United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park, NC 27711

EPA-453/R-96-003b
August 1995

Air

EPA

National Emission Standards for Hazardous Air Pollutants for Shipbuilding and Ship Repair Facilities (Surface Coating)

Background Information for Final Standards

Office of Air Quality
Clean Air
OAQPS
Planning and Standards

EPA 453/R-96-003b

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SHIPBUILDING AND SHIP REPAIR FACILITIES (SURFACE COATING) BACKGROUND INFORMATION FOR FINAL STANDARDS

Volume 2: Summary of Public Comments and Responses

Emission Standards Division

U.S. Environmental Protection Agency
Region 5, Library (PL-12J)
77 West Jackson Boulevard, 12th Floor
Chicago, IL 60604-3590

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

August 1995

NOTICE

This report has been reviewed by the Emission Standards Division of the Office of Air Quality Planning and Standards, EPA, and approved for publication. Mention of trade names or commercial products is not intended to constitute endorsement or recommendation for use. Copies of this report may be downloaded from the Office of Air Quality Planning and Standards' (OAQPS) Technology Transfer Network (TTN). The document is stored under the Clean Air Act Ammendments main menu -- Rules, Policy, and Guidance. The TTN access number is [919] 541-5742 and the voice help line is [919] 541-5384. Copies of the document may also be obtained from the National Technical Information Services (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 [800] 553-NTIS.

TABLE OF CONTENTS

Section		Page
1.0	SUMMARY	1-1
1.1	SUMMARY OF CHANGES SINCE PROPOSAL	1-1
1.2	SUMMARY OF IMPACTS OF PROMULGATED REGULATION	1-4
2.0	SUMMARY OF PUBLIC COMMENTS	2-1
2.1	GENERAL (STRUCTURE OF THE RULE)	2-5
2.2	APPLICABILITY	2-17
2.3	MACT	2-21
2.4	AREA (SYNTHETIC MINOR) SOURCES	2-26
2.5	SOURCE SUBCATEGORIES	2-28
2.6	COATING CATEGORIES	2-29
2.7	REPORTING AND RECORDKEEPING REQUIREMENTS	2-30
2.8	TRAINING REQUIREMENTS	2-35
2.9	THINNING ALLOWANCES	2-37
2.10	COST AND ECONOMIC ASSUMPTIONS AND IMPACTS	2-46
2.11	WORDING (DEFINITIONS) AND CLARITY OF EQUATIONS	2-51
2.12	UNITS OF THE STANDARD	2-56
2.13	TEST METHODS	2-58
2.14	COMPLIANCE PROCEDURES	2-60
2.15	COMPLIANCE DATES	2-67
3.0	ADDENDA	
3.1	ECONOMIC IMPACT ANALYSIS	2-75

1.0 SUMMARY

On December 6, 1994, the U. S. Environmental Protection Agency (EPA) proposed national emission standards for hazardous air pollutants (NESHAP) for shipbuilding and ship repair facilities (surface coating operations) (59 FR 62681) under authority of Section 112 of the Clean Air Act (Act). Public comments were received from 22 sources consisting mainly of States, shipyard owners/operators, marine coating manufacturers, and industry trade associations.

All of the comments that were submitted and the responses to these comments are summarized in this document. This summary is the basis for the revisions made to the standards between proposal and promulgation.

1.1 SUMMARY OF CHANGES SINCE PROPOSAL

Several changes have been made since the proposal of these standards. Major changes include: elimination of compliance option 1; elimination of the training requirements; reduction of the reporting frequencies; extension of date of submittal of the initial notification from 120 to 180 days; adoption of exemptions for low-usage coatings at affected sources and aerosol cans; exclusion of major sources with low-coating usage, addition of a cold-weather thinning allowance; and revisions of the equation required for calculating maximum allowable thinning ratios (now based on volume solids) so that all thinning options use the same equation. Other changes have been made to clarify portions of the rule that were unclear to the commenters and to reduce the recordkeeping and reporting burden. A summary of the major changes is presented below.

1. Several comments were made about the complexity of the rule, with many commenters offering changes to clarify different sections. Many of these recommendations have been incorporated into the final rule. For example, Table 2, which contains the volatile organic hazardous air pollutants (VOHAP) limits for the various coating categories, has been simplified and now contains only one set of units (metric).

2. Based on comments received, compliance option 1 was eliminated from the final rule. The flow chart summarizing the various compliance options was revised and simplified. All training requirements related to painting/thinning, handling/ transfer of VOHAP-containing materials, and certification of all personnel involved with surface coating operations have also been eliminated from the final rule.

3. A definition of "pleasure craft" has been added to ensure that the standards apply only to those coatings (and solvents) used on commercial and military vessels. Some commenters were concerned that, as proposed, the rule could be interpreted to regulate coatings used on pleasure crafts. The EPA never intended for these coatings to be included in these standards. The following definition is included in the final rule:

> "Pleasure Craft means any marine or freshwater vessel used by individuals for noncommercial, nonmilitary, and recreational purposes that is less than 20 meters in length. A vessel rented exclusively to, or chartered by individuals for, such purposes shall be considered a pleasure craft."

4. Some changes have also been made to the notification and reporting schedules. The initial notification deadline has been extended from 120 to 180 days. The frequency of reporting has also been reduced from the proposed quarterly to a semi-annual requirement to be consistent with the Title V operating permit program. The first report is due 6 months after the compliance date.

5. The definition of "affected source" was modified to exclude any major source shipbuilding and/or ship repair facility with surface coating operations involving less than 1,000 L (264 gal) annual marine coating usage.

6. Several commenters recommended that EPA adopt some of the provisions provided in various State rules that reduce burden for low coating usage. The EPA evaluated the impact of those provisions and adopted the following exemptions:

a. Any individual coating with annual usage less than 200 liters (52.8 gallons) is exempt from the requirements of the standard (i.e., the applicable VOHAP limit). The total amount of all coatings exempted in any given year cannot exceed 1,000 liters (264.2 gallons); and

b. Any coating applied via nonrefillable, hand-held aerosol cans is exempt from the requirements of the standard.

7. The proposal preamble requested comments on how to handle thinning issues for various climatic conditions. The EPA reviewed the comments and did a follow-up information collection request for both cold- and hot/humid-weather thinning practices. As a result of this information, a second set of cold-weather VOHAP limits was included as part of the final rule. If the temperature falls below 4.5°C (40°F) and the source needs to thin a coating beyond the normal limit, the date, time, and temperature must be documented, and a more lenient set of limits given in Table 1 of the rule may be used. The cold-weather VOHAP limits are applicable only to coatings that contain, as supplied, 40 percent or more solids by volume (i.e., having VOHAP limits less than 500 g/L of coating less water).

8. The equations used with compliance options 2 and 3 (proposed options 3 and 4) have been changed so that the calculations used for thinning are based on volume solids (nonvolatiles). The revised equations require using the solids-based VOHAP limits when determining maximum allowable thinning ratios. Some of the terminology and variables associated with

the equations were redefined accordingly. The term $VOHAP_{alt}$ is not used in the final regulation.

1.2 SUMMARY OF IMPACTS OF PROMULGATED REGULATION

The final standards will reduce nationwide emissions of hazardous air pollutants (HAP) from shipbuilding and ship repair facilities by 318 megagrams per year (Mg/yr) (350 tons per year [tons/yr]), or 24 percent in 1997 compared to the emissions that would result in the absence of the standards. No adverse secondary air, water, or solid waste impacts are anticipated from the promulgation of these standards.

The implementation of this rule is expected to result in an overall annual cost of $2.0 million. The economic impact analysis shows that the economic impacts from these final standards are insignificant.

2.0 SUMMARY OF PUBLIC COMMENTS

A total of 22 letters commenting on the proposed standards and the background information document (BID) for the proposed standards were received. Comments from the public hearing on the proposed standards were recorded, and a transcript of the hearing was placed in the project docket. A list of commenters, their affiliations, and the EPA docket number assigned to their correspondence are given in Tables 2-1 and 2-2.

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

1. General (structure of the rule);
2. Applicability;
3. MACT;
4. Area (synthetic minor) sources;
5. Source categories;
6. Coating categories;
7. Reporting and recordkeeping requirements;
8. Training requirements;
9. Thinning allowances;
10. Cost and economic assumptions and impacts;
11. Wording (definitions) and clarity of equations;
12. Units of the standard;
13. Test methods;
14. Compliance procedures;
15. Compliance dates; and
16. Miscellaneous.

The comments, the issues they address, and EPA's responses are discussed in the following sections of this chapter.

TABLE 2-1. LIST OF COMMENTERS ON PROPOSED STANDARDS OF PERFORMANCE FOR THE SHIPBUILDING AND SHIP REPAIR INDUSTRY

Docket Item No.[a]	Commenter/Affiliation
IV-D-01	Mr. Bill Schulte Facilities Manager Marinette Marine Corporation Foot of Ely Street Marinette, Wisconsin 54143
IV-D-02	Mr. Donald Theiler Director, Bureau of Air Management Wisconsin Department of Natural Resources 1010 South Webster Street Madison, Wisconsin 63707
IV-D-03	Mr. Langley Spurlock Vice President, CHEMSTAR Chemical Manufacturers Association 2501 M Street Washington, D.C. 20037
IV-D-04	Mr. Ronald Hafner Manager, Corporate Environmental Affairs McDermott International, Inc. 20 S. Van Buren Avenue Barberton, Ohio 44203-0351
IV-D-05	Dr. John Kelly Technical Service Director International Courtaulds Coatings, Inc. 6001 Antoine Drive Houston, Texas 77210-4806
IV-D-06	Mr. Matthew Iwicki Venable, Baetjer and Howard, LLP (BethShip) 1800 Mercantile Bank and Trust Building Two Hopkins Plaza Baltimore, Maryland 21201-2978
IV-D-07	Mr. Doyle Pendleton Acting Deputy Director, Office of Air Quality Texas Natural Resource Conservation Commission Post Office Box 13087 Austin, Texas 78711-3087
IV-D-08	Ms. Elsie Munsell Deputy Assistant Secretary of the Navy 2211 Jefferson Davis Highway CP#5, Room 644 Arlington, Virginia 22244-5108

TABLE 2-1. (continued)

Docket Item No.[a]	Commenter/Affiliation
IV-D-09	Mr. Robert Fletcher Chief, Emissions Assessment Branch (SSD) State of California Air Resources Board 2020 L Street Post Office Box 2815 Sacramento, California 95814-2815
IV-D-10	Mr. James Sell Senior Counsel National Paint & Coatings Associations 1500 Rhode Island Avenue, NW Washington, D.C. 20005-5597
IV-D-11	Mr. Robert Colby Chairman, ALAPCO Air Toxics Committee Mr. David Theiler Chairman, STAPPA Air Toxics Committee 444 North Capitol St. N.W. Washington, D.C. 20001
IV-D-12	Mr. Chandra Sripadam Environmental/Safety Coordinator Trinity Marine Group 13601 Industrial Road Houston, Texas 77015
IV-D-13	Mr. Michael Huston Corporate Counsel (Jeffboat) Baker & Daniels 300 North Meridian Street, Suite 2700 Indianapolis, Indiana 46204-1782
IV-D-14	Mr. R. Page Ayres Senior Environmental Engineer Newport News Shipbuilding 4101 Washington Avenue Newport News, Virginia 23607
IV-D-15	Mr. Randy Frazier Air Quality Engineer II Bay Area Air Quality Management District 939 Ellis Street San Francisco, California 94109
IV-D-16	Duplicate entry
IV-D-17	Ms. Jennifer Parker Manager, Environmental Operations Bath Iron Works Corporation 700 Washington Street Bath, Maine 04530

TABLE 2-1. (continued)

Docket Item No.[a]	Commenter/Affiliation
IV-D-18	Mr. Pat Leyden Deputy Executive Officer (SSC) South Coast Air Quality Management District 21865 E. Copley Drive Diamond Bar, California 91765-4182
IV-D-19	Mr. Dennis Lencioni Corporate Environmental Engineer Trinity Industries, Inc. 2525 Stemmons Freeway Dallas, Texas 75207
IV-D-20	Mr. Glen Crowe Supervisor of Industrial Hygiene and Environmental Quality J. Ray McDermott, Inc. Post Office Box 188 Morgan City, Louisiana 70381
IV-D-21	Mr. Dan Buell Environmental Engineering Specialist NASSCO Post Office Box 85278 MS-22A San Diego, California 92186-5278
IV-D-22	Mr. S. Nunn Acting President, Shipbuilders Council of America 901 N. Washington Street, Suite 204 Alexandra, Virginia 22313

[a]The docket number for the shipbuilding and ship repair NESHAP is A-92-11.

TABLE 2-2. INDIVIDUALS PROVIDING VERBAL COMMENTS AT THE PUBLIC HEARING OF THE PROPOSED NESHAP FOR SURFACE COATING OPERATIONS AT SHIPBUILDING AND SHIP REPAIR FACILITIES

Docket Item No.[a]	Commenter/Affiliation
IV-F-01	Mr. Frank Losey Shipbuilders Council of America 901 W. Washington St., Suite 204 Alexandria, Washington 22314
IV-F-02	Mr. Dennis Lencioni Corporate Environmental Engineer Trinity Industries, Inc. 2525 Stammons Freeway Dallas, Texas 75207
IV-F-03	Mr. Chandra Sripadam Environmental Safety Coordinator Trinity marine Group Post Office Box 24399 Houston, Texas 77229-4399

[a]The docket number for the shipbuilding and ship repair NESHAP is A-92-11.

2.1 GENERAL (STRUCTURE OF THE RULE)

Comment: Three commenters (IV-D-01, IV-D-03, IV-D-15) supported the format of the proposed rule. One commenter (IV-D-01) said that the rule is based not on the purchase and use of expensive control equipment, but on the modification of procedures and materials. Surface coating at shipbuilding and repair facilities often involve large ship modules or completed ships and is often conducted outdoors. The commenter asserted that equipment large enough to control emissions of VOHAP from these processes would prove expensive and unwieldy. Another commenter (IV-D-15) praised the standards for being based on mass of volatile organic compounds (VOC) per unit volume of coating.

Another commenter (IV-D-03) supported the establishment of identical limits for the HAP and VOC contents of marine coatings. This approach recognizes that in coating applications, the use of solvents listed as HAP--especially methyl ethyl ketone (MEK) and

methyl isobutyl ketone (MIBK)--may actually be the preferred environmental approach because they are highly efficient solvents that enable the formulation of coatings with lower VOC content.

Response: The EPA acknowledges and appreciates the commenters support on the structure of the rule.

Comment: One commenter (IV-D-03) supported the provisions in the proposed rule that would allow add-on controls to be used as an alternative means of limiting emissions from coating operations. However, because the commenter was concerned that it would be difficult and time consuming for a company to secure approval of an alternative approach from EPA, the commenter urged EPA to revise the final rule to allow the State or local permitting authority to approve alternative compliance methods, thereby establishing a level playing field among coating selection and add-on control options.

Response: Because the use of add-on controls represents a significant departure from the compliance procedures specified in the NESHAP, the EPA maintains the requirement that affected sources receive approval from the Administrator. The EPA cannot anticipate the type of add-on control equipment that might be installed and, therefore, maintains the requirement that sources obtain approval for, at minimum, the compliance demonstration and monitoring of the system. However, affected sources located in States that have established an Administrator-approved HAP program under Section 112(l) of the Act may employ alternative compliance methods, including add-on controls, if they receive approval from the State agency.

Comment: Three comments were made regarding small pleasure crafts. Commenter IV-D-06, noting that there is no rational basis to exclude certain facilities based on the end-use of the crafts they produce or repair, requested that all facilities, including those constructing and servicing personal pleasure craft, be regulated together. Commenters IV-D-09 and IV-D-18, who support the exclusion of small pleasure craft from the proposed rule, asked the EPA to define "commercial vessel" such that it specifically excludes such a craft.

Response: The definition of "commercial vessel" was removed from the proposed rule and a definition of "pleasure craft" was added to clarify the applicability of the rule. As originally intended, the rule affects coatings applied to commercial and military vessels and not coatings applied either to vessels used by individuals for personal pleasure or to vessels rented for such use. Coating operations involving these vessels will be regulated by the boat building and repair NESHAP.

