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Office of Air Quality Planning and Standards Research Triangle Park, NC 27711
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May 1999
Air

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) FOR PESTICIDE ACTIVE INGREDIENT PRODUCTION:

SUMMARY OF PUBLIC COMMENTS AND RESPONSES

Contains Data for Postscript Only.

EPA-453/R-98-011

National Emission Standards for Hazardous Air Pollutants (NESHAP) For Pesticide Active Ingredient Production Background Information for Promulgated Standards-- Summary of Public Comments and Responses

Emission Standards Division

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

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ENVIRONMENTAL PROTECTION AGENCY

National Emission Standards for Hazardous Air Pollutants for
Pesticide Active Ingredient Production--
Summary of Public Comments and Responses

1. The final National Emission Standards for Hazardous Air Pollutants (NESHAP) will regulate emissions of hazardous air pollutants from pesticide active ingredient production. Only those operations that are part of major sources under section 112(d) of the Clean Air Act as amended in 1990 will be regulated.

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LIST OF ACRONYMS AND ABBREVIATIONS FOR UNITS OF MEASURE

ACRONYMS

ACPA	American Crop Protection Association
Act	Clean Air Act
ACT	Alternative Control Techniques
Administrator	EPA Administrator
Agency	EPA
ALR	average leak rate
ANSI	American National Standards Institute
APCD	air pollution control device(s)
BACT	best available control technology
BIF	boilers and industrial furnaces
CAA	Clean Air Act
CAM	compliance assurance monitoring
CAR	Consolidated Air Rule
CEM	continuous emissions monitor
CEMS	continuous emissions monitoring system(s)
CFR	Code of Federal Regulations
Cl_2	chlorine
CMPU	chemical manufacturing process unit
CMS	continuous monitoring systems
CO_2	carbon dioxide
CTG	Control Techniques Guideline
CWA	Clean Water Act
EG	emission guidelines
EPA	U. S. Environmental Protection Agency
FBCA	fixed-bed carbon adsorber
FDA	Food and Drug Administration
FID	Flame Ionization Detector
FIFRA	Federal Insecticide Fungicide and Rodenticide Act
F_r	fraction removed
FR	Federal Register
GMP	Good Manufacturing Practice
H_2	hydrogen
HAP	hazardous air pollutant(s)

HCl	hydrogen chloride
HCN	hydrogen cyanide
HON	Hazardous Organic NESHAP
IFR	internal floating roof
LDAR	leak detection and repair
MACT	maximum available control technology
MON	Miscellaneous Organic NESHAP
N_2	nitrogen
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industrial Classification System
NESHAP	national emission standards for hazardous air pollutants
NO_2	nitrogen dioxide
NOCS	notification of compliance status
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSM	new source MACT
NSPS	new source performance standards
NSR	new source review
O_2	oxygen
OAQPS	Office of Air Quality Planning and Standards
OECA	Office of Enforcement and Compliance Asurance
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
OVA	Organic Vapor Analyzer
P&R	Polymers and Resins
P2	pollution prevention
PAI	pesticide active ingredient
PEC	purchased equipment costs
PhRMA	Pharmaceutical Research and Manufacturers of America
PM	particulate matter
PMPV	Pharmaceutical Manufacturing Process Unit
POD	point of determination
POTW	Publicly - Owned Treatment Works
PSD	prevention of significant deterioration
QA/QC	quality assurance/quality control
QIP	Quality Improvement Program

R&D	research and development
RACT	Reasonably Available Control Technology
RCRA	Resource Conservation and Recovery Act
SARA/TRI	Superfund Amendments and Reauthorization Act/Toxic Release Inventory
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
SOCMI	Synthetic Organic Chemical Manufacturing Industry
SO_x	sulfur oxides
TOC	total organic compounds
TRE	total resource effectiveness
TRI	toxic release inventory
TSCA	Toxic Substances Control Act
USDA	United States Department of Agriculture
VOC	volatile organic compounds

ABBREVIATIONS FOR UNITS OF MEASURE

Btu	=	British thermal unit
C°	=	degrees Celsius
dscf	=	dry standard cubic foot (@ 14.7 psia, 68°F)
dscfm	=	dry standard cubic foot per minute (@ 14.7 psia, 68°F)
dscm	=	dry standard cubic meter (@ 14.7 psia, 68°F)
°F	=	degrees Fahrenheit
ft^3	=	cubic feet
gal	=	gallon
gr	=	grains
hr	=	hour
K	=	degrees Kelvin
kg/yr	=	kilograms per year
km	=	kilometer
Kpa	=	kilopascals
L	=	liter
L/yr	=	liter per year
lb	=	pound
m^3	=	cubic meter
min	=	minute
mg	=	milligrams (10^{-3} grams)
Mg	=	megagram (10^6 grams)
MMm^3	=	million cubic meters
MW	=	megawatt
MW-hr/yr	=	megawatt-hours per year
ng	=	nanogram (10^{-9} grams)
ppm	=	parts per million
ppmdv	=	parts per million by dry volume
ppmv	=	parts per million by volume
ppmw	=	parts per million by weight
psia	=	pounds per square inch actual
scmm	=	standard cubic meters per minute
ton/yr	=	ton per year
µg	=	microgram (10^{-6} grams)
µm	=	microns
wk	=	week
yr	=	year

1.0 SUMMARY

On November 10, 1997, the U. S. Environmental Protection Agency (EPA) proposed national emission standards for hazardous air pollutants (NESHAP) for pesticide active ingredient (PAI) production (63 FR 60565) under authority of Section 112 of the Clean Air Act (Act). Public comments were received from 34 sources consisting mainly of PAI manufacturers, trade associations, and other interested parties.

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

Applicability

Eliminated applicability of inorganic PAI's.

Introduced concept of "process units" and "PAI process units" analogous to the definitions in other regulations.

Introduced concept of "process unit groups" and "primary product determinations" for defining applicability of PAI process units that are constructed from nondedicated equipment that are also used to produce non-PAI products.

Added provisions regarding overlap with other standards.

Process vent standards

Added 20 parts per million by volume (ppmv) option for HCl/Cl_2 halide emissions.

Changed control requirement for HCl/Cl_2 at new sources from 99.9 percent to 99 percent.

Added an alternative standard that requires control to 20 ppmv as TOC and 20 ppmv as HCl/Cl_2, and compliance is demonstrated using CEM's.

Storage vessel standards

Changed MACT floor and MACT cutoff from pounds per year (lb/yr) format to vapor pressure cutoff.

New source cutoff changed from 1 lb/yr and 7,000 gallons (gal) to 16.5 kilopascals (kPa) and 10,000 gal, and control requirement changed from 98 to 95 percent.

Clarified that allowance for planned routine maintenance of control devices applies only to control devices used for storage vessels.

Final rule allows owner or operator to designate storage vessels as Group 1 storage vessels.

Added alternative standard option like the one for process vents.

Wastewater standards

Changed definition of wastewater to exclude maintenance wastewater streams with low emission potential.

Added exception to the cross-referenced provisions in the Hazardous Organic NESHAP (HON) to allow compliance only with outlet total organic compounds (TOC), not both outlet TOC and total organic hazardous air pollutant(s) (HAP).

Equipment leaks

Changed requirements to be consistent with provisions in the proposed Consolidated Air Rule (CAR) instead of subpart H; the provisions have been included in the final rule.

Pollution prevention

Changed basis for baseline factor from 1 year of data to 3 years.

Added equation to calculate required reduction in volatile organic compounds (VOC) factor.

Added requirement to submit a demonstration summary describing methods to be used to measure and record consumption and production.

Test methods and initial compliance

Revised requirement to correct outlet concentrations to 3 percent oxygen only when using a combustion device and supplemental gases are combined with the vent stream. Also added requirement to correct outlet concentrations when supplemental gases are combined with vent streams that are controlled in non-combustion devices.

Deleted option to demonstrate compliance for a condenser based on test results; final rule requires compliance based on temperature measurement and calculation of the emissions. As a result, also deleted peak-case conditions based on maximum heat removal capacity.

Deleted option to test under representative peak-case conditions.

Expanded definition of peak-case conditions to include most challenging conditions other than maximum HAP load. Also expanded definition of the emissions profile to include equipment limitations as well as actual emissions.

Added optional equations to calculate emissions from heating and depressurization.

Changed the cutoff for calculating incremental values for emissions from heating from 50 degrees Kelvin (K) below the boiling point of the material in the vessel to 10 K below the boiling point.

Added equations for calculating emissions from gas evolution and air drying.

Added equations for calculating controlled emissions from condensers when uncontrolled emissions are generated from one of the seven types of emission episodes for which equations are specified in the rule.

Added provisions for demonstrating initial compliance when using a flare.

Monitoring

Added monitoring parameters for catalytic incinerators.

Changed monitoring provisions for bag leak detectors by allowing adjustments after initial settings under certain conditions and deleting the requirement to develop a Quality Improvement Program (QIP).

Clarified that averaging periods for batch unit operations may be over a "block" period not to exceed the duration of the operation or series of operations as well as over 24 hours.

Reporting

Changed submittal date of Precompliance report from 12 months to 6 months before the compliance date.

Added procedures for submitting notification when the owner or operator wants to change anything that was (or would have been) submitted for approval in the Precompliance report.

Miscellaneous

Numerous editorial changes and changes in definitions to improve readability and clarify intent, especially in the monitoring, recordkeeping, and reporting sections.

1.2 SUMMARY OF IMPACTS OF PROMULGATED REGULATIONS

The final standards will reduce nationwide emissions of HAP from the production of PAI's by 2,500 megagrams per year (Mg/yr) (2,800 tons per year [ton/yr]), or 65 percent compared to baseline emissions that would result in the absence of the standards. Wastewater generated from water scrubbers used to control hydrogen chloride (HCl) emissions is expected to increase by an estimated 10.8 million liters per year. No increase in solid waste is expected. Energy usage is expected to increase by an estimated 4,880 x 10^9 British thermal units (Btu) per year. The total annual costs for control at existing and new sources are estimated to be approximately $37.5 million and $5.16 million, respectively (June 1995 dollars). The economic impact analysis shows that the market price will increase by less than 3 percent, and market output will decrease by less than 3 percent. No plant closures are expected from compliance with the final standards.

2.0 OVERVIEW OF PUBLIC COMMENTS

The public comment period following the November 10, 1997 Federal Register notice (proposed rule) lasted from November 10, 1997 to January 9, 1998. However, a number of commenters requested that the comment period be extended, and EPA did grant an extension of the comment period until February 9, 1998. Late comments received after February 9, 1998 were also accepted. A total of 34 letters commenting on the proposed rule were submitted and these comments have been placed in the docket for this rulemaking (Docket A-95-20) under categories IV-D (received on or before February 9, 1998) and IV-G (received after February 9, 1998). Table 2-1 presents a listing of all persons submitting written comments on the proposed rule, their affiliations, and the recorded docket item number assigned to their correspondence.

In some instances, commenters supported their comments by referencing comments submitted by other comments. This was particularly true of the comments submitted by the American Crop Protection Association (ACPA) which were referenced several times by their member companies. Commenters IV-D-20, IV-D-22, IV-D-25, and IV-D-29 incorporated the comments of the ACPA (comment letter IV-D-16) by reference.

2.1 ORGANIZATION OF COMMENT SUMMARIES

Chapters 3.0 through 20.0 present a summary of the comments on the proposed rule along with EPA responses. The comments are grouped by subject areas, and the organization of topics is similar to the organization of the preamble to the final rule.

TABLE 2-1. LIST OF COMMENTERS ON THE PROPOSED NESHAP FOR THE PAI INDUSTRY

Item No.	Commenter and Affiliation
IV-D-01	D.Gustafson, The Dow Chemical Company
IV-D-02	L. Hott, Novartis Crop Protection, Inc.
IV-D-03	W. Dickerson, BASF
IV-D-04	T. Gilding, American Crop Protection Association
IV-D-05	A. Stungys, Tomen Agro, Inc.
IV-D-06	A. Deshmukh, Occidental Chemical Corporation
IV-D-07	V. Jones Clorox Company
IV-D-08	T. Gilding, American Crop Protection Association
IV-D-09	J. Cooper, AlliedSignal, Inc.
IV-D-10	B. Higgins, STAPPA/ALAPCO
IV-D-11	R. Godbole, Phelps Dodge Corp.
IV-D-12	D. Ailor, Coke and Coal Chemicals Institute
IV-D-13	W. Adams, Kennecott Utah Copper Corp.
IV-D-14	R. Phelps, Eastman Chemical Company
IV-D-15	A. Stungys, TomenAgro, Inc.
IV-D-16	T. Gilding, American Crop Protection Association
IV-D-17	M. Wax, Institute of Clean Air Companies
IV-D-18	D. McKinnon, Manufacturers of Emission Controls Association
IV-D-19	K. Parameswaran, ASARCO, Inc.
IV-D-20	R. DiMenna Rohm and Haas, Co.
IV-D-21	J. Dumelow, DuPont Agricultural Products
IV-D-22	B. Raff, Novartis Crop Protection, Inc.
IV-D-23	C. Wysong, Engelhard Corp.
IV-D-24	R. Pauline, Chemical Specialties Manufacturers Association
IV-D-25	C. Keffer, Monsanto Company
IV-D-26	S. Tirey, Chemical Manufacturers Association
IV-D-27	A. Dawson, American Cyanamid Co.
IV-D-28	L. Swaim, The Dow Chemical Company
IV-D-29	J. Dege, Dupont SHE Excellence Center
IV-G-01	D. Powers, Merck & Co., In.c
IV-G-02	R. Smerko, The Chlorine Institute
IV-G-03	N. Carlson, Elf Atochem
IV-G-04	A. Deshmukh, Occidental Chemical Corporation
IV-G-05	R. Randolph, Missouri Department of Natural Resources
IV-G-06	C. Wysong, Engelhard Corporation

3.0 APPLICABILITY

3.1 SELECTION OF SOURCE CATEGORY

Status at proposal: Under the proposed rule, the source category consisted of the production of all pesticide active ingredients that are used to produce an insecticide, herbicide, or fungicide pesticide end-use product. The preamble to the proposed rule explained how the source category was developed, and requested comment on the scope of the source category. The procedure used to develop the source category is summarized in the remainder of this introduction.

The initial list of categories of major and area sources included 10 source categories in the agricultural chemicals industry group. In June 1996, butadiene furfural cotrimer was moved from the polymers and resins industry group to the agricultural chemicals industry group (61 FR 28197). In the notice of proposed rulemaking, EPA made the following additional changes: (1) all manufacturers of active ingredients within the meaning of FIFRA section 2(a) that are used in herbicide, insecticide, or fungicide pesticide end-use products were added to the agricultural chemicals industry group; (2) the individual initial and new source categories in the agricultural chemicals industry group were combined into a single source category; and (3) the new source category was named "pesticide active ingredient production."

Comment: Thirteen commenters addressed the issue of the source category definition. Four commenters discussed the scope of the source category in general terms: commenters IV-D-09 and IV-D-12 opposed the expansion, commenter IV-D-28 could not tell from the available information whether or not it was appropriate, and commenter IV-D-20 supports the scope of the applicability and the definition of PAI. Eight commenters (IV-D-07, IV-D-11, IV-D-13, IV-D-19, IV-D-23, IV-D-24, IV-G-02, and IV-G-04) requested exemptions

for specific processes or classes of processes that would be subject to the proposed rule; the primary concern of these commenters was that the proposed rule would apply to inorganic PAI production processes, many of which, the commenters contend, are significantly different than organic PAI production processes. One commenter (IV-D-15) stated that the Captan process (one of the original source categories) should not be combined with other PAI processes because it is significantly different from other PAI processes. Details of the comments are described in the remainder of this section.

Commenters IV-D-09 and IV-D-12 opposed the expansion of the source category because (1) the processes subject to the proposed rule are dissimilar in that some are from naturally occurring materials, but others are synthetically produced and (2) many of the processes produce compounds that are not primarily used in insecticide, herbicide, or fungicide products. Commenter IV-D-09 is also concerned that the change has been largely undetected or misunderstood by the regulated community because the proposal did not identify either the number of processes that would be covered or examples of the processes. Without reviewing the processes to ensure that process operation, emission characteristics, control device applicability, and costs are similar, the commenters contend that the proposed regulation is arbitrary and capricious, is inconsistent with the Act and EPA's procedures for developing maximum available control technology (MACT) standards, and defeats the purpose for creating industry categories. Both commenters suggested that EPA change the definition of PAI to mean any synthetically produced material because the Basis and Purpose document only describes processes to synthetically produce chemicals. Commenter IV-D-09 noted that this approach would be consistent with the definition of intermediate, which is a compound produced in a chemical reaction and that is further processed in one or more additional chemical reactions to produce a PAI. Both commenters also indicated that previous rulemakings recognize this distinction (e.g., the HON, the new source performance standards (NSPS) for equipment leaks, and the Effluent Guidelines for Pesticide Chemicals all focus on processes to synthetically produce compounds; whereas the Effluent Guidelines for Gum and Wood Chemicals target production of compounds from natural sources). Commenter IV-D-12 also noted that the Effluent Guidelines are explicit and unambiguous in that each process subject to the guidelines is specified.

One commenter (IV-D-28) stated that the Federal Register notice itself did not contain enough information about the similarities and differences of the processes that would be covered; therefore, the commenter could not determine whether it is appropriate to combine the source categories. However, this commenter stated that, for this rulemaking, EPA should not further expand the source category beyond the processes covered by the proposed rule because owners and operators of other processes may not have read the preamble closely enough to determine that EPA is thinking about adding other processes. Also, this commenter contended that the necessary data to evaluate such processes could not be provided in the comment period. This commenter also specifically supported the exclusion of antimicrobials, rodenticides, and biocides from the definition of PAI.

Commenter IV-D-24 believes the proposed rule is too broad because it does not distinguish between antimicrobial PAI's and other types of PAI's. The commenter requested that EPA exempt formulators of antimicrobial PAI's for the following reasons: (1) production, pollution prevention, and treatment practices for antimicrobial PAI processes are different from other PAI processes; (2) the antimicrobial PAI's have low toxicity, biodegrade rapidly, and have undergone extensive safety testing; (3) EPA recognized the unique nature of sodium hypochlorite and similar chemicals by excluding them from the Effluent Guidelines for Formulating, Packaging, and Repackaging Facilities in the Pesticide Chemical Category; and (4) formulators of antimicrobial products have no air emissions.

Commenter IV-G-02 requested that EPA exempt chlorine and sodium hypochlorite production and packaging plants from the rule because chlorine is already highly regulated. The commenter cited Occupational Safety and Health Administration (OSHA) regulations, Superfund Amendments and Reauthorization Act/Toxic Release Inventory (SARA/TRI) reporting requirements, EPA's pending risk management program requirements for facilities with more than 2,500 pounds (lb) of chlorine onsite, and the pending MACT standards for chlor-alkali production. Another commenter (IV-D-07) also requested that EPA exempt sodium hypochlorite production because the product: (1) does not present an unreasonable risk to the environment; (2) is not emitted to the air in the manufacturing process; (3) ionizes, dissolves rapidly in water, rapidly degrades, and does not volatilize; (4) the production, pollution prevention, and treatment

practices differ from these practices for other PAI's, which EPA recognized by excluding it from the Effluent Guidelines for the Pesticide Chemicals Category.

Commenter IV-D-23 requested that EPA exempt kaolin (aluminum silicate) production because: (1) the process, which consists primarily of mechanical action and treatment with inorganic chemicals, is very different from the flow diagram in the Basis and Purpose document; (2) the commenter's production facility is not a major source of HAP emissions; (3) kaolin is not a typical pesticide in that it repels pests rather than killing them; and (4) kaolin is nontoxic (i.e., it has an unlimited tolerance level).

Commenters IV-D-11, IV-D-13, and IV-D-19 believe sulfuric acid production should be exempt from the rule. All of the commenters operate copper smelters and produce sulfuric acid from the sulfur dioxide in the smelter offgas. These processes would be subject to the proposed rule because the sulfuric acid is registered as a herbicide, but only small amounts of it are sold for this use. (The commenters noted that other sulfuric acid producers also would be subject to the proposed rule, although their sulfur dioxide feedgas is produced by burning sulfur.) Commenter IV-D-13 explained that the smelter offgas contains various metals and metal compounds, some of which are HAP. These HAP are removed by particulate controls prior to the catalytic oxidation of the sulfur dioxide to sulfur trioxide. The commenter cited EPA's final summary report for the primary copper smelters NESHAP, which stated that the particulate controls result in HAP metal control efficiencies of greater than 99.9 percent, and, in most cases, the combined emissions of all HAP metals in acid plant tail gases are less than 0.1 ton/yr. Commenter IV-D-13 also cited the following reasons to support an exemption: (1) the process does not use or generate organic HAP or HCl, which are the major HAP according to the preamble to the proposed rule; (2) sulfuric acid plants are an effective control for metal HAP emissions from smelters; (3) regulating the process would provide no environmental benefit but would impose a significant burden (e.g., to demonstrate that equipment does not emit HAP); (4) EPA lacks authority under section 112(c) of the Act to apply NESHAP to sulfuric acid plants because the plants are not major sources and the de minimis emissions would not present a threat of adverse effects warranting regulation of area sources; (5) most sulfuric acid manufacturers do not think of the process as a PAI process, which may lead to noncompliance due to ignorance;

and (6) the production process, emissions, and controls differ from the original 11 processes. Commenter IV-D-19 provided similar reasons: (1) the preamble to the proposed rule indicates the rule is designed for organics and HCl, but no mention is made of other commodity inorganics; (2) no information in the docket supports a PAI NESHAP for sulfuric acid plants; and (3) the final NESHAP for copper and lead smelter furnaces will indicate that sulfuric acid plants are MACT. Furthermore, both commenter IV-D-13 and commenter IV-D-19 indicated that sulfuric acid plants are not included on the list of source categories, and commenter IV-D-13 believes that if it were listed at all, it logically would be listed among the categories of inorganic chemicals, not with agricultural chemicals. Commenter IV-D-11 concurred with the comments submitted by commenter IV-D-13.

