apply to area sources of HAP's, regardless of whether these sources are regulated under a § 112(d) MACT standard. One commenter (IV-D-39) stated that the preamble inaccurately stated that provisions for modifications and reconstructions are being developed under separate rule makings, and will be applicable to all halogenated HAP sources subject to the proposed regulations. The commenter suggested that the EPA develop definitions for "construction" or "reconstruction" under these regulated area sources for the final solvent cleaning MACT rule, and that any machine that has not been constructed or reconstructed must only comply with the existing source MACT as set forth in the standard.

Response: The EPA concurs that 112(g) does not apply to area HAP sources regardless of whether they are regulated under a 112(d) MACT standard and acknowledges that the proposal statement that states that provisions for modifications and reconstructions are applicable to all halogenated HAP sources was inaccurate. The NESHAP General Provisions were promulgated March 16, 1994. Section 63.5 of these provisions contain definitions and provisions for construction and reconstruction.

Comment: One commenter (IV-D-54) recommended that "new sources" be defined as those for which construction or reconstruction has commenced at least six months after promulgation of the final rule. This would be consistent with the EPA's grace period for new refrigerant recovery and recycle equipment under 40 CFR part 82, subpart F. A second alternative recommended by the same commenter was to create a special provision for solvent cleaning machines constructed between November 29, 1993 and the promulgation date. These two alternatives would avoid the danger of noncompliance with the final rule if it is more stringent than or significantly different from the proposed rule.

Response: The EPA has not changed the proposed definition of new source in the final rule. Under section 112, the Act specifically defines a new source. The proposed NESHAP definition for a new source is consistent with the Act's definition. There was insufficient reason to modify the proposed new source definition in the final rule. The rule has not been made more stringent since proposal.

2.7 MONITORING REQUIREMENTS

Comment: Many commenters (IV-D-21; IV-D-25; IV-D-32; IV-D-34; IV-D-35; IV-D-36; IV-D-40; IV-D-46; IV-D-51; IV-D-52) provided comments on the frequency of the procedures for the monitoring requirements. Seven commenters (IV-D-21; IV-D-25; IV-D-32; IV-D-34; IV-D-35; IV-D-36; IV-D-46) stated that the frequency of control device monitoring should be reduced. However, one commenter (IV-D-40) felt that the frequency was reasonable. The commenter stated that weekly visual inspection of biparting and manual covers would not impose a significant burden.

Eight commenters (IV-D-21; IV-D-25; IV-D-32; IV-D-34; IV-D-35; IV-D-36; IV-D-46; IV-D-52) expressed concern that the weekly monitoring requirements are excessive. One commenter (IV-D-25) suggested that other methods, such as shutting the sump heat off when the vapor level becomes too high or when the refrigerant becomes too warm would serve the same purpose

and would probably be more effective than the weekly monitoring of the air blanket and windspeed. Another commenter (IV-D-35) suggested that an educational program, illustrating the cost benefit of reducing solvent usage, coupled with limits on solvent usage, would provide greater emission reductions than weekly monitoring.

Two commenters (IV-D-21; IV-D-34) stated that the weekly monitoring requirements should be eliminated in lieu of monthly monitoring. Another commenter (IV-D-36) stated that the weekly monitoring for both the temperature of the air blanket and wind speed should be reduced to quarterly monitoring. The commenter added that if a solvent cleaning machine is moved, monitoring should be done at the new location to determine if the wind speed requirements are being met.

In lieu of weekly RRD monitoring, one commenter (IV-D-32) suggested that the EPA consider requiring an initial technical report outlining the procedure used to achieve the RRD parameters and annual testing and confirmation of the standard.

One commenter (IV-D-36) stated that monthly monitoring and recordkeeping for a cover is probably unnecessary since an operator will be constantly viewing the covers on his machine. The commenter also stated that a monthly or quarterly compliance test is unnecessary for dwell time on specific parts after the proper dwell time for a part is determined. Instead, monitoring of this requirement should be performed by the inspection test of each operator, which can be checked by quizzing an operator on the appropriate dwell times for the parts with which he or she works.

One commenter (IV-D-36) stated that monthly monitoring of hoist speed is probably too frequent, and suggested that rather than perform a test on the hoist, proper hoist speed should be part of the operator's work practices test. The commenter qualified that if the hoist has a fixed speed,

quarterly inspections of proper operation of the hoist would be sufficient to ensure continuing compliance.

Another commenter (IV-D-51) stated that the different temperature measurements required for the various emission control devices could be eliminated. The commenter stated that these parameters can be better controlled by installing thermocouples to measure the temperatures and interlocking them with the solvent cleaning machine's sump heating coil. The system would prevent the cleaner from operating if temperatures are not within required ranges. This would eliminate the expense of collecting and maintaining records and would offer greater environmental protection.

Response: Under section 114(a)(3) of the Act, enhanced monitoring and compliance certifications specifying whether compliance was intermittent or continuous is required.

The EPA reassessed the frequency of the monitoring requirements prior to promulgation. As a result of public comments and further review of the provisions, the frequency of monitoring was reduced for the RRD and hoist.

The final rule as with the proposed rule, requires monthly visual inspections of the covers. In the final rule, the temperature of the air blanket for freeboard refrigeration devices must still be measured weekly. If reducing the room draft by controlling room parameters, the windspeed measurements may be measured quarterly with weekly monitoring of the room parameters. If an enclosure is used to achieve RRD, the windspeed within the enclosure must be measured on a monthly basis. Any change in the parameters used to maintain windspeed would be an exceedance that must be reported to the Administrator if not corrected within 15 days. If a solvent cleaning machine is moved, monitoring should be done at the new location to determine whether wind speed requirements are being met at the new location.

The frequency of the monitoring for determining the hoist speed has also been reduced in the final rule. In the final rule, the measurements must be made on a monthly basis for the

first year, thereafter monitoring may be reduced if no exceedances have occurred. If the owner or operator can demonstrate to the Administrator that the hoist speed cannot exceed the required speed, then monitoring can be done quarterly without having to wait for one year of compliance. Again, if there is an exceedance, monitoring must be done monthly.

The EPA does not agree that the temperature measurements that are required in the rule are excessive or difficult to conduct. A thermocouple to measure the temperatures could be used to comply with the temperature measurement requirements as long as these temperatures are recorded and maintained. However, this would require a recorder that could make this measurement method costly.

The rule also allows an owner or operator to use an alternative monitoring procedure for control parameters if approved by the Administrator.

Comment: One commenter (IV-D-08) asked that the EPA withdraw the statement from section VI.H. of the preamble regarding aspects of the enhanced monitoring regulations under title VII since they are currently being discussed in another rulemaking, or modify this section according to the final enhanced monitoring rule under title VII (if available).

Response: The EPA refers interested parties to the enhanced monitoring rule notice for an updated discussion of this rule.

Comment: One commenter (IV-D-31) requested that when the EPA publishes the final rule, the EPA propose clear criteria limiting the Administrator's discretion to determine monitoring frequencies and allow a period of public comment on these criteria.

Response: The EPA is responsible for approving monitoring parameters and procedures that are contained in the sources' initial statement of compliance. In determining whether the parameters and procedures are acceptable, the EPA will consider the monitoring frequency specific to each

source. The EPA will only approve parameters and procedures that are at least as stringent as those required by the final rule. Therefore, the EPA does not plan on specifying criteria limiting the Administrator's discretion or provide for public comment on this matter, as requested by the commenter.

Comment: One commenter (IV-D-35) recommended that the EPA provide owners or operators with an approved list of alternative monitoring procedures. The commenter stated that this would reduce the need for the EPA to approve thousands of alternative monitoring plans submitted by owners or operators. The commenter stated that this would be helpful since the proposed rule requires the owner or operator to identify parameters within 30 days. The commenter suggested that the rule include a date by which sources must submit a monitoring plan to the EPA or designated agency for approval. The date after promulgation should be such that small sources have adequate time to comply.

One commenter (IV-D-31) requested that § 63.465(c) and (d) of the proposed rule allow alternative monitoring if the alternative procedures are approved by "the Administrator or the State," rather than "by the Administrator."