Information supplied to the EPA by several major sources indicates that a pleasure craft is typically not repaired or painted at those facilities affected by the shipbuilding NESHAP. Another reason for not regulating pleasure crafts coatings under the shipbuilding NESHAP is the fact that most "pleasure crafts" are made of fiberglass and require paints uniquely different from those used on metal-hulled ships.

Comment: One commenter (IV-D-07) suggested that it would better serve the regulated community and the regulatory agency to combine the proposed rule with the architectural coatings MACT, reasoning that a combined rule may eliminate redundancies and conflicts, as well as provide better control for VOC and particulate matter (PM_{10}) emissions.

Response: The architectural and industrial maintenance rule is a VOC rule, not a HAP-based standard. However, because three of the four MACT compliance options allow the determination of VOC content in the coating as a surrogate for volatile HAP (VOHAP), the EPA will continue to maintain consistent limits among overlapping coatings that could be affected by either the marine coatings or AIM rule.

Comment: One commenter (IV-D-07) objected to excluding standards for particulate emissions. Surface preparation operations (removing existing coatings and/or profiling the surface) and surface coating operations usually go hand-in-hand at shipyard facilities--that is, surfaces are usually coated immediately after being prepared to prevent flash rusting, especially near large bodies of salt water. It also seemed

reasonable to the commenter that rules should apply to the types of grit being used to remove coatings.

Response: Particulate emissions were initially considered as part of the NESHAP since it was directed toward surface coating operations and related activities. A scoping evaluation was done to estimate the amount of nonvolatile HAP emissions associated with blasting and paint overspray. It was determined that actual HAP emissions resulting from the blast media, abraded paint, and paint (solids) overspray are very low (i.e., less than 0.1 ton per year). These estimates were documented as part of Attachments 1 through 3 to the BID published in February 1994.

The EPA also was required to determine best available control measures (BACM) for particulate emissions as part of a control techniques guidelines (CTG) document for this industry. Although particulate controls such as tarps and curtains are in use at some shipyards, resulting emission reductions have not been quantified at this time to recommend as BACM. Also, although there are more elaborate control systems currently in development that might be available in the future, none are sufficiently demonstrated at this time to recommend as BACM. This information is further discussed in an alternative control techniques document (ACT) that EPA published for this industry in February 1994.

Comment: One commenter (IV-D-11) did not believe that it is appropriate to assume that VOC and HAP are synonymous and to regulate them as if they were. As a general matter, the commenter felt that non-HAP VOC should not be regulated by the stringent standards that apply to HAP.

Response: The EPA understands that the HAP in marine coatings are, in general, a subset of VOC and that not all VOC are HAP. At the time the standards were developed and proposed, there was no EPA-approved test method for measuring HAP in coatings. This led to the adoption of the "VOC-surrogate" approach where VOHAP content of marine coatings is limited by some existing State VOC limits. If an EPA-approved test method did exist, the standards of the NESHAP would not only apply

strictly to HAP, but would be significantly more stringent than they currently are, since the current compliance options 1, 2, and 3, based on EPA Test Method 24, must account for all VOC. However, under compliance option 4, shipyards may develop a HAP-testing/certification method, obtain approval for the method, and comply with the VOHAP limits on a HAP rather than a VOC basis.

Comment: One commenter (IV-D-07), noting that only 25 of 437 shipyards are subject to the rule, believed that the estimated reduction in HAP of 300 tons/yr from these 25 sources is very small in relation to the total amount of HAP emitted by the industry. The commenter agreed that this small decrease in nationwide VOC emissions does not justify the substantial increase in rule and recordkeeping. Although the commenter implied that the rule should apply to area sources, the commenter specifically requested that the EPA defer permitting of area sources in this category [per 40 CFR 70.3(b)(1)] because State agencies have a significant burden in the permitting of major sources and sources subject to area source standards will be required to comply regardless of whether or not a permit is issued.

Response: By law, the EPA is required to develop MACT standards for major sources of HAP [See 42 U.S.C. § 7412(c)(1)]. Rule of area sources, however, is contingent upon the Administrator's determination that these sources present a threat of adverse effects of human health or the environment. At this time, the EPA has not found the threat of HAP emissions from shipbuilding and ship repair area sources significant enough to justify their rule. In any case, compliant coatings are expected to be available at approximately the same cost as existing coatings; therefore, area sources are likely to reduce their emissions to a level comparable to affected major sources, especially since many area sources (located in both ozone-attainment and -nonattainment areas) will be subject to identical limits in order to control VOC emissions.

Comment: Four commenters (IV-D-08, IV-D-11, IV-D-13, IV-D-22) suggested that various exemptions be incorporated into

the NESHAP. Three commenters (IV-D-08, IV-D-13, IV-D-22), noting that the proposed NESHAP was based largely on a California rule, requested that the exemptions within the California rule also be incorporated into the proposed NESHAP. Such exemptions address touch-up operations, low-usage coatings (<120 gallons per year [gal/yr]), and instances in which the award of a repair or coating contract is jeopardized by the cost of complying with the rule. One commenter (IV-D-13) gave specific language that could be added to the rule. Another commenter (IV-D-08) recommended that EPA also include an exemption for aerosol container applications.

Commenter IV-D-11 believed that some consideration should be given to exempting trace amounts of HAP in coatings and thinners. Such trace amounts are often introduced by way of contamination or background presence. The commenter recommended that trace amounts be defined as less than 0.1 percent of total formulation.

Response: The EPA agrees that coating operations using nonrefillable, hand-held aerosol cans should be exempt and added this exemption to the applicability section of the final rule. The EPA also agrees with those comments regarding a minimum annual usage exemption. The following wording was added to the rule to address this issue:

> "The provisions of this subpart do not apply to coatings used in volumes of less than 200 liters (L) (52.8 gallons) per year. The total volume of coating exempt under this paragraph shall not exceed 1,000 liters per year (264 gallons per year) at any facility. Coatings exempt under this paragraph shall be clearly labeled as "low-volume exempt," and the volume of each coating applied shall be maintained in the facility's records."

Regarding trace contaminants (i.e., HAP metals), a level of 0.05 percent (by mass) of total formulation was discussed at an industry meeting on September 1, 1993. The EPA has excluded the concern of trace contaminant levels of HAP metals, pigments, and other additives by only regulating volatile HAP (VOHAP).

Comment: Two commenters (IV-D-02, IV-D-11)--referring to the 23 coating categories, the 11 different numerical limits, and the multiple compliance options--complained that the rule creates complex recordkeeping and compliance requirements, thereby inhibiting compliance determinations by both industry and State and local agencies. One commenter (IV-D-02) recommended combining some of the categories.

Response: The proposed marine coating categories represent the best classification of marine coatings by industry, Department of the Navy - Naval Sea Systems Command (NAVSEA), EPA, and State agencies that currently regulate shipyard emissions. Some categories have identical limits because of NAVSEA's concern that the general use limit of 340 grams per liter (g/L) will eventually be lowered in some States and/or Districts. However, there are certain applications that currently require VOC contents close to 340 g/L. Thus, these "specialty coatings" were identified separately to ensure that technically infeasible limits are not imposed on them. Although the NESHAP contains categories with identical limits, the EPA believes that a side benefit of the promulgated categories is that they help maintain consistency between Federal NESHAP and State VOC rules. The EPA also believes that specifying multiple categories with identical limits places no extra burden on affected sources since the same compliance procedure(s) must be followed for each coating regardless of whether certain categories are combined.

Commenter: Six comments (IV-D-11, IV-D-18, IV-D-19, IV-D-20, IV-D-22, IV-F-01) were submitted concerning the issue of averaging. Three commenters (IV-D-18, IV-D-19, IV-D-22) asked the EPA to establish a method for averaging VOHAP contents for compliance purposes. An averaging option would allow flexibility in larger facilities that apply a wide range of coating types with varying HAP contents. One commenter (IV-D-18) strongly recommended that EPA grant State and local agencies the discretion to allow or preclude sources from emission averaging without having to request Section 112(l) rule approval. This commenter noted that in some instances, a few facilities may need

emission averaging in order to demonstrate compliance. The commenter also noted that averaging would allow facilities to comply at the least cost. One commenter (IV-D-19) suggested that the EPA adopt a 1-month rolling average and that it establish a sixth option under § 63.785 for the averaging procedure. The third commenter (IV-D-22) suggested a "batching average." This commenter also requested that shipyards be allowed to bank emission credits generated from coatings with VOHAP concentrations less than those stipulated in their corresponding standards. Such a policy would provide shipyards with the flexibility needed during unique and infrequent applications.

One commenter (IV-D-11) noted the complexity of the proposed rule and strongly supported EPA's decision not to allow averaging.

One commenter (IV-D-20) suggested that other methods of compliance should be added to the rule, such as a mass balance method with a permitted cap. This option could use a combination of coating category VOHAP limitations and a maximum average content limitation of 3.5 lb/gal. Such an option would allow the flexibility of thinning under extreme weather conditions.

One commenter (IV-F-01) requested that EPA use weighted averages rather than nonweighted averages when setting category-specific standards. That is, the standards should not be biased downward to an unreasonable extent by low-VOHAP coatings applied to a very limited extent.

Response: The EPA has continued to evaluate averaging as a viable alternative throughout the development of the NESHAP. It is important to note that a limited form of averaging is imbedded in the final rule (compliance option 3) but that this averaging is permitted only for simplifying recordkeeping and reporting activities. Each individual coating, as-applied, must still comply with the applicable limits.

The EPA found it difficult to adopt overall facility averaging for at least two reasons. First, EPA would have to reduce the maximum allowable limits given in Table 1 of the proposed rule in order to maintain the expected 24 percent

reduction in HAP emissions, which is the reduction achievable by the MACT standard. For example, according to data collected by the EPA, the weighted averaged VOC content of general use coatings is 368 g/L. Thus, a rule allowing averaging about a 340 g/L limit would yield only an 28/368 = 8.5 percent emission reduction. In order to achieve the 24 percent reduction expected through the proposed NESHAP, a rule based on averaging would have to establish a general use standard of approximately 0.76 * 368 = 280 g/L. Although such an averaging policy would be no less stringent than the MACT floor, it may be more restrictive to certain shipyards, especially those that apply coating(s) with VOHAP contents at or near limit(s). It would also require wholesale restructuring of the regulation.

Second, a rule based on averaging about a given standard would preclude on-the-spot enforcement activities. In other words, the results of a Method 24 examination of an as-applied coating could not be used to identify a violation since the pollutants in the tested coating may be offset by future applications.

In response to commenter IV-F-01, the VOHAP limits are based on the limits associated with the best performing facilities within the source category. The Act is very specific as to how the MACT floor is to be calculated. When the various MACT floor alternatives were developed earlier in the project, weighted averages for each coating category were used to prevent the type of bias suggested by the commenter.

The EPA initially categorized every paint reported by all shipyards providing information in the project data base. After the VOC and HAP contents of each coating were determined/ verified, each coating was ranked within its category (based on VOC or HAP content--from lowest to the highest). Those coatings comprising the best (i.e., lowest VOC or HAP content) 12 percent of the total volume of each coating category were identified as one of the MACT alternatives. Industry representatives quickly pointed out that such an approach was flawed because the few

coatings identified as MACT would not work for all applications associated with a given category.

Comment: One commenter (IV-D-11) believed that the handling and transfer standard, at a minimum, should be revised to require submerged filling for tanks and large vats that store materials containing VOHAP.

Response: Based on information available to EPA, this requirement does not seem realistic or appropriate for this industry. Most of the paints and solvents used at shipyards are dispensed from central, check-out points. Paints are supplied in 5-gallon buckets, 55-gallon drums, or large "tote" containers. Thinners are typically supplied in similar containers, but only small amounts are routinely used in daily painting operations.

Comment: Six commenters (IV-D-04, IV-D-06, IV-D-19, IV-D-20, IV-D-21, IV-D-22) said the proposed NESHAP needs to be amended to reduce the shipbuilder's liability for coatings mislabeled by manufacturers and applied in good faith by shipbuilders. One commenter (IV-D-19) stated that shipbuilders rely on the content representations made by paint manufacturers. If such representations should prove false during a shipyard inspection, the shipbuilder could be held liable even though the coating was applied in good faith. For this reason, commenter IV-D-06 stated that Method 24 can not and should not be the definitive method for determining compliance; rather, an option should be included that permits the use of manufacturer-supplied data. Another commenter (IV-D-21) believed that paint manufacturers should be held liable and/or responsible for any enforcement action resulting from compliance testing. According to commenters IV-D-20, IV-D-21, and IV-D-22, shipyards do not have onsite testing capabilities. Moreover, the testing would be duplicative of the manufacturer's certifications, and the cost to shipyards would be prohibitive with no resulting benefit to the environment.

Response: Section 112(d) of the Act requires the EPA to establish standards for HAP sources. Many shipyards are major sources of HAP, and their rule cannot be substituted by

regulating coating manufacturers. The issue of thinning, which is routinely done at most shipyards, further complicates the issue of liability and demands that a test method be available for measuring the as-applied VOHAP contents at the point of application. However, the rule has been revised to permit the use of batch formulation data in lieu of Method 24 testing, provided that the manufacturer or user demonstrates a quantifiable and consistent relationship between such data and Method 24 results (including the role of cure volatiles). Moreover, the EPA encourages paint users to develop supplier quality assurance (SQA) programs that will help minimize the risk involved when using paint supplier information to determine or verify compliance with the VOHAP limits. When used properly, SQA programs result in cost savings for both the user and the provider.

Comment: Three commenters (IV-D-04, IV-D-06, IV-D-20), two of which (IV-D-06, IV-D-20) asked the EPA to regulate the manufacture and sale of coatings, expressed concern that the expected environmental benefits of the proposed NESHAP might not be realized because noncompliant coatings can be applied at smaller yards and at yards outside the U.S. To the extent that noncompliant paints are cheaper than compliant paints, the proposed NESHAP creates a competitive disadvantage for major sources. Commenter IV-D-06 said that to the extent that only compliant coatings are available on the market, compliance will be easily and efficiently achieved, with lower administrative costs; it would seem most appropriate to regulate the suppliers of these products under Section 111 of the Act, like manufacturers of residential wood heaters are regulated under 40 CFR Part 60, Subpart AAA, and Section 183(e)(3) (rules to require emission reductions from consumer or commercial products).

Response: Section 112 of the Act requires the EPA to regulate major sources of HAP emissions. Many shipyards qualify as major HAP sources and must be regulated according to the law. The EPA believes that use of noncompliant coatings at smaller

yards and at yards outside the U. S. and, thus, creating an unfair competitive advantage is an unlikely scenario. First, compliant coatings for all categories of marine paints are readily available and have been for the past couple of years. The State rules that served as the basis for determining MACT were successfully implemented without the type of effects suggested. Second, many States are likely to be implementing VOC limits similar (if not identical) to the VOHAP limits. When this occurs, many additional shipyards will have to use compliant coatings; currently, most shipyards are located in ozone nonattainment areas. Coatings used in this industry will be regulated under Section 183(e) through either a national rule or a CTG. The final requirements are scheduled for issuance by March 1997.

Comment: Two commenters (IV-D-04, IV-D-22) considered the timing of the shipbuilding and ship repair NESHAP to be improper because paint manufacturers will be subjected to rules in 1997. According to commenter IV-D-04, the EPA has argued that it is without authority to regulate coating manufacturers under Section 112 of the Act, yet it is recognized by the EPA that they plan to promulgate rules for coating manufacturers under Section 183(e).

Response: The commenter is correct in that the EPA does not have the authority to regulate the sale and manufacture of marine coatings under Section 112 (d) of the Act; the Act specifies that EPA is to establish emission standards for source categories listed under Section 112(g). The EPA plans to address labeling requirements for coating manufacturers under Section 183(e) beginning in 1997. Also, the MACT standard addresses work practices and uses of alternative/creative emission control, as well as coating content, while Section 183(e) only addresses coating content.

Comment: One commenter (IV-D-23) noted that the proposed NESHAP does not address painting done at shipyards by individuals who work and reside on ships. The commenter believed that

activities undertaken by these individuals should be considered as part of the shipyard's overall operation.

Response: With the exception (exemption) of pleasure craft, any shipbuilding or ship repair surface coating activities occurring within the confines of the major source property boundaries are considered to be part of the "facility's" overall operations and are, therefore, subject to the requirements of the standard. The rule is intended to apply to painting operations conducted by ship personnel assigned to a ship while that ship is docked at a shipyard because the resulting emissions would be considered part of the shipyard emissions.