Commenter IV-D-11 requested that copper sulfate production be exempted from the rule. The commenter explained that copper sulfate is a byproduct from liquors used at copper refineries and rod mills, and it is registered as a herbicide. To support the request for an exemption, the commenter used arguments similar to those used to support the request for an exemption of sulfuric acid production: (1) the process is not a major source of HAP (but it may be co-located at a site that is a major source); (2) the process emits no more than trace amounts of organic HAP and HCl, the major HAP emitted from the source category according to the preamble to the proposed rule; (3) the rule would not achieve an environmental benefit but would impose a significant compliance burden on owners and operators to show they are below cutoffs; (4) owners and operators do not think of their processes primarily as PAI processes, which is likely to lead to noncompliance due to ignorance; and (5) this process and organic PAI processes do not have similar process operations, emission characteristics, control device applicability and cost, and opportunities for pollution prevention. As an alternative to adding an exemption for this process, the commenter suggested that EPA could limit the applicability of the rule to the manufacturing of organic PAI's.

Commenter IV-D-15 believes the Captan process (one of the initial source categories) should not be combined with other PAI processes because it has properties and process requirements that make it different from other PAI processes. The commenter contends that the impacts of combining the processes in one source category were not considered when drafting

the proposed rule, and the commenter suggested that EPA study the impact of grouping these processes. According to the commenter, some of the differences are: (1) the process vent flow rate for production of the intermediate is much lower than the process vent flow rate for the active ingredient production, which leads to differences in the complexity and cost of the control devices; (2) the Captan process has both volatile organic HAP and particulate HAP emissions; (3) the cost to control carbon disulfide emissions from the active ingredient production would be much higher than the modeled costs (see section 19.2 for additional discussion of the cost impacts).

Commenter IV-G-04 stated that EPA should exempt chromic acid and sodium bichromate processes from the rule because these processes were part of the Chrome Chemicals source category, which EPA delisted.

Commenter IV-G-05 supports the addition of PAI's such as organochlorides and organophosphates because these compounds are bioaccumulative, persistent, and acutely toxic.

Response: In response to the comments, EPA reexamined the scope of the source category and determined that the proposed rule included some processes that are not similar to the others. For the final rule, changes were made to narrow the scope of the source category; in addition, for processes that remain in the source category, changes have been made to exempt some processes and to clarify requirements for others. These changes are: (1) a statement has been added to specify that the provisions of the rule apply only to PAI process units that "process, use, or produce HAP;" (2) the definition of PAI has been changed to mean any *organic* material that is an active ingredient within the meaning of FIFRA section 2(a); and (3) a statement has been added to specify that the rule does not apply to the production of ethylene (processes subject to the HON are also exempted, as they were in the proposed rule).. Finally, EPA decided not to limit the source category only to production of compounds by chemical synthesis. Each of these decisions is discussed in more detail later in this response. However, this discussion first summarizes EPA's rationale for expanding the source category list to include PAI's other than those on the initial source category list, and for aggregating them all together in a single source category; this rationale was presented in the preamble to the proposed rule.

From a survey of a subset of the industry, EPA determined that: (1) production of compounds on the initial source category list as well as many other compounds have a number of similarities, including process equipment, emission characteristics, control applicability, and control costs; (2) many of the additional compounds also are produced at facilities that are major sources; and (3) the initial compounds and the additional compounds are PAI's that are used in herbicides, insecticides, and fungicides. Because common control techniques can be applied, EPA concluded that developing separate standards for each PAI is not warranted and that it is technically feasible to regulate emissions from a variety of PAI processes by a single set of emission standards. Variability in the quantity of HAP produced by different processes was addressed by incorporating applicability thresholds in the standards (section VI.D describes changes that have been made to the thresholds for storage vessels in the final rule). At the facilities that produce more than one PAI, often in the same equipment or same "pool" of equipment, compliance would be facilitated by having only a single set of emission standards. Finally, it would be more efficient and less costly for EPA to develop only a single set of emission standards, and compliance and enforcement activities by regulatory authorities would be more efficient and less costly.

The provision that the rule applies only to PAI process units that "process, use, or produce HAP" has been added to the final rule because EPA did not intend for owners and operators to demonstrate compliance for processes that do not meet this condition. Note, however, that this provision does not automatically exempt process units that do not *emit* HAP; for emission points in such process units, an owner or operator must demonstrate that emissions are less than the applicability thresholds.

The EPA decided to exclude production of inorganic compounds from the source category because (1) inorganic PAI's comprise only a small percentage of the total PAI production, (2) many of the inorganic PAI production processes do not use or emit HAP, (3) data are unavailable on the use, emissions, and control of HAP compounds other than organics and HCl, (4) some of the inorganic PAI's are included in other active or delisted source categories, and (5) most of the inorganic PAI's are used primarily for non pesticidal purposes. In this context, "organic" means any compound that contains carbon and hydrogen with or without other

elements. Based on a review of pesticide registration data in 1996, less than 10 percent of the PAI's in pesticide products that are registered as insecticides, herbicides, or fungicides are inorganic compounds. Inorganic compounds comprise a similar percentage by weight; based on 1993 consumption data, the top 25 compounds account for nearly half of the total PAI production, and the two inorganic compounds in the group (sulfur and copper hydroxide) account for less than 10 percent of the total.

Of the inorganic PAI processes, only those producing HCl, chlorine, and compounds containing arsenic and chromium are known to use and emit HAP. Both HCl and chlorine production processes have been specifically exempted from the final rule because they are the subject of other MACT standards that are under development. Chromium-based compounds are part of the delisted chrome chemicals source category and thus, EPA agrees with the commenter that they should not also be part of the PAI source category. Data on the existing control levels for arsenic-based compounds are unavailable. In the absence of such data, EPA has decided that production of such compounds should not be part of the PAI source category, but they may be investigated at a later date.

The commenters cited examples of some inorganic compounds that are primarily used for nonpesticidal purposes. The EPA believes there are other inorganic compounds that could be added to this list of compounds used only in minor amounts as pesticides. Conversely, most of the organic compounds are specifically designed as PAI's. Exceptions include ethylene, which has been specifically exempted in the final rule because it is the subject of a MACT standard that is under development, and several compounds covered by the HON such as acrolein, ethylene oxide, napthalene, and propylene glycol.

Production of organic PAI compounds that are derived from natural materials is retained in the source category. Natural materials used as PAI's fall into one of two categories. One category includes herbs, tobacco dust, dried blood, chitin, putrescent whole egg solids, pyrethrum flowers, cinnamon, sawdust, and ground sesame plant. These compounds are simply harvested or collected and the only processing involves mechanical action. None of these compounds is a HAP. As a result, these processes are not subject to the final rule because the production processes do not process, use, or produce HAP. The second category includes compounds like

turpentine that are extracted from natural materials. Extraction processes are not exempted from the final rule because they tend to use large amounts of solvent and have a high potential for emissions. Emissions from extraction processes tend to be more concentrated than emissions from many of the operations in chemical synthesis processes, and they tend to be larger scale operations than extraction operations that are part of a chemical synthesis process. These characteristics make control of extraction processes more cost effective than control of many chemical synthesis processes. However, because the final rule includes a primary use criterion for determining applicability (see the response to comment 2 in section 3.2), extraction processes are only subject to the final rule if the product is primarily used as a PAI.

The EPA disagrees with the assertion by one commenter that the Captan® process (and the associated intermediate process) should be considered separately from other PAI processes. The intermediate appears to be an integral intermediate and thus, would be subject to the rule as a separate process. Although the flow rates of the intermediate and Captan® process vent streams differ, the flow rates and other process vent stream characteristics for both processes are well within the range of characteristics for process vent streams at other surveyed PAI facilities. These differences were accounted for in EPA's impact analysis by using different models to represent the two processes.

In addition, the particulate emissions from product dryerss also are considered to be a separate type of emission point like process vents or storage vessels. The fact that this plant is the only one of the MACT floor facilities to have HAP emissions from product dryers is not considered a significantly unique characteristic. It is analogous to the fact that some of the other plants have HAP storage tank emissions or wastewater discharges and are subject to the specific standards for these emission points, where other plants are not.

Finally, EPA believes the cost analysis is correct. Carbon disulfide can be controlled with many of the same control devices that are used to control other organic HAP. If incinerated, the resulting sulfur oxides (SO_2) emissions can be controlled using scrubbers comparable to those used to control HCl emissions. A detailed discussion of the cost analysis is presented in section 19.2. Therefore, EPA believes the Captan process is not sufficiently different from other PAI processes to warrant development of a subcategory or a separate source category.

3.2 DEFINITION OF AFFECTED SOURCE

Status at proposal: Section 63.1360(a) of the proposed rule defines the affected source as the facility-wide collection of process vents, storage tanks, waste management units, heat exchange systems, cooling towers, equipment identified in § 63.149, and equipment components (pumps, compressors, agitators, pressure release devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems) in PAI manufacturing operations at a major source of HAP emissions. The EPA received several comments on the affected source. The comments focused on the following issues: (1) limiting applicability to processes where the primary product is a PAI, (2) limiting applicability to processes where the product is primarily used as a PAI, and (3) clarifying the definition of affected source. Clarification of the definition of the affected source is addressed in responses to comments in this section; changes to the definitions of terms used in the definition of the affected source are discussed in chapter 5.

Comment 1: Commenter IV-G-03 requested clarification of the definition of the affected source to ensure that only those processes and equipment associated with the processes that produce a PAI are affected. The commenter believes the clarification is necessary because the phrase "facility-wide" in the definition could be interpreted to mean that all emission points, whether or not they are associated with a PAI process, are subject to the rule.

Response: Although the definition of the affected source in the proposed rule was described in a very long sentence, the EPA believes that it clearly indicated that "facility-wide" applied specifically to process equipment that are used to produce PAI's. However, to improve clarity and reduce redundancy, the affected source in the final rule is defined to be the "PAI process units" that process, use, or produce HAP, and that are located at a plant site that is a major source. The final rule also indicates that an affected source includes waste management units, heat exchange systems, and cooling towers that are associated with the PAI process units. As noted in the response to comment 4 in this section, most of the language in the proposed definition of the affected source has been shifted to the definition of the new term "PAI process unit" in the final rule.

Comment 2: Two commenters (IV-D-14 and IV-D-28) urged EPA to specify, as in other MACT standards, that a process or process unit is subject to the rule only if its primary product is a PAI. Commenter IV-D-14 defined primary product as the one with the greatest annual design capacity on a mass basis. According to this commenter, a primary product determination is needed because much process equipment that is only occasionally used for PAI production could be subject to the proposed rule, and the exemption for equipment operating in HAP service for less than 300 hours per year (hr/yr) is likely too low to exempt many processes. Commenter IV-D-28 stated that in cases where a single process unit makes more than one product, the concept of "primary product" helps the manufacturer determine which rules apply. This commenter cited three situations where a primary product determination is important. The first is in contract manufacturing, where the process unit is reconfigured as needed to switch from one product to another (the frequency of reconfiguration may be variable--months, a year, or even longer). If a PAI is produced for only a short time during the year, the commenter believes it would not be appropriate for the process unit to be subject to the PAI rule. The commenter also noted that a simple way to define applicability is to specify that if a process unit stops making a PAI, the PAI rule no longer applies. The second situation involves processes that make two or more products at the same time (one is the main reason the process was built; the others are incidental, beneficial by-products). By identifying the primary product, the process unit would be regulated together with other process units that produce that product under a specific, appropriate MACT standard. The third situation is when a facility makes a change in the process unit that is intended to be permanent. The commenter could not find any provision in the proposed rule that would allow such a process unit to be exempt from the rule if they stop making a PAI.

Another commenter interpreted the proposed rule to mean that the rule would apply whenever a PAI is produced. If a facility uses non-dedicated equipment, the commenter realized that this could mean that other rules would apply when the equipment was reconfigured to produce a different product (e.g., the proposed pharmaceuticals rule used the same language). The commenter believes that complying with two standards for the same equipment would be confusing. Therefore, the commenter suggested that the PAI rule apply only when 50 percent or more of the annual production from the equipment is a PAI, or that EPA allow a facility to

comply only with the most stringent rule that would apply to the equipment, regardless of the configuration or the product being produced.

Response: In response to the comments EPA evaluated several options for including a primary product determination. The analysis considered two types of situations. The first situation consists of processing equipment that produces only one PAI, produces different PAI's at different times, or simultaneously produces coproducts (one of which is a PAI). In each of these, PAI is produced to some degree with each operation of the equipment. The second situation involves processing equipment that produces different products periodically, and some of the products are not PAI's.

For the first situation EPA determined that a primary product determination is not needed. This conclusion is obvious for equipment that only produces PAI's because no other rule could apply, provided that compounds subject to the HON are exempted from this regulation. The analysis is more complicated if a PAI is produced as a byproduct or is produced in minor quantities relative to some other product of the process. The EPA is not aware of any such situations. However, if such processes exist, they may already be subject to the HON, in which case they are exempted under § 63.1360(d) of the final rule. The only other standard that might apply to such a process in the future is the Miscellaneous Organic NESHAP (MON). The MON will cover a wide variety of compounds in many different industries. Thus, EPA believes that a process unit producing a PAI, even if the PAI is not the primary product, has more in common with other PAI process units than with process units that will be subject to the MON. Therefore, EPA also believes it is more appropriate to regulate all such process units under the PAI rule rather than the MON.

The EPA considered four options for defining the applicability of the rule to equipment periodically used to produce chemicals other than PAI's. The first option is no change from proposal (i.e., no primary product determination). The second option is to include all equipment used to produce different products in a "process unit group," and always comply with the regulation that applies to the primary product for the group, regardless of what product is being produced. The third option is to define the applicability of the rule based on the primary product of the process unit. The fourth option is similar to the second option, except that the applicable

rule for the process unit could, under certain circumstances, be a rule other than the one for the primary product of the group.

Under option 1, there is no primary product determination, and the standards apply to each PAI process unit. Equipment used to produce multiple products is part of a PAI process unit whenever it is producing a PAI. This option was rejected because, as the commenters noted, it has the undesirable effect of requiring an owner or operator to comply with a different regulation each time the feedstock changes or the equipment is reconfigured to make a different type of product.

The second option is to lump all nondedicated equipment into one or more "process unit groups" and require the owner or operator to comply with the rule that applies to the primary product within the group. A variation on this option would be to require compliance at all times with the most stringent regulation that would apply to any of the individual process units within the group. This option was rejected because the promulgated pharmaceuticals standard does not include a provision that would allow an owner or operator to elect to comply with the final PAI rule when a pharmaceutical is produced in a process unit group that has a PAI for the primary product. The variation also was rejected because it would be difficult to implement; the most stringent regulation would vary depending on the mix of different types of emission points at a given facility and could require mixing and matching different requirements from different rules that apply to the various emission points.

The third option would specify that the rule apply only if the primary product of the process unit is a PAI. This option was rejected because it does not solve the problem of equipment being subject to multiple regulations. A process unit is defined only by the product it makes. If the raw materials are changed or the equipment is reconfigured to make a different product, the result is a different process unit. An exemption for a process unit when it no longer produces a PAI would be meaningless because, by definition, a change in product creates a different process unit. In other words, it is not possible to make a permanent change in the primary product of a process unit because the change creates a different process unit. The process unit is based on the product being produced, not a specific collection of equipment.

The fourth option, like the second option, includes the concept of process unit groups. Under this option, the owner or operator may elect to comply with another existing MACT standard for any PAI process unit(s) if the primary product of the process unit group is subject to the other standard on the promulgation date of the PAI rule or the date of startup of the process unit group, whichever is later. Thus, PAI process units within a group, even if the PAI is not the primary product for the group, are subject to this standard unless and until the process unit group is subject to another MACT standard that covers the primary product of the group. This option also allows the owner or operator to elect to comply with the pharmaceuticals standard for any PAI process unit(s) if any of the products produced in the process unit group are subject to the pharmaceuticals standard. Thus, pharmaceutical manufacturing process units within a group that are covered by the pharmaceuticals MACT may comply with those standards even if a PAI is the primary product of the group. This provision is included because the pharmaceuticals rule does not have a provision that would allow an owner or operator to comply with the PAI rule while producing a pharmaceutical product when the primary product of the group is a PAI. However, two provisions in the pharmaceuticals rule are not applicable when producing a PAI. First, the process vent emission limit of 0.15 Mg/yr in the PAI rule applies instead of the 2,000 lb/yr limit in the pharmaceuticals rule because the 2,000 lb/yr cutoff would not be consistent with the MACT floor for PAI process vents. Second, the owner or operator of a new source that will produce PAI's as well as pharmaceuticals must comply with all of the requirements regarding application for approval of construction or reconstruction in § 63.5 of the General Provisions; the exclusions in § 63.1259(a)(5) of the pharmaceuticals rule do not apply. Again, EPA believes this change is necessary to avoid disparate treatment of PAI producers.

Under option 4, the primary product of a group is defined as the product (e.g., a PAI, pharmaceutical, HON chemical, or currently unregulated chemical) with the highest estimated operating time or total production rate for the 5 years after the compliance date for the PAI rule or after startup of the process unit group, whichever is later. The owner or operator proposes the number of groups and the boundaries of each group based on site-specific operation, but a group may only include equipment that is or may be used with equipment that is used to produce a PAI (i.e., some equipment must overlap between the PAI process unit and some other process unit for all equipment in both process units to be part of the same group). This option was selected

because it simplifies compliance by allowing an owner or operator to comply with only one regulation for a process unit group. It accomplishes this goal without sacrificing emission reductions because the requirements of the rules are similar. It also does not require that an existing regulation be amended.

Clarification of the 300 hour exemption that one of the commenter's cited is also needed. This exemption does not apply to process units; it applies to pumps, valves, and other "equipment" that are subject to the equipment leak provisions in subpart H. This provision has been clarified in the final rule.

Comment 3: Commenter IV-D-09 found the definition of the affected source to be confusing and ambiguous regarding substances that are only occasionally produced for PAI use or are not normally used as PAI's. For example, many chemicals that are registered active ingredients also have many other uses. According to the commenter, the rule should clarify that production of a chemical exclusively for nonpesticidal purposes is not subject to the rule. The commenter also noted that for some chemicals that are registered PAI's only a small percentage of the total quantity produced is sold for use as a PAI. Therefore, the commenter stated that the rule should be clarified to restrict applicability to production of chemicals that are primarily intended to be used as PAI's. Another commenter (IV-D-12) also believes the rule should not apply to processes producing compounds that are not primarily used as PAI's.

Response: Since proposal, EPA has evaluated four options for determining applicability of process units that produce a product for use both as a PAI and other purposes. Option 1 is to require no primary use determination (i.e., no change from proposal). Option 2 is to list in the rule compounds that are registered as PAI's but that would not be subject to the rule based on determinations that their primary use nationwide is not as a PAI. Option 3 is to require site-specific determinations of primary use. Option 4 is to list in the rule all PAI's that are subject to the rule.

Option 1 would encompass the most process units and would therefore achieve the greatest environmental benefit. The EPA rejected this option, however, because it could result in inequitable regulatory treatment of a given type of process unit. For example, one facility might produce a compound for multiple purposes, including a small amount for use as a PAI, but other

facilities produce the same compound exclusively for other purposes. Under this option, only the facility producing a small amount of the compound for use as a PAI would be subject to the rule even though otherwise identical to the other facility.

Under option 4, a list of PAI's subject to the regulation would be included in the regulation. Compounds for which the primary use is the collective non-PAI purposes would be excluded from the list. This option was rejected because it would not accommodate changes in the industry. This is a dynamic industry with new compounds being developed and registered as PAI's every year. Between 1984 and 1995, the industry added an average of 14 new compounds per year (although not all of these new compounds would meet the definition of organic PAI subject to regulation under this rule). As a result, updating the list every year would be impractical. Another disadvantage to this option is that EPA's pesticide reregistration process is not yet complete. Presumably compounds with incomplete evaluations would be included on the list. The list then would have to be amended periodically to delete compounds whose registrations are canceled.

Option 2 was rejected because, like option 4, it would not automatically accommodate changes in the industry; the rule might have to be amended periodically to exempt new compounds that are primarily used for non-PAI purposes. Another concern with option 2 is that it would be difficult to ensure that the list is accurate and complete.

The final rule adopts option 3, which requires site-specific determinations of primary use. This option was selected for several reasons. First, this approach is likely to result in a given process being subject to only one, most appropriate regulation because EPA is not aware of any compounds for which the primary use is as a PAI for one facility but not others. Furthermore, EPA does not expect the primary use at a given facility to vary. However, if the primary use changes to non-PAI purposes, the PAI final rule will still apply to the process unit (based on EPA's "once-in, always-in" policy); if the primary use changes to a PAI, the PAI final rule will apply only if the process unit is not already subject to the HON. A second advantage of this option is that it automatically accommodates new compounds that are developed in the future, and existing compounds that are found to have a pesticidal application. A third advantage is that minimal additional recordkeeping and reporting is required. Manufacturers are required under

FIFRA to record and report the annual production of each PAI that they produce; today's final rule requires that they also record and report the total production to demonstrate that the compound is produced primarily for non-PAI purposes. Finally, the pharmaceuticals rule provides a recent precedent for including a primary use provision.

The final rule incorporates the primary use concept in the definition of PAI process unit. Specifically, a process unit is considered to be a PAI process unit if more than 50 percent of the material produced is used as a PAI or integral intermediate. The primary use is determined based on the projected annual production from the process unit in the three years after the effective date of this rule or startup, whichever is later.