Response: The EPA provided provisions in the proposed and final rule that allow an owner or operator to use alternative monitoring procedures that meet the approval of the Administrator. The purpose of these provisions is to allow the owner or operator monitoring flexibility. It would be extremely burdensome for the EPA to compile a comprehensive list of approved alternative monitoring procedures, as suggested by the commenter. In fact, the EPA does not have adequate information to ensure that all possibilities would be included. Therefore, the EPA has decided not to provide such a list to owners or operators of solvent cleaning machines. However, monitoring requirements in the proposed and final rule were determined for individual controls and not for control combinations. If an owner or operator of a cleaning machine uses one or more of the controls contained in the

final rule in another combination, the specified monitoring requirements for that control would be the default monitoring requirement. The alternative monitoring procedures must be at least as stringent as those contained in the final rule.

The timeframe for submitting the initial statement of compliance has been extended from 30 days, as stated in the proposed rule, to 150 days in the final rule. This change was made because, upon evaluation, the EPA concluded that additional time was needed to compile and prepare this report.

The NESHAP General Provisions define the term "Administrator" to mean the Administrator or his or her delegated authority. Therefore, when the final rule refers to the Administrator, this term implies the State, if the State has been designated as the delegated authority by the EPA.

Comment: One commenter (IV-D-31) suggested that the EPA amend the specifications for measuring the temperature of super-heated vapor systems. The following were suggested as possible alternatives:

(a) The measurement of temperature should be taken at the point of super-heated vapors generation.

(b) The measurement of temperature should be taken where the parts will be located during cleaning.

(c) The EPA should allow a temperature "at least" 50 percent above the solvent's boiling point, rather than "precisely" 50 percent over the boiling point.

Response: The EPA has clarified that the measurement of the SHV temperature should be taken "at the center of the superheated vapor zone" in lieu of "at the center of the solvent-vapor zone," as proposed. This was chosen by the EPA over "at the point of super-heated vapors generation" to provide a more specific test because of the vagueness of the location of the "point of super-heated vapors generation." The center of the superheated vapor zone was considered the most practicable location because it is where SHV achieves emission control.

After reviewing the comments summarized above, the EPA contacted a vendor of SHV technology to obtain additional information on the proper operation of SHV systems. Based on the information received, the requirements for superheated vapor have been changed in the final rule to "at least 10 degrees Fahrenheit (5.5 degrees Celsius) above the solvent's boiling point."

Comment: One commenter (IV-D-31) stated that an exceedance of a monitored parameter should not be deemed a violation and requested that the EPA delete all references that indicate that exceedances are automatically violations. The commenter reasoned that some of the parameters and limitations that the EPA has set are not sufficiently achievable, and some are not supported by sufficient data. Further, the commenter stated that the EPA needs to clarify what qualifies as a violation.

Response: The EPA has clarified in the final rule which requirements, if not met, constitute an immediate exceedance and which requirements, if not met, allow 15 working days to correct the problem before it becomes an exceedance. An exceedance, in itself, is not necessarily a violation. The Administrator or delegated regulatory authority determines whether the owner or operator has committed a violation of the rule.

Comment: One commenter (IV-D-12) requested that the exact location of the temperature measurement be specified in the monitoring requirements for a FRD and SHV.

Response: As discussed previously, the EPA has amended the final rule to indicate that the compliance temperature measurement for SHV is to be taken at the center of the superheated vapor zone.

The EPA believes that the location of the FRD temperature measurement is clearly defined in the proposed rule. Therefore, the description of the FRD temperature measurement has not been changed in the final rule.

Comment: One commenter (IV-D-54) asked for more details on the information the EPA would require from owners/operators of solvent cleaners to demonstrate that the dwell time requirements are being met.

Response: In the proposed and final regulation, the EPA required that the owner or operator of a solvent cleaning machine demonstrate compliance with the dwell control technique by maintaining records of tests for determining appropriate dwell times for each part or parts basket typically cleaned.

An owner or operator of a solvent cleaning machine using a programmable hoist to achieve the proper dwell time could demonstrate compliance with the dwell requirement by submitting to the Administrator a record of the hoist program for each part/parts basket. Owners or operators complying with the dwell could also demonstrate compliance with the dwell requirement by submitting to the Administrator a table showing each part/parts basket and its appropriate dwell time.

Alternatively, the owner or operator may determine the maximum dwell time using the most complex parts type or parts basket, and then use this dwell time for all parts and/or parts baskets.

2.8 RECORDKEEPING AND REPORTING REQUIREMENTS

2.8.1 General

Comment: Eight commenters (IV-D-02; IV-D-20; IV-D-22; IV-D-29; IV-D-33; IV-D-42; IV-D-49; IV-D-52) were concerned about the complexity and costs of the reporting and recordkeeping requirements in § 63.467 and § 63.466 of the proposed rule. One commenter (IV-D-02) stated that a large number of the affected small facilities will not be aware of their obligations under this rule. Three commenters (IV-D-02; IV-D-20; IV-D-29) suggested that the EPA develop an explicit implementation plan and "user-friendly" reporting and monitoring forms prior to promulgation. One commenter (IV-D-02) also suggested that a database be created of the known affected facilities (including their addresses) and that

they should be notified of their obligations by mail. One commenter (IV-D-52) requested that the EPA look at less costly reporting requirement alternatives. Another commenter (IV-D-42) requested that the recordkeeping and reporting requirements be simplified if there are effective permitting and enforcement programs in place at the State or local level.

Response: The EPA agrees that it may take longer for smaller facilities to become aware of the final NESHAP; however, it would be overly burdensome for the EPA to create a database of the known facilities (including their addresses), and/or to notify them of their obligations by mail. However, the EPA is preparing a guidance document to assist owners and operators in complying with the rule. This guidance will include compliance tables and example reporting forms. A pamphlet describing the rule will also be produced.

In order to streamline the reporting requirements and add additional time for the sources to familiarize themselves with the final rule, the EPA has extended the initial notification report deadline from 90 days to 270 days. The EPA believes that this extension allows sufficient time for facilities to learn about this rule. Owners and operators of solvent cleaning machines subject to this rule could become informed of this rule through vendors, industry trade associations, State regulatory agencies, and the OAQPS Technology Transfer Network (TTN) electronic bulletin board system.

The EPA has also extended the submittal date for the compliance report from 30 to 150 days, and the compliance period from 2 to 3 years in the final rule. The EPA concluded that an additional year to comply with the rule was necessary to allow owners or operators of halogenated solvent cleaning machines time to learn about the rule, evaluate their compliance options, and come into compliance with the rule. The EPA also concluded that 30 days would not allow sufficient time for some owners or operators of halogenated solvent cleaning machines to compile and prepare a compliance report. For example, owners or operators choosing to comply with the

3 month rolling average solvent consumption limit. The EPA extended this to 150 days to allow an owner or operator sufficient time to compile and prepare this report, regardless of their compliance choice or company size.

The reporting burden for owners or operators of cleaning machines choosing to comply with the equipment standard has also been reduced by eliminating the requirement for an annual control device monitoring report. The EPA determined that reporting parameter fluctuations in lieu of submitting all of the monitored data recorded for the year would be sufficient to demonstrate compliance. Therefore, the EPA decided that records of control device monitoring could remain on site, where, upon an inspector's request, they can be inspected.

Comment: One commenter (IV-D-36) stated that the rule should specifically allow an owner or operator to modify the means of compliance by notifying the appropriate authority in writing of the intended change and the date when the change would occur. The commenter recommended that the rule specify that no permit modification is required, but that a notice that the means of compliance is being changed is sufficient.

Response: Owners or operators of solvent cleaning machines may modify their means of compliance provided they follow the requirements of the General Provisions. The proposed rule cross referenced the General Provisions, which specifically states that any change in information already provided to the Administrator, under § 63.9, Notification Requirements, must be provided to the Administrator within 15 days after the change. The final rule contains a table in appendix C that details the applicability of the General Provisions (subpart A) to the rule.

The title V permit regulation, section 70.7(e), specifies determination criteria and requirements for both "minor" and "significant" permit modifications. An application requesting the use of minor permit modification procedures allows for streamlined procedures and processing. A change in compliance

method would be considered a major permit change and would require a new permit.