Comment: One commenter (IV-D-12) claimed that paint manufacturers would experience difficulty in producing compliant coatings for certain categories. The commenter, therefore, asked that the following standards be changed: change the antifoulant standard from 3.33 lb VOHAP/gal coating to 4.00; change the inorganic zinc standard from 2.83 to 4.00; and change the specialty interior standard from 2.83 to 3.20.

Response: The commenter did not provide any supporting information on this issue. Without any technical justification for such changes, the EPA does not agree that manufacturers will have difficulties producing compliant coatings for certain categories. This belief is supported by the fact that several manufacturers are currently supplying compliant coatings to the Navy and several shipyards located in States with existing limits similar to the proposed limits.

2.2 APPLICABILITY

Comment: Five commenters (IV-D-01, IV-D-08, IV-D-15, IV-D-20, IV-F-02) were concerned that certain facilities and military installations would be affected by the proposed rule even though emissions resulting from coating operations are well below the 10/25 tons/yr threshold. Commenters IV-D-01 and IV-D-15 noted structural repair operations. Commenter IV-D-01 recommended modifying the statement in Section 63.781(a) to read that affected facilities are major sources of VOHAP. Commenter IV-D-15 recommended re-evaluating the applicable sources section

and providing some clarification. Commenters IV-D-20 and IV-F-02 asked that the rule apply only to coating activities, not to all activities within a shipyard.

Commenter IV-D-08 stated the proposed rule does not discuss the potential impact on minor marine coating operations that occur on facilities that are major HAP sources for emissions unrelated to shipbuilding and ship repair. The commenter believed that the EPA did not intend this rule to affect these sources. However, unless the rule is modified to include an exemption for low-volume users, the number of affected Navy facilities alone will be in the hundreds because of the inclusion of all military facilities that use marine coatings for any reason.

Commenter IV-D-08 discussed how many military installations may be treated more stringently than similarly-sized "cities" and may be required to permit all industrial and nonindustrial sources as a single source in determining the applicability for Title V permits. This requirement is due to the military installations' representation under SIC Code 9711, "National Security."

With such unique circumstances in mind, commenter IV-D-08 believed a minimum production quantity or HAP emission threshold below which applicability of this rule is unreasonable exists. The Administrator has the authority [Section 112(d)] to determine that some sizes should not be regulated by appropriately defining the "affected source." The commenter also referenced VOC content rules in California and some small number cutoff (i.e., 120 gallons per year). Therefore, the commenter believes that it also is proper for EPA to provide a small quantity exemption in the final rule.

Response: Major-source determinations must consider all operations. Commenter IV-D-08 was correct in assuming that the EPA did not intend for this rule to affect those major sources of HAP emissions with minor marine coating operations. Therefore, a surface coating usage was incorporated into the definition of "affected source" for this regulation. Those major source

facilities with annual marine coating usage less than or equal to 1,000 liters are excluded (as nonaffected sources), and will therefore not be subject to the requirements of the shipbuilding NESHAP, except for maintaining coating records that document annual usage. It should also be noted that compliant coatings are readily available and can be used for any marine coating application. Effective September 1, 1994, the Navy mandated that only compliant coatings are to be used on Navy ships. Noncompliant coatings hopefully will become obsolete once the NESHAP and the State VOC rules become effective.

With respect to commenters IV-D-20 and IV-F-02, the rule applies to owners and operators of major source facilities that engage in shipbuilding or ship repair operations. However, the rule only limits VOHAP contents of coatings and requires VOHAP-containing coating containers and materials to be handled in a responsible manner; it does not affect other activities at shipyards.

Comment: Three commenters (IV-D-06, IV-D-07, IV-D-13) requested that the EPA regulate all shipyards, both large and small. The commenters explained that, without this provision, much of the expected emissions reductions will not occur since noncompliant coatings may simply be applied at smaller yards. The commenters also noted the competitive disadvantage that this incentive would impose on larger shipyards.

According to the commenters, regulating all shipyards would have many advantages. First, emissions would be reduced beyond the 300 tons/yr expected from the proposed NESHAP. Second, an incentive would be created to narrow the product market toward compliant coatings, thereby reducing the possibility of mistaken purchase and use of noncompliant coatings (especially at companies with multiple shipyards), while also reducing the need for extensive product monitoring and sampling at the source level. Third, producers would narrow product lines, potentially producing economies of scale in production and marketing. Fourth, recordkeeping and reporting requirements would be less burdensome because noncompliant coatings will be phased out of

the market. And fifth, regulating all shipyards would create a level playing field in the industry.

Commenter IV-D-13 believed the EPA has not presented any justification for not regulating both large and small yards. Rather, it appears that the EPA proposes to limit the NESHAP to major HAP sources simply on the assumption that they can best cope with the additional costs and administrative burdens. The commenter claimed that this policy punishes the larger shipyards without recognizing that several larger yards have already taken significant steps to reduce VOHAP emissions, while many of the smaller yards have done little. The commenter noted that the EPA, if it desired, could reduce the notification, recordkeeping, and reporting requirements for the smaller shipyards, but that they should be required to use the same marine coatings as used by the larger yards.

Response: By law, the EPA is required to develop MACT standards for major sources of HAP (see 42 U.S.C. § 7412(c)(1)). Rule of area sources (which includes smaller shipyards), however, is contingent upon the Administrator's finding that area sources adversely affect human health or the environment. The EPA has not made a finding at this time; thus, area sources are not subject to the NESHAP requirements. The EPA believes that the establishment of final BACM and CTG limits on the VOC contents of marine coatings partially addresses the commenters' concern.

Another consideration involved the parallel CTG project, which provides guidance for States in developing VOC rules. If the States adopt similar VOC limits documented in the CTG/ACT as final BACM (best available control measures), all VOC major source shipyards located in ozone nonattainment areas will be required to use compliant coatings and, thereby, will be required to reduce HAP emissions beyond the 300 tons/yr. As the commenters also recognized, this limitation also will cause the paint manufacturers to focus their efforts on compliant coatings. Some of the major manufacturers have indicated that they are actively trying to reduce product inventories and will not market/maintain low-usage products that are noncompliant.

Regarding recordkeeping requirements, even if noncompliant coatings are entirely phased out of the market, there is no assurance that painters would not add additional thinner (VOHAP) beyond the limits. Some type of system that checks the as-applied coatings to verify compliance must exist.

Comment: One commenter (IV-D-07) claimed that offshore platforms represent a substantial percentage of the structures that are repaired at shipyards in Texas. Therefore, they should be included in the rule that specifically covers the ship repair industry if the standard is to be effective. With their inclusion, much confusion will be avoided, such as whether or not the VOHAP-containing coatings used on offshore platforms should be included in determining whether a company is a major source.

Response: Based on the information provided to the EPA from those shipyards located in the Gulf Coast region, very few (if any) of the yards repairing platforms as a significant part of their business would qualify as major sources of HAP emissions. The EPA visited several bargeyards and small shipyards in that area and annual coating usage was very low compared to the estimated usage at the 25 major source shipyards.

Platforms were excluded from the definition of "ship" to minimize overlap with the Architectural and Industrial Maintenance (AIM) coatings rule being developed under Section 183(e) of the Act. However, the EPA strived to be compatible in those coating category definitions and limits common to both projects. Although the AIM rule pertains to VOC and not directly to HAP, overall HAP emissions should decrease since HAP are generally a subset of VOC.

2.3 MACT

Comment: One commenter (IV-D-06) thought EPA determined the existing source MACT floor improperly. Assuming the accuracy of EPA's determination that there are less than 30 sources in the source category, the MACT floor for existing sources is to be determined by "the average emission limitation achieved by the best performing 5 sources" [42 U.S.C. § 7412(d)(3))(B) (emphasis added)]. The EPA recognized this average in the preamble to the

proposed rule at 59 FR 62687 stating the MACT floor was "calculated to be the arithmetic average (mean) of the emission limitation achieved by the best performing five sources (emphasis added). Yet in determining the MACT floor for existing sources, EPA selected the emission limitation achieved by "the median facility of the best performing five sources" (59 FR 62688). As indicated in the preamble, only 3 of the estimated 25 major sources are located in California, the State with the most stringent emissions limitations. By selecting the median source of the top five sources, EPA selected the California standards as the MACT floor for existing sources, contrary to Section 112(d)(3)(B). The EPA should properly calculate the MACT floor by averaging these three sources' emissions limitations with the emissions limitations achieved by the next two best controlled sources. The resulting MACT floor will certainly be lower (less stringent) than the California limitations.

The commenter requested that the MACT floor be properly calculated and the resulting MACT standards be reproposed for public comment.

Response: The EPA has interpreted "average" as meaning a measure of central tendency. Such a measure may include either the arithmetic mean, median, or mode [see 59 FR 29196 (June 6, 1994)]. In the case of the shipbuilding NESHAP, the EPA believes that use of the median is most appropriate for developing the MACT floor.

The limits associated with the median facility were adopted as MACT based on the EPA's view that the median "set of limits" would be more appropriate to use than trying to develop weighted average (mean) limits for each of the 23 categories. Three of the top (best) sources were located in California and two were in Louisiana. To identify an intermediate limit (between the California and Louisiana limits) would not be appropriate because there is not a continuum of paints that could be used. Coating manufacturers formulate paints to meet various requirements, including VOC content limits.

As a result of a different issue, the EPA recalculated the MACT floor with 10 additional major sources (35 total) and determined the floor to be the same as proposed. The following analogy further explains the EPA's rationale on the MACT floor decision. In several rulemakings, when candidate facilities use different control devices and the intermediate limit does not correspond to an existing technology, EPA has selected the median approach because there is an associated technology and level of control. The same reasoning applies to VOC limits where manufacturers have developed lower VOC coatings based on the latest technology (and requirements).

Another issue to be considered is that since the NESHAP proposal date, the Navy has adopted VOC limits similarly based on the California limits for all Naval shipyards and Navy-related work. Since at least two of the Naval shipyards qualify as major sources, if the MACT floor were to be recalculated today, the limits would be identical to the proposed (and promulgated) limits, regardless of the approach used to determine the mean or median level of control. The Louisiana limits would not enter into any of the floor calculations. This point is further discussed in a later comment/response.

Comment: One commenter (IV-D-06) was concerned over the preamble discussion of a prototype portable enclosure and felt that it was inappropriate to discuss capture systems that are in the early developmental stages that may have very limited applicability. The preamble should not contain an implicit recommendation of unproven technology.

Response: The purpose of the preamble discussion was to provide information. The "Compliant All-Position Enclosure" was recently demonstrated at the Metro Machine Shipyard in Norfolk, Virginia. While such a demonstration does not qualify as "available" technology, the EPA thought that it was important to provide information to the industry that such equipment is being developed; this inclusion was not meant to be an implicit or explicit recommendation for any new technology.

It should also be noted that several shipyards currently use tarps and curtains to reduce particulate and paint overspray emissions. To the EPA's knowledge, none of those reductions have been quantified and, therefore, cannot be recommended as best available control measures (BACM).

Comment: Four commenters (IV-D-11, IV-D-13, IV-D-20, IV-D-22) believed that the EPA underestimated the number of major sources affected by the rule. The first commenter (IV-D-11) cited a local agency that reported at least three major sources in its State, while the EPA's background information document identifies only one within its State. This commenter believed that it may be simpler to establish applicability based upon the total gallons of coating and solvents used in a given year.

The second commenter (IV-D-13) said "it is difficult to comprehend that only 25 such facilities would have the potential to emit more than 25 tons annually of HAP. It does not require much painting to actually generate more than 25 tons per year." The commenter listed 22 other shipyards that may likely qualify as major sources; most of these shipyards have not been identified by the EPA as major sources.

Commenter IV-D-22 claimed that the 412 shipyards not identified by the EPA as major sources emit more cumulatively than the 25 targeted yards. This commenter also predicted that emissions of HAP will simply shift from the major sources to nonmajor sources.

Response: Section 112(d)(3) requires emission standards for existing sources to be based upon the average emission limitation achieved by the best performing 12 percent of existing sources (for which the Administrator has emissions information) if there are more than 30 sources in the source category, or the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) if there are fewer than 30 sources in the source category (42 U.S.C. §7412(d)(3)). To estimate the number of major sources, the EPA assumed that coating operations are responsible for all the VOHAP emissions. The EPA believes that

this sufficiently characterizes this source category. Using the best information and data available at the time the EPA developed the proposed rule (1992-93), the EPA estimated that the average VOHAP content of all marine coatings (weighted by annual usage volumes reported in the data base) was 141 g/L (1.18 pounds per gallon [lb/gal]). A major source facility would have to emit a minimum of 22.7 Mg/yr (25 tons/yr) of total HAP, or use an estimated 160,933 L/yr (42,534 gal/yr):

$$(22.7 \text{ Mg/yr} \times 1{,}000{,}000 \text{ g/Mg}) \;/\; (141 \text{ g/L}) = 160{,}993 \text{ L/yr} \; (42{,}534 \text{ gal/yr})$$

When the as-applied coating volume was adjusted for thinning volume added, the estimated paint usage of major shipyards ranged from 132,500 to 151,400 L/yr (35,000 to 40,000 gal/yr). The EPA used this range to initially identify shipyards as major sources of resulting HAP emissions from coating operations. The calculated values reflect average VOHAP content for all marine coatings. Ship owners or shipyards may have specific coating requirements that differ signficantly from the average value of 141 g/L (1.18 lb/gal) used in the calculation. Individual shipyards must determine their major source status and hence the applicability of the MACT standards on the basis of their potential VOHAP emissions.

Comment: Two commenters (IV-D-20, IV-D-22) suggested that the MACT determination is flawed on the basis that there are more than 30 shipyards that qualify as major sources. The MACT floor, therefore, should have been based on the top 12 percent of the sources and not on the best five sources.

Response: The MACT floor determination was based on the best information available at the time EPA developed the proposed regulation. After the close of the comment period some State permit programs provided additional paint usage and VOC/VOHAP emissions data for several shipyards, three of which reflected 1994 performance, rather than 1992-1993 performance (the period on which EPA based the proposed standards). Using this new data, EPA determined that there are ten additional shipyards (35 total) that qualify as major sources -- i.e., their potential HAP

emissions are greater than the 9.1/22.7 Mg (10/25 ton) cutoffs. Since there are more than 30 sources in the category, EPA calculated the MACT floor for the final rule using data from the best-performing 12-percent of sources.

EPA also determined that the median of the best performing 12 percent of sources most accurately reflects the central tendency of the data used to determine the MACT Floor, and thus for this rule, is the appropriate interpretation of the term, "average," in Section 112(d)(3) of the Act. (See 59 FR 29196 (June 6, 1994) for a general discussion of EPA's discretion in interpreting "average" in section 112(d)(3).) Because 12 percent of 35 is 4.2, the MACT floor (median of the best-performing 4 sources) is some average of the second and third best controlled shipyards. This has no impact on the proposed MACT Floor limit because all three best-performing shipyards in the category are located in California, and they all use the same "level of control." Accordingly, the MACT floor determination in the final rule did not change from what was proposed. EPA believes that this determination of the final MACT floor is reasonable and the best use of the available data. The calculation also includes some margin of error -- i.e., even if there are 45 major sources, the best performing 12 percent is represented by the best performing 5 shipyards (0.12 x 45 - 5.4 or the best performing 5 shipyards). The median of these five yards is the level of control achieved by the third best performing shipyard, which is located in California. Both the MACT floor and the associated marine coating VOHAP limits would remain the same as the limit promulgated in the final rule.

Recent indications from the Navy and other industry representatives reveal that fewer affected sources exist today because of base closings and consolidation efforts. The original estimation of 25 major source shipyards was based on annual paint and solvent usage, type of work conducted (new construction versus repair), number of employees, and type (size) of vessels serviced. This information also was used in developing the model plants and resulting emissions. Chapter 6 of the proposal BID

describes the model plants, as well as the HAP content of paints and solvents used in this industry. The (weighted) average HAP concentration of all marine coatings mentioned in the previous comment/response was an integral part of emissions estimates and determining if a shipyard qualifies as a major source facility. Other HAP-emitting processes at most shipyards such as welding, metal forming/cutting, and abrasive blasting exist, but the vast majority of HAP emissions come from organic solvents used in marine paints and solvents used for thinning and cleaning.