Comment 4: Commenter IV-D-28 believes the definition of affected source needs to be revised to include not only the emission points, but also the process unit and emission control technologies. The commenter recognizes that the definition in the proposed rule is similar to the definitions in other MACT standards, but the commenter has recently realized that it is too narrow. For example, in determining whether changes constitute "reconstruction," the changes must cost more than half as much as building a new similar affected source. However, under the proposed rule, the affected source includes only process vents, not the reactors, distillation units, or other process equipment of which the vent is a part. Similarly, it includes valves and connectors on process piping, but not the piping itself. The commenter also contended that the cost of installing emission controls is a legitimate part of the cost of building a new affected source, but to consider that cost in the reconstruction analysis, emission control technologies must be included in the definition of the affected source.

Response: Reconstruction, as defined in the General Provisions, includes: "the replacement of components of an affected . . . source to such an extent that . . . the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source . . ."

The EPA agrees with the commenter that the equipment and piping within a process are components of an affected source that should be considered in the fixed capital cost analysis for determining whether changes constitute reconstruction. For this and other reasons, the final rule includes the term "PAI process unit," which is defined as the process, any associated storage

tanks, equipment identified in § 63.149, piping and ducts, and components such as pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used in the production of a PAI or integral intermediate.

The EPA disagrees with the commenter's assertion that control devices should be a component of an affected source for the purposes of determining reconstruction costs. The preamble to the General Provisions cites EPA's policy on this issue, which was originally stated in the preamble to a December 16, 1975 regulation that deals with modification, notification, and reconstruction requirements under 40 Code of Federal Regulations (CFR) part 60. That preamble states: "Costs associated with the purchase and installation of air pollution control equipment (e.g., baghouses, electrostatic precipitators, scrubbers, etc.) are not considered in estimating the fixed capital cost of a comparable entirely new facility unless that control equipment is required as part of the process (e.g., product recovery)."

Comment 5: Commenter IV-D-28 supports the statement on page 60571 of the preamble that the rule only applies to facilities that use, produce, or emit HAP.

Response: The EPA does not know where the commenter found this statement; it is not on page 60571, nor is it anywhere else in the preamble to the proposed rule. However, EPA agrees with the commenter that the rule should not apply to facilities, or process units within facilities, that do not use or produce HAP. Process units that use or produce HAP but do not emit it are not automatically excluded because EPA believes a facility must demonstrate that the HAP is not emitted or that the emissions are below the appropriate applicability cutoffs. Therefore, the applicability section of the final rule has been revised to specify that the rule applies to PAI process units that process, use, or produce HAP.

Comment 6: Commenter IV-D-24 expressed concern that the proposed 25,000 pound production threshold could lead to unequal treatment of companies with one large facility as opposed to several small facilities.

Response: The Clean Air Act requires that EPA develop standards for major sources (i.e., stationary source located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons/yr or more of any HAP or

25 tons/yr or more of any combination of HAP). The EPA interprets this definition to mean that all emissions from the plant site are to be included when determining whether a source is a major source. Small facilities (i.e., area sources) are to be regulated only if the emissions from those facilities are determined to pose a threat of adverse effects to human health or the environment or if otherwise listed under section 112(c).

3.3 APPLICABILITY TO PRODUCTION OF INTERMEDIATES

Status at proposal: Under § 63.1360(a) of the proposed rule, PAI manufacturing operations would include manufacturing of any intermediate that is integral to a PAI production process and for which more than 50 percent of the annual production of the intermediate is used in the onsite production of PAI's. An integral intermediate process was defined as a process manufacturing an intermediate that is used in the onsite production of PAI's and is not removed to storage before being used to produce the PAI(s). An intermediate was defined as a compound produced in a chemical reaction that is further processed or modified in one or more additional chemical reactions to produce a PAI. Section 63.1360(h) of the proposed rule also would allow an owner or operator to elect to include other intermediate processes in the affected source. The other intermediates included (1) integral intermediates for which less than 50 percent of the intermediate is used in the onsite production of PAI's, and (2) isolated intermediates (i.e., intermediates that are removed to storage before being used in the onsite production of PAI's).

Comment: Two commenters (IV-D-16 and IV-D-25) addressed the issue of including the production of intermediates in the affected source. Commenter IV-D-25 supported the provision that would allow an owner or operator the option of including production of isolated intermediates under the PAI rule because the commenter produces intermediates that would be subject to the Miscellaneous Organic NESHAP, but with this option the commenter may avoid the complexity of complying with two NESHAP. Commenter IV-D-16 recommended clarifications to §§ 63.1360(a) and (h) of the proposed rule. To improve the clarity of § 63.1360(a), the commenter recommended replacing the phrase "that is integral to a PAI production process" with "that meets the definition of integral intermediate process." The commenter also recommended replacing the word "and" in § 63.1360(h) with "or" to clarify that either or both of the two listed types of intermediates manufacturing operations may be included;

according to the commenter, the language in the proposed rule could be interpreted to mean that the option may be used only if both types are included. Another commenter (IV-D-28) stated that the term "isolated intermediate" should not be used because it has a different meaning under Toxic Substances Control Act (TSCA), and different definitions for a single term will cause confusion. Another commenter (IV-D-15) stated that the rule needs to include a definition for "storage" to clarify which intermediate processes are integral.

Response: The intent of the proposed rule was to consider each integral intermediate process to be a separate process within the affected source, and to allow the owner or operator to elect to include any other intermediate process in the affected source. To improve the clarity of these provisions, EPA made several changes in the final rule. The first change was to include the production of integral intermediates in the definition of the new term "PAI process unit," as described in section 3.2 of this chapter. This change clarifies that production of each integral intermediate is a separate process unit. The second change was to delete the term "isolated intermediate" to eliminate possible confusion with the term as it is defined under TSCA. The impact of this change was minimal because the term was only used in the proposed rule to describe intermediates that are not integral intermediates. The third change was to replace the term "integral intermediate process" with the term "integral intermediate" and change the definition to mean an intermediate for which 50 percent or more of the annual production is used in the on-site production of one or more PAI's and is not stored before being used in the production of another integral intermediate or the PAI(s). For the purposes of this definition, an intermediate is stored if it is discharged to a storage vessel and at least one of the following conditions is met: (1) the processing equipment that discharges to the vessel is shutdown before the processing equipment that withdraws from the vessel is started up; (2) on average, the material is stored in the vessel for at least 30 days before being used to make a PAI; or (3) the processing equipment that discharges to the vessel is located in a separate building or processing area of the plant than the processing equipment that uses material from the vessel as a feedstock, and control equipment is not shared by the two processing areas. Processes that satisfy any of these conditions are considered to be significantly distinct and separate. The fourth change was to clarify the provisions allowing the owner or operator to elect to include any intermediate process in the affected source. The final rule specifies that an owner or operator may elect to

designate production of any intermediate that does not meet the definition of integral intermediate (and is not otherwise exempted) as a PAI process unit in the affected source. See chapter 7 for a discussion of integral intermediates in the development of the MACT floor.

3.4 RECOVERY DEVICES

Comment : Commenter IV-G-03 requested that EPA clarify the applicability of equipment that is used for multiple processes when the recovered material from a PAI process is used in a non-PAI process. The commenter noted that § 63.1360(f)(5) provides some guidance for storage tanks, but this guidance needs to be expanded to cover other pieces of equipment.

Response: The term recovery device in the proposed rule had the same meaning as in the HON, but it should have been used only in conjunction with the wastewater provisions. The MACT floor for process vents is based on the concept that certain condensers are part of the process (i.e., process condensers) and any other add-on devices are considered to be control devices; the concept of recovery devices as in the HON does not apply to process vents. For the final rule, the term recovery device has been revised to include only devices used with water streams, and to specify that equipment based on gravity separation may be a recovery device only if all of the inlet streams are two-phase liquid streams. The material recovered in a recovery device may be used in any process, including non-PAI processes.

3.5 EXEMPTIONS FROM THE RULE

Status at proposal: The proposed rule exempted research and development facilities, emission points subject to the HON, emission points subject to other MACT standards, a variety of water discharges, and equipment (i.e., flanges, valves, etc.) in organic HAP service for less than 300 hr/yr.

Comment 1: Two commenters requested additional exemptions in § 63.1360(d) for emission streams with certain characteristics. Commenter IV-D-27 suggested the following should be excluded from the rule: processes where the sum of uncontrolled organic HAP emissions is <10,000 lb/yr; process vents with concentrations <50 ppmv total organic HAP concentration or <0.005 standard cubic meters per minute (scmm) flow; and storage tanks with uncontrolled organic HAP emissions <500 lb/yr. Commenter IV-G-03 requested an overall

exemption for PAI processes where the total organic HAP emissions are less than 500 lb/yr. Commenter IV-G-03 stated that the justification for the exemption is that it meets the intent of the CAA in that (1) it is protective of human health and the environment, and (2) all PAI processes achieve a level of control already being achieved by the better controlled and lower emitting processes. The commenter believes that this overall exemption would be consistent with the intent of allowing exemptions for individual types of emission points associated with production of a given product, and the sum of these individual exemptions could conceivably even exceed the suggested overall cutoff of 500 lb/yr. The commenter also believes an overall exemption would give potentially affected facilities flexibility to reduce emissions in the most cost effective way.

Response: The EPA decided not to exempt processes and storage tanks based on emission stream characteristics. However, based on similar comments regarding the MACT floor, the applicability cutoffs for storage vessels were revised for the final rule; see section 8.2 for a discussion of the changes. In addition, the definition of process vent was revised to exclude streams that are undiluted, uncontrolled, and contain less than 20 ppmv of HAP; see the responses to comment 8 in section 5.2 and comment 1 in section 7.2 for additional information.

An overall cutoff was not included in the proposed rule, and also is not included in the final rule because it is either inconsistent with the MACT floor or would require a restructuring of the MACT floor with no clear benefit. Moreover, EPA believes the emissions averaging and pollution prevention provisions in the rule provide comparable flexibility. It is not clear whether the commenter wants the exemption to replace the cutoffs for individual types of emission points (i.e., “individual cutoffs”) or to be in addition to them. If the overall cutoff were to be in addition to the individual cutoffs it would be inconsistent with the MACT floor because a facility would only take advantage of it if it were less stringent than the sum of the individual cutoffs, which are based on the floor. An overall cutoff could not simply replace the individual cutoffs because the MACT floor consists of individual cutoffs plus control efficiencies for emission points that exceed the cutoff. Thus, the entire MACT floor would have to be reevaluated to determine an overall control efficiency to go with it.

However, the EPA agrees with the commenter that flexibility in compliance is important. This is the reason emissions averaging and pollution prevention provisions were included in the proposed rule, and are retained in the final rule. The emissions averaging provisions allow an owner or operator to determine the total required emission reduction for a group of emission points, excluding equipment leak emissions, and to control these emission points in any way that achieves the total required reduction. The pollution prevention provisions allow an owner or operator to take credit for substantial reductions in HAP consumption as an alternative to using add-on control devices to achieve the specified emission reductions.

Comment 2: Commenter IV-D-28 requested an exemption for equipment that does not handle process fluids (e.g., heat exchange or refrigeration systems). The commenter noted that previous MACT standards have distinguished production equipment, which handle process fluids, and other equipment. The commenter suggested the following language based on § 63.160(e) of the HON: "Except as provided in this subpart, lines and equipment not containing process fluids are not subject to the provisions of this subpart. Utilities and other nonprocess lines, such as heating and cooling systems which do not combine their materials with those in the processes they serve, are not considered to be part of a process unit."

Response: The final rule contains requirements for heat exchange systems, which can include equipment that does not handle process fluids. The EPA has required some type of monitoring of noncontact cooling water because heat exchangers are known to leak in the industry, and could contribute to significant emissions if left uncorrected. For this reason, the final rule, as well as many other MACT standards, including the HON, and the pharmaceuticals NESHAP, contain requirements for monitoring of cooling towers under the heat exchange systems requirements. Regarding the referenced language from subpart H of part 63, EPA agrees with the commenter that, unless otherwise stated in any subpart that references subpart H, lines and equipment not containing process fluids are not subject to the provisions of subpart H, as the language in § 63.160(e) states. The language of subpart H, however, was meant to exclude only components in lines that do not contain process fluids from the Leak Detection and Repair Provisions of subpart H. The proposed rule, by referencing the provisions of subpart H, including § 63.160(e), also contained this provision.

Comment 3: Section 63.1360(d)(2) of the proposed rule states that the provisions of the PAI rule would not apply to emission points in PAI manufacturing operations that meet the applicability requirements under subparts F, G, H, and I of the 40 CFR part 63. Commenter IV-D-28 supports the concept that one rule takes precedence, but believes there are two deficiencies with the proposed statement. First, the commenter interprets the statement to mean that, in order to be exempt from the PAI rule, an emission point would have to be subject to all four subparts at the same time. However, the commenter contends that few, if any, emission points would meet this condition. Second, the commenter believes it is not useful to have an exemption that applies only to specific "emission points" within a process unit because the PAI rule and the four specified subparts deal with different subsets of HAP. As a result, the commenter believes it is possible that, within a process unit that is subject to one or more of the specified subparts, the PAI rule may apply to some emission points that are not, individually, subject to the other subparts. This would mean that two different regulations would apply within the same process unit, which the commenter contends would be too complex.

To make the exemption achievable and useful, the commenter suggested two changes. First, revise § 63.1360(d)(2) to state that emission points in PAI manufacturing operations that meet the requirements under subparts F, G, and H are not subject to any provisions of the PAI rule, and emission points that meet the applicability requirements under subparts H and I are not subject the the requirements in the PAI rule that are related to equipment leaks. Second, add language similar in concept to that in § 63.160(c) of the HON that would allow a facility to elect to comply with either another applicable MACT standard (e.g., the HON) or the PAI rule for all relevant emission points associated with a process unit.

Response: The EPA agrees with the commenter that clarification of the proposed provision is needed. The EPA did not mean that all four subparts must be applicable simultaneously for the exemption to be allowed. Further, EPA agrees with the commenter that all of the emission points in a given process unit should be part of only one source category for the purposes of applying MACT standards. Therefore, this provision was revised in the final rule to specify that emission points within a process unit that is subject to subpart F are not subject to the final rule. References to subparts G and H were deleted because these subparts are cross-

referenced from subpart F. The proposed exemption for emission points subject to subpart I was replaced with a provision that allows the owner or operator the option of continuing to comply with the provisions of subpart I or switching to compliance with the equipment leak provisions in the final rule (see section 3.8 for more information). These changes are consistent with the commenter's first suggestion.

Although some of the compounds subject to the HON are registered as PAI's, and others are intermediates in the production of PAI's, EPA believes the HON should take precedence for any process that is subject to the HON because such a process is likely to be used predominantly to produce chemicals in bulk for various uses. Even if the production at a particular facility is captively used only to produce PAI's, the HON should take precedence because the process is the same as that at other facilities that are producing the same chemical for other uses. Therefore, EPA disagrees with the commenter's suggestion that a facility be allowed to elect whether to comply with the HON or the PAI final rule. Overlap with other MACT standards may occur for some intermediates and nondedicated equipment; the applicability in these situations is discussed in sections 3.2 and 3.3 of this document.

Comment 4: Section 63.1360(d)(3) of the proposed rule would exempt emission points in PAI manufacturing operations that meet the applicability criteria under any other existing MACT standard. Commenter IV-G-01 suggested expanding this exemption to allow a facility to comply with a more stringent rule in lieu of the PAI rule. For example, the commenter described a situation in which nondedicated equipment may be used to manufacture pharmaceuticals part of the year and a PAI for the remainder of the year. Under the proposed rules for the PAI and pharmaceuticals source categories, the equipment would be subject to the PAI rule when making a PAI and to the pharmaceuticals rule when making pharmaceutical products. The commenter believes complying with two standards for the same equipment train would be confusing. As an alternative to broadening the exemption, the commenter suggested that the rule apply only when 50 percent or more of the annual production from the equipment is a PAI (see comment No. 1 in section 3.2 of this document).

Response: The EPA decided to delete this provision because: (1) it is redundant with the provision described in comment 3 above for processes subject to the HON; (2) other than the

HON, there are no existing MACT standards that would apply to PAI production; (3) inorganic compounds that may be registered as PAI's (e.g., sodium dichromate, chromic acid, hydrogen chloride [HCl], chlorine [Cl_2], hydrogen cyanide [HCN]) are part of source categories that have been deleted or for which standards have not yet been promulgated, and production of inorganic compounds has been deleted from the PAI source category); and (4) changes to the applicability of intermediates in the final rule mean it would be unnecessary for production of intermediates (see section 3.3). The commenter's concern about nondedicated equipment being subject to multiple rules is addressed in the response to comment 1 in section 3.2.

Comment 5: Commenter IV-D-28 suggested editorial clarifications to the language used in §§ 63.1360(d)(2) and (3). Specifically, the commenter suggested using the phrase "within an affected source subject to" instead of the phrases "that meet the applicability requirements" and "that meet the applicability criteria."

Response: In an effort to improve clarity, the final rule uses language similar to that suggested by the commenter.

3.6 NEW AFFECTED SOURCE

Status at proposal: Section 63.1360(g)(2) of the proposed rule states that an addition of PAI manufacturing operations at an existing plant site would be subject to the requirements for a new source if the addition has the potential to emit 10 tons/yr or more of any HAP or 25 tons/yr or more of any combination of HAP, unless the Administrator establishes a lesser quantity at a plant that currently is an affected source. New source requirements also would apply to a new plant site on which construction started after November 10, 1997 or a reconstructed source for which reconstruction started after November 10, 1997.

Comment 1: Commenter IV-G-03 suggested that § 63.1360(g)(2) be reworded by inclusion of the phrase "by regulation" after the word "Administrator" so that it does not arbitrarily extend the Administrator's decisions of establishing lesser quantities without specific guidance or regulations.

Response: The phrase "unless the Administrator establishes a lesser quantity" is redundant with section 112(a)(1) of the Act. Because of this redundancy it is not included in the final rule.

Comment 2: Commenters IV-D-21 and IV-D-29 requested confirmation of their interpretation of § 63.1360(g)(2) to mean that a source with minor actual emissions but major potential to emit could elect to accept a Federally enforceable "synthetic minor" operating permit with an emission limit below the 10 and 25 tons/yr cutoffs, and thereby avoid the new source requirements for process vents, storage tanks, and wastewater. Another commenter (IV-D-28) supports the approach whereby an addition is subject to new source standards only if it meets the 10 or 25 tons/yr emission level by itself.

Response: The new affected source provisions have been revised for the final rule. As noted in the responses to comment 1 in section 3.2 and comment 1 in this section, the term "PAI manufacturing operations" and the phrase "unless the Administrator establishes a lesser quantity" are not used in the final rule. The EPA also is concerned that the term "addition" may be ambiguous. The intent was that the requirements apply only to additions consisting of equipment dedicated to the production of a single PAI. Therefore, the final rule specifies that new source requirements apply to an affected source for which construction or reconstruction commenced after November 10, 1997, or to any single PAI process unit that meets the following conditions: (1) it is not part of a process unit group, (2) construction commenced after November 10, 1997, and (3) it has the potential to emit 10 tons/yr of any one HAP or 25 tons/yr of combined HAP. Under this definition, if an owner or operator elects to accept Federally enforceable conditions that limit the potential to emit for a single PAI process unit that is added to an existing facility to levels below these thresholds, the PAI process unit would be subject to existing source standards, not new source standards.

3.7 STARTUP, SHUTDOWN, AND MALFUNCTION

Status at proposal: For batch processes, § 63.1360(e) of the proposed rule would require an owner or operator to comply with the provisions in the rule during periods of startup and shutdown, and periods of malfunction would be regulated according to § 63.6 of the General Provisions. For continuous processes, § 63.1360(e) of the proposed rule specifies that only

§ 63.6 of the General Provisions would apply during periods of startup, shutdown, and malfunction.

Comment: Three commenters addressed the startup, shutdown, and malfunction provisions in § 63.1360(e) of the proposed rule. Commenter IV-D-28 agrees that routine startups and shutdowns between batches should be covered by the rule, but stated that it should not apply during other startups and shutdowns because normal emission control techniques may be inappropriate or ineffective during those times. According to the commenter, some of the other situations include (1) initial startup of a process unit, (2) startup after a malfunction or an extended period of nonoperation, and (3) shutdowns due to a malfunction. The commenter explained that during initial startup, control devices and monitoring systems need to undergo "shakedown" and debugging, and may need time to reach their full efficiency. After an extended downtime, process equipment also will need time to get back to normal operating conditions, and control devices will need to reach operating temperatures or equilibrium. Although the commenter understands that the proposed rule would not apply during malfunctions, the requirements during a shutdown associated with the malfunction were not clear.

Commenter IV-D-28 also stated that the final PAI MACT standards should not incorporate § 63.6(e) of the General Provisions for four reasons. First, the requirement in § 63.6(e)(3)(i)(A) to minimize emissions "at least to the levels required by all relevant standards" is ambiguous. Second, the General Provisions do not address shutdowns of compliance equipment such as control devices. Third, the General Provisions do not address startups, shutdowns, and malfunctions that affect only a portion of the process. Fourth, the General Provisions do not say how to deal with periods of nonoperation. To address these concerns, the commenter suggested revising §§ 63.1360(e)(1) and (2) to refer to a new § 63.1360(e)(3) in the rule instead of § 63.6 of the General Provisions. For the new § 63.1360(e)(3), the commenter recommended using language similar to that in the HON. The commenter also noted that the discussion of § 63.6 in Table 1 (the General Provisions applicability table) would need to change as in the HON.

Commenter IV-D-29 recommended that EPA consider revising § 63.1360(e)(1) of the proposed rule to allow batch processes with air pollution control equipment to comply with the

startup, shutdown, and malfunction requirements in 40 CFR 63.6(e). The commenter explained that operating practices for controls used with batch processes are the same as those for controls used with continuous processes; for both types of processes, operators verify that all control equipment is on-line and functioning properly to minimize emissions at all times (consistent with § 63.6(e)(1)(i) of the General Provisions). Furthermore, the commenter stated that maintenance and corrective actions after a malfunction of a control device are the same for both batch and continuous processes. Therefore, the commenter recommended that EPA consider revising the rule to include the following language: "For batch processes with air pollution control equipment, startup, shutdown, and malfunction shall be regulated according to section 63.6 of subpart A of this part. For batch processes without air pollution control equipment, the provisions of this subpart shall apply during startup and shutdown, and periods of malfunction shall be regulated according to § 63.6 of subpart A of this part."