Comment: One commenter (IV-D-31) requested that the EPA remove the requirements in § 63.466(b) and (c) of the proposed rule that require routine compliance records (e.g., results of control equipment monitoring) be kept.

Response: The NESHAP General provisions [§ 63.10(b)] and title V provisions [§ 70.6(a)(3)(ii)(B)] both require that monitoring data and support information that verifies compliance with the rule be maintained for 5 years. The proposed requirements are consistent with these provisions and are therefore maintained in the final rule.

Comment: Several commenters (IV-D-04; IV-D-10; IV-D-34; IV-D-40; IV-D-42) were concerned that the submittal date (no later than 90 days after the date of promulgation) for the initial report did not allow enough time for owners and operators to prepare for, or the State and local authorities to assume delegation of, the NESHAP for such notification. Two commenters (IV-D-04; IV-D-34) suggested that the submittal date for the initial report should be changed to "no later than 270 days after promulgation," or 9 months. Another commenter (IV-D-10) requested an extension to at least 6 months after promulgation. Another commenter (IV-D-40) suggested that the initial notification requirement be extended to 6 or 9 months and noted that the dry cleaning standards initial compliance notification was extended to 270 days.

Response: The EPA concurs that 90 days may not allow enough time for all owners and operators of halogenated solvent cleaning machines to learn of and prepare for the NESHAP initial report. The EPA has extended the required submittal date of the initial notification report for existing sources from "no later than 90" to "no later than 270" days after promulgation of the rule. New sources for which construction or reconstruction had commenced and initial startup had not occurred before the date of promulgation must

submit the report as soon as practicable before startup but no later than 60 days after the promulgation date. New sources for which the construction or reconstruction commenced after the date of promulgation shall submit the report as soon as practicable before the construction or reconstruction is planned to commence.

Comment: Three commenters (IV-D-08; IV-D-20; IV-D-29) stated that recordkeeping and reporting should only be required when the information is specifically used to demonstrate compliance with the regulation. One commenter (IV-D-08) was concerned that the initial reporting requirements exceed the minimum required to determine if the cleaning machine in question is subject to, and complying with, the rule.

Response: The EPA has reevaluated reporting and recordkeeping requirements. As discussed in a previous response, some of these requirements have been changed based on this evaluation. The final rule only includes the minimum recordkeeping and reporting necessary to demonstrate compliance with the regulation. The proposed initial reporting requirements were similar to the requirements stated in the NESHAP General Provisions. Differences between the General Provisions and the proposed Halogenated Solvent Cleaner NESHAP requirements include the following:

(1) The halogenated solvent cleaner NESHAP requires an estimate of the yearly consumption of halogenated solvents for each solvent cleaning machine, and

(2) The General Provisions require that the report include a statement as to whether the affected source is a major or area source.

The EPA has determined that annual solvent consumption estimates are necessary to ensure compliance with the rule. These estimates are necessary for the EPA to assess whether there may be a compliance problem (e.g., poor work practice compliance, leaks). Therefore, this requirement has been maintained in the final rule. The EPA has also included the

General Provision requirement of a statement as to whether the affected source is a major or area source to reduce confusion.

Comment: One commenter (IV-D-42) suggested that there be no requirements for submittal of information during the time period when State and local agencies are submitting requests for delegation of authority to administer the federal standard.

Another commenter (IV-D-02) stated that § 63.467(e) of the proposed rule should specify that the annual control device monitoring report be sent to the EPA unless a State has accepted delegation of subpart T through the 112(l) program.

Response: The initial notification submittal deadline for new cleaners in the final rule was increased from 90 to 270 days after promulgation. If there has been no delegation of authority by the EPA to the State or local level, the regulatory authority is maintained with the EPA and reports are to be sent to the EPA.

Comment: Two commenters (IV-D-21; IV-D-31) stated that the submittal date for the initial statement of compliance should be extended. One commenter (IV-D-31) stated that they believed that compliance activities begin on the compliance date and they were confused because the results of the first 3-month rolling average emissions calculation would not be available within 30 days of compliance. Another commenter (IV-D-21) suggested that the 30-day submittal date should be revised to "90 days after the compliance date specified in section 63.460(b) and (c)."

Response: The EPA agrees that 30 days may not be adequate time to complete the initial compliance activities and submit an initial compliance report. Therefore, the provisions in the final rule were changed to 150 days after the compliance date.

Comment: One commenter (IV-D-22) recommended that § 63.466(c) of the proposed rule allow recordkeeping in either written or electronic form.

Response: The EPA agrees with the commenter that recordkeeping should be allowed in either written or electronic form. The final rule has been clarified to allow for recordkeeping in either written or electronic form. This requirement is consistent with the General Provisions [§ 63.10(b)(1)].

Comment: Four commenters (IV-D-20; IV-D-25; IV-D-29; IV-D-35) stated that reporting directly to the regulatory agencies should only be required if retaining records on-site is not sufficient to demonstrate compliance with the regulation (e.g., title V operating permit sources). One commenter (IV-D-25) requested that the records required by the control device monitoring report [§ 63.467(e) of the proposed rule] and the solvent consumption report [§ 63.467(f) of the proposed rule] remain on-site and not be submitted to the Administrator or the agency to which enforcement is delegated. One commenter (IV-D-35) stated that in New Jersey, operators are required to keep records of solvent usage, but do not have to submit them.

Response: The EPA reevaluated the minimum reporting and recordkeeping requirements needed to demonstrate compliance. The EPA has promulgated the minimum reporting requirements necessary to demonstrate compliance with the rule. Solvent consumption or monitoring measurement records need to be reported to the regulatory agency to verify compliance with the rule. Therefore, the proposed reporting requirements have not been modified in the final rule. Furthermore, 40 CFR Part 70 (State Operating Permit Program) submittal of reports of any required monitoring are required every 6 months [§ 70.6(a)(3)(iii)(A)].

Comment: Two commenters (IV-D-06; IV-D-33) stated that the reporting requirements for conveyorized and open top vapor degreasers should be consistent with 40 CFR part 70. The commenter also stated that, although § 63.467(g) of the proposed rule is not in direct conflict with 40 CFR part 70, a provision should be added stating that more frequent reporting

of exceedances may be required by the States in an operating permit.

Response: The EPA acknowledges that the State, under 40 CFR Part 70, may require more frequent reporting than required under the proposed and final rule. For example, 40 CFR Part 70 requires submittal of reports of any required monitoring every 6 months [§ 70.6(a)(3)(iii)(A)]. Under 40 CFR Part 70, exceedances require "prompt" reporting, where the regulatory authority defines the degree and type of exceedance likely to occur and the applicable requirements [§ 70.6(a)(3)(iii)(B)].

Comment: Several commenters (IV-D-08; IV-D-22; IV-D-25; IV-D-52; IV-D-54) requested that an alternative to the requirements of § 63.466(a)(1) and (2) of the proposed rule be provided for owners of existing cleaning machines who may no longer possess an owners manual or may not be able to trace the date of installation of their machines or controls. One commenter (IV-D-08) suggested that the EPA allow owners to submit a written set of procedures as a substitute for an owner's manual. The commenter also suggested that, in place of installation records, the EPA allow the owner to certify that the machine and/or its controls were installed prior to the proposal date. Another commenter (IV-D-54) suggested deleting the requirement that owner's manuals must be maintained for the lifetime of the machine.

Response: The EPA acknowledges that a number of owners and operators of existing halogenated solvent cleaning machines may not have an owners manual or may not be able to trace the date of installation of their machines or controls. The EPA's intent was to offer an owner or operator a simple method from which an equipment compliance determination can be made and documented. Therefore, in the final rule, the EPA has allowed the owner or operator to substitute written maintenance and operating procedures in lieu of an owners manual. In situations where an installation report is unavailable, the owner or operator can substitute a

certification that the machine and/or its controls were installed prior to or after the proposal date.

Comment: One commenter (IV-D-54) asked for more details on what information the EPA would require from owners or operators of solvent cleaners to demonstrate that the cover requirements are being met.