It is also important to note that the existing marine coating VOC limits in California and Louisiana (documented in Table 3-9 in the proposal BID) have different limits for the various coating categories. The 1991 California limits are more stringent than the 1991 Louisiana limits in the general use category and in only a few specialty categories, including antifoulant (400 g/L vs. 440 g/L), high temperature (500 g/L vs. 650 g/L), military exterior (340 g/L vs. 420 g/L), and specialty interior (340 g/L vs. 420 g/L). Louisiana also identified an additional 11 specialty categories with limits ranging from 420 to 730 g/L. Seven of these categories are government specifications and have military application. Since 1994, the Navy, has required all shipyards doing Navy work to use coatings that would be in compliance with the MACT limits. Information from the Navy did not indicate that these additional coating categories are needed or required or that there was a requirement above the general use limit of 340 grams/liter. Therefore, EPA has not created additional categories for these coatings.

2.4 AREA (SYNTHETIC MINOR) SOURCES

Comment: Six commenters (IV-D-02, IV-D-07, IV-D-08, IV-D-19, IV-D-20, IV-F-02) offered statements about the ability of a major source to change its status to a minor source. One commenter (IV-D-02) stated that EPA's proposal to allow a facility to become a "synthetic minor" source, thereby avoiding the MACT requirements, is consistent with Wisconsin's position on this issue. Should the facility later increase the potential HAP emission rates, the NESHAP then would apply immediately.

Conversely, if a major HAP source subject to the MACT requirements later makes a change that reduces the potential HAP emissions below the major levels, the facility should not be allowed to get out of meeting the NESHAP requirements. The commenter's position was stated as "once MACT, always MACT." This approach is consistent with Wisconsin's approach to the VOC RACT rules. The general idea is that if the facility was able to operate under the NESHAP requirements using compliant coatings, there is no justification for allowing these facilities to emit VOHAP at higher levels.

Five commenters (IV-D-07, IV-D-08, IV-D-19, IV-D-20, IV-F-02) believed that a facility should be able to alter its status from a major to a minor or area source based upon changes in its operations or emissions. One commenter (IV-D-08) believed that a facility should be able to change from an "affected source" to a "nonaffected source" based on a finding that the annual VOHAP emissions are below established limits and that projected future emissions will be below established limits. Any subsequent change in excess of the reference year emissions or the projected emissions should require reporting to the appropriate regulatory agency and the reinstatement of applicability.

Commenters IV-D-19 and IV-D-20 requested that the proposed NESHAP include an option for facilities to apply for a permit as a synthetic minor source of HAP. Under the Title V program, facilities have the option to apply for a synthetic minor permit, provided the facility has a potential to emit above major source thresholds and can certify that actual emissions do not exceed major source thresholds. Incorporating the Title V approach into the proposed NESHAP would help resolve a long-standing debate regarding applicability and the potential to emit. Commenter IV-D-19 claimed that this option would benefit both industry and the environment because it provides an incentive for industry to reduce toxic emissions, while providing the flexibility offered for minor source operations. Commenter IV-D-20 said this

provision would allow some flexibility in a shipyard's decision to limit product usage or schedule activities.

Commenter IV-F-02 said that if a shipyard's emissions are reduced to a level below the major source threshold because of State or Federal rules, the source should no longer be subject to the NESHAP.

Response: The EPA has decided that facilities may switch to area source status (including "synthetic minor" designation) at any time until the "first compliance date" of the standard. The "first compliance date" is defined as the first date a source must comply with an emission limitation or other substantive regulatory requirement in the applicable MACT standard. Therefore, a potential major source can opt to become a "synthetic minor" source if there are Federally enforceable limits that restrict HAP emissions from exceeding the 9.1/22.7 Mg (10/25 ton) thresholds. However, after the first compliance date (1 year after promulgation), a source that is subject to a MACT standard is permanently subject to that standard. This requirement is consistent with the intent of the Act to ensure that emissions reductions are permanent and that the health and environmental protection provided by MACT standards is not undermined.

2.5 SOURCE SUBCATEGORIES

Comment: One commenter (IV-D-06) suggested establishing separate source categories according to average ambient temperatures. This separation would allow different standards to be set for yards located in climates demanding excess thinner use.

Response: While there have been discussions concerning various ways to classify shipyards by climatic location, the EPA decided to use a general (and simple) thinning allowance for all locations by providing cold-weather limits. Categorizing by climate zone is impractical because even shipyards in warm climates, on occasion, are required to thin as a result of cold weather.

Comment: One commenter (IV-D-07) suggested that subcategorization could be used to distinguish shipyards that perform routine coating operations from those, especially private ones, that experience variable operations. The commenter strongly recommends that flexibility be retained within each category if such subcategorization should occur.

One commenter (IV-D-11) agreed with the EPA that there is no basis for differentiating among different classes of operations within the shipbuilding and repair industry, especially since compliant coatings are reported to be readily available.

Response: The EPA does not believe that it is appropriate to subcategorize on the basis of routine versus nonroutine work. Such subcategorization could complicate enforcement. In addition, the segregation of "routine" yards from nonroutine yards may restrict routine yards from changing their operations and accepting alternative workloads in the future. Finally, it would be difficult to establish criteria defining a routine yard.

2.6 COATING CATEGORIES

Comment: One commenter pointed out that the Navy's coating needs are driven by the requirements of ship operations, maintenance schedules, and related costs. These requirements determine what will be included in military specifications for coatings.

Response: The EPA worked with NAVSEA personnel (and members of the shipbuilding and ship repair industry) to develop this rule and has become well acquainted with the various requirements of coatings used on naval vessels. The EPA has accommodated those needs by adopting separate limits for specialty categories and adding a couple of additional coating categories (e.g., air flask and rubber camouflage).

Comment: One commenter (IV-D-07) noted that three coating categories account for approximately 90 percent of VOHAP emissions. To this commenter, it seemed that these three categories could be identified as marine coatings (marine topcoat, marine zinc, and marine antifoulant) and then regulated at the source nationwide similar to the architectural coating rule. This method of identification would be consistent across the source category and would deter the supply of noncompliant coatings.

Response: The commenter is correct that these three categories account for the majority of sales and resulting emissions. Limits, however, were set for several categories to prevent miscategorization of coatings. The EPA does not view the number of coating categories as a serious issue since the same procedures and deadlines must be followed regardless of the number of categories. Moreover, since many of the coating categories are for specialty and military purposes, many shipyards will not have to be concerned with the full spectrum of coating categories.

2.7 REPORTING AND RECORDKEEPING REQUIREMENTS

Comment: Three commenters (IV-D-01, IV-D-09, IV-D-21) regarded quarterly compliance reporting as excessive. One commenter (IV-D-21) recommended semiannual or annual reporting.

Another commenter (IV-D-09) recommended that EPA require owners and operators to submit an annual compliance status report in lieu of a quarterly or semiannual report. An annual report, according to this commenter, should be sufficient for compliance purposes as long as records are made available for each inspection.

The third commenter (IV-D-21) recommended that reporting of normal operating conditions (i.e., no exceedances) should be required on an annual basis. According to this commenter, quarterly reporting would prove time- and money-consuming for the facility. In addition, the commenter stated that agencies providing oversight and review could not possibly keep current with reports on a quarterly or semiannual basis without hiring additional personnel.

Response: The EPA has reduced the reporting requirements of affected sources. As stated in the final rule, shipyards must submit reports every 6 months following the compliance date. Furthermore, a source that violates the standard must submit additional information, as specified in § 63.788(c)(1), for the reporting period during which the violation(s) occurred. This amendment will result in a cost savings to affected facilities, and these savings have been reflected in the revised costs. The EPA made the decision to be consistent with the Title V Operating permit program. The Title V reporting requirements are given in Section 504(a) of the Act. Section 504(a) requires permittees to submit compliance reports to the permitting authority no less often than every 6 months. (See 42 U.S.C. § 7661(c)(a).)

Comment: Five commenters (IV-D-02, IV-D-07, IV-D-08, IV-D-09, IV-D-11) were concerned with the time allowed for submitting the notification and compliance plans. The commenters felt that more than 120 days will be needed to prepare and submit the plans. Three commenters (IV-D-03, IV-D-08, IV-D-11) suggested 180 days, one (IV-D-07) suggested "greater than 180 days," and one (IV-D-09) suggested 180 days with the option of extending the deadline an additional 180 days if the State or local agency notifies the EPA that it plans to seek Section 112(l) equivalency.

Response: The EPA has agreed to allow 180 days for the submittal of the initial notification and implementation plans.

Comment: One commenter (IV-D-08) did not concur with the estimated recordkeeping burden of 845 hours per source per year in the proposed rule. Based on previous experience, the

commenter estimated the burden of the proposed rule ranges, at minimum, from 2,000 to 4,000 hours per source per year.

Response: In response to comments on the burden of the proposal the EPA revised the requirements. We have removed the training requirement, limited the applicability to the use of coatings in excess of 1,000 liters per year, provided for those affected shipyards a low usage exemption of 200 liters (with a total of 1,000 liters per shipyard), and revised the reporting from quarterly to semi-annually. The mentioned changes plus the flexibility in the final regulation should result in a lower burden per source. The EPA developed its estimates of the burden recognizing the fact that many shipyards already have tracking systems in place for their paint/solvent operations. The EPA estimates were developed using labor estimates for recordkeeping provided by some shipyards.

Comment: Two commenters (IV-D-09, IV-D-21) objected to the requirement that shipyards retain records for a minimum of 5 years. One commenter (IV-D-21) noted that the local agency requires a retention of only 3 years. Another commenter (IV-D-09) recommended requiring record retention for 2 years or until the next inspection, whichever is longer. This commenter stated that records should be kept longer than 2 years only if the facility has not been inspected within that time. This commenter additionally noted that most facilities in its State are inspected every 1 or 2 years.

Response: The requirement that records be retained for 5 years is based on the statute of limitations imposed on the EPA in the Act and is consistent with the requirement in other rules, such as the Operating Permits Rule--Part 70 of Title 40 of the CFR.

Comment: One commenter (IV-D-11) believed that basing noncompliance on discrepancies between anticipated monthly solvent usage and actual usage is unrealistic given the amount of unscheduled repair work that occurs at shipyards. The commenter

suggested modifying the proposed rule to acknowledge this aspect of the industry and to specifically state how to incorporate thinner usage for unscheduled repair work. One idea given by the commenter would allow the facilities to document the unscheduled repair work and to include that information with the required quarterly report. The commenter also said it might be sufficient to allow shipyards to adjust their allowable thinner volumes at the end of the month to account for unscheduled repair work.

Response: The EPA understands that much of the repair work that occurs in shipyards is unscheduled, and the text of the rule has been modified to ensure that such repairs are not affected. Specifically, compliance options 2 and 3 in the final rule state that a shipyard shall designate thinners and determine maximum allowable thinning ratios "prior to the first application of each batch," rather than "prior to each month." The EPA's intention throughout the NESHAP development was to ensure that shipyards adequately monitor and manage thinning practices. Thus, it is not necessary that shipyards perform calculations and notify painters prior to each month, only that they take these actions before a coating is applied.

Comment: One commenter (IV-D-13) believed the proposed NESHAP would impose significant and unnecessary burdens and costs on shipyards. The commenter recommended that EPA subject all shipyards to the proposed rule. Under such a scenario, there would be no need for the burdensome recordkeeping and reporting requirements because paint manufacturers--given no market for noncompliant coatings--would, by necessity, develop only compliant coatings. The commenter, however, recognized the disproportionate costs that this scenario would impose on smaller shipyards and noted that EPA may want to establish different recordkeeping and reporting requirements for differently-sized shipyards.

Response: The EPA does not agree with the commenter's statement that the NESHAP will impose unnecessary burdens and costs on shipyards. Because thinning is routinely done at most shipyards, buying/using only compliant paints will not guarantee

compliance with the VOHAP limits. In addition, U.S. coating manufacturers may still produce noncompliant coating for export, and foreign manufacturers may produce noncompliant paints that might be used in the U.S.

The EPA does agree with the commenter's view that if only compliant paints were sold/used within the U.S., the playing field would be closer to "level" for all shipyards, regardless of size and/or location. The CTG project was conducted in parallel with the NESHAP because of the overlap involving coating limits. Most shipyards are currently located in ozone-nonattainment areas, and if States adopt similar VOC limits, there will be no advantage to most of the area-source shipyards. Some States have indicated that VOC limits will be enforced in both ozone-nonattainment and -attainment areas.

Since most of the cost burden of the NESHAP is associated with the recordkeeping and reporting requirements, compliant coating costs versus current coating costs is a minor issue. Smaller shipyards are just as likely to add thinners (and exceed the VOHAP limits) as the major source shipyards, but the cost of a paint/solvent tracking system would be far more significant to small shipyards.

Comment: One commenter (IV-D-18) urged the EPA to provide flexibility to local agencies to allow for alternative recordkeeping, reporting, and monitoring procedures that are cost effective and equally accurate in demonstrating compliance.

Response: Subpart A of Part 63 of the CFR (General Provisions) already allows local permitting authorities to adopt alternative monitoring, recordkeeping, and reporting procedures.

Comment: One commenter (IV-D-22) considered the recordkeeping requirements to be needlessly excessive and micro-managerial. The commenter suggested monitoring potential emissions by counting the total quantity of paints, coatings, and thinners that are brought into a shipyard, rather than requiring each shipyard employee to perform on-the-spot complex mathematical calculations.

Response: The EPA has reduced the recordkeeping frequency and has included a form of averaging (compliance option 3) to provide additional flexibility. On-the-spot mathematical calculations are not intended for any of the compliance options. Any calculations to determine the maximum allowable thinning rate are done once, when the paint is received. Calculations can be performed using a spreadsheet or simple graphs based on Equation 1 (see Appendix B of the rule). Each container of coating is to be labelled with the maximum allowable thinning rate so the painter knows how much thinner may be applied and still meet the applicable VOHAP limit. Because thinning is routinely conducted at most shipyards and because such thinning could easily result in the application of a noncompliant coating, the EPA does not feel that the recordkeeping requirements are needlessly excessive or micro-managerial.

Compliance option 3 (based on VOC) and compliance option 4 (based on VOHAP) are meant to provide affected sources with a means of minimizing the recordkeeping burden by allowing shipyards to group together coatings (for recordkeeping and reporting purposes only) that use the same thinner. Also, to the extent that many ship owners provide coatings directly to the shipyard and require unused volumes to be returned to the ship, thorough recordkeeping requirements are all the more imperative.

Comment: One commenter (IV-F-02) asked the EPA to approve certain types of report forms so that reports generated internally by the shipyard do not need to be reformatted for the permitting agency.

Response: Reports need to have all the necessary data (e.g., coating identification, coating category, volume used, VOHAP content, solids content, and test method) to determine compliance in a format that is clearly understandable. In addition, manufacturers and affected sources are required to certify the VOHAP content of marine coatings. They may use a form similar to that published as Appendix A in the promulgated rule.

2.8 TRAINING REQUIREMENTS

Comment: Two commenters (IV-D-01, IV-D-15) suggested that a general outline of training requirements be provided to ensure some amount of uniformity and to prevent misinterpretation of the standard. This training would assist facilities with developing a program to train a professional person to maintain an effective compliance and monitoring regimen.

Three commenters (IV-D-01, IV-D-08, IV-D-14) did not concur with the approach for ensuring that all personnel engaged in the various aspects of painting adhere to the training certification requirements. Commenter IV-D-01 stated that requiring each employee who could be assigned to a coating operation to be properly trained and informed of each operational and recordkeeping requirement is "risky." The commenter suggested that personnel in charge of coating operations (e.g., managers, foremen) should be trained and certified. These personnel then could be responsible for correctly conveying proper practices to those involved in coating operations.

Commenter IV-D-08 said that training all military and civilian personnel involved in painting operations is simply too impractical. Annual training of this sort for all personnel involved in painting operations poses numerous logistical problems and unnecessary costs. The commenter recommended that the EPA implement procedural controls rather than annual training. The commenter stated several rationale, including high turnover in personnel and uniformity with existing procedural documentation (i.e., mil-specs, technical manuals, ship class paint schedules, and repair work packages). This approach has been validated by the commenter's experience in California where procedural controls already have alleviated the need for additional training.