Response: The EPA has reconsidered the applicability of the rule during periods of startup and shutdown and determined that the requirements of the rule should not be applied under certain situations for batch processes as well as for continuous processes. For batch processes, these situations include initial startups of new or reconstructed processes, and shutdowns that are not part of intended operation (e.g., for maintenance, replacement of equipment, or other repair as a result of a malfunction). These are times when the operators may be unfamiliar with the equipment operation or it may not be possible to follow standard operating procedures. However, setting the equipment in operation after maintenance (including maintenance to correct a malfunction), after switching to a product that has been produced in the past, or for each batch during a campaign are all routine, normal operating conditions that should result in the same emissions profile. Similarly, the cessation of operation at the end of a campaign, between batches, or for planned, preventive maintenance are all normal operations with the same emissions profile. Conversely, for continuous processes, startup and shutdown for any reason results in operation under conditions different from the normal steady-state operation. To account for these differences between batch and continuous processes, the final rule provides definitions for startup and shutdown that differ from the definitions in the General Provisions. Specifically, the following definitions have been added to the rule:

Startup means the setting in operation of a continuous PAI process unit for any purpose, the first time a new or reconstructed batch PAI process unit begins production, or, for new equipment added to any PAI process unit, including equipment used to comply with this subpart, the first time the equipment is put into operation. For batch process units, startup does not apply to the first time the equipment is put into operation at the start of a campaign to produce a product that has been produced in the past, after a shutdown, or when the equipment is put into operation as part of a batch within a campaign. As used in § 63.1363, startup means the setting in operation of a piece of equipment or a control device that is subject to this subpart.

Shutdown means the cessation of operation of a continuous PAI process unit or any equipment within the PAI process unit, including equipment required or used to comply with this subpart, for any purpose. Shutdown also means the cessation of a batch PAI process unit, any equipment within the PAI process unit, or any individual piece of equipment required or used to comply with this part or for emptying and degassing storage vesselsas the result of a malfunction. Shutdown does not apply to cessation of a batch PAI process unit at the end of a campaign, for routine maintenance, for rinsing or washing of equipment between batches, or other routine operations.

The EPA has also clarified in the final rule that the provisions can apply to processing equipment, as well as control, monitoring, and recordkeeping equipment. Additionally, in response to the commenter's concerns regarding ambiguity of the general provisions, EPA has replaced the reference to the general provisions with language from the HON that specifically clarifies applicability of provisions during startup, shutdown, and malfunction events.

3.8 OVERLAP WITH OTHER REGULATIONS

Comment: Three commenters stated that, in addition to the exemptions in § 63.1360(d) of the proposed rule, the rule must also address overlaps with other regulations. Commenter IV-D-28 identified overlaps with NSPS under part 60, NESHAP under part 61, and RCRA equipment leaks requirements that are not addressed. Commenters IV-D-21 and IV-D-29 went a step further and identified specific NSPS and NESHAP with overlapping provisions for Group 1 PAI vents (i.e., NSPS subparts Kb, III, NNN, and RRR; and NESHAP subparts BB, FF, and G). All three commenters suggested revising the rule to include language similar to that in

§ 63.110 of the HON for provisions dealing with process vents, storage tanks, and wastewater. Commenter IV-D-28 also suggested borrowing language from §§ 63.160(b) through (d) to address overlapping provisions that deal with equipment leaks.

Response: The EPA agrees with the commenters that the rule must address overlap with other regulations. The final rule includes language similar to that in § 63.110 of the HON for overlap with NSPS requirements for storage vessels in subpart Kb of 40 CFR part 60 and RCRA requirements in 40 CFR parts 260 through 272. The EPA also added a provision specifying that an owner or operator subject to both this rule and the equipment leak requirements in subpart I of 40 CFR part 63 may elect to comply with the requirements of either rule.

The requirements in NSPS subparts III, NNN, and RRR apply to individual vents, whereas the process vent standards in the final rule apply to the sum of all process vents within a process. As a result, a facility generally must comply with both the final rule and any applicable NSPS. One exception is provided in the final rule. If an owner or operator elects to reduce emissions from a process vent by 98 percent (or implement an equivalent control option), then the owner or operator is required to comply only with the provisions of the final rule.

The final rule does not address overlap with NESHAP in 40 CFR part 61. Subparts BB and FF regulate emissions from benzene production, which, because it is subject to the HON, is not subject to the PAI rule. Subpart G is reserved and also is not covered in § 63.110 of the HON.

3.9 STORAGE TANK ASSIGNMENT

Status at proposal: Section 63.1360(f) of the proposed rule specifies procedures to determine if storage tanks, including storage tanks in a tank farm, are part of the affected source. Under the proposed rule, a storage tank would be part of the affected source if the majority of its throughput is associated with PAI processes. If the use varies from year to year, the determination would be based on the utilization that occurred during the year preceding publication of the proposed rule (i.e., November 10, 1997). A storage tank in a tank farm would not be part of the affected source if all of its throughput went through intervening tanks between it and the applicable processes. The proposed rule also specifies that if there is a significant

change in the use of the storage tank that the owner or operator would be required to reevaluate the applicability of the rule for that tank.

Comment: Commenter IV-D-28 addressed two aspects of the storage tank applicability determinations. First, the commenter stated that for storage tanks in a tank farm, the provisions in § 63.1360(f)(3)(ii) of the proposed rule do not indicate whether material from or to intervening tanks should be excluded or included in the "predominant use" calculation. The commenter recommended that the language from § 63.100(g)(3) of the HON be used without modification because those provisions are clear and complete; it would also make the PAI rule more consistent with the HON. Second, the commenter stated that a facility should not be required to reevaluate the applicability every time the predominant use may have changed. The commenter believes that frequently changing storage tank assignments would make the compliance program difficult to administer, and that the reevaluation is unwarranted because changes in usage between process units are accounted for in the initial assignment determination.

Response: The EPA agrees with the commenter that the rule must indicate how material from or to intervening tanks is to be used in the predominant use calculation. Language from § 63.100(g)(3) of the HON was not copied verbatim into the proposed rule because a storage tank was only assigned to the PAI manufacturing operations in general; it was not necessary to assign it to a specific PAI process unit. However, because the concept of process units was added to the final rule for other reasons, the language from § 63.100(g)(3) was also added to the final rule. The final rule retains the requirement to reevaluate the applicability assignment if the storage vessel begins receiving material from (or sending material to) another process unit because these are significant changes that are not accounted for in the initial evaluation. For example, if a tank is no longer associated with a given process, it should no longer be assigned to the process unit for that process.

4.0 COMPLIANCE DATES

4.1 EXISTING SOURCES

Comment: Four commenters addressed the issue of the compliance date for existing sources. Commenter IV-D-15 stated that EPA should delay implementation of the rule to allow facilities to comply with the HON and then reassess their potential to emit. Commenters IV-D-16 and IV-D-28 supported the proposed compliance date of 3 years after promulgation. Commenter IV-D-17 urged EPA to seek expeditious promulgation, implementation, and enforcement of the proposed limits; this commenter believes a compliance date sooner than the statutory maximum of 3 years after promulgation might be appropriate and is certainly achievable.

Response: The compliance date cannot be more than 3 years after promulgation because, as one commenter noted, 3 years is the maximum time allowed under the Act. However, section 112(i)(3)(B) of the Act and § 63.6(i) of the General Provisions allow an owner or operator to request an extension of compliance of up to 1 additional year if the additional period is necessary for the installation of controls. To make this provision more visible, it also has been stated in the final rule. The EPA does not believe commenter IV-D-17 presented a compelling argument for a compliance date sooner than 3 years after promulgation. Thus, EPA continues to believe that 3 years is a reasonable time period, and appreciates the support of two of the commenters in this regard.

4.2 NEW SOURCES

Comment 1: Commenter IV-D-28 believes the proposed provision that would require new sources to be in compliance upon startup should be revised to require compliance by initial startup or the promulgation date of the rule, whichever is later.

Response: A provision requiring that new sources be in compliance by initial startup or the promulgation date, whichever is later, is consistent with other MACT standards and has been added to the final rule.

Comment 2: Commenters IV-D-21 and IV-D-29 suggested adding a provision that would extend the compliance date for new sources that commence construction after proposal but before promulgation if the final standard is different from the proposed standard and the owner or operator complies with the standard as proposed during the 3-year period immediately after the effective date.

Response: The language suggested by the commenter is similar to the provisions in sections 112(i)(2) of the Act and § 63.6(b)(3) of the General Provisions (except these provisions refer to final standards that are "more stringent," as opposed to merely "different," than the proposed standards). The EPA assumes the commenters are relying on these authorities for their requests. Because the final rule is not more stringent than the proposed standards, there is no need to include this provision in the final rule.

Comment 3: Commenters IV-D-21 and IV-D-29 believe EPA should either allow new sources a period of up to 6 months to complete any required testing after startup, or change the definition of startup to stipulate that startup is not complete until all required performance testing is complete and that this testing must be completed no later than 6 months after steady state production for continuous processes or until 6 months after a successful batch production run has been completed.

Response: The EPA does not believe that the compliance date needs to be changed to accommodate required emissions testing. Under the proposed rule, an owner or operator would be required to submit the Notification of Compliance Status report no later than 150 days after the compliance date (i.e., startup for a new source). This requirement is consistent with other MACT standards (e.g., the HON, Polymers and Resins [P&R] I, and P&R IV), and it is nearly the requested 6 months after the compliance date. Furthermore, much of the work (e.g., the

emissions profile) may be completed before the compliance date. The amount of time needed to reach steady state production or to complete a successful batch production run should not be greater in this industry than in other chemical production industries. Therefore, the final rule retains the provision to submit the Notification of Compliance Status report no later than 150 days after the compliance date.

5.0 DEFINITIONS

5.1 NEW TERMS DEFINED IN THE FINAL RULE

Comment 1: Commenter IV-D-28 requested that EPA provide a definition for Flame Ionization Detector (FID).

Response: In the final rule, FID is defined to mean "a device in which the measured change in conductivity of a standard flame (usually hydrogen) due to the insertion of another gas or vapor is used to detect the gas or vapor."

Comment 2: Commenters IV-D-28 and IV-G-03 requested that EPA provide a definition for TOC.

Response: In the final rule, TOC is defined to mean "those compounds measured according to the procedures of Method 18 or Method 25A of 40 CFR part 60, appendix A."

Comment 3: Commenter IV-D-28 requested that EPA add definitions for startup and shutdown consistent with the HON.

Response: Definitions for these terms in the final rule are presented in the response to comments on startup, shutdown, and malfunctions in section 3.7 of this document.

Comment 4: A number of commenters (IV-D-14, IV-D-21, IV-D-28, IV-D-29, and IV-G-03) requested that the rule define both process wastewater and maintenance wastewater.

Response: The final rule includes definitions for both of these terms that are consistent with the definitions in the HON. The terms were added because the requirements in the final rule for maintenance wastewater differ from the requirements for process wastewater. See section 10.2 for a discussion of the changes to the maintenance wastewater provisions.

Comment 5: Commenters IV-D-14, IV-D16, and IV-D-28 requested that the final regulation include a definition of "bag dumps."

Response: The final rule defines bag dumps to be equipment into which bags or other containers containing a powdered, granular, or other solid feedstock material are emptied. To be complete, the final rule also defines product dryer as equipment that is used to remove moisture or other liquid from granular, powdered, or other solid PAI or integral intermediate products prior to storage, formulation, shipment, or other uses.

Comment 6: Commenter IV-D-15 stated that the rule needs to include a definition for "storage" to clarify which intermediate process are integral or non-integral.

Response: The definition of "storage" as it relates to intermediates is described in the response to comments in section 3.3 of this document.

Comment 7: Commenter IV-D-28 requested that EPA define "organic HAP" by listing covered compounds because compounds like phosgene and cyanide compounds do not have universal interpretations.

Response: The final rule defines organic HAP as "those HAP listed in section 112(b) of the Act that are measured according to the procedures of Method 18 or Method 25A, 40 CFR part 60, appendix A, and exist in the vapor phase at ambient conditions."

5.2 REVISED DEFINITIONS THAT DIFFER FROM COMMENTERS SUGGESTIONS

Comment 1: Commenter IV-D-28 requested that EPA change the definition of "Group 1 storage tank" to match the HON because control of 240 lb/yr or 1 lb/yr is unlikely to be cost effective, and consistency with the HON reduces regulatory burden.

Response: The responses to comments in sections 8.1 and 8.2 of this document describe changes to the MACT floor and standard for storage vessels. As a result of these changes to the floor, the definition of "Group 1 storage vessel" for the final rule has been changed to be consistent with the HON, except that the vapor pressure cutoffs differ. For existing sources, the vapor pressure cutoff is 3.45 kPa for storage vessels with a capacity greater than or equal to 75 cubic meters (m^3). For new sources, the cutoff is 16.5 kPa for storage vessels with a capacity

greater than or equal to 38 m^3 and less than 75 m^3, and 3.45 kPa for storage vessels with a capacity greater than or equal to 75 m^3.

Comment 2: Commenters IV-D-21 and IV-D-29 stated that the final rule should include a definition of impurity because one of the exemptions is for "vessels and equipment storing and/or handling material that contain no organic HAP and/or organic HAP as an impurity only." The commenters suggested the following wording: "A substance that is produced coincidentally with the primary product, or is contained in the final product as a contaminant serving no useful purpose, or is present in a raw material. An impurity does not serve a useful purpose in the production or use of the primary product and is not isolated."

Response: The EPA agrees with the commenter that a definition of the term "impurity" is needed to clarify the use of this term in the definition of storage vessel. The final rule defines impurity as "a substance that is produced coincidentally with the product(s), or is present in a raw material. An impurity does not serve a useful purpose in the production or use of the product(s) and is not isolated." The exemption cited by the commenter also has been revised in the final rule by deleting the words "and equipment" and the words "and/or handling." Removing these words clarifies the original intent of the statement, which was to exempt certain storage vessels.

Comment 3: Commenter IV-G-03 stated that the definition of "wastewater" needs clarification with regard to the second criterion, which is that it must be water that "is discarded from PAI manufacturing operations at a major source." The commenter stated that this implies that the "source" in question that must meet the definition of "major" is the vessel, tank, process equipment.

Response: In the final rule this criterion has been changed to be water that "is discarded from a PAI process unit that is at an affected source." The term "PAI manufacturing operations" was replaced with the term "PAI process unit" to clarify that the wastewater is discarded from process equipment or storage vessels and because, as discussed in the responses to comment 7 in this section and to comments 1 and 2 in section 3.3, the term "PAI manufacturing operations" has been deleted from the final rule. The phrase "at a major source" was replaced with the phrase "that is at an affected source" to clarify that the discharge is only classified as wastewater if it is from a PAI process unit that processes, uses, or produces HAP and is located at a major source.

The definition of wastewater was also changed in other ways as part of the changes in the provisions for maintenance wastewater; these changes are described in section 10.2 of this document.

Comment 4: The proposed rule states that to be a process condenser, the primary purpose of the condenser must be to recover material as an integral part of a unit operation, and the condenser must support a vapor to liquid phase change for periods of source equipment operation that are above the boiling or bubble point of substances. Several examples of process condensers were also provided. Commenter IV-G-01 recommended changing the proposed definition because the requirement that source operation be above the boiling or bubble point temperature means that a given condenser will sometimes be a process condenser, and sometimes it will be an air pollution control device. The commenter believes this will cause confusion for the facility, and tracking the changes from one classification to the other will be burdensome. Therefore, the commenter recommended that the definition be changed to mean "a condenser whose primary purpose is to recover material as an integral part of the unit operation, or is essential to effectively run the process." Furthermore, the commenter believes the facility, which is more familiar with the process than anyone else, is in the best position to determine whether it should be considered a process condenser or an air pollution control device.

Commenter IV-D-28 requested that the definition of "process condenser" be clarified because the term "integral" is not defined, the term "unit operation" is used incorrectly (see comment 7 in section 5.4), it is not clear what the term "support" means, it is not clear what the difference is between the boiling and bubble point, the term "substance" should be limited to HAP, and the examples are circular because they use the term "process condenser."

Response: The EPA agrees with the commenter that a given condenser may be classified as a process condenser at some times and as an air pollution control device at other times. However, EPA believes the conditions for both types of situations are clearly defined in the final rule and that this approach is preferable over potentially arbitrary classifications based on its typical use over all uses. Because one of the formats of the process vent standard requires that a reduction from uncontrolled emissions be applied across all vents within a process, EPA is concerned about the opportunity for crediting reductions achieved by condensing boiling streams

on other sources in the process (i.e., overestimating the control by calling the condenser an air pollution control device for all inlet streams).

Although the basic concept of the definition is unchanged in the final rule, a number of editorial changes were made to clarify the meaning. For the final rule, process condenser is defined to mean "a condenser whose primary purpose is to recover material and is an integral part of a unit operation. The condenser also must cause a vapor-to-liquid phase change for periods during which the temperature of liquid in the process equipment is at or above its boiling or bubble point. Examples of process condensers include distillation condensers, reflux condensers, and condensers used in stripping or flashing operations. In a series of condensers, all condensers up to and including the first condenser with an exit gas temperature below the boiling or bubble point of the liquid are considered to be process condensers. All condensers in line prior to the vacuum source are included in this definition." The definition retains the term "bubble point" because a liquid mixture does not boil at only a single temperature. For a mixture of two or more components, the bubble point is the temperature at which the first bubbles of vapor form in the liquid. In the examples, the process condenser is considered "an integral part of the unit operation" because process could not be operated without the condenser.

Comment 5: Commenter IV-G-01 recommended that the definition of "pesticide active ingredient manufacturing operations" should not include waste management units. The commenter stated that in other standards the waste management units are not part of the applicable process units and thus are not subject to the standard but are instead used to comply with the standard. The commenter also concluded that the proposed definition could be interpreted to require compliance with the new source standards at an existing waste management unit simply because a new and major PAI manufacturing operation has been built that will contribute wastewater to the unit.

Response: As discussed in the response to comments in section 3.2 of this document, the term "PAI manufacturing operations" has been deleted from the final rule. The definition of the affected source has also been revised, and a new term, "PAI process unit," has been added. The PAI process unit is comparable to the chemical manufacturing process unit (CMPU) in the HON, and it does not include the waste management units. However, waste management units are part

of the affected source, as in the HON and other standards. Finally, the commenter's conclusion regarding the application of new source requirements is correct. If a new PAI process unit that meets the requirements for new source applicability (see section 3.6 of this document for a discussion of changes in these requirements), then the waste management units associated with that new PAI process unit would have to meet the requirements for new sources. The practical impact of this requirement, however, is expected to be minimal because the requirements for new sources and existing sources are identical except when the HAP load to the waste management unit exceeds 2,100 Mg/yr. Based on survey data from the industry, no single existing PAI process unit discharges wastewater with such a high load (and only one facility discharges wastewater containing that much HAP).

Comment 6: Commenter IV-D-09 stated that the definition of "pesticide active ingredient" must be revised to be consistent with the basis and purpose document. The commenter asserted that PAI's derived from naturally occurring substances are not "synthetically manufactured" or "produced in a chemical reaction" and should not be regulated by the proposed NESHAP.

Response: Processes that derive PAI's from naturally occurring substances most likely will be subject to the rule if they are extracted with HAP solvents. Such extraction is comparable to extraction used in production of synthetic organic PAI's. Thus, the production of PAI's derived from naturally occurring substances has not been deleted from the definition of PAI in the final rule. Only sources that use a HAP are regulated; therefore, many producers of PAI's from naturally occurring compounds are not regulated. However, as noted in the response to comments in sections 3.1 and 3.2 of this document, production of inorganic compounds has been deleted from the affected source, and production of compounds that are primarily used for non-pesticidal purposes is not subject to the final rule.

Comment 7: Commenter IV-D-28 believes EPA should replace the term "process" with the term "process unit," and then add a new term called "PAI process unit." The commenter finds the proposed definition of "process" unclear for several reasons. First, it forces a subtle, non-obvious departure from common usage for the term; by defining it as equipment that is used to produce PAI's, it means equipment used to produce other products cannot be called a process.

Second, it does not require a process to consist of more than one unit operation; the commenter noted that the HON was amended to clarify that a CMPU consists of two or more unit operations (the commenter also objected to changing the definition of unit operation from the definition in the HON; see comment 7 in section 5.4 of this chapter). Third, inconsistencies among regulations are likely to lead to problems in establishing and implementing compliance programs at facilities with processes subject to different regulations. To resolve some of these concerns, the commenter believes a generic term, "process unit," should be added with a definition that encompasses all of the different types of process units in other MACT standards. The commenter also would add the new term "PAI process unit" to define a specific type of process unit that is subject to the PAI MACT standard. The commenter supports the exclusion of formulation from the definition of "process" (or "PAI process unit").

Response: Many of the changes suggested by the commenter have been incorporated in the definitions in the final rule. The term "process" has been retained, but the definition has been changed to refer to the production of any product, not just PAI's. The generic term "process unit" has been added to parallel the term CMPU in the HON, and the term "PAI process unit" has been added and defined as a process unit that is used to produce a PAI or integral intermediate. The definition also describes other features of a PAI process unit based on language in the proposed definition of "process," but it does not specify that a PAI process unit must consist of at least two unit operations. See the response to comments in section 3.2 of this document for more information about the changes in these definitions as they relate to the definition of the affected source.