Response: The EPA proposed that an owner or operator of a halogenated solvent cleaning machine choosing to comply with the equipment and work practice standard must include, in an annual report, a monthly inspection record of the cover to ensure that it is free of cracks, holes, or other defects [§ 63.465(b)(2) of the proposed rule]. This can be done through a visual inspection of the cover when it is in the closed position and must be documented in a log. The EPA also proposed that an operator test be required to demonstrate that the work practice requirements (including the use of a cover) of the rule are understood. Enforcement and validation of work practice compliance is difficult. The EPA evaluated a number of options and determined that the proposed requirements were the most reasonable requirements for owners and operators of solvent cleaners to demonstrate compliance with cover requirements. These proposed requirements have been maintained in the final rule.

Comment: Two commenters (IV-D-35; IV-D-40) stated that some sources should be exempt from reporting requirements. One commenter (IV-D-40) recommended that the EPA exempt batch vapor cleaning machines of less than 0.60 square meters (6.5 square feet) from annual reporting requirements, quarterly exceedance reporting, and the permitting requirements of the proposed standards. Another commenter (IV-D-35) recommended that the reporting requirement for area sources be waived.

Response: The EPA has not exempted batch vapor cleaning machines with a solvent/air interface area of less than 0.60 square meters from reporting and Title V Operating Permit Program permitting requirements. These small cleaning

machines could be a significant halogenated HAP emission source within a major HAP emission source and must therefore be subject to reporting and permitting requirements.

Comment: One commenter (IV-D-35) recommended that the recordkeeping and reporting requirements be put into a table for each option available for major sources.

Response: The EPA agrees that presenting the recordkeeping and reporting requirements in a summary table would inform owners and operators of halogenated solvent cleaning machines of the options available to them in a less confusing, more comprehensive manner. The EPA is currently developing a guidance document to the final rule to aid owners and operators of halogenated solvent cleaning machines in compliance with this rule. This guidance document will include a summary table of the recordkeeping and reporting requirements for the various compliance options.

Comment: One commenter (IV-D-35) recommended that, for major sources, States should be given the option of coordinating the NESHAP-required reports with State emission reporting requirements for VOC.

Response: The EPA agrees that, as long as the State emission reporting requirements for VOC are at least as stringent as the NESHAP requirements and all information necessary to demonstrate compliance is included, States should be given the option of coordinating the two reports. The General Provisions state that if a State requires a report containing all the information required in a report required for the NESHAP, that report may be submitted to satisfy the requirements of the NESHAP [§ 63.10(a)(3)].

Comment: One commenter (IV-D-21) recommended that separate recordkeeping requirements should be required for "area" and "major" sources.

Response: The EPA does not believe that recordkeeping requirements for area sources should differ from those required for major sources. A halogenated solvent cleaning machine of the same size, design, and operating schedule at an

area source has the same potential to emit as one at a major source. The proposed recordkeeping requirements are the minimum determined necessary to demonstrate compliance, and are considered to be reasonable.

Comment: One commenter (IV-D-31) requested that if an initial report is required, it should be a simple, one-time obligation, with no requirement to submit updates. Specifically, the commenter requested that § 63.467(a) and (b) of the proposed rule be revised so that those facilities with 5 or more halogenated solvent cleaning machines could submit one report for all cleaning machines.

Response: The proposed and final initial report requirement [§63.467(a) of the proposed rule] is a simple report that allows for a facility with a number of halogenated solvent cleaning machines to submit one report including separate information on each of their machines. Updates to the initial report are only required to notify the EPA of an installation of a new source.

Comment: Two commenters (IV-D-20; IV-D-29) stated that the following should be included in the reporting and recordkeeping section of the final regulation:

> "(a) Each owner or operator of a batch vapor or in-line solvent machine shall maintain records of the results of control device monitoring for a period of 5 years."

Response: The General Provisions require that a source maintain records of all information in permanent form for 5 years following occurrence. The proposed regulation already included a statement analogous to that suggested. Section 63.466(b) of the proposed rule states the following:

"(b) Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the provisions of 63.462 shall maintain records of the results of control device monitoring required under § 63.465(a), (b), (c), and/or (d) either in computerized or written form for a period of 5 years."

The EPA has maintained a similar statement in the final rule except that the word "computerized" has been changed to "electronic."

Comment: Two commenters (IV-D-20; IV-D-29) recommended adopting a requirement that the source develop and implement a broad operation and maintenance (O&M) plan that would cover many of the recordkeeping and monitoring requirements in a simpler manner.

Response: The recordkeeping and monitoring requirements contained in the final rule are the minimum necessary to demonstrate compliance. The additional burden of an O&M plan is not warranted. The EPA is preparing a guidance document that will aid owners or operators with the recordkeeping and monitoring requirements of the final rule.

Comment: One commenter (IV-D-51) stated that owners or operators complying with the NESHAP through the use of the control equipment option should not be required to collect solvent consumption data.

Response: The requirement contained in § 63.467(a)(4) of the proposed rule, requiring an estimate of the yearly consumption of halogenated solvents for each solvent cleaning machine in the initial notification report, has been retained in the final rule. In addition, the annual compliance reports require a yearly estimate of halogenated solvent consumption. The EPA has decided that the inclusion of a solvent consumption estimate is necessary to help identify whether there may be compliance problems (e.g., leaks, poor work practices).

2.8.2 General Provisions

Comment: Two commenters (IV-D-08; IV-D-32) requested that the EPA consider exempting all halogenated solvent cleaning machine sources from all subpart A (General Provisions) requirements because of duplication of effort and general confusion.

Response: Owners or operators who are subject to a subpart promulgated for a specific source category under

section 112(d), 112(f), or 112(h) of the Act are also subject to the requirements of the NESHAP General Provisions. Therefore, halogenated solvent cleaning sources subject to the rule must comply with the NESHAP General Provisions. The General Provisions were developed to eliminate the repetition of general information and requirements within the subparts. They have the legal force and effect of standards, and they may be enforced independently of relevant standards, if appropriate. In the final rule, the EPA has overridden those sections of the NESHAP General Provisions that do not apply to halogenated solvent cleaning sources. Batch cold cleaning machines have less requirements than batch vapor and in-line cleaning machines. The table in appendix C of the final rule summarizes which sections of the General Provisions apply to the rule and which have been overridden.

Comment: One commenter (IV-D-19) stated that the EPA should exempt area source batch vapor and in-line cleaning machines from the General Provisions' startup/shutdown planning and other preconstruction notification recordkeeping and reporting requirements. The commenter requested that the initial notification procedure provided in § 63.467 of the proposed rule be required in lieu of the preconstruction notification requirements of the General Provisions. The commenter stated that the small emissions from these sources do not justify the administrative burden of the weekly startup/shutdown procedures. The commenter suggested that an annual report describing solvents used and removed would be far more appropriate and stated that the EPA could create a less onerous procedure for such *de minimis* sources.

Response: The proposed and final rule contain provisions for startup and shutdown of vapor cleaning machines. The startup, shutdown, or malfunction provisions contained in the NESHAP General Provisions in section 63.6(e)(3), 63.10(e)(5)(i), and 63.10(d)(5)(ii) have been overridden in the final rule.

Comment: Several commenters (IV-D-20; IV-D-29; IV-D-42; IV-D-54) stated that the General Provisions are too burdensome for area sources and that the requirements should be simplified. Two commenters (IV-D-20; IV-D-29) suggested that it would be useful to override the General Provisions and allow the regulating agency the choice to determine what information is necessary to assure compliance with the regulation. One commenter (IV-D-19) requested that the EPA clarify that new and reconstructed batch cold cleaning machines are subject only to the initial reporting requirements of § 63.467(b) of the proposed rule so that there is not any confusion regarding cold cleaning machines being subject to the initial notification requirements of the General Provisions.

Response: As described in a previous response, a source that is subject to the halogenated solvent cleaning NESHAP is also subject to the NESHAP General Provisions. This includes both area and major sources subject to the NESHAP. The initial notification report in the final rule is similar to the reporting requirements in the General Provisions. The EPA has evaluated what portions of the General Provisions to override. Those sections of the General Provisions that are overridden in subpart T are presented in the table in appendix C of the final regulation.

Comment: One commenter (IV-D-31) requested that the EPA reopen this rule for comments on the applicability of subpart A (General Provisions) once that subpart is final. The commenter stated that it is the EPA's responsibility to provide this opportunity for effective comment as promised by the Administrative Procedure Act, and by comparable requirements in the Act.