Commenter IV-D-14 was not aware of guidance provided on the extent of training which must be certified for "all personnel involved with coatings, thinning of coatings, keeping coating records, or handling/transferring VOHAP containing materials." By a narrow interpretation of this provision, the commenter would

have to train over 1,400 people yearly, in addition to many other personnel who routinely handle VOHAP containing material but who have nothing to do with coating operations. Although a great many of these materials are regulated by previous legislation, such as RCRA and OPA '90, the commenter also would like to make certain that the language in this section applies only to personnel involved in surface-coating operations.

Response: In light of these comments, the EPA has reconsidered and decided to remove the training requirements from the NESHAP. Although the EPA believes that it is important to establish measurable and achievable standards, training of personnel is an essential part of ensuring compliance, and the EPA believes that shipyards will take appropriate steps to ensure personnel handling coatings are properly trained.

2.9 THINNING ALLOWANCES

Comment: Eight commenters (IV-D-01, IV-D-06, IV-D-07, IV-D-08, IV-D-13, IV-D-17, IV-D-22, IV-F-02) expressed the need for increased thinner usage during extreme weather conditions. Five of these commenters (IV-D-01, IV-D-07, IV-D-13, IV-D-17, IV-D-22) explicitly requested a thinning allowance or an alternative set of standards for extreme-weather applications.

One commenter (IV-D-01) stated that there is a valid need for excess thinning solvents due to extremely cold weather. One commenter (IV-D-06) said that simply thinning to suggested ratios may not provide a low enough viscosity in cold weather to successfully apply the coating. Commenter IV-D-07 said that it was reasonable to assume that additional solvent would be needed under extremely cold-weather conditions. Another commenter (IV-D-08) stated that additional thinning can be compulsory, depending on the severity of the low temperatures. Commenter IV-D-13 said that its entire production process would be shut down several days of the year if it is prohibited from adding excess thinners during the winter. Commenter IV-D-17 expressed concern that the VOHAP limits would be incompatible with thinning requirements imposed by cold weather. Commenter IV-F-02 noted that, even in Houston and in Mississippi, thinning sometimes is

required in cold weather, and commenter IV-D-22 stressed the need for a thinning allowance for both humid and cold weather.

Commenters IV-D-06 and IV-D-07 noted that if the coating is not applied at the proper viscosity, the paint may not set properly and may need to be removed and reapplied, resulting in a quantity of emissions in excess of that amount that would have occurred given an allowance for cold-weather thinning.

Response: The EPA recognizes that extreme weather conditions may require adding thinning solvents to coatings, making it incompatible with the proposed limits, especially since those limits are based on California standards and California experiences a very moderate climate. The EPA has, therefore, conducted surveys of nine shipyards in cold climates, nine shipyards in hot and/or humid climates, and four coating manufacturers to ascertain the necessity of a thinning allowance.

Based on information provided by the commenters and the survey responses, the EPA determined that excess thinning may often be required in cold weather, but rarely, if ever, required in hot and/or humid weather. Thus, the EPA included in the final rule another set of (cold-weather) VOHAP limits for most coating categories that permits a shipyard to abide by a second set of limits during days in which the ambient temperature at the yard is below 4.5°C (40°F) when coating(s) are to be applied. When these conditions are met, the VOHAP limits at affected sources are increased by an amount equal to 50 g/L of coating. This allowance permits a general use coating with a VOHAP content of 340 g/L to be thinned at a rate of approximately 10 percent by volume. This rate increases for lower-VOHAP general use coatings and for coatings of categories with greater VOHAP limits. Thus, depending on the particular coating to be thinned, the cold-weather VOHAP limits include a thinning rate of at least 10 percent. When the cold-weather limit is not sufficient or when thinning beyond the applicable VOHAP limit is desired but can not be pursued because the specified weather conditions are not fully satisfied, shipyards are expected to employ other methods of viscosity reduction (e.g., heating), postpone or

reschedule operations, or pursue other available means of coping with the weather.

Shipyards that utilize the cold-weather VOHAP limits must record and report: (1) the dates and hours during which temperatures were below 4.5°C (40°F) , (2) the volume of each batch (as supplied) applied during cold-weather days, and (3) the maximum allowable thinning ratio. These requirements are specified in the final rule.

Comment: Seven commenters (IV-D-01, IV-D-05, IV-D-06, IV-D-07, IV-D-08, IV-D-13, IV-F-02) discussed the effectiveness of in-line heaters. One commenter (IV-D-08) said that heaters for paint containers and in-line heaters can reduce viscosity and alleviate some or all of the necessity for thinning. The other comments were more skeptical of the ability of heaters to reduce the need for excess thinning.

According to commenter IV-D-01, in-line paint heating for viscosity control is an expensive option. Since extremely cold conditions are infrequent and temporary, heaters would be unused for long periods of time.

Commenter IV-D-05 noted that in-line heaters provide sufficient viscosity control in some instances but do not solve all of the application problems that can be experienced during paint application in cold weather.

Another commenter (IV-D-07) noted that extremely low temperatures could cause surfaces to act as heat sinks, thereby inhibiting proper setting of the paint. Under such conditions, paint heaters do not provide sufficient control of the coating process.

Commenter IV-D-13 has investigated the use of in-line heaters. According to its coating suppliers, no in-line heaters are designed to handle large volumes of paint. Rather, in-line heaters are normally used in connection with the application of low volumes of special paints.

One commenter (IV-F-02) said that in-line heaters are often impractical because they do not heat coatings in their storage

containers. Therefore, thinners are still required in order to transfer the fluid from storage to pumps and hoses.

Commenter IV-D-06 stated that although in-line heaters reduce viscosity significantly, they are not widely used in the shipbuilding industry or in any other metal finishing operations for the following reasons. First, in high-solids, multiple-component coatings, the reduction in VOC or VOHAP content places the resin components in close proximity (less dispersal in solvent) and speeds the reaction (shorter pot life). Additional heating shortens the pot life even further (each 10°F temperature increase doubles the reaction rate). If the painter stops applying a coating even for short periods, the coating may harden inside the heater, hoses, or paint gun. This hardening often will require scrapping the unit and other equipment. These problems possibly could be avoided by adding a solvent purge to the system (but significant amounts of solvent may be required). This solvent would have to be collected and disposed of or reclaimed in a solvent still. Second, the in-line heaters require extensive cleaning and maintenance of the circulation systems. Third, painters, application equipment, scaffolding, and man-lifts must be moved frequently; in-line heaters add to the amount of equipment that must be moved.

Response: The EPA considered the comments regarding paint heaters when addressing the viscosity and curing limitations imposed by extreme weather conditions. The EPA did not base MACT on paint heaters, nor does it require paint heaters to be used as a means of meeting the VOHAP limits. In response to a number of concerns regarding the application of coatings in cold temperatures, the EPA included in the final rule another set of (cold-weather) VOHAP limits for most coating categories. However, shipyards retain the freedom to meet the limits through the use of heaters or heaters in combination with thinners, alternative application methods, or other tools that may be available.

Comment: One commenter (IV-D-05) conducted laboratory studies to assess the effect of temperature on the viscosity of

several marine coatings. An example involving a high solids epoxy coating was cited, and it was determined that the required solvent addition to adjust the viscosity at 4.5°C (40°F) to that at 70°F increased the VOC by about 50 grams/liter (0.42 lb/gal). The commenter believed that this example is typical of other products used in the industry. The commenter further suggested that EPA should consider allowing a maximum addition of 80 g/L (0.67 lb/gal) of thinner above the allowable limits to products used in shipyards where coatings must be applied at temperatures below 4.5°C (40°F).

The information provided to EPA indicated that all shipyards not located in warm/moderate climates (as well as several that are) have to use additional thinning to compensate for viscosity problems during periods of cold weather. The EPA views such conditions and practices to be part of the MACT floor since geographic/climatic conditions cannot otherwise be factored into the coating limits associated with the shipyards located in California or Louisiana.

Response: The EPA is providing another set of limits that would be applicable when a painting operating is to occur when the ambient temperature is below 4.5°C (40°F). The new limits were derived by increasing the VOHAP limits by 50 g/L of those coating categories published in the proposed regulation having VOHAP limits equal to or less than 500 g/L. The VOHAP limits were not increased by more than 50 g/L under any conditions because: (1) EPA believes that the cold-weather limits will be sufficient for most applications; (2) alternative means are available for reducing viscosity and for coping with the weather; and (3) a greater allowance might encourage excess thinning at shipyards. Coatings with VOHAP contents greater than 500 g/L coating less water have sufficient solvent content that viscosity should not be an issue, regardless of climate.

Comment: One commenter (IV-D-06) said coating temperature has a great effect on coating viscosity and that manufacturers recommend maintaining a specific viscosity (for example 20 seconds with a No. 2 Zahn Cup) in order to ensure that the

coating will pass through the gun at an acceptable rate and provide proper atomization. Proper atomization controls surface finish and, to a lessor degree, film thickness. The issue of film thickness is also related to the painter's application of the coating. The painters can achieve consistent and acceptable wet film thickness (a specified number of mils) if each coating product has a consistent viscosity from use to use. Inconsistent dry film thicknesses (resulting in runs or sags) and poor surface finishes may require blasting the area again and reapplying the coatings.

The issue of extreme weather conditions justifying excess thinning is very much coating-dependent since some coatings may need additional thinner for viscosity adjustment at 50°F, while others may not need adjustment until temperatures are below 30°F. It is clear, however, that as ambient temperature decreases, coating viscosity will increase, and for some coatings this will require additional thinning as ambient temperature drops.

Linking solvent addition to preapproved viscosity setpoints would allow shipyards in cold climates the ability to use additional thinner to successfully apply the coating. Of course, the amount of thinner needed will vary from day to day depending on meteorological conditions. In addition, the acceptable viscosity is product-specific; therefore, no universal viscosity setpoint could be established. Nonetheless, the commenter approved the setpoint approach.

Response: The EPA appreciates the commenter's input regarding the value of a setpoint approach. This approach was considered but was not required because of the lack of data needed to determine viscosity setpoints, the variability of target viscosities among coating products, and the increased recordkeeping and reporting requirements inherent in such an approach.

The EPA recognizes that thinning requirements vary according to coating products and weather conditions, and it believes that shipyards have adequate flexibility to cope with these variables. Thinning, for example, is only restricted to the extent that the

VOHAP limits are not exceeded. Coatings with VOHAP concentrations below the applicable standard may be thinned, so long as the standards are met. During cold-weather days, shipyards are granted additional latitude with respect to thinning (see above comments/responses).

Comment: One commenter (IV-D-06) indicated that it would be too restrictive to require control of thinners at a central job site. While recognizing that thinning prior to sending the coatings to the application point will provide significant control of thinner use, the commenter's experience indicated that thinning at the application point often is required practically. The commenter requested that EPA clarify that thinning at the application point is permissible.

Response: Thinning up to the applicable VOHAP limit is permissible at any location, including the application point. However, maximum allowable thinning ratios must be indicated on coating containers (via labeling or other documentation) and thinner additions must be adequately documented.

Comment: Commenter IV-D-07 believed that it was unreasonable to set specific limits on the amount of additional solvent that may be added since target viscosities depend upon numerous variables (type of coating, ambient temperature, surface temperature, humidity, dew point, etc.). Specific limits also would be difficult to enforce.

Response: The EPA surveyed both coating manufacturers and shipyards with regard to thinning practices and thinning necessities. The EPA used the responses to these surveys as the basis for establishing the previously described thinning policy. The EPA agrees that an allowance based on target viscosity is a reasonable criterion. However, target viscosities depend on many variables and for this reason the EPA sees no other response to the issue of cold-weather thinning that does not impose significant recordkeeping and reporting requirements or permit an unlimited amount of thinning.

Comment: One commenter (IV-D-13) believed that the proposed NESHAP would halt its entire production process many days each

year because it could not use epoxy topcoatings that meet the as-applied VOHAP content limits. The commenter claimed that the final NESHAP must allow shipyards in colder climates to use more thinner during cold weather than what is allowed under the proposed NESHAP. The commenter recommended that these shipyards be allowed to use 10 percent thinning by volume when the ambient temperature is less than 40°F but greater than 20°F and 20 percent thinning by volume when the ambient temperature is between 0°F and 20°F. According to the commenter, allowing the use of additional thinner during cold weather will not have any significant adverse environmental impact. The additional thinners would be used relatively infrequently (only when the ambient temperature is below 40°F), and the use of the additional thinners would occur during the winter months, when ozone levels are typically low.

Response: The EPA understands the commenter's circumstances and has provided a second set of (cold-weather) VOHAP limits that permit, at a minimum, 10 percent thinning during time periods in which temperatures are less than 4.5°C (40°F). Depending on the VOHAP content of the coating as-supplied and the VOHAP limit of the coating category, a greater thinning rate may be permissible. The commenter is encouraged to pursue innovative combinations of thinning, heating, process alterations, and other methods in order to comply with the limits at temperatures below -6.67°C (20°F). Although it is helpful to know that such cold-weather thinning will occur during periods when ozone formation is typically low, it is not a consideration for a MACT standard; it is more directly relevant to BACM and reducing overall VOC emissions.

Comment: One commenter (IV-D-14) stated that the use of alternate thinners (containing little or no VOHAP) may lower the flash point of the resulting mixture, thus affecting production from either the industrial hygiene standpoint or by prohibiting "hotwork" (welding, cutting, etc.) on a hull that either is being painted, or is within the same dock.

Response: The EPA is aware that not all alternate thinners are interchangeable with current applications. There is no requirement to use alternate thinners, and each shipyard would have to evaluate such products prior to implementation.

Comment: One commenter (IV-D-17) resubmitted statements written in 1993 regarding cold-weather thinning: "When California and Louisiana promulgated their rules, it is our concern that minimal attention had been given to extremely low temperatures for a large portion of the year ... Consequently, we exhibit concern with 'never to be exceeded' limits being bas- historical research that may have been limited to Californ... Louisiana ... Perhaps the 'never to be exceeded' and 'as applied' verbiage can be set to seasonal parameters that would allow a greater maximum VOC content during cold-weather months."

Response: The EPA recognizes the commenter's concerns and solicited information from shipyards and paint manufacturers in order to craft a policy that accommodates the unique conditions of shipyards subjected to extreme weather conditions. The resulting cold-weather limits (see Table 2 in the final rule) represent EPA's decision based on the information provided by the respondents.

Comment: One commenter (IV-D-22) thought it would be appropriate to delegate to the States the responsibility to regulate the use of thinners in a manner that will ensure a net reduction in emissions.

Response: Under the CAA, States have the authority to issue permits and to enforce the NESHAP standards. The Federal Government (EPA), however, is responsible for issuing the standards and cannot delegate such a specific part of this responsibility to the States. The EPA also has provided sufficient flexibility in the final standards with the addition of cold-weather limits and compliance option 3 which allows paints to be "grouped by thinner type" for recordkeeping purposes.

Comment: One commenter (IV-F-02) asked that the EPA devise a simpler way for painters to determine how much thinner they can add.

Response: Shipyards may choose to adopt nomographs similar to the one provided in Appendix B of the rule. As stated in the final NESHAP, coating containers must clearly display whether any thinner may be added to the coating, and, if applicable, the maximum thinning ratio. Shipyards have the discretion, however, to place additional information on these containers, such as the maximum allowable volume of thinner (based on the maximum allowable thinning ratio) that may be added to a particular container.

2.10 COST AND ECONOMIC ASSUMPTIONS AND IMPACTS

Comment: One commenter (IV-D-06) was concerned that EPA's economic analysis was limited to a national scope. The real competition that the major sources face is from overseas shipyards. Even without the proposed NESHAP, the commenter stated domestic shipyards continually lose work to overseas competitors for very small differences in price. The commenter believed that the less than one percent increase in price predicted by EPA will cause more work to be lost to overseas competition that are subject to little or no environmental rules. Commenter IV-D-14 agreed that even minor price impacts could create a competitive disadvantage for U.S. shipbuilders.