Comment 8: In the proposed rule, a process vent was defined as "a vent from a unit operation through which a HAP-containing gas stream is, or has the potential to be, released to the atmosphere." Examples of process vents and emission points that would not be process vents were also included in the definition. The proposed rule defined a product dryer vent as "a vent from an atmospheric dryer through which a gas stream containing gaseous organic HAP, particulate matter HAP, or both is, or has the potential to be, released to the atmosphere. Commenter IV-D-28 requested that EPA modify these definitions to include a de minimis HAP concentration cutoff (because the proposed definition would apply even to controlled sources),

specify which HAP are covered (the commenter understands the rule to mean organic HAP and HCl), exclude streams that are routed to a fuel gas system, and delete the phrase "has the potential to be."

In the proposed rule, a Group 1 process vent was defined as a "process vent from a process at an existing or new affected source for which the uncontrolled emissions from the sum of all process vents are greater than or equal to 150 kilograms per year (kg/yr) (330 lb/yr)." Three commenters (IV-D-21, IV-D-28, and IV-D-29) requested that EPA change this definition to match the HON. Commenters IV-D-21 and IV-D-29 suggested the following language: ". . . Group 1 process vent means any process vent from a continuous process at an existing or new affected source for which the flow is greater than or equal to 0.005 cubic feet per minute (scfm), the total organic HAP concentration is great than or equal to 50 ppmv, and the total resource effectiveness index value, calculated according to § 63.115 of subpart G, is less than or equal to 1.0." The commenters suggested the following for batch process vents: "Group 1 process vent means any process vent at an existing or new affected source with uncontrolled emissions greater than 330 lb/yr."

Response: The definition of "process vent" in the final rule incorporates several of the suggested changes. Specifically, the definition excludes streams with low HAP concentrations (20 ppmv was selected instead of the suggested 50 ppmv), the phrase "has the potential to be" has been deleted, and the type of HAP has been identified. Although concentration data are not available from the surveyed plant, streams with concentrations below 20 ppmv are likely to be uncontrolled because that level is considered to be the practical limit of control. Furthermore, such streams are likely to have low annual emissions, and thus have little impact on the applicability determination for a process. The exemption for fuel gas systems has not been included for reasons discussed in the response to comments in section 6.3 of this document. In the final rule, a process vent is defined as:

a point of emission from processing equipment to the atmosphere or a control device. The vent may be the release point for an emission stream associated with an individual unit operation, or it may be the release point for emission streams from multiple unit operations that have been manifolded together into a common header. Examples of process vents include, but are not limited to, vents on condensers used for product recovery, bottom receivers, surge control vessels, reactors, filters, centrifuges, process tanks, and product dryers. A vent is not considered

to be a process vent if the undiluted and uncontrolled emission stream that is released through the vent contains less than 20 ppmv HAP, as determined (1) through process knowledge that no HAP are present in the emission stream; (2) using an engineering assessment as discussed in § 63.1365(b)(2)(ii); (3) from test data collected using Method 1818 of 40 CFR part 60, appendix A; or (4) from test data collected using any other test method that has been validated according to the procedures in Method 301 of appendix A of this part. Process vents do not include vents on storage vessels regulated under § 63.1362(c), vents on wastewater emission sources regulated under § 63.1362(d), or pieces of equipment regulated under § 63.1363.

The other suggested changes to the definition of Group 1 process vent have not been included in the final rule because they would be inconsistent with the MACT floor for process vents. The MACT floor was developed by evaluating all PAI processes in one group, and considering the emissions from the sum of the process vents within each process. However, as noted above, EPA did change the definition of "process vent" to exclude emission streams with HAP concentrations less than 20 ppmv; this change also affects Group 1 process vents.

The definition of a product dryer vent was changed to indicate that it is a process vent. Thus, the 20 ppmv cutoff also applies to product dryer vents. However, even if the organic HAP and HCl/Cl_2 concentrations are below 20 ppmv, the product dryer vent is still subject to the 0.01 gr/dscf standard for particulate matter emissions.

Comment 9: Commenter IV-D-28 supports the definitions of recapture device and recovery device.

Response: These terms were mistakenly used in several places in the proposed rule; except for the concept of recovery from water streams, they are not used in the final rule. These terms are not used in the process vent provisions in the final rule because they conflict with the terms "process condenser" and "air pollution control device." An EPA survey of the industry specified that respondents distinguish between process condensers and air pollution control devices, and the MACT floor was based on this information. This approach is simpler than the three-term approach used in the HON, and it draws a clearer distinction between equipment that is essential to the operation of the process and equipment that is used primarily to control emissions. There may be incidental recovery of compounds that are collected in some absorbers

and carbon adsorbers, but the intended purpose of such equipment is likely to be as an air pollution control device.

The HON specifies that water is not wastewater until after it exits the last recovery device. Because the final rule, like the proposed rule, continues to cross-reference the wastewater provisions in the HON, the concept of recovery also is retained in the wastewater provisions in the final rule.

5.3 REVISED DEFINITIONS CONSISTENT WITH COMMENTERS SUGGESTIONS

Comment 1: A number of commenters (IV-D-16, IV-D-20, IV-D-21, IV-D-28, and IV-D-29) requested that the definition of "cover" be made consistent with the definition in the HON by deleting the requirement that covers be sealed.

Response: The requirement that covers be sealed has been deleted from the definition in the final rule to be consistent with the definitions in previous rules.

Comment 2: Commenters IV-D-21 and IV-D-29 stated that EPA has not explained or justified the reason why hoses should be considered containers in the PAI industry, but not in the SOCMI. The commenters recommend that EPA remove hoses from the definition of containers in this rule.

Response: Hoses have been deleted from the definition of containers in the final rule because they are not used as containers and were mistakenly included in the proposed rule.

Comment 3: Commenter IV-D-28 stated that EPA should not use the term "isolated intermediate" because this term has a different meaning under TSCA, which will cause confusion.

Response: The EPA agrees with the commenter's concern. The term "isolated intermediate" has been deleted from the final rule to avoid confusion.

Comment 4: Commenter IV-D-28 requested that the definition of "hard-piping" be revised to mean pipe as well as tubing, which would be consistent with the HON.

Response: The EPA agrees that the definition should be consistent with the HON. The definition of "hard-piping" has been changed in the final rule to mean pipe as well as tubing.

Comment 5: Commenter IV-D-28 stated that the definition of Publicly-Owned Treatment Works (POTW) is too wordy and only needs to state "as defined at 40 CFR part 403.3(O)". The commenter stated that the rest of the existing definition serves no purpose and can do harm if, for example, one regulation or the other is amended in a nonuniform way.

Response: The EPA agrees that the definitions should be identical and avoid potential discrepancies that might result from amendments to the Clean Water Act regulations. The final rule states that POTW is defined in 40 CFR part 403.3(O).

Comment 6: Commenter IV-D-28 stated that contrary to the definition, a "continuous process" is not "typically steady state;" it typically "approaches" steady state, which is an ideal condition that does not exist most of the time.

Response: The commenter is correct; the word "approaches" has been added to the definition of "continuous process" in the final rule.

Comment 7: Commenters IV-D-21 and IV-D-29 stated that although the basic definition of point of determination (POD) is a paraphrase of the HON, the NOTE attached to the POD definition has a reference to TABLE 8 compounds in addition to TABLE 9 compounds. The commenters stated that TABLE 8 is not mentioned anywhere else in the proposed rule and the commenters believe this was a transcription error and should be deleted; TABLE 9 is the only list needed for both new and existing PAI manufacturing operations. Commenter IV-D-28 stated that the proposed definition of POD is unclear, primarily because it uses the term "process," which is also unclear. The commenter stated that the definition of POD should be changed to match the HON.

Response: For the final rule, the definition of POD has been changed to mean "each point where a wastewater stream exits the PAI process unit." This definition is consistent with the definition in the HON. All references to Table 8 compounds in the proposed rule were inadvertent and have been deleted from the final rule.

Comment 8: Commenter IV-D-16 requested that nonwastewater "waste" tanks under the definition of "storage tank" be exempt since this type of tank was not included in the storage tank database. Commenter IV-D-27 stated that EPA should include the following exclusions to the

definition of storage tank: tanks regulated under 40 CFR 260-270 RCRA provisions; and other waste (nonwastewater) tanks.

Response: For the final rule, the definition of storage vessels states that nonwastewater waste tanks are not considered to be storage vessels. Tanks regulated under 40 CFR parts 260 through 270 are a subset of all nonwastewater waste tanks.

5.4 DEFINITIONS UNCHANGED SINCE PROPOSAL

Comment 1: Commenter IV-D-28 requested that the definition of "internal floating roof" should use the term "fixed roof," not "permanently affixed roof."

Response: The suggested change would not change the meaning of the definition. To be consistent with other regulations, the definition has not been changed in the final rule.

Comment 2: Commenter IV-D-28 stated that the definition of liquid-mounted seal must be incorrect because there should never be any liquid between the wall of the storage tank and the floating roof.

Response: The definition states that the seal must be "mounted in contact with liquid between the wall of the storage vessel or waste management unit and the floating roof." This means the base of the seal, which is between the wall and the roof, is also in contact with liquid. Therefore, the definition of liquid-mounted seal has not been changed for the final rule.

Comment 3: Commenter IV-D-16 requested that the definition of "Group 1 wastewater stream" be revised to mean either process wastewater meeting the criteria in § 63.132(c) of the HON or the criteria in the proposed pharmaceuticals regulation, not just the HON criteria. The commenter recommended this change as a way to exclude streams with low emission potential from control requirements. In addition, the commenter believes that not having definitions for "partially soluble HAP" and "soluble HAP" (i.e., terms used in the pharmaceuticals regulation) could result in confusion and misapplications during implementation by State authorities. Therefore, the commenter requested that EPA define these terms by listing the compounds in each category.

Response: Applying only the criteria from the proposed pharmaceuticals regulation would result in a different group of streams being subject to treatment requirements. Allowing

both sets of criteria would result in fewer streams being treated, and less emissions reduction would be achieved. Because the standard as proposed was determined to be cost effective, the EPA decided not to change the definition of Group 1 wastewater stream. The EPA also did not add definitions for partially soluble HAP and soluble HAP because these terms are not used in the rule.

Comment 4: Three commenters (IV-D-16, IV-D-22, and IV-D-27) stated that EPA needs to supply a definition for "particulate HAP" or specifically identify which of the HAP listed under CAA Section 112(b) are particulates covered under the bag dump and product dryer standard. The commenters suggested that the definition of "particulate HAP" should be as follows: "any air pollutant listed in or pursuant to section 112(b) of the Act which is a solid material at ambient conditions and which exists as discrete particles over a wide range of sizes."

Response: As described in section 11.1 of this document, the standards for bag dumps and product dryers in the final rule have been changed to be for particulate matter rather than particulate HAP. Therefore, a definition of particulate HAP is not needed.

Comment 5: Commenter IV-D-28 requested that EPA provide a definition for the term "planned, routine maintenance."

Response: The final rule states that in the Notification of Compliance Status report and each Periodic report, the owner or operator must describe the maintenance that is anticipated for the storage vessel control device during the next 6 months. The EPA believes that this provision is clear, and that a definition of planned routine maintenance is not necessary.

Comment 6: Commenter IV-D-28 requested that the definitions of "batch process" and "continuous process" be deleted because it is the unit operations that comprise a process that are either batch or continuous, and both types may exist within a process.

Response: The final rule retains definitions for batch and continuous processes because the terms are used in certain provisions. For example, the pollution prevention provisions require the owner or operator to calculate HAP and VOC factors every 30 days for continuous processes and every 10 batches for batch processes. However, to address the situation of a process that consists of both batch and continuous unit operations, the final rule specifies that

such a process is considered to be a continuous process for the purposes of the pollution prevention provisions.

Other instances where the term "batch process" was used in the proposed rule have been changed to focus on unit operations within the process. For example, the block averaging period for monitoring in the proposed rule was defined as equal to, at a maximum, the period from the beginning to the end of a batch process. For the final rule, this provision has been changed to specify that the block averaging period is equal to the time, at a maximum, from the beginning of the first batch unit operation to the end of the last batch unit operation in a process.

Similarly, the recordkeeping provisions in the proposed rule would require the owner or operator to keep a record of the number of batches produced during a year. For the final rule, this provision was changed to specify that the owner or operator must keep records of the number of batches for batch processes, the number of operating hours for continuous processes, and both the number of batches for batch unit operations and the operating hours for the continuous unit operations within a process that contains both types of unit operations.

Comment 7: Commenter IV-D-28 found the definition of "unit operation" in the proposed rule to be confusing and requested that EPA change it to match the definition in the HON. The commenter considers the definition in the HON to be clear because it refers to *equipment*, and it specifies that a unit operation makes a single physical or chemical change to a stream. The proposed rule defined a unit operation as a *processing step*, and did not refer to physical or chemical changes in the stream. The commenter also explained that the term "distillation column" was replaced with the term "distillation unit" in the HON because two columns may be designed to work together to make a single change to a stream, in which case both columns, together, are within the same unit operation. In addition, each distillation column has a reflux condenser, which is part of the "unit."

Response: A unit operation is an activity, not a piece of equipment. For example, unit operations include filling, mixing, absorption, reaction, extraction, heating, distillation, washing, decanting, filtering, and drying. The term "unit operation" is used in the definitions of "batch emission episode," "process condenser," and "process vent" to characterize the type of activity that causes emissions. It is the activity, not the equipment, that changes the characteristic (or

possibly multiple characteristics) of the stream and that may result in an emissions episode. Furthermore, multiple activities with different emission levels may occur in a given piece of equipment (e.g., filling followed by pressurization, reaction, and depressurization). Because compliance demonstrations are based on determination of the emissions from each emissions episode (which are then summed as appropriate for a given process vent), EPA believes it is reasonable to link the unit operation with the activity that causes the emission rather than the equipment from which the emission occurs. The term "distillation column" has been replaced with "distillation unit."

Comment 8: Commenter IV-D-28 requested that EPA add a definition of control device consistent with the HON.

Response: The definition in the HON refers to combustion, recovery, and recapture devices, and for process vents, recovery devices are not considered to be control devices. As described above, the final rule considers add-on devices to be either control devices or process condensers. Otherwise, the definition in the final rule is comparable to the definition in the HON.

6.0 STANDARDS-GENERAL

6.1 HEAT EXCHANGER SYSTEMS

Comment: Commenter IV-D-16 stated that the requirements for heat exchanger systems should be deleted. The commenter stated that the EPA has not justified the high costs of sampling that would be required by the proposed rule; however, if sampling is required, the proposed reference to subpart F is the most reasonable available. Commenter IV-D-28 supports the decision to use the HON requirements for heat exchangers, but believes the rule should simply cross-reference the HON, not modify and spread out the requirements among the standards, compliance, monitoring, recordkeeping, and reporting sections of this rule. If the final rule is not revised to cross-reference subpart F, Commenter IV-D-28 requested that EPA correct the last sentence in § 63.1362(g)(3) to be consistent with the HON. Specifically, the commenter stated that the word "and" should be deleted from the phrase "ion specific electrode monitoring, pH, *and* conductivity or other representative indicators" because only one surrogate indicator is needed, not all of them.

Response: The EPA disagrees with the commenter's assertion that the heat exchanger system provisions impose a high cost for sampling. The rule allows considerable flexibility in the type of sampling or other monitoring that an owner or operator may perform, and the amount of required sampling or monitoring is minimal. The owner or operator may elect to sample for one or more HAP or other substances whose presence in the cooling water indicates a leak. Alternatively, the owner or operator may elect to monitor for any surrogate indicator that reliably identifies the presence of a leak. If the owner or operator elects to comply by monitoring for a surrogate indicator, the owner or operator must develop a plan that specifies what parameter or condition will be monitored, the level that constitutes a leak, and an explanation of how the

selected parameter or condition will reliably identify a leak. In the first year, sampling or monitoring is required eight times; in subsequent years, sampling or monitoring is required only four times per year. If the heat exchangers are all part of a single system, only one set of inlet and outlet samples are required. These requirements also are not considered burdensome because many facilities in the chemical processing industry, and presumably the PAI production industry as well, conduct such sampling or monitoring as a common maintenance practice. Furthermore, sampling for the detection of heat exchanger system leaks is a general requirement of some State permits (e.g., Texas Natural Resources Conservation Commission).

The Agency agrees with the comment that cross referencing the heat exchanger provisions in subpart F of the HON would simplify the rule. Therefore, as noted in the response to the first comment in section 20.3 of this document, the final rule cross-references all of the heat exchanger system provisions in subpart F rather than incorporating some of the provisions in the rule and cross-referencing others. However, the heat exchanger system provisions are contained in more than one section in the PAI rule because this rule is structured differently from the HON. In the HON, all of the requirements for a specific type of emission point were presented in a single section or in consecutive sections. In the PAI rule, the standards for all types of emission points are presented in one section, the initial compliance provisions for all types of emission points are presented in the next section, and so on. Therefore, each section in the final rule cross-references the appropriate heat exchanger system provisions from subpart F. This change also corrects the editorial error that one commenter identified.

6.2 OUTLET CONCENTRATION STANDARDS

Comment 1: Commenters IV-D-16 and IV-D-27 requested that the 20 ppmv outlet concentration standards be the same for all existing and new source process, storage tank, and wastewater vents and that they be based on both TOC and total organic HAP. The commenters requested this clarification because § 63.1364(d)(5) of the proposed rule only used organic HAP, and § 63.1364(c)(1)(viii) only used TOC. The commenters also asked for clarification that TOC excludes methane and ethane. Commenter IV-D-27 requested that the 20 ppmv concentration apply to both uncontrolled and controlled vents.

Response: The Agency agrees with the commenters that the 20 ppmv compliance option should be the same for all emission streams at both new and existing sources. In the final rule, the control device (or last control device in series) must achieve an outlet, undiluted TOC concentration of 20 ppmv or less, as calibrated on methane or the predominant HAP. The reference to organic HAP in § 63.1364(d)(5) of the proposed rule was an error. The intent at proposal was that the standards would be based on TOC for all emission points; in addition, for wastewater emissions, the standard included total organic HAP as well as TOC because the wastewater provisions were based on the HON. To make the standards consistent for all emission points, the final rule states that when the phrase "TOC concentration or total organic HAP concentration" is used in §§ 63.139 and 63.145, the phrase "TOC concentration" applies for the purposes of the final rule.

The final rule also includes the option to subtract out methane and ethane from the TOC concentration. Though sources have this option, EPA believes the use of a continuous TOC analyzer, such as a FID, will be complicated by having to subtract out methane and/or ethane. Because the inclusion of methane and ethane, which should only be significant for combustion devices, will only yield a higher TOC value, the simplification of the method to use a continuous FID without such a correction is allowed for all devices.

Lastly, the final rule also specifies that uncontrolled emission streams containing less than 20 ppmv HAP are not considered to be process vents subject to the control requirements in the rule. This provision is incorporated in a revised definition of "process vent," as described in the response to comment 8 in section 5.2.

Comment 2: Commenter IV-G-03 contends that the standards are arbitrary and capricious because smaller producers will be forced to comply with the 98 percent reduction requirement, whereas larger producers are more likely to be able to comply with the "volume limitation," which the commenter believes is less stringent. Commenter IV-D-17 stated that the limits proposed in the rule are readily achievable using proven, commercially available technologies.

Response: The EPA does not understand what the commenter means by the volume limitation, or why small producers are at a disadvantage to large producers. The process vent

standards require either 98 percent reduction or control to an outlet concentration of 20 ppmv for individual vents that meet certain flow rate and HAP load thresholds. New source standards also specify either 98 percent reduction or control to an outlet concentration of 20 ppmv. Possibly the commenter believes the 20 ppmv outlet concentration option is less stringent than the 98 percent reduction requirement. This is true if the uncontrolled concentration is less than 1,000 ppmv. However, the uncontrolled concentration is a function of the individual production process, which may be operated by either a small producer or a large producer. Furthermore, the rule prohibits intentional dilution as a means of achieving this outlet concentration standard. Finally, the 20 ppmv limit is not intended to be a less stringent option; it is simply a recognition that 20 ppmv is the practical limit of control for control devices.

6.3 COMPLIANCE OPTIONS

Comment 1: Commenter IV-D-28 requested that the final regulation allow owners and operators to comply by routing emissions to a fuel gas system or to a process, as in the HON. Commenters IV-D-21 and IV-D-29 requested that EPA exempt from regulation all gaseous streams routed to fuel gas systems by changing the definition of process vent to match the HON.

Response: The EPA has not changed the final rule to allow compliance by routing streams to fuel gas systems. Under the HON, a fuel gas system is defined as a combustion device. One common type of combustion device is a boiler. The final rule already contains requirements for boilers as control devices. Therefore, to avoid the confusion of whether the owner or operator should comply with requirements for boilers or fuel gas systems, the final rule contains provisions only for boilers. However, for large boilers (>44 megawatts [MW]), there are no performance testing or monitoring requirements, which is the same outcome as allowing compliance via fuel gas systems.

The HON allows emissions from storage vessels to be routed to a process. Specifically, the owner or operator must conduct a design evaluation to demonstrate that such emissions predominately meet one or more of the following ends: recycled and/or consumed in the same manner as a material that fulfills the same function in that process, transformed by chemical reaction into a material that is not a HAP, incorporated into a product, or recovered. The EPA agrees that routing emissions from a storage vessel to a process is also acceptable for storage

vessels in the PAI source category, and the final rule has been revised accordingly. However, the provisions in the PAI final rule differ from the HON in two ways. First, the recovery option is not included because, as noted in the response to the comment in section 3.4, the concept of recovery as used in the HON is not used in the PAI final rule. Second, the design evaluation must demonstrate that less than 5 percent of the HAP routed to the process are ultimately emitted; otherwise, routing to a process is less stringent than routing to a control device.

Comment 2: Commenter IV-D-28 stated that if emission streams from different types of vents (i.e., process vents, storage vessels, and wastewater) are all manifolded to a common device, the rule should specify which requirements take precedence. For example, the commenter stated that under the HON, the owner or operator may comply with the first applicable set of requirements from the following hierarchy: process vents, transfer racks, storage vessels, waste management units, and in-process equipment subject to § 63.149.