Response: The NESHAP General Provisions (Subpart A) applies to all those regulations subject to subsequent subparts of part 63 [including subpart T], except if overridden [§ 63.1(a)(4)]. The General Provisions were proposed and public comment was taken. The General Provisions

are final after an effective comment period, as dictated by the Administrative Procedure Act and the Act. The EPA will not be reproposing the rule to receive comments on the applicability of subpart A. However, all changes in the final General Provisions were evaluated for their impact on the final NESHAP for halogenated solvent cleaners and have been accounted for in the final NESHAP.

2.8.3 Solvent Consumption

Comment: Three commenters (IV-D-08; IV-D-21; IV-D-36) stated concerns regarding the reporting of solvent consumption. Two commenters (IV-D-08; IV-D-36) stated that it was unclear whether the "yearly consumption" of solvent was to be the amount of halogenated solvent added to the machine, or the amount emitted. The commenter was concerned that if an owner or operator is to report on the amount emitted, it would be too burdensome. The commenter suggested that the report be made in mass units (lbs, kg) and be reported for each type of halogenated solvent added to the machine so that the EPA can estimate the amount of halogenated solvent emitted, in total or by type. The commenter further stated that it may be useful for the EPA to obtain material safety data sheets or some other information concerning the blend of constituents for the solvents and mixtures purchased or added to the machines.

Response: The yearly consumption requirement is intended to be the amount of solvent that has been added to each solvent cleaning machine. This information will assist compliance personnel in identifying potential problems. The requirement for the reporting of yearly solvent consumption has been retained in the final rule.

2.8.4 Exceedance Report

Comment: One commenter (IV-D-10) stated that the proposal does not encourage honest and truthful reporting of exceedances. The commenter stated the following:

(1) The EPA should specify more clearly what constitutes noncompliance, and the consequences, if any, of submitting an exceedance report as required by the proposal;

(2) The EPA should allow a source the opportunity to make repairs within a specified time period, and if successful, the source should not have to submit an exceedance report;

(3) The EPA should specify whether the submission of an exceedance report will result in a fine or other sanction, and whether the inclusion of a description of successful repairs will be sufficient to ensure that no action will be taken against the reporter; and

(4) The EPA should use a cooperative approach as opposed to an adversarial approach, in assessing any penalties for noncompliance. In addition, the EPA should establish a policy that no penalty will be imposed for any initial exceedance, as long as the company is willing to work diligently toward correcting the situation.

Response: It is in a source's best interest to address exceedances as soon as possible to reduce their potential liability. The responsiveness of the source will likely be taken into account when determining what appropriate enforcement action to take. Not all exceedance reports will necessarily result in a penalty. If an exceedance occurs, a report describing the exceedances and the repairs made must be submitted to the regulatory authority in the quarter in which the exceedance occurs. An exceedance occurs when a source violates an applicable emission limit or standard, except when a provision promulgated or approved by the Administrator exempts such a condition as a federally enforceable violation, such as a malfunction. Sections have been added to the final rule that delineate what constitutes an immediate exceedance and what becomes an exceedance if it is not corrected within a 15 day timeframe. The designated regulatory authority for the rule will determine when a violation necessitates a fee.

Comment: One commenter (IV-D-34) stated that the EPA should allow owners or operators the opportunity to document adjustments or repairs to the equipment in lieu of a quarterly report for any exceedance or noncompliance to avoid an unnecessary reporting burden for both equipment operators and EPA personnel. The commenter suggested that reporting be required only for chronic noncompliance and gross exceedances of emission limits.

Response: The EPA has reviewed the General Provision requirements for the reporting of exceedances. To make the rule consistent with the General Provisions, the rule has been modified to require biannual exceedance reports, if there is not an exceedance, and quarterly exceedance reports, if there has been an exceedance. After a full year of compliance without an exceedance, biannual exceedance reporting can be resumed.

Comment: One commenter (IV-D-54) requested clarification on whether the quarterly exceedance report required in § 63.467 of the proposed rule is part of the enhanced monitoring report required under 40 CFR part 64.

Response: Clarification that the exceedance report is not part of the enhanced monitoring report under 40 CFR part 64 is made here.

2.9 OPERATING PERMIT PROGRAM

Comment: One commenter (IV-D-19) suggested that, to avoid any confusion, the EPA should state in the text of the final NESHAP that batch cold cleaners are not subject to title V permitting requirements. The commenter argued that although the preamble made clear its intent to exempt batch cold cleaning machines from title V permitting requirements, the text of the proposed NESHAP only excludes batch cold cleaning machines from that portion of the General Provisions requiring compliance with permitting rules. The commenter stated that this approach may lead to confusion since EPA's final rule for the operating permit program appear to require

a specific EPA determination in order to exempt § 112 area sources.

Response: The EPA has added provisions to the reporting and recordkeeping section of the final rule that state that batch cold halogenated HAP solvent cleaning machines located at nonmajor sources are not subject to title V permitting requirements.

Comment: Five commenters (IV-D-02; IV-D-17; IV-D-19; IV-D-27; IV-D-33) requested that the EPA consider exempting additional sources from title V permit provisions.

One commenter (IV-D-17) requested that the applicability section (§ 63.460 of the proposed rule) exempt area source emission units from Act title V permit requirements. States generally issue permits for facilities only, and requiring a title V permit for an area source at a facility that would otherwise not have to get a title V permit would be burdensome. Two other commenters (IV-D-02; IV-D-19) stated that the EPA should, as with batch cold cleaning machines, exempt area batch vapor and in-line cleaning machines from title V requirements because of the complexity, expense, and overall burden it would place on small area source facilities.

Another commenter (IV-D-33) recommended that a cutoff level within the small degreasing subcategory be established so that small businesses are not required to submit to unreasonable administrative and compliance requirements. The commenter believed that sources with a solvent-vapor air interface smaller than 10 square feet should be exempt from the title V permit process; however, other reporting requirements may be necessary for these sources to ensure compliance with minimum control requirements. Another commenter (IV-D-27) suggested a size cutoff of 10 tons of emissions per year.

Response: The EPA has exempted batch cold cleaning machines located at nonmajor sources from title V Operating Permit Program requirements in the final rule. Under CFR 40 Part 70, nonmajor HAP sources are exempt from

permitting requirements for 5 years. The EPA has not exempted any other halogenated solvent cleaning machine from permitting requirements in the final rule.

2.10 CLARIFICATIONS

2.10.1 Definitions

Super-Heated Vapor

Comment: Four commenters (IV-D-25; IV-D-31; IV-D-34; IV-D-40) suggested revisions to the definition of SHV. Two commenters (IV-D-34; IV-D-40) stated that the definition for "SHV system" is incorrect. It should state that super-heated vapors are generated by heating the vapors, not the liquid solvent. One commenter (IV-D-40) mentioned that super-heated vapors may be applied using recirculating or static systems.

Several commenters (IV-D-31; IV-D-34; IV-D-40) stated that the definition for SHV should specify the units (degrees F or C). One commenter (IV-D-31) recommended that the EPA use the Celsius scale, because that is the scale most commonly used in engineering.

One commenter (IV-D-25) stated that the definition for SHV should be clarified by stating that the super-heated area is for cleaned parts to pass through before exiting the machine so as to evaporate the liquid solvent on them. Another commenter (IV-D-31) stated that in the definition of "SHV system" the "more than 1.5 times greater" than the solvent boiling point should be changed to read "more than 1.5 times" the solvent boiling point.

Response: The EPA has modified the definition of SHV system to incorporate the comments received. The definition of SHV system has been changed to read as follows:

> Super heated vapor system means a system that heats the solvent vapor, either passively or actively, to a temperature above the solvent's boiling point. Parts are held in the super heated vapor before exiting the machine so as to evaporate the liquid solvent on them. Hot vapor recycle is an example of a superheated vapor system.

In the standards section of the rule it is stated that, if SHV is used to comply with the rule, the owner or operator

must ensure that the temperature of the solvent vapor at the center of the superheated vapor zone is at least 12°C (10°F) above the solvent's boiling point.