According to commenter IV-D-06, while the economic impact analysis considered the yards' abilities to deal with control costs, it is unclear that the analysis considered the costs of compliance. These costs include laboratory costs (Method 24 testing), additional clerical staff to manage the recordkeeping requirements, the associated office and computer equipment, and the additional notifications to the painters on maximum allowable thinning. The commenter noted that all of these factors increase the economic impact of the proposed rule and adversely impact international competitiveness.

Response: The EPA considered several aspects of the overall costs of compliance including: the costs associated with

recordkeeping and reporting requirements; the costs of using compliant coatings in lieu of noncompliant coatings, which are slightly less expensive in some cases; and the cost savings achieved through the use of lesser volumes of thinner and coating as a result of the greater solids (nonvolatiles) contents of compliant coatings. The analysis of these costs are presented in Chapter 8 of the BID of the proposed NESHAP.

There are two reasons why the cost analysis conducted by the EPA does not consider shifts in business from major sources in the U.S. to area sources in the U.S. or to sources outside the country. First, most work conducted at major sources is related to military vessels. This work is protected from foreign competition by the Jones Act. Second, because the cost impacts are expected to result in a price increase of less than 0.1 percent, distributional effects were considered negligible.

Comment: One commenter (IV-D-14) raised the issue discussed in the cost impacts section of the preamble that stated the use of compliant coatings will not require different equipment. The commenter was inclined to believe that lower-VOC coatings will likely be thicker and require stronger application equipment (i.e., airless vs. conventional air assisted systems, and perhaps different aperture lines, wands, and guns). Paint heaters may not be feasible to use depending on the length of the line from source to application and resultant heat loss. Also, the size and type of paint storage unit (e.g., paint "tote" vs. bucket), as well as temperature effects on "pot-life" of a paint, may have additional impacts on cost.

Response: The EPA was not provided with specific information indicating that the compliant coatings will require new equipment or different technologies. Compliant coatings have been used successfully for the last several years, and sufficient volumes of compliant (and equipment compatible) coatings can be readily produced using current technology to cover the present market requirements.

Comment: Three commenters (IV-D-13, IV-D-20, IV-D-22) were critical of EPA's cost impact analysis. One commenter (IV-D-13)

believed that the total economic impact of the proposed rule has been underestimated by the EPA as a result of its gross underestimation of the total number of sources that would be subject to the rule.

Another commenter (IV-D-20) claimed that the cost-benefit analysis performed by the EPA does not appear to take into account the potential jobs lost, the overall benefit to the environment, the economic impact to the entire industry, or the life cycle of the coating.

The third commenter (IV-D-22) said that the EPA's cost impact analysis is grossly flawed and incomplete as it does not include such items as the costs of shipyard mathematicians to do paint and thinning calculations, storage, monitoring and recordkeeping, HAP reduction and monitoring equipment, and preparation of EPA reports. This commenter urged the EPA to conduct a complete and accurate analysis of the shipyard industry and the standards being proposed, despite the fact that this analysis may trigger OMB review and may therefore cause EPA to miss the deadline for promulgating the NESHAP.

Response: The EPA does not believe that it has grossly underestimated the number of affected sources. In fact, when the EPA proposed the rule, two major sources identified in the EPA's database had become nonmajor sources--one through reduced workload and one through a merger with another shipyard. In any case, an underestimation of the number of affected sources does not alter the costs per source, only the total industry costs. Since this cost was estimated by the EPA to be $1.7 million per year, it is very unlikely that a greater number of affected sources--the individual size of which will tend to be smaller than those identified by the EPA--will increase total industry costs to a level that would prompt a review by the Office of Management and Budget.

The EPA does not expect any job loss to result from promulgation of the shipbuilding NESHAP, both because price impacts are expected to be negligible (less than 0.1 percent), and because much of the work that is performed at affected

sources is military-related and protected from foreign competition. Thus, the EPA disagrees with the conclusions reached by commenter IV-D-20. The EPA used the total annual costs in its Economic Impact Analysis to estimate potential price, output, and employment impacts. The EPA has provided an estimate of the environmental benefits by citing an expected HAP emissions reduction of 272 Mg (300 tons) per year. However, a dollar value was not assigned to these emission reductions.

Finally, the EPA has been very sensitive to the effects of the proposed NESHAP on the life expectancy of compliant coatings since a reduced life expectancy will result in more frequent applications. The NAVSEA representatives also have been very concerned about this effect. Both the EPA and the NAVSEA, however, concluded that compliant coatings pose no significant life cycle or life expectancy impacts.

Regarding the concerns raised by commenter IV-D-22, the EPA has addressed several different kinds of costs (and cost savings) and refers the commenter to Chapter 8 of the BID.

Comment: Three commenters (IV-D-14, IV-D-20, IV-D-22) noted that if the projected price impact of 0.1 percent is applied to just a fraction of the work performed at shipyards, the costs easily exceed the $1.7 million estimated by the EPA.

Response: The commenters asserted that the price impacts presented in the Economic Impacts Analysis (EIA) led the reader to conclude that the annual cost estimate of approximately $1.7 million was inconsistent with the price impact estimates, and, therefore, the annual cost estimate must have been understated.

The EIA estimates that annual price impacts will range between 0 percent and 0.3 percent, depending on the market segment that is examined. The commenters concluded that this range could be applied to the final price of a ship to calculate the change in price that will result from the rule.

In general, this methodology is valid for ships that are built or repaired within a 1-year period because all data (e.g., control costs, value of shipments, etc.) used to calculate

economic impacts are expressed in annual terms. For example, if a small ship, priced at $5,000, is built within a 1-year period, the price impact calculation would follow the formula: $5,000 * 0.3 percent, where 0.3 percent is the estimated price impact for the commercial construction market segment. Accordingly, in this example, EPA would expect the price of a small ship to increase by approximately $15 due to the rule.

However, there are exceptions to this methodology. When large ships are built--such as an aircraft carrier--they are usually built over a period of many years. Let us assume that an aircraft carrier, priced at $4 billion, is built over a period of 7 years. It is unlikely that the entire $4 billion will be paid at the end of the seventh year. Instead, the more likely scenario is that the shipyard will receive payments for work completed on a continuing basis throughout the 7-year period. This scenario would be reflected in the annual value of shipments data.

Continuing with the example and for simplicity's sake, let us assume that 1/7 of the carrier is completed in the first year, 2/7 of the carrier is completed by the end of the second year, etc. A more appropriate use of the data is to apply the price impact estimates to the above scenario by using the following formulas:

$$\frac{\$4 \text{ billion}}{7 \text{ years}} = \$570 \text{ million in annual revenue}$$

then,

$$\$570 \text{ million} \times 0.001 = \$570{,}000$$

where: 0.001 (0.1 percent) is the estimated price impact for the military construction market segment.

The above calculations lead us to expect that the annual price increase for constructing an aircraft carrier is approximately $570,000. (Note that this simple illustration does not take into account interest rates or other factors which could complicate the above calculations.)

The above example illustrates that the control cost and price impact estimates are consistent with one another. The price increases for all ships or parts of ships constructed or repaired in a given annual period should total approximately $1.7 million. It should be stressed that the confusion regarding the meaning of the price impact estimate arises only because the construction or repair of some ships may exceed a 1-year period. In these cases, the reader should keep in mind that all estimates are presented in annual terms and only should be applied to other data that are expressed in annual terms.

Comment: One commenter (IV-F-01) noted that the EPA's economic impact assessment cited negligible costs to government-owned shipyards. The commenter, however, claimed that the Federal Facilities Compliance Act, which requires shipyards to comply fully with the proposed NESHAP, would impart significant costs on the Navy, as well as private shipyards.

Response: The EPA received input from the U.S. Navy and the U.S. Coast Guard and believe that any concerns about costs have been adequately addressed. (See response to commenter IV-D-08.)

2.11 WORDING (DEFINITIONS) AND CLARITY OF EQUATIONS

Comment: Three commenters (IV-D-05, IV-D-13, IV-D-21) suggested amending the definition of "weld-through (shop) preconstruction primer." Commenter IV-D-05 suggested amending the definition to read "and does not normally require removal before application of the film building primers." These types of coating sometimes need to be wholly or partially removed in critical vessel areas, such as cargo tanks, and when inorganic zinc high-build primers are used as the first coat in the coating system.

Commenter IV-D-13 requested that "weld-through (shop) primer" in Table 2 of the proposed rule be changed to "weld-through (shop) preconstruction primer," so as to be consistent with the definition of this coating category in § 63.782.

Commenter IV-D-21 suggested that the portion of the final sentence defining weld-through (shop) preconstruction primers be amended to read: "... and does not normally require removal

before application of the film building primers." When constructing new vessels and during the process in which weld-through preconstruction primers are used, there may be requirements for removal of "secondary surface damage" or contamination prior to application of film building primers.

Response: Preconstruction primers are mainly applied in the United States for short-term protection of steel, before it is welded and cut to the required sizes. This primer coating is usually removed by blasting before application of the full marine coating system. Preconstruction primers used in the United States are mainly inorganic zinc-rich formulations. The study provided to EPA (Document No. II-D-074 in Docket No. A-92-11) indicated that considerable cost saving would result if EPA retained the relatively high VOC content 650 g/L for a weld-through preconstruction primer (i.e., a primer that does not need to be removed prior to welding). As a result, EPA set the limits for weld-through preconstruction primers at 650 g/L and the limits for high build zinc materials at 340 g/L. The EPA's understanding of this newly introduced product produces three benefits: (1) it becomes the base coat for the top coat system and does not require removal; (2) it will be able to bypass several of the preblasting steps resulting in an 85 percent reduction of the particulate emissions from the production step; and (3) the net VOC emissions per unit ship surface area painted will be reduced even though a high VOC content primer was used. The EPA does not wish to encourage the use of such high VOC content coatings in areas that will require removal of the primer. The rule has been amended so that "weld-through preconstruction primer" is used in a consistent sense throughout the rule. The definition of this term also has been modified to address the fact that areas of a ship coated with weld-through preconstruction primers sometimes require removal.

Comment: One commenter (IV-D-06) made the following comments regarding the definitions of § 63.782:

a. "Batch." The second sentence of the definition is superfluous and will only confuse the regulated community and enforcement officials. It should be deleted.

b. "Bitumens." The second sentence of the definition places unnecessary restrictions on the definition, and should be deleted. It is of no regulatory concern whether the bitumens are derived from "crude" oil, or "low grade" coal. Regardless of how a bituminous compound is derived, it does the same thing when used in a coating.

c. "Container of coating." The last clause of the definition should be amended to read: "... applied, including but not limited to a bucket or pot." This clarification will avoid any interpretation of the clause as limiting the definition to only the examples mentioned.

d. "Epoxy." Both clauses beginning with "such as" should be eliminated to avoid any misrepresentation of these examples as limiting the definition.

e. "Maximum allowable thinning ratio." The parenthetical at the end of the definition should be deleted as it is redundant. Further, for the reasons stated elsewhere in these Comments, the commenter objects to the use of Method 24 as determining source compliance where a source is reasonably relying on a content certification from a supplier.

f. "Nonvolatile." For purposes of clarity, the first sentence of the defined phrase should be changed to "Nonvolatiles or volume solids," and the last sentence of the definition should be deleted.

g. "Ship." As discussed above, a facility building and repairing personal "pleasure" watercraft should be included in the source category and regulated along with the other types of facilities covered by the proposal. In line with this approach, the definition of ship should be expanded to include any such vessel.

h. "Inorganic zinc (high build) coating." This definition should be amended to delete the last sentence so that the descriptive language regarding film thickness is not misinterpreted as a regulatory requirement.

i. "Military exterior coating." For purposes of clarity, the defined term should be changed to "Military exterior coating or Chemical Agent Resisting Coatings ('CARC')," and the last sentence of the definition should be deleted.

j. "Mist coating." The last clause of the definition describing the functions of mist coating (i.e., "thus acting as a sealer coat and preventing the formation of blisters or pinholes

in the final coating system") should be deleted so as to avoid the impression that such functions are regulatory requirements.

k. "Nuclear coating." This definition should be amended to avoid vague standards and should require only that the coating meet ASTM D4082-83 and ASTM 3912-80."

Response: The EPA reviewed each of comments regarding definitions and made the following changes in the final rule:

In the final rule:

a. "Batch." The statement "is characterized by uniform composition" was removed from the definition. The statement that a batch may vary in composition from batches of the same product is informational and was not deleted.

b. "Bitumens." The second sentence in the definition was deleted to place no restriction on the source of the bitumens.

c. "Container of coating." The definition was amended to read: "...applied, including but not limited to a bucket or pot."

d. "Epoxy". For clarity, both clauses beginning with "such as" were eliminated from the definition.

e. "Maximum Allowable Thinning Ratio." The parenthetical sentence at the end of the definition was retained; although it is not part of the formal definition, it serves to emphasize that "content" certification of a supplier should also include VOC/VOHAP materials that would contribute to emissions at the end of the curing stage.

f. "Nonvolatile." The definition has been modified to include the term "volume solids".

g. "Ship." The definition has been modified, but only to clarify the exclusion of pleasure crafts from the applicability of the shipbuilding and ship repair NESHAP, as originally intended by the EPA. The term "pleasure craft" is also defined in the final regulation.

h. "Inorganic zinc (high build) coating." Parentheses were added to the last sentence to further clarify that this is not a regulatory requirement.

i. "Military exterior coating." The defined term was changed to "Military Exterior Coating or Chemical Agent Resisting Coating (CARC)."

j. "Mist coating." The last clause in the definition (describing the functions) was deleted.

k. "Nuclear coating." Parentheses were added to the last sentence in the definition to indicate that it is not part of the formal definition.

Comment: Two commenters (IV-D-09, IV-D-18) asked the EPA to modify the definition of commercial vessel to exclude small pleasure crafts. Although the EPA indicated that the proposed standard is not intended to affect those facilities that build or repair small pleasure craft, the current definition of a shipbuilding and ship repair facility does not specifically exclude facilities that build or repair these craft.

Response: The EPA does not define "commercial vessel" in the final rule. Instead, it explicitly defines "pleasure craft" and excludes such a craft from the definition of a ship, thereby rendering coatings applied to such a craft exempt from the shipbuilding NESHAP. The manufacture and coating of pleasure crafts will be regulated by the forthcoming boat building and boat repair NESHAP.

Comment: One commenter (IV-D-11) believed that in Figure 1 of the proposed rule, a "greater than" inequality symbol appearing in a decision block of the last compliance option should be reversed.

Response: The EPA agrees with the commenter's observation and has corrected this typographical error in the final rule. Other changes have been made to the figure to enhance its readability and to reflect precisely the text and terms that appear in the rule.

Comment: One commenter (IV-D-13) could not determine how an "add-on control system" would come into play under the proposed NESHAP. The commenter believed that the rule should be revised to make it clear that a shipyard could, if it desired, use an add-on control system in connection with the use of marine

coatings that exceed the VOHAP content limits specified in the NESHAP.

Response: A shipyard may use an add-on control system as an alternative method for meeting the level of control associated with the limits in the rule. The normal procedure for sources that choose to use add-on controls to meet the standards requires the source to submit information about the proposed control system to the Administrator for approval. The source must include with the submittal documentation that demonstrates how the control system will achieve VOHAP reductions equal to or greater than those that would be achieved with the use of compliant coatings.

Comment: One commenter (IV-D-20) remarked that the EPA did not provide any discussion as to how EPA determined that BACM was identical with MACT. Another commenter (IV-F-01) asked the EPA to clarify why BACM and MACT have been defined identically, when they have been identified separately in the CAA.

Response: The basis for that determination is provided in the promulgation preamble in Part V. Control Techniques Guidelines and in the separate notice for the CTG. There was a summary discussion of the CTG included in the proposed NESHAP directing the reader to an alternative control techniques (ACT) document that EPA published in February 1994 to provide information and guidance to States regarding BACM.

2.12 UNITS OF THE STANDARD

Comment: Two commenters (IV-D-07, IV-D-15) asked that all standards be expressed in the same units. Commenter IV-D-07 believed that the standards should be expressed in units of mass of VOHAP per volume of coating. This standard is directly related to the way coatings are purchased and applied. Commenter IV-D-15 recommended that EPA provide some clarification to the standards listed on Table 1. In particular, the commenter stated that specific units need to be listed in terms of descriptive materials (mass of VOC/volume coating or mass VOHAP/mass of solids).