Response: For situations in which different streams are manifolded into the same control device, the owner or operator would have to demonstrate that the device meets the most stringent control efficiency applicable to the emission sources. In the HON, the control level required for process vents and transfer racks was highest, at 98 percent, followed by 95 percent control for storage and wastewater emission sources. Therefore, in a situation where all types of emission streams would be manifolded to a device, the "hierarchy" would be according to process vents and transfer racks, followed by storage and wastewater, because process vents and transfer racks require higher control efficiencies.

6.4 ROUTINE MAINTENANCE

Comment: Several commenters (IV-D-16, IV-D-21, IV-D-27, IV-D-28, and IV-D-29) requested either an extension in the 240 hr/yr allowance for routine maintenance or greater flexibility in its application. Commenter IV-D-27 suggested that EPA allow up to a 30-day extension for control devices (like RCRA incinerators) that require more than 10 days of maintenance per year, or allow a facility to compensate for longer downtime by overcontrolling at other times (this would also require a change in the compliance averaging period–see comments in section 7.5 of this document). In addition, commenters IV-D-21 and IV-D-29 recommended that the 240 hr/yr be allowed for each PAI process unit because maintenance may

be required prior to each campaign. Alternatively, commenter IV-D-29 suggested that, based on standard maintenance work practices, the startup, shutdown, and malfunction requirements in subpart A of part 63 should be allowed in lieu of the proposed 240 hr/yr time period. Commenter IV-D-29 explained that the standard work practice for many companies is to isolate all equipment upstream of control devices where planned maintenance will occur to eliminate all safety hazards to personnel and minimize any impact to the environment. Commenter IV-D-28 supported the provision, but suggested it be expanded to cover controls for waste management units, controls used on equipment leaks, and recovery devices (if applicable).

Response: The proposed 240 hr/yr for planned routine maintenance was mistakenly applied to all control devices in the proposed rule; it should only have been applied to storage vessels. The startup, shutdown, and malfunction provisions prohibit the shutdown of control devices during operation; however, EPA recognizes that for storage vessels, it is impossible to "not operate" (i.e., not have breathing losses) during a period of time in which an add-on control device would be undergoing planned maintenance. Therefore, EPA has in the final rule allowed an amount of time (240 hr/yr) in which the control devices for storage vessels *only* can be non-operational due to planned routine maintenance. All other situations (i.e., those that require unplanned, emergency maintenance) should be addressed through the startup, shutdown, and malfunction provisions. This change makes the final rule consistent with other MACT standards. The rationale for the 240 hr/yr allowanceis that EPA determined that routine maintenance for certain control devices may take as much as 10 days to complete, and that this time frame is consistent with State permitting activities (see 59 FR 19441 for a more detailed discussion of the time allowance).

6.5 MACT AND MACT FLOOR

Comment: Commenter IV-D-28 stated that the 20 surveyed plants represent only 26 percent of the estimated number of affected sources; thus, it is possible that EPA may not have collected data representing the best controlled source, the best controlled 12 percent of existing sources, and the impacts of going beyond the floor for each of the initial source categories and the combined source category. The commenter suggested that it is possible that EPA has no data at all on many of the source categories that were combined in the proposed rule.

Commenter IV-D-28 also stated that the applicability thresholds for process vents and storage vessels are tiny. The commenter had not determined whether the thresholds were for the floor or options more stringent than the floor, but either was a concern. For example, if they are for the floor, the commenter believes it is likely that they are from facilities that are not major sources due to PAI operations alone and if so, the floor should not be based on them. Alternatively, if they are for options more stringent than the floor, the commenter believes the resulting cost effectiveness values must be in a range that has been considered unacceptable for other standards.

Response: Some of the above comments imply that the database that was used to determine the MACT floor is not representative of the industry. The EPA acknowledges that data are not available for every process included in the source category, nor for every affected source. However, EPA believes the processes at the surveyed plants are representative of all processes in the source category, that the surveyed plants include the best controlled plants in the source category, and that using the data from the surveyed plants to develop the MACT floor is appropriate.

The response to the comment in section 3.1 describes a few changes that have been made since proposal to exclude from the source category some processes that are not representative of those that were surveyed. Because the remaining processes are believed to have similar product use, process unit operations, types of HAP emitted, emission rates, and controls, they were combined in a single source category. As a result, separate evaluations of each process (or each initial source category) are unwarranted.

Although only a subset of the estimated total number of affected facilities in the entire source category were surveyed, the MACT floor was based on actual data obtained from a number of facilities, nine, that is equal to 12 percent of the total number of affected facilities in the source category. Even if data from the entire source category had been collected, the MACT floor dataset would still consist of nine facilities. In addition, because EPA strived to identify and survey the best controlled sources, as described in the Basis and Purpose document, EPA believes that the surveyed facilities include both the best controlled source and the best performing 12 percent of existing sources. The EPA also rejects the notion that facilities whose

PAI processes alone do not exceed the major thresholds should not be part of the MACT floor. The EPA's implementation of the definition of major source, which requires the aggregation of all HAP emissions within a plant site, was affirmed in a July 21, 1995 D.C. Circuit Court decision (National Mining Association vs. U.S. Environmental Protection Agency), where NMA had challenged EPA's definition of a major source. Thus, EPA believes the MACT floor developed from the survey data is representative of the source category.

Finally, the standard was based on regulatory alternatives more stringent than the MACT floor only when the cost was determined to be reasonable. For storage vessels, the standard is based on the MACT floor because no alternative was determined to be cost effective. For process vents at existing sources, the standard is more stringent than the floor for certain large vents for which control at 98 percent was determined to be cost effective. The standard for all other process vents at existing sources and at new sources is based on the MACT floor.

6.6 CLARIFICATION

Comment: Commenter IV-D-28 noted that § 63.1362(a) of the proposed rule requires control of HAP emissions to the level specified in Table 2 and paragraphs (b) through (g). The commenter stated that because these are not different sets of requirements, it would be better to require control of HAP emissions "to the levels specified in paragraphs (b) through (g), as summarized in Table 2.

Response: The EPA agrees with the commenter, and has made the suggested change in the final rule.

7.0 STANDARDS-PROCESS VENTS

7.1 MACT AND MACT FLOOR

Comment 1: Three commenters (IV-D-26, IV-D-20, and IV-D-27) requested that sources be able to use vents meeting the criteria for 98 percent control in determining 90 percent overall process control requirements. Commenters stated that EPA determined that the MACT floor was 90 percent on a process wide basis. Commenter IV-D-16 also indicated that vents required to be controlled to 98 percent should be used in establishing the overall 90 percent reduction for the process because the data analysis supporting the MACT floor for existing sources (90 percent reduction requirement for process vents) is based on control achieved on all process vents by the best controlled 12 percent of all processes. According to commenter IV-D-27, excluding these vents increases the stringency of the floor.

Response: The MACT floor was determined to be 90 percent control for process vents at existing sources. In addition to the MACT floor, the EPA is required to develop regulatory alternatives beyond the floor and to select MACT based on the cost effectiveness of these alternatives. For specific process vents, Regulatory Alternative 1 would require 98 percent control efficiency, i.e., those vents that meet the flow and annual uncontrolled emissions criteria described in § 63.1362(b)(2)(iii) of the final rule, and would require 90 percent control efficiency for the sum of emissions from all other vents within the process. The cost of Regulatory Alternative 1 was judged to be acceptable, and this alternative was selected as MACT. The EPA agrees that this requirement is more stringent than the floor. If a vent that must be controlled to 98 percent is included in determining 90 percent control for all process vents within the process, the owner or operator would only be complying with the MACT floor, not the more stringent regulatory alternative. Thus, the final rule does not allow an owner or operator to use process

vents that are subject to the 98 percent control requirement in determining compliance with the 90 percent overall control level for the sum of other process vents in the process.

Comment 2: Commenters IV-D-21 and IV-D-29 stated that the data used to set the 98 percent level of performance was obtained during off-line tests during which liquids (for the most part hazardous waste surrogates) were burning during continuous injection. Furthermore, the commenters stated that there were no data for the efficiency of combustion of dilute concentrations of gaseous HAP streams emitted from batch processes in a discontinuous fashion. The commenters believe that EPA has insufficient data to support the establishment of a PAI batch process combustion control equipment MACT floor. Commenters suggested that EPA should reexamine this control requirement, and determine a true MACT floor based on testing that is conducted on actual batch processes, over the typical 1-hour batch cycle times, with gaseous vent line concentrations ranging from 100 percent HAP down to 1 lb/yr HAP.

Response: Some of the surveyed PAI manufacturing facilities reported control efficiencies for RCRA incinerators that were based on performance tests conducted for liquid burning, and these facilities all reported control efficiencies that exceeded 98 percent. Although these data were not from tests conducted when only gaseous streams were incinerated, a considerable amount of performance testing for thermal incinerators has been conducted over the years. Based on these tests, EPA has concluded that incinerators that operate above certain temperatures and with certain residence times consistently achieve 98 percent emission reduction or, if inlet concentrations are low, to an outlet concentration of no more than 20 ppmv. Typical operating temperatures for the RCRA incinerators in the PAI data base are at least 1800°F and residence times are in the range of 1 to 3 seconds. Because these temperatures and residence times are higher than would be expected for a typical thermal incinerator, it is expected that these RCRA incinerators also achieve at least 98 percent for process vent streams. Therefore, EPA believes the 98 percent control efficiency assigned to RCRA incinerators in the MACT floor analysis are reasonable.

Comment 3: Commenters IV-D-16 and IV-D-27 noted an inconsistency that should be resolved. The commenters pointed out that in the proposed standards, integral intermediate processes are combined with PAI processes to define a single “process,” but they were evaluated

separately in the MACT floor analysis. Commenter IV-D-27 further noted that this change would result in an increase in the applicability cutoff of the MACT floor because part of the emissions from intermediate process No. 36 should be combined with the emissions from active ingredient process No. 35 that had the lowest uncontrolled emissions and was used to establish the applicability cutoff of 0.15 Mg/yr.

Response: The response to the comment in section 3.3 describes changes in the final rule to clarify the definitions of "integral intermediate" and "process." That response explains that the intent in the proposed rule was to consider production of integral intermediates to be separate processes. As the commenters noted, this is also the approach used to develop the MACT floor. As a result, EPA has not changed the basic approach used to develop the MACT floor. However, in re-examining this approach since proposal, EPA realized that some of the active ingredient processes at the surveyed facilities included production of intermediates; in addition, some of the reported intermediate processes may satisfy one of the criteria for storage and thus not be integral intermediates. If all of the intermediates are integral intermediates, the floor would increase to 92 percent. If none of the intermediates are integral intermediates, the floor would decrease to 88 percent. Thus, EPA considers the proposed floor of 90 percent control to still be appropriate. The applicability cutoff also is unchanged because the active ingredient production and intermediate production are not combined into a single PAI process unit.

Comment 4: Commenter IV-D-15 stated that the control technologies at their facility were "taken out of context" and inappropriately used in the MACT floor calculation. The commenter stated that their intermediate process is not representative of other processes within the PAI industry; in addition, it may not be an "integral intermediate," depending on what "storage" means (the intermediate could be stored from several hours to several days prior to the active ingredient process). The commenter stated that the regulation would require burdensome administrative requirements that do not result in emission reductions, and the equipment required for control of volatile organic HAP is prohibitively expensive ($48,500/ton of HAP removed).

Response: While the commenter indicates that their intermediate and active ingredient processes are not "representative," these processes are located at a MACT floor facility (i.e., the top 12 percent of sources). The commenter's basic concern for the active ingredient process is

that both gaseous HAP and particulate HAP are emitted from the process, and particulate HAP is well controlled. Good control of particulate HAP at this plant provides a high overall control efficiency and is the factor that makes it a MACT floor plant. While the control efficiency for particulate HAP is high, it is not included in the MACT floor calculation for process vents for organic HAP. It is also important to remember that the presence of multiple planks for a process (i.e., process vents, storage tanks, equipment leaks, wastewater, and product dryers) varies throughout the industry from process to process. For example, some processes emit HAP from process vents and wastewater but not from the other three planks. In addition, use of product dryers in the PAI industry is common. At the commenter's facility, the product dried is a HAP compound, and HAP is emitted from the process and controlled; these uncontrolled and controlled emissions would be included in the overall HAP emission calculation at the facility just like any other plank. At other facilities, however, the product dried was not a HAP and there were no HAP emissions from this process step. See chapter 6.5 for additional discussion.

The commenter's concerns regarding the intermediate process are related to the fact that it is a single vent with low flow that is controlled with a flare. While this may not be representative of all processes in the industry, it is important to remember that this intermediate process in and of itself is not the basis for the MACT floor for existing source process vents, but was included in the average control efficiency calculation along with other processes at the MACT floor facilities. The commenter expressed concern regarding the control costs not being representative either (i.e., a flare is a less expensive control device than some other devices and is not technically feasible for all processes). However, flare costs were not estimated for control of process vents, and the cost to control this particular process vent was not determined directly anyway. Model streams were developed based on "average" streams in the industry that are subject to the standard, and the cost to control these model or average streams was estimated for thermal oxidizers and condensers. See chapter 19 for additional discussion of costs and impacts.

7.2 APPLICABILITY CUTOFFS

Comment 1: Commenters IV-D-16, IV-D-20, and IV-D-27 requested that an uncontrolled emission concentration cutoff of 50 ppmv be established for existing and new sources (to be demonstrated on either a HAP or a TOC basis). According to

commenter IV-D-27, this could be done by revising the definition of Group 1 process vent or by creating an exemption in § 63.1360(d)(4). According to commenter IV-D-16, this would be a powerful incentive for some sources to fully implement pollution prevention practices to achieve compliance. Commenters IV-D-16 and IV-D-27 indicated the cutoff (or Group 1 process vent definition) should also include a cutoff of 0.005 standard cubic meters per minute (scmm).

Commenters IV-D-21, IV-D-27, and IV-D-29 stated that to be consistent with the HON, EPA should set an applicability cutoff based on "total resource effectiveness" that would provide incentives for sources to implement pollution prevention practices (such as product recovery devices) in order to avoid triggering process vent standards. Commenters IV-D-21 and IV-D-29 recommended that the flow rate and concentration cutoffs from the HON process vent definition be used.

Response: Under the proposed rule, the applicability cutoff of 0.15 Mg/yr of HAP per process was contained in the definition of Group 1 process vent. For the final rule, the definition of "process vent" was revised to exclude streams containing less than 20 ppmv HAP, and the definition of "Group 1 process vent" was revised to include a mass cutoff of 6.8 Mg/yr for total hydrogen chloride and chlorine emissions as well as the 0.15 Mg/yr cutoff for organic HAP emissions. The rationale for changes to these definitions is provided in the response to comment 8 in section 5.2.

It is not clear that the higher cutoffs suggested by the commenters would lead to increased implementation of pollution prevention practices (and it certainly would not result in increased compliance with the pollution prevention alternative in the rule). However, higher cutoffs would result in lower overall control efficiencies, which would be inconsistent with the MACT floor. Finally, as noted in the response to the comment in section 3.4, the concept of recovery devices, as used in the HON, was not intended to be in the proposed rule and is not in the final rule.

Comment 2: Commenter IV-D-15 suggested a higher threshold level (greater than or equal to 0.15 Mg/yr) needs to be developed either for a process as a whole or for the individual process entities that make up the commenter's Captan process. Commenters IV-D-16 and IV-D-20 stated that the process mass emissions cutoff should be set at 2,000 lb/yr and be applicable to both controlled and uncontrolled emissions. The commenters stated that to account

for the limited nature of the PAI data base, EPA should use 2,000 lb/yr process cutoff that was established for the proposed Pharmaceutical MACT standards. In addition, the commenters stated that a 330 lb/yr cutoff is far lower than the 10,000 lb/yr cutoff that was determined to be the cost effective cutoff in the Batch Processes Alternative Control Techniques (ACT) document. Commenter IV-D-27 stated that the applicability cutoff for process vents should be set at 10,000 lb/yr (or higher) as was done in the Batch Processes ACT document; this is the minimum value for which 90 percent control was determined to be cost effective. The commenter noted that in many cases, controls on processes with small HAP emissions were added for odor control or VOC's. The commenter disagreed with EPA's assertion during Partnership group meetings that the CAA does not allow the Agency to consider the reason controls were added. Specifically, the commenter states that there is no statutory limitation on how EPA defines the "affected source"; for example, EPA has already provided exclusions in § 63.1360(d), and a higher applicability cutoff could be another. Commenters IV-D-16 and IV-D-28 claim that the lack of meaningful cutoffs for existing and new source process vents will discourage pollution prevention (because if pollution prevention doesn't reduce emissions below cutoffs, it will be become more difficult to meet the required percent reduction from the lower starting point) and result in disproportionate impact on process vents with extremely small emissions; other MACT standards exclude low flow and low HAP to mitigate this concern.

Response: The EPA attempted to collect information on the best controlled facilities in the PAI industry; EPA believes that the best controlled facilities are contained in its PAI data base and that the processes contained in the data base are representative of the industry. Based on the PAI data base, many processes with uncontrolled emissions that were significantly less than the cutoffs mentioned by the commenters were controlled to levels of 90 percent or greater. Because the emission cutoffs mentioned by the commenters were not supported by the process vent data, these cutoffs would not have been defensible because they would have been less stringent than the cutoff prescribed by the MACT floor.

The commenters indicate that the cutoff determined at proposal is not cost effective and suggested other cutoffs that have been demonstrated as cost effective. However, there is no provision in the amended CAA for consideration of cost effectiveness in setting the MACT floor.

Therefore, it is conceivable that the standards, which are set based on the practices of the industry, will require a level of control that is greater than what was determined to be cost effective for other CAA programs. For example, the 10,000 lb/yr cutoff contained in the draft Batch Processes ACT that was referenced by the commenters was intended to simplify applicability of presumptive Reasonably Available Control Technology (RACT) control measures, which are applied to the reduction of criteria pollutants (in this case, VOC's), and can include the consideration of cost effectiveness.

Finally, the amended CAA also contains no provisions for considering reasons why certain processes are controlled and others are not in assembling the group of sources that will make up the best 12 percent of the source category. Therefore, the issue of facilities controlling HAP's for odor control or other purposes is not a consideration in setting the floors.

Comment 3: Commenter IV-D-28 also noted that, unlike other regulations, many of the process vent provisions apply to a collection of vents rather than to individual vents. The commenter is unsure whether the collective approach will work and stated that the rule should also include an option that allows for the determination of Group status for each individual vent and control of emissions on a vent-by-vent basis.

Response: The Group 1 process vent emissions cutoff (i.e., 0.15 Mg/yr) was determined based on the uncontrolled HAP emission level from the collective or entire process, not on an individual vent basis. The rule allows an applicability determination for an individual process vent based on a concentration cutoff; emission streams containing less than 20 ppmv HAP are not considered process vents.

Comment 4: Commenter IV-G-01 asserted that the applicability equation found in § 63.1362(b)(2)(iii)(A) used to determine which vents must be controlled to 98 percent is inappropriately applied to batch operations. The commenter explained that the flow rate used in the computer model to develop the 98 percent applicability regulatory alternative (Batch Processes ACT) is a constant flow rate, which is inconsistent with batch processing.

Response: In the Batch Processes ACT, EPA developed costs for an incinerator to estimate the cost effectiveness of controlling emissions from batch process vents. Although flow rates from batch processes vary, the control device must be capable of handling the maximum

flow rate possible. Therefore, the incinerator was sized and costed for the maximum flow rate that occurs from the process, even though venting from batch processes will include periods of lower flow rates.

7.3 HCl STANDARDS

Comment 1: Commenters IV-D-21 and IV-D-29 are concerned that EPA's approach to determining the MACT floor for the HCl emission limit criteria (e.g., the 6.8 Mg/yr cutoff) in § 63.1362(b)(3) of the proposed rule considers only a limited number of process vents emitting HCl which may not be representative of the entire source category. The commenters recommend that EPA consider setting the HCl cutoff for existing sources at least as high as the average of the two lowest HCl emission rates from controlled processes at the MACT floor facilities (i.e., (6.8 Mg/yr + 11.0 Mg/yr)/2 = 9.0 Mg/yr), or that the control device for the process vent emitting HCl meet a minimum 90 percent efficiency if installed and in operation before November 7, 1997. (Note: EPA assumes the commenter means the proposal date of November 10, 1997.) The commenters believe these changes will improve incentives for pollution prevention, and allowing 90 percent control would reduce the cost burden on existing facilities because retrofitting to achieve an incremental improvement in control is very expensive.

Response: The EPA disagrees with the commenter that the proposed cutoff for HCl emissions is inappropriate. As described in the Basis and Purpose document and summarized below, EPA believes the cutoff of 6.8 Mg/yr is a very clear and obvious breakpoint. Also, even though the MACT floor plants have fewer processes with HCl emissions than organic HAP emissions, this is representative of the industry as a whole. Thus, one would expect that the HCl floor would be based on less data than the floor for organic HAP emissions. The EPA also notes that if the floor were determined by evaluating the best controlled processes throughout the industry rather than the processes at the best performing 12 percent of existing facilities that the applicability cutoff might be lower than 6.8 Mg/yr. It certainly would not be higher.

To develop the MACT floor for the proposed rule, all of the processes at the nine MACT floor facilities were ranked by uncontrolled HCl emissions. All processes with uncontrolled emissions below 6.8 Mg/yr were uncontrolled, and processes with higher emissions were

controlled to various levels. Therefore, the MACT floor was determined to be no control for processes below this threshold, and 94 percent for processes above it.