Manual Cover

Comment: Two commenters (IV-D-29; IV-D-35) believe that the definition of cover should state that the cover needs to completely seal the cleaner openings when in place and must be free of cracks, holes, and other defects, and that the cover should be designed to easily open and close without disturbing the vapor zone. One commenter (IV-D-29) pointed out that if the definition is changed, then the information can be removed from the standard.

Response: The EPA has clarified the definition of a cover in the final rule. The EPA has not added the verbiage suggested by commenters IV-D-29 and IV-D-35 to the cover definition. The EPA has determined that this language is more suitable in the standards section of the rule. The definition of a cover reads as follows:

> Cover means a lid, top, or portal cover that shields the solvent cleaning machine from air disturbances when in place and is designed to be easily opened and closed without disturbing the vapor zone. Air disturbances include, but are not limited to, lip exhausts, ventilation fans, and general room drafts. Types of covers include, but are not limited to, sliding, biparting, and roll-top covers.

Primary Condenser

Comment: One commenter (IV-D-40) recommended that the definition of primary condenser be revised to note that primary condensers typically do not circulate refrigerant.

Response: The EPA has modified the definition of primary condenser to indicate that they circulate or recirculate a chilled substance.

Carbon Adsorption Systems

Comment: One commenter (IV-D-40) stated that a definition for a carbon adsorption system should be added.

Response: The EPA has added a definition for a carbon adsorber to the definitions section of the final rule.

Cold Cleaning Machine and Solvent Cleaning Machine

Comment: Three commenters (IV-D-15; IV-D-16; IV-D-25) provided comments on the definition of cleaning machine. One commenter (IV-D-25) requested that the EPA clarify that solvent cleaners which employ heated, but non-boiling, solvent are considered cold cleaners. One commenter (IV-D-16) recommended adding the phrase, "This definition does not include remote-reservoir cleaning devices," to the definitions for cold cleaning machine and solvent cleaning machine.

Response: The EPA has clarified in the cold cleaning machine definition that cleaning machines that use heated, non-boiling, solvent are considered cold cleaning machines. The EPA has not added the verbiage, suggested by commenter IV-D-16, to the cold cleaning machine and the solvent cleaning machine definitions. The cold cleaning machine and the solvent cleaning machine definitions do include remote-reservoir cleaning machines that use solvent with a halogenated HAP solvent content of greater than 5 percent by weight.

The solvent cleaning machine definition has been modified to state that it is "any device or piece of equipment that uses halogenated HAP solvent liquid or vapor..."

Existing and New

Comment: Two commenters (IV-D-15; IV-D-31) presented alternative definitions for "new" and "existing." One commenter (IV-D-15) stated that the definitions of "existing" and "new" in § 63.460(d) and (e) and § 63.461 of the proposed rule are inconsistent. The commenter recommended that the definition for "existing" read as follows:

> "Existing means any solvent cleaning machine that commences construction or reconstruction before November 29, 1993."

Two commenters (IV-D-15; IV-D-31) recommended that the definition for "new" read as follows:

> "New means any solvent cleaning machine, the construction or reconstruction of which is commenced on or after November 29, 1993."

Response: The definition of "existing" has been written similar to the definition suggested by commenter IV-D-15. The definition for "new" is consistent with the General Provisions and has not been changed.

Solvent/Air Interface

Comment: Two commenters (IV-D-06; IV-D-20) stated that the term solvent/air interface should be more precisely defined in relation to a readily identifiable physical location on the solvent cleaning machine (such as the bottom of the primary condenser coil or the mid-line of the primary condenser).

Response: The solvent/air interface has been defined in relation to the mid-line of the primary condenser coil(s) in the final rule.

Reduced Room Draft

Comment: One commenter (IV-D-40) stated that RRD should be defined as the reduction of the air flow across the top of the freeboard area of the cleaning machine. Otherwise enclosed cleaners would still be required to reduce air flows outside of the machine.

Response: The definition of RRD has been modified to read, "means decreasing the flow or movement of air across the top of the freeboard area of the solvent cleaning machine..."

Freeboard Height

Comment: One commenter (IV-D-45) recommended that the freeboard height definition be further clarified by modifying the first sentence to read, "freeboard height means the distance from the solvent/air interface to the top of the cleaning machine as measured during the machine's idling mode." The undisturbed vapor blanket is a condition occurring

only during the idling mode, so freeboard height is measured only during this mode.

Response: The EPA agrees that clarification of the definition of the freeboard height as being as measured during the machine's idling mode is necessary for vapor cleaning machines. Therefore, the definition of freeboard height has been modified as recommended by the commenter.

Freeboard Refrigeration Device

Comment: One commenter (IV-D-50) stated that the definition for "freeboard refrigeration device" should be revised to include an adequate primary condensing system.

Response: The freeboard refrigeration device definition has not been changed as requested by the commenter. However, in the standards the EPA has added that a super-cooled primary condenser that meets the requirements of a freeboard refrigeration device is equivalent to a freeboard refrigeration device.

Solvent Blend

Comment: One commenter (IV-D-55) stated that a definition should be added for "solvent blend."

Response: The term "solvent blend" has been removed from the rule and, therefore, is not defined in the final rule.

2.10.2 Toxicity

Comment: Two commenters (IV-D-10; IV-D-31) had several comments related to toxicity. One commenter (IV-D-10) stated:

(1) The preamble inaccurately states that MC and TCE are both classified as probable human carcinogens (Group B2 carcinogen). Trichloroethylene is currently under review by the EPA and is considered to lie somewhere along a continuum between Groups B2 and C as a possible human carcinogen;

(2) Toxicity information on long-term exposure to PCE and TCE discussed in the preamble was based on animal studies at very high exposure dose levels, and adverse effects are not expected at occupational or environmental exposure levels; and

(3) The central nervous system function impairments from short-term exposure to MC discussed in the preamble are

transitory and are typical for both halogenated and nonhalogenated solvent exposure.

The commenter requested that the discussion of the EPA's risk analysis be revised to include a statement noting that the real risk is unknown and may be zero. The commenter stated that the statements of risk in the preamble were unqualified and misleading and that according to EPA's risk assessment guidelines, "the true value of the risk is unknown, and may be as low as zero."

Another commenter (IV-D-31) provided the following clarifications on the discussions of solvent toxicity in the preamble:

(1) The preamble should state that the cancer classification for TCE is under review by the EPA;

(2) The word "transitory" should be inserted before the word "impairments" in the phrase "(MC) has been known to cause impairments" in the discussion of MC toxicity;

(3) The preamble should state that the health effects data for PCE and TCE, which show adverse effects in the liver and kidneys, are based largely on animal studies conducted at high dose levels. Kidney and liver effects as well as fetotoxicity would not be expected at appropriate exposure levels (below permissible exposure level [PEL]/threshold limit value [TLV]); and

(4) The EPA's discussion of the analysis of potential lifetime human cancer risk should include two things. First, that the risk estimates are based on high-dose animal studies using the conservative linearized multistage model. Second, according to the EPA's own cancer risk assessment guidelines, the real risk is unknown and may be zero.

Response: Methylene chloride is considered a probable human carcinogen and is currently classified as a Group B2 carcinogen; however, the EPA agrees that TCE lies somewhere along a continuum between Group B2 and C as a possible human carcinogen. The EPA continually adjusts these classifications when warranted by additional data. There are new data in a

follow-up NIEHS study associating MC with pancreatic tumors in workers and liver tumors in female mice. There is also data that indicates that MC exposure may have genotoxic effects.

In cancer studies, high doses are used to elicit a response in a small number of animals. The EPA disagrees that the adverse effects observed in high dose animal studies would not be expected at occupational or environmental levels. While one may not readily observe adverse effects in the general population, the impact on sensitive sub-populations must be considered, as well as the repeated exposure to multiple pollutants that may have an additive effect.

The EPA agrees that the central nervous system function impairments associated with short-term exposure to solvents such as MC are transitory; however, transitory effects nevertheless can be of serious concern under certain scenarios. The Act directs the EPA to address transitory health effects as well as non-transitory effects.