Response: The EPA clarified the units issue in two ways. First, Table 2 in the final rule lists all limits in terms of metric units. This action is intended to minimize conversion errors and to facilitate enforcement. Second, the EPA understands that the amount of coating applied to a surface is determined by the amount (volume) of coating film required. The amount applied/required is also the basis for determining the cost of a coating "system." The volume of coating film coverage is based on the solids (nonvolatiles) volume within the coating. For this reason, the EPA requires that all determination of thinning allowances be based on the VOHAP solids limits. Footnotes have been included in Table 2 to explain the relationship between standards based on volume of coating and standards based on volume of solids.

Comment: Two commenters (IV-D-07, IV-D-15) expressed concern regarding the $VOHAP_{alt}$ standards. Commenter IV-D-07 believed that the reference to alternative VOHAP limits sets a duplicative standard that is confusing as well as difficult to calculate and enforce. This commenter did not understand the need for a second VOHAP limit, and recommended that the EPA omit the second VOHAP limit from the rule.

Commenter IV-D-15 recommended that EPA provide some additional discussion of the alternate standard, which explains why the standard was chosen and calculated. The commenter stated that the calculation discussion also should show how to calculate the standard for sample coatings.

Response: The EPA originally established the $VOHAP_{alt}$ limits for compliance option 4 (formerly option 5). This option allows affected sources to develop and implement a VOHAP test method to allow a source to demonstrate compliance based on actual VOHAP emissions rather than on VOC emissions, which serve as a surrogate for VOHAP in options 1 through 3. (See Document II-B-026 in the project docket for additional information regarding the VOHAP limits expressed in terms of applied solids.) All thinning determinations now are performed

the same way, regardless of the option (i.e., VOC or VOHAP). Affected sources located in ozone attainment areas may prefer to use option 4 in order to comply with the NESHAP without facing a VOC constraint. However, sources are free to use any of the four options to demonstrate compliance.

The limits were expressed in terms of mass of VOHAP per volume of applied solids (nonvolatile film forming material) in order to base VOHAP emissions upon the actual activities performed at a shipyard. For example, were the VOHAP limits expressed only in units of g/L of coating, then a source seeking to apply a noncompliant paint under option 4 could render the paint compliant by diluting the coating using non-HAP VOC or water and exempt solvents depending on the option selected. Since the objective of a coating operation is to apply a given volume of film forming material (solids), the total volume of coating applied would necessarily increase resulting in an increase in emissions of VOHAP.

Although options 2 and 3 also use VOC as a surrogate for VOHAP, the EPA decided to require the use of the solids-based limits in these options when any coating is thinned. This decision eliminates the need for a specific equation (such as Equation 2 in the proposed rule) and provides a clearer and more intuitive basis for Equation 1 in the final rule. An example of how the EPA determined the solids-based limits is given below:

General use limit = 340 g/L coating.

Assuming a solvent density of 839 g/L (the average solvent density reported by shipyards and marine coating manufacturers during the MACT development), the volume fraction of solvents in a coating that just meets the standard is : 340 g/L ÷ 839 g/L = 0.405.

The volume fraction of solids (nonvolatiles) in the coating, assuming it contains no water or exempt solvents, is therefore:

$$1 - 0.405 = 0.595.$$

Thus, the general use standard expressed in units of mass of VOHAP per volume of solids is :

340 g ÷ 0.595 L = 571 g/L of solids.

2.13 TEST METHODS

Comment: Four commenters (IV-D-06, IV-D-09, IV-D-11, IV-D-15) claimed that the proposed rule is too inflexible with respect to the use of test methods. One commenter (IV-D-06) objected to the principle that Method 24 should be the definitive method for determining compliance. The commenter agreed that a source should be able to reasonably rely on a certification of VOC content obtained in good faith from a supplier. Furthermore, the commenter stated that the use of formulation data to demonstrate compliance with the proposed VOHAP limits (§ 63.786(c)) should be acceptable without a source submitting an application to the Administrator, because this method, on a case-by-case basis, is extremely cumbersome and inconsistent with the widespread use of formulation data by many States. The commenter further noted that Method 24, Section 3.4, allows for the determination of the volume fraction solids (nonvolatiles) of a coating using the manufacturer's formulation.

One commenter (IV-D-09) recommended that the EPA allow the use of test methods other than Method 24. The use of Method 24 was based on the assumption that VOC content was to be used as a surrogate for VOHAP content. The VOHAP are a subset of VOC. Therefore, Method 24 could lead to an overly conservative estimation of VOHAP content. The commenter agreed that Method 24 could be used to determine whether a coating is in compliance, but did not believe Method 24 was appropriate for determining whether a coating is noncompliant. Therefore, the commenter recommended that the EPA allow considerable flexibility to State and local agencies in determining the most appropriate test methods. The commenter further recommended that EPA add language to this rule or to the general provisions that would allow the State or local agency greater flexibility in the use of alternative test methods.

One commenter (IV-D-11) noted prior discussions with the EPA concerning certain technical difficulties with using Method 24.

These difficulties pose potential enforcement difficulties to the commenter, since the proposed rule stipulates that Method 24 is the reference method and overrides the manufacturer's certification.

One commenter (IV-D-15) suggested that EPA provide additional comment on testing methods that can be used in place of EPA Method 24. It was the commenter's understanding that EPA has evaluated and accepted BAAQMD Test Methods 21 and 22 as equivalent to EPA Method 24.

Response: Under the final rule, shipyards retain liability despite applications made in good faith because (1) thinners may have been added by the shipyard and (2) NESHAP are developed on an industry-by-industry basis, thus the NESHAP must be enforced upon sources (i.e., shipyards) and not upon third parties (i.e., coating manufacturers). The EPA, however, has revised the final rule to permit the use of "batch" formulation data in lieu of Method 24 results, providing the data are consistent with Method 24 results (which may require accounting for cure volatiles).

The EPA understands the conservative nature of using VOC as a surrogate for VOHAP and established compliance option 4 as a result. This option allows a shipyard to apply coatings with VOC contents exceeding the VOHAP limits so long as an alternative test method is approved that is capable of demonstrating the actual VOHAP content does not exceed the VOHAP limits. Test or certification data based on any EPA approved method can be used in demonstrating compliance with options 1, 2, or 3.

Comment: One commenter (IV-D-21) was concerned about the requirement that the process for determining the VOHAP content must include the mass of the exempt compound, unlike the determination of the VOC content, which subtracts the mass of the exempt compound. The commenter stated that EPA's methodology destroys the relationship between VOC and VOHAP identified in the proposed rule.

Response: Under most EPA rules, the mass of exempt compounds is not included in the VOC determination. However, in

this NESHAP, VOC is being used as a surrogate for measuring VOHAP. It is therefore appropriate to require exempt compounds appearing on the HAP list (such as trichloroethylene) to be included in the determination of VOC. This requirement is specified in § 63.786 of the final rule.

2.14 COMPLIANCE PROCEDURES

Comment: One commenter (IV-D-04) stated this rule seems to place an unrealistic burden on the worker actually applying the paint to produce documentation and perform complicated calculations in order to demonstrate compliance. The commenter cited the following example to illustrate his point: the painter has to use a trial and error methodology until the spray performs properly; by the time the preferred performance is achieved, the painter may have no idea what the exact formulation of the coating is "as applied."

The commenter stated that although EPA has stated verbally that a mass balance approach based either on the inventory of coating materials purchased or on an inventory of total coating materials actually used during a specified period of time is an acceptable alternative under this rule, he was concerned that unless this option, which is currently being used to demonstrate compliance in the shipbuilding industry, is specifically identified as a compliance method in the rule, States will be hesitant to continue allowing this option when writing operating permits. Therefore, the commenter felt that the mass balance method of demonstrating compliance is much more realistic, would alleviate the undue burden for detailed recordkeeping placed on the person applying the coating and would, in the end, be more accurate. The commenter further suggested that EPA needs to recognize this method as viable and acceptable for demonstrating compliance by specifically including it in the rule instead of asking industry to rely on EPA's verbal assurances. Without specific reference to this method in the rule, the commenter felt that accurate recordkeeping (with the associated increase of burdens in time, manpower, and liability) would be virtually unobtainable.

Response: The EPA disagrees with the commenter's views regarding the burden on the painter. As stated earlier in response to commenter IV-D-13 (in Section 2.7 Reporting and Recordkeeping Requirements), the EPA understands the trial-and-error methodology followed by many painters and has designed the NESHAP to accommodate such practices. The rule requires shipyards to inform painters of the maximum allowable thinning ratio of each coating for which he or she will be applying. This ratio, multiplied by the volume of coating being thinned, yields the maximum allowable volume of thinner that may be added to the coating. The EPA believes that painters can easily determine and track this volume. That is, the painter does not need to know the final formulation of the paint but does need to know that the volume of thinner added does not exceed the maximum thinner allowable, as determined previously (upon receipt of the as supplied material).

The EPA has maintained, and continues to maintain, that demonstrating compliance via a mass-balancing approach is completely acceptable. Moreover, this approach forms the basis for compliance options 2 through 4, which allow affected sources to demonstrate compliance by comparing the total volume of thinner added to a coating or group of coatings to the maximum allowable volume of thinner as determined by Equation 3. Thus, an inventory of thinners and paints, organized by coating and compared against maximum allowable thinning volumes, can serve as the basis for demonstrating compliance. (A shipyard can demonstrate compliance of coatings to which no thinner will be added simply by certifying the coatings' VOC or VOHAP content, as-supplied, and by notifying painters that no thinner may be added.)

Comment: One commenter (IV-D-05) suggested that the coating manufacturer provide information on the maximum VOC content of the product as supplied on the product data sheet and/or product label. This information then could be used by the shipyard/ applicator to determine compliance with the standard. Since VOC is being used as a surrogate for HAP, compliance could be

determined for both VOC and VOHAP limits. Similarly, commenter IV-D-14 suggested that EPA provide guidance to manufacturers on documenting coating ingredients.

Response: The EPA agrees that labels including the VOC and VOHAP content of each paint would be helpful. However, the EPA does not have authority under this NESHAP to require such information from the coating manufacturers.

Comment: One commenter (IV-D-06) raised issues involving the calculation method required to determine compliance. The commenter stated that in most cases, the VOC content of the coating as-supplied usually is available from a Material Safety Data Sheet (MSDS) or technical data sheet, but the volume fraction solids (or volume fraction VOC) usually is not available. This and other MSDS problems also are discussed in the preamble to the rule (59 FR 62687). The commenter stated the following problems exist for the average density of solvents in the coating:

1. Wide ranges exist on the weight fraction of a solvent in a coating;

2. It can be difficult to obtain accurate density data for lesser-known solvents;

3. The volume of a solvent component in a coating is difficult to obtain since coatings are manufactured on a weight basis and not a volume basis; and

4. Coating manufacturers are very resistant to providing the level of detail necessary (exact speciation and weight or volume fractions) to perform the calculations since their formulations are proprietary.

In addition, the commenter asserted that this method will not work for coatings containing water or exempt solvents, and suggested that EPA address this problem by including in the final rule additional equations that provide VOHAP (VOC) levels on a less-water and non-VOHAP basis.

Response: Although the proposed rule provided several equations for determining the maximum allowable thinning ratio, the final rule provides only one. Furthermore, this equation is

based on the volume fraction of solids (nonvolatiles) in the coating rather than on the total coating volume. Thus, the water and non-HAP-exempt-compound content of the coating are not directly relevant to the calculations. Rather, it is necessary for affected sources to know the volume fraction of solids (V_s) in the coating. This information is often supplied by coating manufacturers and does not constitute proprietary information. If V_s is not supplied by the manufacturer, then affected sources are to determine V_s with Equation 2, which should be applicable in the vast majority of cases. Equation 2 requires shipyards to know the average density of solvents within the coating. Again, this information can be supplied by manufacturers without revealing proprietary information.

Equation 3 in the final rule is to be used to calculate the maximum allowable volume of thinner for a coating or group of coatings during a month with cold-weather conditions [defined as having temperatures below 4.5°C (40°F).]

Comment: One commenter (IV-D-06) indicated that it would be impossible to choose the compliance procedure for a specific coating prior to the beginning of each month as EPA requires. Prediction can be difficult since yards often get rush jobs or changes in the coatings with only 1 or 2 days' notice. The commenter requested that EPA delete the prior monthly determinations of compliance procedures, and allow shipyards to choose the compliance procedure when the coating specification is received.

Response: The only advance information needed by the shipyard is the compliance options likely to be used. This information will help ensure that the correct paint and thinner data are collected in a timely fashion. Shipyards using options 2 through 4 have 15 days following the end of the month to compare the actual volume of thinner used to the maximum allowable volume of thinner. Nevertheless, EPA modified the language of the rule to stress that requirements such as designating a thinner, determining maximum allowable thinning

ratio, and notifying painters need to be fulfilled prior to each application, rather than prior to each month.

Comment: One commenter (IV-D-06) expressed three areas of concern with the requirements in § 63.785(c), which require a label or other means described in the implementation plan should be used to notify persons responsible for applying the coatings. The commenter first stated that EPA needs to provide more detail in the rule that states what information needs to appear on the labels, the location of the label, the size of the label, and how it should be affixed to the container. The rule, as proposed, leaves a large gap, which is subject to interpretation by the shipyard and enforcement authorities, as to what is acceptable. Second, the commenter stated that labels of any size can present a problem on small containers since the labels may obscure some of the manufacturer's labeling on the can concerning OSHA rules, VOC content, ozone depleting compound content, and instructions from the manufacturer concerning storage, mixing, thinning, and safe handling procedures. Third, the commenter noted that EPA needs to specify more notification options in the rule so fewer custom plans need to be devised and approved in the implementation plan.

Response: The rule (both proposed and final) requires shipyards to inform painters of the designated thinner and maximum allowable thinning ratio. This information need not be supplied in the form of a label affixed to a can if approval is granted for another form of notification through a source's implementation plan. Moreover, the label may be affixed in a manner that does not permanently obscure important coating information. The EPA chose not to be overly prescriptive regarding painter notification requirements so that shipyards may retain maximum flexibility.

Comment: One commenter (IV-D-14) pointed out that a potential key to the various options for demonstrating compliance lies with the manufacturers of the paints involved. To the commenter's knowledge, no guidance has been issued to paint manufacturers regarding certification and labeling requirements.

In order for shipyards to be able to use VOC and VOHAP content information in thinning, application, and recordkeeping/reporting activities, it is important that EPA-acceptable documentation from manufacturers be available. The commenter stated that guidance on what "certification" is acceptable should be a prerequisite to commenting on the use of these data.

In addition, the commenter stated that parameters constituting EPA-acceptable information upon which to base certification of both VOC and VOHAP content in coatings will be of considerable interest to the manufacturers because of the direct impact on cost. Depending on the frequency and testing involved, the requirement for coating certification could mean equipment or staff additions to verify and list the required information. The requirements for certification on a per can, per batch, per paint, or per paint group basis will be as critical as the necessity for empirical versus theoretical concentrations in determining the feasibility of any proposed compliance determination methodology.

Response: The EPA has decided to use the volume solids based limits (units) for demonstrating compliance for any coating or group of coatings that are thinned. With this decision, it is suggested that all coating information be provided in terms that allow shipyards the easiest means to demonstrate compliance. The EPA cannot require manufacturers to test their coatings or to supply certain HAP-related data, although such provisions by manufacturers are expected to occur to facilitate sales to the end-users (i.e., shipyards and ship owners). The EPA suggests that the reader review compliance options 2 and 3 in the promulgated rule to ascertain the specific information needed. However, the certification data the EPA expects to see are exemplified in Appendix A of the rule.

Comment: One commenter (IV-D-08) noted inconsistencies in the preamble regarding compliance options 1, 2, 3, and 4 in paragraphs III.D. and VII.E. Additionally, the commenter made the following statements concerning proposed compliance options 1 and 5:

Option 1 in paragraph VII.E., "Certification of Each Container of Coating, as Applied," represents an economically unsound proposition. Pragmatically this option needs revisions or elimination because of the high costs it would impose.

Option 5 in paragraph VII.E. cannot be considered as a real possibility because it remains open-ended in that the EPA has not provided requirements for sample preparation and the performance specifications required of an acceptable analytical procedure as stated in paragraph III.D. Until details are developed by EPA, we cannot agree to option 5 as it includes no definitive option for sources in areas without VOC limits. The rule should not be issued until option 5 methodology is defined and given appropriate review and comment. Further, the confusion in options between paragraphs III.D and VII.E in the preamble should be corrected.