The EPA believes there is no basis for setting a cutoff at 9.0 Mg/yr or for setting a control level of 90 percent for control devices installed before November 10, 1997. Because the MACT floor consists of both a control efficiency and a cutoff, the cutoff cannot be changed independently of the control efficiency. A cutoff of 9.0 Mg/yr would be inappropriate because it is not associated with the determined MACT floor control efficiencies. Furthermore, it would not make sense to include one controlled process (i.e., the process with emissions of 6.8 Mg/yr) in the group with all of the uncontrolled processes; this is a very clear and natural cutoff. If the standard were based on an alternative more stringent than the floor, the rule might allow emission points that are already controlled to the level of the MACT floor to comply with that level (as was done for organic emissions from process vents). However, there is no basis for a 90 percent control level, regardless of the installation date, because the 94 percent control level for HCl is the MACT floor. Finally, the EPA recognizes that the incremental cost effectiveness will be high for a facility with control just below the required level. However, this would be true no matter where the level was set.

Comment 2: Commenters IV-D-16 and IV-D-27 stated that the HCl standards for new sources should be set at 99 percent removal for consistency with the HON requirements. Commenter IV-D-27 stated that since there is no actual test data from the pesticide manufacturing industry demonstrating a 99.9 percent removal of HCl; a change to 99 percent would provide consistency with HON rule requirements.

Response: The EPA agrees with the commenters. The proposed control level was based on a value reported by a surveyed facility. This value was not supported by test data or other documentation. However, a control level of at least 99 percent is likely for this scrubber because HCl control levels of 99 percent are widely accepted as achievable by scrubbers, and several other facilities reported this level. Therefore, for the final rule, the required control level for new sources has been changed to 99 percent. Although being consistent with the HON is not a priority, this change, as one commenter observed, does make the two rules consistent.

7.4 COMPLIANCE AVERAGING PERIOD

Comment: Commenter IV-D-27 stated that the process vent standards should be based on "annual average" removals to reflect the data used in developing the standards. The commenter stated that these data were annual values that mask variability in uncontrolled emissions (especially for batch processes) and control device operating parameters, thus, it is unreasonable to expect that the annual efficiency can be met on a daily basis.

Response: The EPA believes that the data used to develop the MACT floor are consistent with compliance determinations over 24-hour periods (or, as allowed in the final rule, the duration of a batch process). One consideration is that emission stream conditions from batch to batch should be essentially the same. Even if temperatures, reaction times, purge flows, or other operating characteristics varied slightly from one batch to the next, EPA assumes that the reported annual uncontrolled emissions for the MACT floor facilities were calculated, quite logically, assuming identical emissions for each batch of a given process. A second consideration is the reported control efficiencies for most of the control devices were values that likely are consistent from day-to-day. For example, many of the processes are controlled with combustion devices, which operate with a consistent reduction efficiency. For other devices (e.g., a condenser), it is likely that the efficiency varies for different episodes, but if emissions for a given episode are consistent from one batch to the next (as described above), the control efficiency for that episode should also be consistent, assuming the control device operating parameters are consistent. There may be a few situations where control parameters vary for a given emission episode over the course of a year (e.g., if a control device is used only part time or if the vents manifolded to the control device change as the mix of processes change). At the MACT floor plants, several processes are known to be subject to part-time control, but EPA has no evidence of changes in control settings for different combinations of manifolded vents. Processes subject to part-time control that have average control efficiencies below the level of the standard are no different from processes with a consistent control level below the level of the standard; both must implement additional control. The response to the comment in section 16.1 presents rationale for monitoring on a daily or block basis.

7.5 OVERLAP WITH OTHER STANDARDS

Comment: Commenter IV-D-27 requested that EPA specifically state that regulated emissions from pesticide manufacturing process vents that are routed to Resource Conservation and Recovery Act (RCRA) incinerators are deemed to comply with the standards of this rule with no additional performance testing, monitoring, recordkeeping, or reporting requirements.

Response: The proposed rule exempted an owner or operator from performance test requirements for RCRA control devices, and this provision has been retained in the final rule. In addition, the final rule exempts the owner or operator from monitoring, recordkeeping, and reporting provisions when emissions are routed to a RCRA control device.

7.6 CLARIFICATIONS

Comment 1: Commenter IV-D-28 asserted that § 63.1362(b)(2)(iii)(B) of the proposed rule allows an owner or operator to demonstrate that a control device was "designed" to reduce organic HAP emissions by between 90 and 98 percent; however, the commenter suggests that the focus should be on the reduction the device is capable of achieving instead of its design. The commenter has a similar concern on § 63.1362(c)(1)(ii) of the proposed rule.

Response: The Agency agrees with the commenter regarding the term "design" of a control device. This subparagraph in both § 63.1362(b) for process vents and (c) for storage tanks has been revised to include "If the owner or operator can demonstrate that a control device installed on a process vent subject to the requirements . . . on or before November 10, 1997 *reduces* inlet emissions of total organic HAP by greater than or equal to 90 percent but less than 98 percent . . . "

Comment 2: Commenter IV-D-16 stated that the flowrate equation in subparagraph 63.1362(b)(2)(iii)(A) of the proposed rule should be revised to contain a "less than or equal to" sign rather than an "equal to" sign to agree with the regulatory text.

Response: The equation in § 63.1362(b)(2)(iii)(A) of the proposed rule for the flow rate is correct. For the 98 percent requirement to apply, the actual weighted average flow rate for the vent must be less than or equal to the flow rate calculated using this equation. In the final rule, an additional equation for determining the weighted average flow rate for the vent has been added.

7.7 REQUIREMENTS FOR SURGE CONTROL VESSELS AND BOTTOMS RECEIVERS

Status at proposal. Under the proposed rule, emissions from surge control vessels and bottoms receivers would be regulated as process vents. This approach differs from the HON, which regulated these emissions under subpart H. Because the equipment leak standards in the proposed rule also cross-referenced subpart H, the proposed rule specified that the provisions for surge control vessels and bottoms receivers in subpart H would not apply.

Comment: Commenter IV-D-28 opposes the proposed requirement to regulate surge control vessels and bottoms receivers as process vents because it introduces a third way to regulate such emissions under the MACT standards. The commenter would prefer that these emissions be regulated as equipment leaks, as under the HON. If that is not acceptable, the commenter's second choice is to regulate the emissions as storage vessels, as under P&R IV. The commenter believes that additional inconsistency is confusing and likely to lead to inadvertent compliance mistakes.

Response: The EPA notes that there is essentially no difference between regulating emissions from these equipment as "equipment leaks" (as in subpart H) versus as "storage tanks" (as in subpart G). Both the applicability and control requirements for these sources in the HON are identical. The reason EPA departed from this rationale in the proposed rule, is that surge control vessels and bottoms receivers typify the processing equipment, in capacity and function, found in these industries. Especially in the case of batch processing (where the HON does not regulate process vents), the characteristics of emission streams from these equipment are not significantly different than any other equipment. Emission streams from bottoms receivers and surge control vessels result from the displacement of saturated gases from incoming materials. Displacement emissions are very common in both the pharmaceuticals and this industry. Therefore, EPA decided to regulate them in a manner consistent with the remainder of processing equipment found in these industries.

In response to the commenter's concern about possible confusion from the inconsistent application of requirements across different source categories, EPA believes that the consistent treatment described above will actually eliminate a great deal of confusion in the implementation of the rule, because all equipment associated with a process will be treated in the same manner,

and the control requirements, which are process based, can be evaluated over all equipment in the process. Additionally, because of the similarities of these equipment with other process vessels, the confusion related to defining a surge control vessel or bottoms receiver from another process vessel will also be averted.

8.0 STANDARDS-STORAGE VESSELS

8.1 STORAGE VESSEL MACT FLOOR

Status at proposal: Under the proposed rule, the MACT floor for storage vessels consisted of applicability cutoffs and a control efficiency for vessels that exceeded the cutoffs. To develop the floor, the storage vessels at the best performing 12 percent of facilities were ranked by decreasing uncontrolled emissions. The vessels were divided into two groups based on an uncontrolled emissions cutoff below which the median control efficiency was no control. This cutoff was 108 kg/yr, and the median control above the cutoff was 41 percent. A vessel size cutoff was established at 38 m^3 based on the smallest vessel with uncontrolled emissions greater than 108 kg/yr that was controlled at least to 41 percent. For new sources, the smallest vessel with the best level of control was determined. The floor for new sources was determined to be 98 percent control efficiency for storage vessels 26 m^3 or greater with uncontrolled emissions of at least 0.45 kg/yr.

Comment: Commenter IV-D-27 stated that the control levels originally provided by the commenter for Tank Nos. 10 and 15 are inaccurate due to incorrect coolant temperatures used by the commenter. The commenter stated that the impact of this change is that the existing source MACT floor based on the median control level for vessels with greater than 240 lb/yr of uncontrolled emissions becomes 21 percent (now based on Tank No. 10 instead of Tank No. 15), instead of 41 percent. Commenter IV-D-14 stated that the new source MACT floor should be revised to include consideration of vapor pressure of the stored HAP to be a primary parameter.

Response: The EPA has corrected the control efficiencies for each of the storage vessels mentioned by the commenter. The EPA also reexamined the data base since proposal and removed several vessels that should not have been included because they do not meet the

definition of storage vessel. Changes to the storage vessel data base, and changes to the MACT floor and the final standard that are summarized in the remainder of this response and in the responses to comments in section 8.2, are discussed in the memorandum "Explanation of Options for Re-evaluating the Storage Tank MACT Floor for the Production of Pesticide Active Ingredients NESHAP," (Docket A-95-20, Docket Item No. IV-B-2).

The proposed approach to developing the MACT floor for storage vessels was significantly different than the approach used to develop the floor for other rules (e.g., the HON, polymers & resins, and pharmaceuticals). Since proposal, EPA has reevaluated the revised data base and determined that an approach consistent with that used for the other rules is feasible and appropriate for this rule. One of the commenters also recommended that the floor include vapor pressure cutoffs as in other rules. As a result, EPA decided to revise the MACT floor. The revised approach established vapor pressure cutoffs at the same storage vessel capacity cutoffs and control efficiency cutoffs as were used in the previous rules. Specifically, the approach examined storage vessel cutoffs at 38 cubic meters (m^3), 75 m^3, and 151 m^3. (In English units, these capacities correspond with 10,000 gallons [gal], 20,000 gal, and 40,000 gal, respectively, and the data base includes at least one storage vessel at each of these sizes.) Within these size ranges, the vapor pressure cutoff at which the majority of storage vessels were controlled to 95 percent or more was determined; the 95 percent level is consistent with the efficiency of floating roofs, which are the most cost-effective controls.

Under the revised approach, at liquid vapor pressures of 3.45 kPa and higher, the median control efficiency was found to be at least 95 percent in both the 75 m^3 and larger range and the 151 m^3 and larger range; at all vapor pressures, the majority of storage vessels with capacities smaller than 75 m^3 were found to be uncontrolled. The vapor pressure of 3.45 kPa is the vapor pressure of toluene, which is the predominant HAP in the industry and the most common organic HAP stored in storage vessels. Therefore, the revised MACT floor for storage vessels at existing sources was determined to be 95 percent control for storage vessels with a capacity greater than or equal to 75 m^3 that store material with a vapor pressure greater than or equal to 3.45 kPa. In addition, the MACT floor was determined to be no control for all storage vessels with a capacity less than 75 m^3.

The MACT floor for storage vessels at new sources is based on the best controlled storage vessel. As discussed above, the best level of control for storage vessels is considered to be 95 percent. The capacity of the smallest vessel controlled to 95 percent was determined to be 40 m^3, and the vapor pressure of the compound stored in this vessel was 16.5 kPa. The MACT floor for new sources must be at least as stringent as the floor for existing sources. Therefore, the MACT floor for new sources is 95 percent control for storage vessels with (1) a capacity of 40 m^3 or greater that store material with a vapor pressure of 16.5 kPa or greater and (2) a capacity of 75 m^3 or greater that store material with a vapor pressure of 3.45 kPa or greater.

8.2 STORAGE VESSEL STANDARD

Status at proposal: Under the proposed rule, one regulatory alternative more stringent than the floor was developed. The regulatory alternative would require 95 percent control of storage vessels with capacity of 75 m^3 or greater that have uncontrolled emissions of 108 kg/yr or greater. Storage vessels smaller than 75 m^3 (and greater than 38 m^3) that have uncontrolled emissions of 108 kg/yr or greater would require control to the floor level (41 percent). This regulatory alternative was determined to be cost effective. Therefore, the proposed standard for storage vessels at existing sources was established at 95 percent control for vessels with a capacity greater than or equal to 75 m^3 that have uncontrolled emissions greater than or equal to 108 kg/yr.

No regulatory alternatives more stringent than the MACT floor were developed for storage vessels at new sources. Therefore, the proposed standard for storage vessels at new sources was determined to be 98 percent control efficiency for storage vessels with a capacity of 26 m^3 or greater with uncontrolled emissions of at least 0.45 kg/yr.

8.2.1 Applicability Cutoffs

Comment 1: Several commenters (IV-D-16, IV-D-21, IV-D-22, IV-D-27, and IV-D-29) requested that EPA increase the lower emission cutoff for existing and new storage vessels. Most of the commenters recommended increasing it to at least 500 lb/yr; this level corresponds to the level in the Batch Processes ACT document for which manifolding to an existing control device was shown to be cost effective. Commenter IV-D-27 suggested adding an exemption in § 63.1360(d)(4) for such vessels. Several of the commenters also noted that combustion would

be the only feasible means of controlling HAP emissions of only 0.45 kg/yr, and that secondary emissions would increase significantly as a result.

Response: The Agency has determined that including the higher cutoff suggested by the commenter would have been less stringent than the cutoff prescribed by the MACT floor. The emission cutoffs mentioned by the commenters are not supported by the storage vessel data base.

As discussed in the response to the comment in section 8.1, EPA has revised the MACT floor since proposal. This revised MACT floor uses storage vessel capacity and the vapor pressure of stored material as the parameters for determining applicability for storage vessels, and no uncontrolled emissions cutoff is included in the floor. The Agency expects that implementing standards based on this format will be considerably easier than implementing the proposed standards, because no ongoing emission tracking will be required to demonstrate compliance with a cutoff for the standard. Use of these parameters is consistent with requirements for storage vessels in other rules.

Comment 2: Commenters IV-D-16 and IV-D-27 stated that the minimum applicability size cutoff for existing Group 1 storage vessels should be changed to correlate with the NSPS subpart Kb size cutoff to simplify compliance. The commenters stated that the cutoff for storage vessels at existing sources would change from 38 m^3 to 40 m^3. In addition, the commenters pointed out that the 38 m^3 cutoff is below the smallest controlled to the median control efficiency in the study (i.e., 39 m^3).

Response: For the final rule, EPA based the standards for new and existing sources on the MACT floor because the cost to go beyond the floor was determined to be unreasonable. As a result of the changes to the database discussed in the response to the comment in section 8.1, the capacity cutoffs in the final rule are higher than the cutoffs suggested by the commenters. For existing sources, the cutoff is 75 m^3 instead of the 40 m^3 suggested by the commenters. For new sources, the cutoff is 40 m^3 instead of the 39 m^3 suggested by the commenters.

8.2.2 Control Level of the Standard

Comment: Commenter IV-D-27 requested that EPA keep the existing source standard for storage vessels with capacities greater than 75 m^3 the same as that for smaller storage vessels,

unless floating roof technology is already in-place. The commenter asserted that the EPA's "beyond the floor" standard of 95 percent organic HAP control for existing "large" storage vessels is not justified for storage vessels that were not already equipped with floating roof technology. The commenter stated that EPA's assumption that any existing vessel larger than 75 m^3 can be cost-effectively retrofitted with a floating roof is unrealistic.

Response: For the proposed rule, the MACT floor was based on a control efficiency of 41 percent. As discussed in the response to the comment in section 8.1, the revised MACT floor is based on 95 percent control. The final standards also are based on a control of 95 percent because the cost to control to a higher level was determined to be unreasonable. Now that both the MACT floor and the standard are based on the same control efficiency, the commenter's concern about going beyond the floor is no longer relevant. However, EPA wishes to emphasize that the costs for the proposed standard were determined to be reasonable. The costs estimated at proposal reflect the costs for retrofitting an existing fixed roof vessel with an internal floating roof (IFR). These costs were based on equations developed from vendor information on the cost of installing a new aluminum, noncontact IFR with a vapor-mounted primary seal and a secondary seal; this cost estimate included retrofit costs for modifying the vessel, including any corrections to vessel shell deformations or obstructions, any special structural modifications, and cutting vents or openings if necessary. The estimated costs also included the costs to empty, clean, and degas the vessel prior to retrofit.

8.2.3 Format of the Standard

Comment: Commenters IV-D-21, IV-D-28, and IV-D-29 stated that EPA should allow floating roofs as a control option for storage vessels at new sources. Commenters IV-D-21 and IV-D-29 stated that it is possible to reduce emissions of some HAP by 98 percent using a floating roof, with the efficiency calculated using TANKS3.

Response: As discussed above, the control level for storage vessels at new sources is 95 percent under the final rule. Floating roof technology is allowed to meet this limit, just as it is for existing sources.

8.3 COMPLIANCE AVERAGING PERIOD

Comment: Commenter IV-D-27 requested that the storage vessel standards be on an annual average basis to reflect the data used in developing the standards (the commenter included data for the median controlled vessel, which is controlled with a condenser; the data show the variation in emissions and control efficiency throughout the year for this vessel).

Response: The EPA does not agree with the commenter's assertion that the data used to develop the MACT floor reflect only an annual compliance period. All of the storage vessels in the revised MACT floor analysis (see section 8.1) that are controlled to at least 95 percent are controlled with technologies (i.e., combustion devices) that achieve their control efficiency at all times (i.e., as averaged over a period as short as the 3-hour period of a performance test). The storage vessel that is controlled with a condenser is not part of the majority controlled to at least 95 percent in the revised MACT floor analysis. Therefore, the final rule retains the requirement to demonstrate compliance with the percent reduction or outlet concentration limit for an add-on control device on a daily basis. Alternatively, the owner or operator may install a floating roof, which must be inspected annually and as otherwise specified in § 63.120 of the HON.

8.4 STORAGE VESSEL DEFINITION

Comment 1: Commenters IV-D-21 and IV-D-29 recommended that EPA adopt the complete SOCMI MACT storage vessel definition set in the PAI NESHAP.

Response: The definition for storage vessels for the PAI industry is similar to the definition used in the HON. Additional language contained in the HON definition for storage vessels includes a vessel ". . . that has been assigned . . . to a chemical manufacturing process unit that is subject to this subpart." This language regarding the assignment of storage vessels to the source category or a PAI process unit that is subject to subpart MMM has been added to the definition in the final rule. The only remaining difference between the two definitions is that the HON excludes only bottoms receivers and surge control vessels, and the PAI draft rule excludes all process vessels. Under the PAI rule, bottoms receivers and surge control vessels are process vessels. Thus, they are not regulated as storage vessels under either rule. The exclusion of process vessels has been retained in the definition for storage vessels. The response to comments

in section 7.7 of this document provides rationale for regulating bottoms receivers and surge control vessels as process vessels.

Comment 2: One commenter (IV-D-27) suggested that EPA add two exclusions to the storage vessel definition: (1) vessels regulated under 40 CFR 260 through 270 RCRA provisions, and (2) other waste vessels (nonwastewater). Because EPA's data base only contains vessels used for storing raw materials and products, other types of vessels should be excluded.

Response: Storage vessels containing waste materials were not intended to be included under the storage vessel definition. The PAI data base includes only those storage vessels that contain raw materials, solvent, or product. Therefore, an exclusion for nonwastewater waste vessels has been added to the definition of storage vessels in the final rule. This exclusion includes vessels subject to 40 CFR parts 260 through 270.

8.5 OVERLAP WITH OTHER STANDARDS

Comment: Commenter IV-D-27 requested that EPA specifically state that regulated emissions from pesticide manufacturing storage vessels that are routed to RCRA incinerators are deemed to comply with the standards of this rule with no additional performance testing, monitoring, recordkeeping or reporting requirements.

Response: The proposed rule exempted an owner or operator from performance test requirements for RCRA control devices, and this provision was retained in the final rule. In addition, the final rule exempts the owner or operator from monitoring, recordkeeping, and reporting provisions when emissions are routed to a RCRA control device because these RCRA provisions also are at least as stringent as the provisions in the final rule.

8.6 CLARIFICATIONS

Comment 1: Commenter IV-D-28 suggested that EPA change every use of "control device" to "control device(s)." The commenter stated that the proposed rule appears to require that only a single control device be used to control emissions from a storage vessel, however, combinations of control devices should be allowed, as appears to be the case for other streams.

Response: The Agency agrees with the comment regarding the use of multiple control devices on a single process; it was not EPA's intention to limit the control scenario implemented

by a facility. Either a single control device or a series of control devices is acceptable as long as the overall control efficiency specified by the regulation is achieved. The term "control device(s)" has been added to the pesticide regulation in place of "control device" to make it clear that use of multiple control devices is acceptable.

Comment 2: Commenters IV-D-21 and IV-D-29 point out that § 63.1362(c)(1)(ii) refers to control devices "designed to reduce emissions of organic HAP by greater than 41 percent but less than 95 percent." The commenters assert that including the words "95 percent" is not necessary and makes this statement confusing. The commenters recommend that the words "but less than 95 percent" be removed to help clarify this section.

Response: This provision in the proposed rule referred to storage vessels that are already controlled at least to the level of the floor, but do not exceed the level of the standard. Because the standard in the final rule is equivalent to the floor, this provision is no longer needed and has been deleted.

Comment 3: One commenter (IV-D-16) pointed out that in both the definitions of Group 1 Storage Vessel (§ 63.1361) and the standard (§ 63.1362), the conversion from metric units to English units are rounded off. The commenter requests that EPA provide a more precise conversion to English units.

Response: In an effort to reduce confusion over the conversion from English to metric units (or vice versa), only metric units have been included in the final rule. This is consistent with the approach used in the HON.