The EPA agrees that "the true value of the risk is unknown, and may be as low as zero" but, as also stated in the Guidelines for Carcinogen risk Assessment (51 FR 33 992, September 24, 1986), "the linearized multistage procedure leads to a plausible upper limit to the risk consistent with some proposed mechanisms of carcinogenesis." Therefore, the EPA has not revised the risk analysis as requested by the commenter.

The EPA agrees that the cancer classification for TCE is under review by the EPA. The EPA also agrees that the word "transitory" should be inserted before the word "impairments" in the phrase "(MC) has been known to cause impairments." However, the clarification on MC toxicity given above should be noted. These clarifications have been noted. However, since the EPA is not republishing the proposal preamble, the proposal preamble has not been changed.

2.10.3 Wording of Regulation

Comment: One commenter (IV-D-21) supported the EPA's proposal to allow for equivalent control technologies and

methods of compliance. The commenter recommended that §§ 63.462 and 63.463 of the proposed rule be revised to include the following language where appropriate:

> "Except as provided for in [sections] §§ 63.463 and 63.468, each existing, new, or reconstructed batch vapor or in-line solvent cleaning machine shall conform to the following..."

Response: The wording suggested by the commenter is misleading in that it leads one to believe that the equivalent methods of control section is an alternative to § 63.462 of the proposed rule. The EPA did not intend for the equivalent methods of control section to serve as an alternative to the standards. In terms of the equipment standard, the section is meant to provide a means to comply using other equivalent controls not specifically listed. To clarify this, the rule has been modified by adding the following statement to the equipment standard provisions of the final rule:

> "...or other equivalent methods of control as determined using the procedure in the equivalent methods of control section..."

Applicability

Comment: Three commenters (IV-D-20; IV-D-29; IV-D-35) requested that the EPA specifically state in the applicability section that the rule applies only to batch vapor and in-line cleaning machines, and batch cold cleaning machines.

Response: The EPA has clarified in the applicability section that the rule applies to batch vapor, in-line vapor, in-line cold, and batch cold cleaning machines that use halogenated HAP solvents.

Comment: Three commenters (IV-D-20; IV-D-29; IV-D-35) suggested the use of a table, outlining a simple compliance schedule in place of § 63.460(b), (c), (d) and (e) of the proposed rule. The schedule would be much easier to comprehend and would help owners/operators determine if their equipment is affected by this rule.

Response: The EPA believes that § 63.460(b), (c), (d) and (e) of the proposed rule are clearly worded and therefore

will not be removed. The EPA is producing a guidance document for the rule that will contain an easy to follow compliance schedule presented in table format.

Reporting

Comment: One commenter (IV-D-31) stated that in § 63.467(c)(3)(ii) of the proposed rule the word "required" should be changed to "needed."

Response: In § 63.467(c)(3)(ii), the word "required" has been changed to "necessary" as this more clearly represents the EPA's intent.

Other

Comment: One commenter (IV-D-31) stated that every time the rule uses the words "cleaning machine," the EPA should add the words "subject to this subpart."

Response: The applicability section of the rule states which sources are subject to the rule. Any reference in the rule to "cleaning machine" after the applicability section assumes that the cleaning machine is subject to the rule.

Typographical Errors

Comment: Two commenters (IV-D-36, IV-D-45) stated that in § 63.467(c), (d), and (e) of the proposed rule the reference to "§ 63.460(b) and (c)" should read "§ 63.460(d) and (e)."

Response: This correction has been made.

Comment: One commenter (IV-D-30) stated that the equation in § 63.463(b)(4) of the proposed rule does not appear to have been printed correctly.

Response: The proposed rule does not contain a § 63.463(b)(4) as referred to by the commenter. The EPA assumes that the commenter intended to comment on equation 3 in § 63.464(b)(4) of the proposed rule. In addition, the commenter did not provide any information on the reasoning behind the comment. The EPA has reviewed equation 3 and has determined that the equation appeared in the proposed rule in its correct form.

Alternative Standard Wording

Comment: One commenter (IV-D-35) stated that the word "may" in § 63.463(a) of the proposed rule should be changed to "must." This is to indicate that if owners/operators choose the alternative standard, then they must comply with the provisions set forth in the alternative standard.

Response: The change has been made as suggested by the commenter.

2.10.4 Other

Title of the Standard

Comment: Two commenters (IV-D-39; IV-D-43) stated that the term halogenated encompasses five elements: fluorine, chlorine, bromine, iodine, and astatine. The commenters (IV-D-39; IV-D-43) recommended that, since all six of the solvents listed in the proposed rule (MC, PCE, TCE, TCA, CT or C) qualify as chlorinated solvents and no non-chlorinated solvents are identified, the title of the standard should be changed to "National Emissions Standards for Chlorinated Solvents."

Response: The standards were written to cover halogenated solvent cleaners, and were not written to cover chlorinated HAP solvents unless they were halogenated. The final rule clarifies that MC, PCE, TCE, TCA, CT, or C used in solvent cleaning machines in amounts greater than 5 percent by weight are covered by the rule. The title of the standard has not been changed.

CAS Number

Comment: One commenter (IV-D-15) recommended that, to avoid any confusion, the EPA should include the CAS number for each of the six solvents listed in § 63.460(a) of the proposed rule. These CAS numbers are as listed below:

methylene chloride - (CAS No. 75-09-2)

perchloroethylene - (CAS No. 127-18-4)

trichloroethylene - (CAS No. 79-01-6)

1,1,1-trichloroethane - (CAS No. 71-55-6)

carbon tetrachloride - (CAS No. 56-23-5)

chloroform - (CAS No. 67-66-3)

Response: The EPA has added the CAS numbers for each of the solvents listed in § 63.460 of the proposed rule.

Authorities Retained

Comment: Several commenters (IV-D-06; IV-D-20; IV-D-31) stated that the authorities that shall be retained by the Administrator and not transferred to a State should be included in § 63.460(f) of the rule and be subject to public comment.

Response: The EPA acknowledges that in many instances the approval authority is delegated from the Administrator to the Regions and the state/local agencies. However, in some instances the EPA has chosen not to delegate similar authority to the state/local level. The EPA has listed the authorities that it will retain in § 63.460(e) and (f) of the final rule.

Background Information Document

Comment: One commenter (IV-D-03) reported that she was misquoted in the background information document. The commenter was quoted as stating that HCFC-123 caused cancer, however, the commenter reports that she stated that HCFC-123 caused benign tumors, not carcinogenic tumors. The commenter requested that this incorrect reference be removed.

Response: The EPA agrees that the BID stated that HCFC-123 caused carcinogenic tumors in error. However, the BID has already been published (EPA-453/R-93-054) and therefore cannot be changed. A memorandum noting the error has been placed in the docket.

EPA Approval

Comment: Two commenters (IV-D-21; IV-D-30) stated that in §§ 63.465(d) and 63.468 of the proposed rule it should be clarified what will occur if the Administrator does not act on an application for equivalency in time for the source to meet the compliance schedule in the standard. One commenter (IV-D-21) suggested that a "default" clause should be added to these sections that states that EPA approval is automatically

given if a determination is not made within a specified time frame.

Response: Verbiage detailing what occurs when the Administrator receives an equivalency request has not been added to the final rule because the General Provisions address this issue. Under section 63.6(g) of the General Provisions, an owner or operator may apply to the Administrator to use an alternative means of emission limitation. If the reductions in emissions are at least equivalent to the reduction achieved under an equipment design, work practice, or operational emission standard, the Administrator will publish in the Federal Register a notice allowing the use of the alternative emission standard and will allow an opportunity for public comment on the alternative. The final rule has been amended to require that such an equivalency request by an existing source must be made no later than 18 months after promulgation of the standard. This would allow sufficient time for the Administrator to evaluate and approve or disapprove of an alternative prior to the deadline for submittal of the initial compliance report. If an owner or operator requests to use an alternative monitoring method, section 63.8(f)(5) of the General Provisions requires the Administrator to notify the owner or operator of approval or intention to deny approval of the request within 30 calendar days after receipt of the original request and within 30 calendar days after receipt of any supplementary information that is submitted.

2.11 MISCELLANEOUS

2.11.1 Guidance Documents

Comment: One commenter (IV-D-02) stated that they are concerned that the presentation of the regulation made it difficult to understand. The commenter suggested that an "easy-to-understand" regulation guidance document be produced.