Response: The EPA agrees that option 1 (certification on a container-by-container basis) is likely to be expensive and unlikely to be used; this option was proposed, however, since it might provide additional flexibility to shipyards. This option has not been included in the final rule since commenters thought it was not helpful and that its elimination helped to simplify the overall rule.

The EPA also included proposed option 5 (now promulgated option 4) to provide flexibility. This option was established to allow shipyards and coating suppliers to develop their own test methods for VOHAP.

Regarding the confusion in the preamble between paragraphs III.D and VII.E, the EPA acknowledges the mix-up and has clarified each of the compliance option descriptions, requirements, and equations in both sections.

Comment: Four commenters (IV-D-04, IV-D-13, IV-D-20, IV-D-22) complained about the complexity of the compliance options, especially if the options are to be followed by the painter at the point of application.

Response: Although each painter needs to be cognizant of the rules, the painter only needs to be concerned with the following issues: (1) is the paint compliant? can thinner be

added? and if so, how much? (2) how is the volume of coating and thinner recorded? and (3) what are the required work practices? The EPA does not believe these issues are too complex for painters to follow.

2.15 COMPLIANCE DATES

Comment: One commenter (IV-D-08) recommended that the appropriate timing of the applicability determination be 12 months after the effective date of the rule. The commenter's recommendation was based on past experience collecting/analyzing this type of data.

Response: The EPA has decided that the applicability determination will coincide with the notification requirements, which require submittal within 180 days of the effective date. Considering that affected sources have 365 days to comply with the rule, this requirement ensures that shipyards will plan adequately for their compliance while providing ample time to formulate that plan.

Comment: One commenter (IV-D-14) urged the EPA to consider a compliance date period that takes into account all of the factors that may inhibit shipyards from meeting the proposed schedule. Many, if not most, of the larger shipyards have the U.S. Navy as their primary customer. The commenter stated that changes in paint formulation or allowable thinning procedures likely will require Navy approval, testing, equipment changes, milspec changes, drawing alterations, and a considerable learning curve for the applicators and development of a recordkeeping system. From the commenter's experience, this cascade of necessary changes certainly will take longer than 1 year to implement. The commenter suggested a compliance date of 3 years after the effective date of the rule.

Response: The Navy has indicated that effective September 1, 1994, they have incorporated the new limits into their qualified paint list (QPL), current specifications, and all future contracts. Current inventories of non-compliant paints are expected to be depleted before the compliance date. Therefore, EPA believes the date is achievable.

Comment: One commenter (IV-D-09) believed that the requirement to comply within 1 year after the effective date of the standard was appropriate unless a State or local agency submits a request for Section 112(l) equivalency prior to the final compliance date. In such a case, the commenter believes that the final compliance date should be 30 days after final action by the EPA on the Section 112(l) equivalency request. The commenter identified several districts that have existing rules that address surface coatings of marine vessels. The commenter's initial experience with implementing Section 112(l) indicated that the process was time-consuming. If the final compliance date for a Section 112(l) equivalent standard is not the effective date of the equivalent standard, sources will have to comply with dual rules.

Response: The EPA promulgated the final rule on Approval of State Programs and Delegation of Federal Authorities (58 FR 62262) under Section 112(l) of the Act on November 26, 1993. This final rule contains specific guidance relating to the approval of rules or programs that States can implement and enforce in place of certain Federal Section 112 rules and the partial or complete delegation of Federal authorities and responsibilities associated therewith. Submission of rules or programs by the States under this subpart is entirely voluntary. States seeking to implement and enforce some provisions of their own programs in lieu of NESHAP under Section 112 need to obtain approval under this rule. Once granted approval, State rules and applicable part 70 operating permit conditions are federally enforceable and substitute for the otherwise applicable Federal requirements within a State or local jurisdiction.

The EPA recognizes the complex interactions that are the consequence of regulating a community of sources with State and Federal requirements and that accompany any division of responsibility in such a joint effort. However, this regulation allows an owner or operator of a stationary source to demonstrate compliance using any of the four options or by using an alternative method of compliance with the applicable VOHAP

limits. The alternative method must achieve at a minimum an equivalent reduction in emissions that would have been achieved as a result of the applicable limits. The regulation does not require the use of specific add-on controls or other equipment. Since the provisions in 112 (l) do not permit a State, or local agency to adopt limits that are less-stringent than those in the Federal regulation, EPA does not believe that the final compliance date should be changed.

Comment: One commenter (IV-D-06) objected to EPA's decision not to include the proposed regulatory text in the Federal Register. It was the commenter's position that in a rulemaking as extensive and technical as the proposed VOHAP MACT standard/ VOC CTG, and in light of the fact that sources often face enforcement for technical violations that arise primarily from the letter rather than the spirit of the law, EPA could fulfill its obligations under the Administrative Procedure Act by publishing a proposal in the Federal Register that includes the proposed regulatory language. To the extent that EPA has discretion to exclude the regulatory text from a proposal publication, it was the commenter's position that EPA abused such discretion in this case. The foisting of regulatory costs, such as the cost of disseminating the proposed regulatory text, on the regulated community, where the benefit of the proposed rule will inure to the public at large is impermissible absent explicit statutory authority [See, e.g., United States v. Rohm & Haas Co., 2F3d 1265 (3rd Cir. 1993)]. It would have been far more efficient for EPA to publish the text than for each potentially regulated entity and other interested person to incur separate costs in obtaining the document.

Response: The EPA has reviewed its responsibility to adequately inform the affected public of proposed actions. The decision to reduce the amount of printed material in the Federal Register and ensure that the material, including the proposed regulatory text of the proposed rule, is accessible for public comment and judicial review does not conflict with the statutory requirements of the Administrative Procedures Act

(APA), the Federal Register Act (FRA), nor the requirements of the Clean Air Act Amendments of 1990. Access to material that is used as the basis of the proposed rule (officially located in the Air Docket created by the Act) is identified in the preamble to the proposals and promulgations of rules. Specifically, the EPA clearly established and will continue to look for additional connections and will include directions for obtaining the text of information not printed in the Federal Register. Currently, this information may be obtained through one of the following sources: (1) the TTN's "Recently Signed Rule" bulletin board; (2) directly from the Air and Radiation Docket and Information Center; (3) distribution to trade associations; (4) plaintiffs in court ordered regulatory actions; (5) contact with small business ombudsman system in each State; and (6) if necessary, from the contact person at the EPA. The response to this approach has been positive as the process has aged.

Comment: One commenter (IV-D-06) objected to EPA's request that duplicate comments be sent to the "contact person" as well as to the rulemaking docket. It would have been far more efficient for EPA to assemble and send all comments to the relevant employees than for each commenter to accomplish this task separately. The cost of distributing comments within the EPA should not be placed on the regulated community.

Response: This request was made in error and the EPA apologizes for any inconvenience caused to the commenter(s).

Comment: One commenter (IV-D-03) recommended that in the preamble to the final rule, as part of the rationale for setting identical standards for HAP and VOC, EPA should note that the HAP solvents used in shipbuilding applications have relatively low toxicity. The commenter stated that in terms of their potential hazard, all HAP are not equal. The commenter further noted that under Section 112(g) of the Act, EPA is required to rank the relative hazard of all 189 chemicals listed as HAP. In its recent Section 112(g) rulemaking, 59 FR 15504 (April 1, 1994), EPA assigned methyl ethyl ketone (MEK) and methyl isobutyl ketone

(MIBK) two of the lowest toxicity scores (177 and 186, respectively).

Response: The toxicity of commonly-used marine coating solvents is not part of the rationale for setting equivalent VOC and VOHAP standards. Standards developed under Section 112(d) are technology based, not risk based. Standards under Section 112(g) have a different emphasis and must consider toxicity rankings.

Comment: One commenter (IV-D-11) complimented the EPA for including a compliance procedures flow diagram. These materials aid regulatory agencies and industry in understanding the provisions of the rule, especially when there are multiple standards and compliance options.

Response: The EPA appreciates the comment regarding the flow diagram and found it to be a useful tool for internal discussions as well. The EPA further improved the flowchart by correcting a typographical error, streamlining the graphics, and clarifying some of the text.

Comment: One commenter (IV-D-11) strongly recommended that EPA require lower vapor pressures of cleaning solvents at major sources. This shift would result in an increased demand, stimulating manufacturers to develop environmentally friendly substances that would be used at all facilities across many different categories.

Response: As part of the MACT development process for this industry, the EPA determined that HAP emissions associated with cleaning solvents are minimal compared with emissions from coatings and thinning solvents. Therefore, no effort was spent comparing solvents or their associated emissions. However, the EPA is requiring certain work practices that should prevent, or at least minimize, pollution during handling of cleaning solvents.

Comment: One commenter (IV-D-20) said the EPA should consider funding a project to create an EPA-approved computerized data management system.

Response: Commercial systems for data management are available. The EPA does not believe that development of a data management system for this industry would be an appropriate use of EPA resources. One reason EPA does not fund such activities is that these systems may have to be designed on a yard-by-yard basis. Shipyards, however, are not restricted from cooperating among themselves to develop a specific data management system.

Comment: One commenter (IV-D-21) was concerned about the potentially excessive monitoring requirements on processes with add-on controls where the process is using a compliant coating. The regulated site will have monitoring requirements identified on their Permit to Operate. The monitoring requirements identified in the proposed NESHAP should not be any different from the monitoring conditions identified in the site's Permit to Operate.

Response: The EPA agrees with the comment and references the final rule promulgated under Section 112(l). States can enforce limits from their own operating permit program that are considered to be equivalent to the Federal requirements of this NESHAP. The monitoring requirements for add-on controls are consistent with other Federal rules and those associated with the use of compliant coatings only involve as supplied and as applied paperwork.

Comment: One commenter (IV-F-01) suggested that the proposed standards might force shipyards to apply paints with shorter life expectancies, thereby requiring more frequent painting and greater emissions over the lifecycle of the ship.

Response: The EPA has identified VOHAP limits (and indirectly those coatings meeting those limits) that represent the MACT floor for the shipbuilding and ship repair industry. For this rule, EPA tried to identify MACT coatings that were both technically feasible (proven) and commercially available. Paint manufacturers and shipyards with existing limits similar to the VOHAP limits have not reported the problem raised by the commenter in their use of compliant coatings. Also, the Navy's

QPL testing includes service life, and there are compliant coatings in each category included on the QPL.

Comment: One commenter (IV-F-01) noted that the 25 shipyards identified in the preamble as major sources have been the ones to lead voluntary emissions reductions. It would be unfair to set standards without recognizing the contributions that these yards have already made to the environment.

Response: As requested by Section 112 of the Act, the MACT floor determination was based on the best information available to the EPA at the time (see 42 U.S.C. § 7412(d)). Those yards that were identified as part of the floor will have less difficulty, and therefore, less of a cost impact, in complying with the promulgated standards.

Comment: One commenter (IV-F-01) believed that the EPA surveyed very few of the 437 shipyards and that this limited data gathering effort may have lead to an over-estimation of environmental benefits and an underestimation of costs.

Response: The EPA collected information from approximately 50 shipyards through information collection requests, visits to shipyards, and working with NAVSEA, the U.S. Coast Guard and trade associations representing most of the larger shipyards. The EPA made a concerted effort to collect information from a representative cross-section of the industry by requesting information from as many geographic and climatic locations as possible. The Act requires EPA to base MACT standards on data available to the Administrator. Based on that data, the EPA does not believe that environmental benefits have been overestimated or that costs have been underestimated.

Comment: One commenter (IV-F-01) claimed that the proposed rule, by stating that noncompliance is an enforceable violation, criminalizes the rule. The focus should not be on criminalization but on emission reductions.

Response: Unexcused deviations by a source are violations of the rule, and the EPA will select the most appropriate enforcement response to address the violation.

3.0 ADDENDA

3.1 ECONOMIC IMPACT ANALYSIS

September 15, 1995

MEMORANDUM

Subject: Economic Impact Analysis: Addendum

From: Michele McKeever
Innovative Strategies and Economics Group
Air Quality Strategies and Standards Division (MD-15)

The purpose of this memo is to present revised economic impact estimates for the shipbuilding National Emission Standard for Hazardous Air Pollutants (NESHAP). Due to late changes in the regulatory requirements of the shipbuilding rule, the estimated number of affected facilities as employed in the economic impact analysis (EIA) is incomplete. Therefore, the economic impacts presented in the document must be updated.

The EIA was conducted based on the assumption that twenty-five shipbuilding and repair facilities would be directly affected by the rule. Current estimates now indicate that a total of thirty-five facilities may be directly affected.

The methodology for estimating the revised economic impacts is the same methodology presented in the original EIA. The NESHAP is now estimated to affect a total of thirty-five facilities. The additional ten facilities expected to be directly affected by the NESHAP are all categorized as medium tier two facilities. Three of these facilities are further classified as construction facilities while the remaining seven are classified as repair facilities. Due to time, resource, and data constraints, these new facilities were assigned the same economic characteristics as their corresponding market-segment counterparts. (Market segments are detailed in the EIA.)

An increase in the number of affected facilities also leads to an increase in the expected costs associated with the NESHAP. The revised total annual cost of the NESHAP is estimated as approximately $2 million (1991 $).

Market-Segment Impacts

The above information was used to recalculate market-segment price increases. The original conclusion presented in the EIA - that the additional cost of the rule is estimated to have relatively small impacts on the final price of a repaired or newly constructed ship - still holds true. The price impact of the NESHAP on any market segment is estimated to be .3 percent or less and some market segments show negligible price increases. The new calculations also indicate that the NESHAP is expected to have a negligible impact on the industry's total output and employment and only a slight impact on the industry's revenue. All market segments in the first tier are expected to experience a .1 percent decrease in revenue while the military construction market segment in the second tier is expected to experience a .2 percent reduction in revenue. The other market segments in the second tier are not expected to be affected.

Facility-Level Impacts

Facility-level impacts were also recalculated using the new data. The results of the facility-level analysis indicate that all of the facilities are expected to experience price increases of less than one percent. Therefore, the conclusion of this analysis is that implementation of the NESHAP is not expected to significantly impact the thirty-five major-source facilities in the shipbuilding and repair industry.

In addition to the above impacts, the conclusion of the small business analysis has not changed. There are no significant impacts on small businesses in this industry.

TECHNICAL REPORT DATA

(Please read Instructions on reverse before completing)

1. REPORT NO. EPA-453/R-96-003b	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Surface Coating Operations at Shipbuilding and Ship Repair Facilities--Background Information for Final Standards		5. REPORT DATE August 1995
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Midwest Research Institute, 401 Harrison Oaks Boulevard, Suite 350, Cary, North Carolina 27513		10. PROGRAM ELEMENT NO.
		11. CONTRACT/GRANT NO. 68-D1-0115
12. SPONSORING AGENCY NAME AND ADDRESS Director, Office of Air Quality Planning and Standards, Office of Air and Radiation, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED
		14. SPONSORING AGENCY CODE EPA/200/04
15. SUPPLEMENTARY NOTES		

16. ABSTRACT

National emission standards for control of HAP emissions from surface coating operations at shipbuilding and ship repair facilities were recently published in-- 60 FR 64330, December 15, 1995. This regulation was promulgated under the authority of Section 112 of the Clean Air Act. The Standards will reduce air toxics form all major source shipyards (defined as those shipyards that emit 9.1 Mg/yr [10 tons/yr] or greater of any HAP material or 22.7 Mg/yr [25 tons/yr] or greater of any combination of HAP materials). This document provides:

1) the basis for the revisions made to the standards between proposal and promulgation.
2) a summary of the comments submitted and the responses to these comments.
3) a summary of the changes made since proposal.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air Pollution Shipbuilding and Ship Repair Hazardous Air Pollutants Surface Coating (Painting)	Air Pollution Control	

18. DISTRIBUTION STATEMENT Release Unlimited	19. SECURITY CLASS (Report) Unclassified	21. NO. OF PAGES 85
	20. SECURITY CLASS (Page) Unclassified	22. PRICE

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

U.S. Environmental Protection Agency
Region 5, Library (PL-12J)
77 West Jackson Boulevard, 12th Floor
Chicago, IL 60604-3590