Response: The EPA is producing a guidance document that will be directed towards small business owners or operators of solvent cleaning machines. The document will assist owners or operators to determine the applicability of the rule to their

operations and to comply with the regulation. This guidance document is scheduled to be published early in 1995.

Comment: Two commenters (IV-D-10; IV-D-31) stated that it would be useful for both the EPA and the source if the EPA were to assist the source in evaluating its compliance problems, and in determining the steps necessary for bringing it into compliance. One commenter (IV-D-31) stated that the EPA should build an outreach program to help regulated businesses find solutions to compliance difficulties.

Response: The EPA's Office of Air Quality Planning Standard's Small Business Assistance Program has allocated funds for the development of a guidance document to help regulated businesses comply with the final rule. This document should be published early in 1995.

Comment: One commenter (IV-D-24) recommended that the EPA produce a best management practices (BMP) guide for halogenated solvents carburetor cleaning in lieu of inclusion in the NESHAP. The commenter stated that distribution to the motor vehicle service industry could be provided through the § 507 small business assistance program and otherwise. The commenter suggests that the guide state that: (1) halogenated carburetor cleaning compounds only be used in batch cold cleaning machines, (2) batch cold carburetor cleaning machines have covers for use at all times, (3) halogenated carburetor cleaning compounds only be used with water barriers, and (4) that leaks be repaired expeditiously, that solvent dragout be kept to a minimum, and that spent solvents be recycled if possible.

Response: The commenter has provided no basis for exempting halogenated solvent carburetor cleaning machines from this rule. Therefore, the EPA has not removed carburetor cleaning machines from the final rule.

The EPA is preparing a guidance document that will assist owners or operators of carburetor cleaning machines in complying with this rule.

2.11.2 Compliance

Comment: Eight commenters (IV-D-13; IV-D-22; IV-D-32; IV-D-39; IV-D-40; IV-D-45; IV-D-52; IV-D-54) requested a revised compliance schedule. One commenter (IV-D-52) felt that the compliance time period should be measured from the date that the final rule is promulgated, rather than from proposal. Another commenter (IV-D-40) recommended that the EPA stagger the compliance dates over a period of 18 to 36 months. Several commenters (IV-D-13; IV-D-22; IV-D-32; IV-D-39; IV-D-45; IV-D-51; IV-D-52; IV-D-54) stated that the compliance period should be extended from 2 years to 3 years as allowed by the Act Amendments of 1990. One commenter (IV-D-13) requested the additional compliance time so that they could have more time to test and validate an aqueous-based cleaning machine they are evaluating for use as a substitute to their present solvent-based system. Two commenters (IV-D-39; IV-D-45) stated that a three year compliance period would be necessary in order to allow as many sources as possible to achieve the optimum compliance approach of HAP elimination. One commenter (IV-D-32) claimed that this action will allow companies additional flexibility to prioritize those compliance actions that have the highest potential for environmental benefit.

Response: Commenter IV-D-52 is correct that the compliance time period is measured from the date of promulgation. It is stated as such in § 63.460(e) of the proposed rule. In this section it states that existing cleaning machines must comply with the rule "no later than 24 months after the date of promulgation of this subpart."

The compliance time period has been extended from 2 years to 3 years. This will provide owners or operators of solvent cleaning machines additional time to consider alternative cleaning methods, determine the compliance option best suited to their cleaning process, coordinate their regulatory requirements under this rule with their other regulatory obligations, and to come into compliance with the rule.

Comment: Three commenters (IV-D-10; IV-D-22; IV-D-42) requested that sources using HAP's that are scheduled to be phased-out in 1996 be handled separately from the other HAP's. Two commenters (IV-D-22; IV-D-42) suggested that the regulation should only apply to new solvent cleaning machines using TCA, and that the same considerations should be given to other ozone depleting compounds being phased out under the Montreal Protocol or by presidential order.

One commenter (IV-D-22) stated that TCA cannot be stockpiled for long, which would force owners/operators of existing cleaning machines that use TCA to change processes or apply for an essential-use exemption for TCA. Flexibility for the use of TCA should be built in the final regulations.

Response: The rule treats all halogenated solvents the same whether they are being phased out or not. The EPA sees no reason to treat solvents that are being phased out differently than other solvents. By January 1, 1996 TCA will be phased out. Under the final NESHAP, existing sources must comply 3 years after promulgation, which will be late 1997. Therefore, TCA will be phased out before owners or operators of solvent cleaning machines must comply with the NESHAP.

Comment: One commenter (IV-D-22) stated that for a particular process in their operations, a large vapor degreaser will need to be used until July 1997. The commenter estimated that under the proposed rule, it will take at least $500,000 to bring the degreaser into compliance for only one and a half years of use. The commenter does not believe that this cost will justify the potential environmental benefit.

Response: The commenter has not provided enough information to allow the EPA to determine why the commenter would achieve compliance with the rule at such a high cost. However, as stated above, existing sources do not have to comply with the final NESHAP until 3 years after promulgation; which will be late 1997.

Comment: One commenter (IV-D-36) stated that emissions averaging should be allowed as a means of demonstrating

compliance with MACT standards. Additionally, the commenter proposed that the facility be allowed to show compliance with an individual NESHAP by allowing emissions averaging within a MACT standard or between and among the various MACT standards applicable to the facility.

Response: The commenter (IV-D-36) has not provided any examples of how incorporating emissions averaging into this rule would be beneficial to the environment. Therefore, the EPA has not incorporated emissions averaging into this rule.

2.11.3 Organization

Comment: One commenter (IV-D-42) stated that the NESHAP should be simplified and reorganized to make it more understandable to the wide varieties of industries and regulatory personnel affected. As an example, the commenter recommended one table showing requirements for all cleaners including batch cold cleaners.

Response: The EPA is preparing a guidance document that will explain in more detail the compliance options and their requirements. This will include a table showing the requirements for all cleaning machines. This guidance document is scheduled to be published early in the year in 1995.

Comment: Several commenters (IV-D-20; IV-D-29; IV-D-30; IV-D-35; IV-D-42) recommended that the EPA emphasize the standard for cold solvent cleaners by using a separate section or a table. Two commenters (IV-D-20; IV-D-29) stated that moving this small section to the front of the standards section would provide more emphasis.

Response: The EPA has created a separate section for batch cold cleaning machines in the final rule.

Comment: Two commenters (IV-D-20; IV-D-29) suggested that the test methods and monitoring procedures in § 63.465(a) of the proposed rule be simplified by removing the words "used to comply with these standards."

Response: The EPA believes that these words need to be maintained in the final rule for clarification purposes.

Therefore, § 63.465(a), subsections 1 through 4 have not been modified as recommended by the commenter.

2.11.4 Other

Preamble

Comment: One commenter (IV-D-33) stated that the preamble was not sufficiently detailed to determine the basis for EPA's regulatory approach. The commenter cited the following specific examples of where more detail is required in the preamble:

(1) Information on how the MACT floor was derived;

(2) Whether the standard is based on the floor or values above the floor;

(3) The basis for calculating the control combinations, and whether these combinations are equivalent; and

(4) The model parameters used to simulate different machine sizes, and the calculation of the MACT emission limits.

Response: Detailed descriptions of these analyses are contained in supporting documents that are available in Air Docket number A-92-39.

Solvent Workgroup

Comments: Two commenters (IV-D-31; IV-D-40) stated that the EPA should seek industry input into the solvent workgroup's deliberations. One commenter (IV-D-40) volunteered to participate.

Response: The EPA does not have provisions for industry to serve on internal EPA workgroups. However, the Agency has contacted the commenters to inform them of an industry symposium on solvent cleaning where their input could be used.

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15 SUPPLEMENTARY NOTES

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16. ABSTRACT

This document includes a summary of all public comments that were submitted on the proposed rule, along with responses to these comments. This summary of comments and responses serves as the basis for the revisions made to the standards between proposal and promulgation. This document complements the National Emission Standards for Hazardous Air Pollutants: Halogenated Solvent Cleaning -Background Information Document (EPA-453/R-93-054, November 1993).

17. KEY WORDS AND DOCUMENT ANALYSIS

a DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
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