9.0 STANDARDS FOR EQUIPMENT LEAKS

9.1 LEVEL OF THE STANDARD

Comment: The MACT floor for equipment leaks was determined to be no control, and the proposed standard was based on a more stringent regulatory alternative that consisted of implementation of the leak detection and repair (LDAR) program from the HON. Six commenters (IV-D-14, IV-D-16, IV-D-20, IV-D-21, IV-D-27, and IV-D-29) stated that the standard should not be based on the LDAR program from the HON because their analyses show it is not cost effective. Several commenters provided data contradicting both the emission rates and costs used in EPA's cost analysis.

All six commenters asserted that initial equipment leak frequencies and thus the actual emissions rates are lower than EPA estimated using the SOCMI average emission factors. According to commenter IV-D-16, recent screening data obtained to demonstrate compliance with the HON, P&R IV, and State programs (from 7 companies and 21 processes, not necessarily PAI) show current industry maintenance, design, and materials selection result in far lower leak rates and emissions than EPA assumed; commenter IV-D-21 made a similar summary statement. Commenter IV-D-16 provided a tabular summary of leak rates for more than 100,000 connectors, 64,000 valves, and 1,400 pumps. Estimated emissions based on these data are approximately 6 percent of the level used in the EPA analysis. Commenter IV-D-27 also stated that leak rates are typically less than 5 percent of the value obtained using the SOCMI average emission factors. Commenter IV-D-16 noted that this level is comparable to the controlled level estimated by EPA, and concluded that any additional reductions achieved by implementing the standard would be extremely small. Commenters IV-D-16 and IV-D-27 believe EPA's assumption that the fluid in

contact with each component is 100 percent HAP is overly conservative; commenter IV-D-27 suggested 50 percent would be a better value.

Commenters IV-D-14, IV-D-16, and IV-D-27 asserted that the costs used in the EPA analysis were underestimated. Commenter IV-D-27 provided the following specific examples based on a quote the commenter obtained from Team Industrial Services to conduct an LDAR program: (1) initial and annual monitoring costs should be at least $4.50/component and $2.95/component, respectively, instead of $2.50/component and $2.00/component; and (2) labor costs to repair components should be at least $30.00/hour, not $22.50/hour. Commenter IV-D-27 also noted that the lower emissions estimated by the commenters results in a smaller product recovery credit than EPA estimated.

Based on the available information, commenters IV-D-14, IV-D-16, and IV-D-27 estimated cost-effectiveness values that are much higher than EPA's estimate. Based on unspecified data and assumptions, commenter IV-D-14 estimated the cost effectiveness to be more than $35,000/Mg for a facility with 215 pumps, 4,460 valves, and more than 16,000 connectors. Commenter IV-D-27 estimated the cost effectiveness for the nationwide population of components in EPA's analysis to be more than $64,000/Mg; this estimate was based on the revised monitoring and labor costs described above, assuming fluid in contact with the components contains 50 percent HAP, and assuming that the LDAR program would achieve the same percentage emission reductions that were used in the EPA analysis. Commenter IV-D-16 calculated a cost effectiveness of $78,000/Mg for the nationwide population of components in EPA's analysis; this estimate was based on the costs from EPA's analysis, assuming the LDAR program would achieve a 10 percent reduction in emissions from the lower baseline described above.

Commenters IV-D-16 and IV-D-20 recommended that EPA consider setting a standard based on a sensory (visual, olfactory, audible) LDAR program or other alternatives that are under consideration for other rules (i.e., for formulation processes covered by the MON or the draft Generic MACT standards, part 63 subparts TT and UU).

Response: In recent regulatory development efforts involving similar industries, the EPA has generally found equipment leaks to be a significant source of emissions. The EPA's

approach has been to require industries to identify leaks and fix them as soon as possible. The EPA is sensitive to the recordkeeping burden associated with an LDAR program for this industry and has strived to minimize the number of activities that have to be conducted and documented while still requiring sources to identify and eliminate equipment leaks. Relative to earlier rules, the Agency developed the HON to focus most of the recordkeeping and reporting burden on those processes and types of equipment that have the most significant leaks, in terms of HAP emissions. Since the development of the HON, the Agency has proposed the consolidated air rule (CAR) that is designed to minimize the reporting and recordkeeping burden even further (see 63 FR 57748). The EPA believes that, in addition to consolidating many LDAR programs, the CAR addresses many concerns regarding the burden placed on industry to implement LDAR programs with little environmental benefit. The proposed CAR is specifically focused on identifying and fixing leaking components, and leaves out many of the recordkeeping requirements that are focused on nonleakers. For example, the proposed CAR includes options for identifying groups of equipment, such as valves, that are located within an area or length of pipe without individually listing each component. The proposed CAR also allows much less frequent monitoring of components, depending on leak rates identified during an initial survey. If less than 0.25 percent of connectors are found to be leaking, monitoring is only required every 8 years (however, at least 50 percent of the connectors must be monitored during the first 4 years, and the remainder must be monitored within the next 4 years). For valves, the required monitoring frequency can be as low as every 2 years, if the percentage of leakers for a given group is less than 0.25 percent.

In general, commenters contend that EPA has overstated the reductions achieved by the LDAR program and understated the costs in estimating cost effectiveness. In response to commenter concerns, EPA reviewed the original analysis and also calculated the cost effectiveness of a revised LDAR program based on the requirements of the proposed CAR. The revised analysis used the data supplied by the commenters; the EPA also combined recently obtained initial leak rate data for components in pharmaceutical processes with the data provided by commenters. The EPA does not consider the emission estimates in the original analysis to be invalid. However, for the revised analysis, EPA used the leak rate data provided by the commenters and other recently obtained data to determine a lower bound on the baseline

emissions (and a corresponding upper bound on cost effectiveness for a given set of assumptions regarding subsequent leak frequencies and the number of monitoring instruments that are needed). The remainder of this response summarizes the procedures and results of the revised analysis. This summary includes a description of models used in the analysis, procedures to calculate emissions, specific aspects of the costing methodology, and the estimated cost effectiveness. Details of the analysis are documented in reference number 1 (Docket No. A-95-20, Docket Item No. IV-B-3). As a result of this analysis, the standards for equipment leaks have been changed since proposal; the requirements in the final rule are consistent with the proposed CAR requirements rather than the subpart H requirements.

Models. Batch and continuous model processes were developed for the original analysis and these models were also used in the revised analysis. The batch process consisted of 65 gas valves, 340 liquid valves, 14 pumps, and 1,100 connectors. The continuous process consisted of 240 gas valves, 1,100 liquid valves, 33 pumps, and 1,500 connectors. For this analysis, all valves were considered to be liquid valves because the commenters provided leak rate data only for "valves." Components in the batch process were assumed to be in service for 2,800 hr/yr, and components in the continuous process were assumed to be in service for 5,000 hr/yr.

Emissions Estimates. Uncontrolled emissions for the model processes were estimated based on initial leak rate data. The EPA started with the initial leak rate data provided by the commenters. Most of these data were from facilities in the SOCMI or polymers and resins industry. The EPA also combined recently obtained initial leak rate data for components in pharmaceuticals processes with the data provided by the commenters. These data were combined because EPA believes pharmaceuticals processes are at least as representative of PAI processes as are SOCMI or polymers and resins processes due to the prevalence of batch processing, similar process equipment, and similar HAP in the pharmaceutical and PAI industries. Combining the two data sets approximately doubled the amount of available data to 200,000 connectors, 87,000 valves, and 2,600 pumps. All of the leak rates for a particular type of component in the data base were summed. To estimate average leak rates, each of these overall leak rates was divided by the total number of that type of component in the data base.

Uncontrolled annual emissions for the two model processes were estimated by multiplying these average leak rates by both the number of components and the operating hours for the models.

Controlled emissions for the two model processes were based on several assumptions about subsequent leak rates because leak rate data are not available. For valves and connectors, the leak frequency occurrence rates after implementation of LDAR were assumed to be equal to the performance levels required in the proposed CAR (i.e., 0.25 percent). The EPA also assumed that repairs are 100 percent effective, and that there are no recurrences of leaks. These assumptions are similar to those in the HON, except that the occurrence levels are lower than those assumed in the HON analysis. These appear to be reasonable assumptions given the fact that the initial leak frequencies for valves and connectors were in some cases lower than the specified performance level. For pumps, the CAR does not specify a performance level. Therefore, it was assumed that the leak occurrence rate after implementation of the LDAR program is equal to 50 percent of the initial leak frequency. This assumption appears reasonable based on the leak frequency reductions that have been achieved by other LDAR programs. The initial leak frequency for pumps was estimated to be 7.44 percent by using the estimated uncontrolled average leak rate for pumps (as estimated above) in the average leak rate (ALR) equation for a leak definition of 1,000 ppmv. (The ALR equations are presented on page 5-46 of the EPA document entitled "Protocol for Equipment Leak Emission Estimates," EPA-453/R-95-017, November 1995.) The occurrence rate for pumps, therefore, was assumed to be 3.72 percent. Controlled average leak rates were estimated using one-half of the occurrence rates in the appropriate ALR equations (i.e., equations for leak definitions of 500 ppmv for valves and connectors, and 1,000 ppmv for pumps). One-half of the occurrence rate is assumed to be the average leak frequency over the monitoring cycle. Controlled annual emissions for the two model processes were estimated by multiplying these average leak rates by both the number of components and the operating hours for the models.

Unlike the original analysis, the revised analysis does not depend on the assumption that components are in 100 percent HAP service. The leak-rate methodology used in the revised analysis estimates the amount of organic compounds (VOC or HAP) emitted. Thus, the analysis will overstate the HAP emissions if the leak includes non-HAP VOC. In these situations,

however, the program will still control the remaining non-HAP VOC, and the cost effectiveness will reflect the control of both HAP and VOC.

Costing Methodology. In general, the LDAR costs are based on procedures and unit costs that were used in the analysis for the HON. The approach identifies both initial costs to establish the monitoring program, recurrent annual costs to monitor and repair leaks, and a credit for product recovered by reducing leaks. Initial LDAR monitoring and repair costs and the cost of a monitoring instrument are annualized using a capital recovery factor. Monitoring and repair costs are assumed to be the same every year. The total annual cost of the LDAR program is the sum of the annualized initial costs plus the annual monitoring and repair costs minus product recovery credits.

A review of the costing methodology indicated that costs for the monitoring instrument needed to be updated, but no changes are warranted in other elements of the methodology. The original analysis was based on costs for a monitor that is no longer available. Capital costs for a currently available monitor that is widely used are higher than the capital costs for the original monitor, but maintenance costs are lower. See reference number 2 (Docket No. A-95-20, Docket Item Numbers IV-B-6 and IV-B-7). As a result, total annual costs for the new monitoring instrument are lower. A discussion of other costs in the analysis is provided below.

One commenter stated that initial and annual monitoring costs should be at least $4.50/component and $2.95/component, respectively, instead of $2.50/component and $2.00/component. The commenter indicated that the higher values were based on costs typically charged by contractors who monitor equipment for leaks as a service. Unit monitoring costs in the EPA analysis are lower because they include only labor costs. When a monitoring contractor is hired, the cost per component must consider annualized costs of implementing the overall program, including overhead costs and the costs of purchasing and maintaining a monitoring instrument. Adding 40 percent to account for overhead costs increases the unit monitoring costs used by EPA to $3.50/component and $2.80/component. The annual maintenance charge plus the annualized purchase cost of the monitoring instrument adds another $2.00/component to both values; this value is likely higher than the cost to a monitoring contractor because it assumes the monitoring instrument is only fully utilized in the first year (this was not an issue in the original

analysis because all components were assumed to be monitored the same number of times each year). The resulting costs of $5.50/component and $4.80/component are higher than the values quoted by the commenter. Therefore, EPA did not change the monitoring costs for this analysis.

One commenter stated that labor costs to repair components should be at least $30.00/hr, not $22.50/hr. The actual cost in the EPA analysis is $22.50/hr, multiplied by a factor of 1.4 to add another 40 percent for administrative and support costs, which yields a value of $31.50/hr. Again, this value is comparable to the value quoted by the commenter. Therefore, EPA did not change the labor cost for this analysis.

The total annual costs (TAC), after accounting for product recovery, were estimated to be $2,066/yr for the batch model process and $5,226/yr for the continuous model process. The total capital investment (TCI) is $7,914 for the batch model process and $15,277 for the continuous model process. The TCI includes both the cost of the monitoring instrument and the cost for the initial round of monitoring and repair.

Impacts. Nationwide emissions were estimated by scaling the emissions for the model processes based on the number of batch and continuous processes in the PAI industry. Nationwide, there are an estimated 146 batch processes and 43 continuous processes. The nationwide uncontrolled emissions for equipment components in the PAI industry are estimated to be 503 Mg/yr, and the nationwide controlled emissions following implementation of the LDAR program in the CAR are estimated to be 117 Mg/yr; the nationwide emission reduction is estimated to be 386 Mg/yr.

Nationwide costs to implement an LDAR program for the PAI industry consistent with the program in the CAR were estimated using two approaches. In the first approach, the monitoring instrument capital cost and annual maintenance cost were prorated based on the ratio of the nationwide number of components as characterized by the two model processes to the number of components that a fully utilized instrument could be used to monitor (i.e., about 9,000 components). The second approach, a more conservative one, assumes one instrument is needed for every 9,000 components (or fraction thereof) at each facility. Under second approach, a total of 80 monitoring instruments would be needed (58 for the 58 modeled facilities, and 22

for the 20 surveyed facilities (some of the surveyed facilities needed two instruments because they had more than 9,000 components in PAI processes).

The nationwide costs under both approaches were estimated by scaling the unit costs for the model processes based on the number of batch and continuous processes in the PAI industry. As a result, the estimated nationwide TCI and TAC using the first approach are $1.81 million and $526,000/yr, respectively. Using the second approach, the TCI and TAC increase to $2.26 million and $692,000/yr, respectively.

Cost Effectiveness. The cost effectiveness associated with implementation of an LDAR program consistent with the requirements of the proposed CAR using the first costing approach is estimated to be $1,400/Mg at existing sources ($526,000/386 Mg). The cost effectiveness at existing sources using the second approach is estimated to be $1,800/Mg ($692,000/386 Mg). Both of these values are considered to be reasonable.

9.2 CROSS-REFERENCING THE CONSOLIDATED AIR RULE

Comment: The preamble to the proposed rule states that EPA will consider cross-referencing the CAR if the CAR is complete before this rule is promulgated. Commenter IV-D-28 strongly opposes cross-referencing requirements in the CAR (unless the CAR requirements are only one option) because the CAR has become more and more complicated, still contains flaws, and has not been promulgated.

Response: The EPA has decided to incorporate requirements consistent with those of the proposed CAR into this final rule, as opposed to cross-referencing them. The EPA intends, with this action, to minimize confusion and reduce the potential for errors and inconsistencies that could be created by cross referencing.

9.3 REFERENCES

5. Memorandum from B. Shine and K. Schmidtke, MRI, to Project File. October 21, 1998. LDAR program cost effectiveness.

6. Memorandum from K. Barnett, EPA:ESD, to Equipment Leaks Costing Project File. October 18, 1998. Equipment leaks costing.

10.0 STANDARDS FOR WASTEWATER

10.1 GENERAL

Comment: Commenter IV-D-20 believes the wastewater provisions should be based on the proposed pharmaceuticals rule, not the HON, because: (1) both the pharmaceuticals and PAI manufacturing industries produce biologically active materials and are relatively small in scale compared to SOCMI facilities (the commenter noted that the surveyed facilities are larger than the typical manufacturing processes within the PAI industry), (2) the evaluation for the proposed pharmaceuticals rule was based on more recent emission models and a more thorough assessment of emissions and control costs, and (3) the HON wastewater requirements are extremely complex and difficult to understand. Other commenters requested that only specific provisions from the proposed pharmaceuticals rule be included in this rule, as noted in the comments below.

Response: The EPA disagrees with the commenter's claim that the proposed pharmaceuticals wastewater provisions are more appropriate than the provisions in the HON for the PAI source category. First, although the scale of PAI operations typically is closer to pharmaceuticals than to SOCMI, the applicability cutoffs in both the HON and pharmaceuticals regulations are comparable. Second, the analysis for the pharmaceuticals proposed standard was not better, it was just different. For example, the pharmaceuticals analysis was based on the use of methanol as a model compound because of the prevalence of that compound in the pharmaceuticals industry, but the HON analysis modeled each HAP. Comparisons of specific aspects of the provisions in the two rules are discussed in many of the responses in the remainder of this chapter.

10.2 AFFECTED WASTEWATER

Comment 1: Several commenters (IV-D-14, IV-D-21, IV-D-28, and IV-D-29) stated that maintenance wastewater streams should either be excluded from the regulation or subject to the same requirements as in § 63.105(b)(2) of the HON. All of the commenters cited the variability and unpredictable nature of maintenance wastewater streams (which makes it difficult to determine whether a stream is Group 1 or Group 2) and the low potential for substantial emissions (because such streams are typically due to rinsing or flushing equipment) as reasons to regulate maintenance wastewater streams differently. Commenter IV-D-28 added that maintenance wastewater streams cannot be controlled like process wastewater streams. For example, the commenter explained that trying to pump the small amount of water generated when bleed lines or pumps are drained would cause equipment problems if there was not enough flow to keep material running through the pump itself. Commenter IV-D-28 also stated that the cost to comply with conveyance requirements would be enormous, especially if an enclosed system has to be installed for every piece of equipment because someday a maintenance wastewater stream might be generated there.

Response: The EPA considered the above comments and is persuaded by the commenters' arguments that the variability of maintenance activities makes characterization of these wastewaters difficult, and that there is fairly low potential for substantial emissions for most of these wastewater streams. However, EPA has no data on typical quantities of maintenance wastewater streams generated, or the characteristics of these wastewater streams. Therefore, EPA's approach, in resolving this issue, was to specify characteristics of maintenance wastewater streams that have significant emission potential. The EPA also sought to minimize the burden of characterization of all maintenance wastewater streams. Based on this approach, EPA evaluated three possible options for regulating maintenance wastewater streams. The first option was to adopt the same requirements as in § 63.105 of the HON, which is the option suggested by the commenters. The EPA believes that maintenance wastewater streams may warrant a different treatment in this industry than what was done under the HON because the PAI industry is expected to generate process wastewater streams in discrete batches, due to the batch nature of the industry. These process wastewater streams are expected to have properties similar to those for maintenance wastewater streams in terms of the quantities generated, the frequency of generation, and the options for management, suppression and treatment. Therefore, for

streams with significant emissions potential, whether generated because of maintenance activities or by the process operations, EPA believes that proper management and treatment is warranted.

The second option evaluated was to require the same management and treatment for both maintenance and process wastewater streams, as in the proposed rule. Under this option, the applicability thresholds are the same as in the HON for both types of streams. However, because information on maintenance wastewater streams is unavailable, it is not clear how many such streams would be subject to management and treatment requirements. For example, one extreme is that industry would be required to characterize numerous maintenance wastewater streams with no environmental benefit. Conversely, it is possible that many streams with low flow rates and low emission potential would meet the Group 1 applicability thresholds of 10,000 ppmw at any flow rate. Another concern with this option is the extent of dedicated maintenance wastewater conveyance systems that will need to meet emission suppression requirements on the chance that a Group 1 maintenance wastewater stream might be discharged in the processing area served by that part of the conveyance system.

Finally, the third option considered and incorporated into the final rule is a modification of option 2 that does not require characterization, suppression, and treatment of small maintenance wastewater streams with low emission potential. The HON includes two thresholds for triggering Group 1 applicability: the first, which has already been discussed, captures any streams with greater than 10,000 ppmw HAP load and does not consider emissions potential; the second applicability threshold, however, considers emission potential by adding a quantity (greater than 10 liters per minute [L/min]) in addition to the HAP concentration (1,000 ppmw HAP). When converted to HAP load, the second applicability threshold is equivalent to approximately 5.3 Mg of HAP. This load was used as the applicability threshold in the definition of maintenance wastewater in the final rule. The final rule also specifies that the maintenance wastewater definition applies to individual discharge events, not the sum of all events occurring from a single POD over the course of a year. By defining maintenance wastewater streams in this manner, only the largest, most significant maintenance wastewater streams would be subject to suppression and treatment. These large streams should be easier to identify and may occur only at certain POD's. The definition of Group 1 wastewater streams also includes maintenance

wastewater streams with this same load; thus, there are no Group 2 maintenance wastewater streams, and there is no burden to characterize and track any maintenance wastewater streams other than Group 1 streams.

It is conceivable that there are no maintenance wastewater streams with characteristics approaching this definition in the industry. However, because EPA has no data on the quantities or characteristics of these maintenance wastewater streams, EPA believes the best approach is to define a threshold of concern rather than to exempt from suppression and treatment all maintenance wastewater streams.

The EPA considered the example brought up by the commenters of needing to drain maintenance wastewater streams onto diked floor areas and sumps prior to sending to enclosed drains. The commenters argue that it would be unreasonable to build enclosed conveyance systems for all maintenance wastewater streams that require control. However, EPA believes that those few maintenance wastewater streams that could trigger Group 1 applicability would be routed to a process or chemical sewer to begin with, regardless of whether they were considered affected streams for purposes of this MACT standard, and believes that most facilities are capable of routing wastewaters through temporary flexible hoses to a conveyance system that would serve a chemical or process sewer especially for these situations.

Comment 2: Because the MACT floor for wastewater at existing sources is no control, commenter IV-D-16 recommended that EPA exclude from control requirements those streams that have low emission potential. Therefore, the commenter recommended that EPA establish an alternative Group 1 threshold for soluble HAP with low vapor pressures, similar to the threshold in the proposed pharmaceuticals rule. Another commenter (IV-D-27) also requested that EPA add alternative Group 1 thresholds based on differences in the volatility of HAP compounds, like those for partially soluble and soluble HAP compounds in the proposed pharmaceuticals rule. A third commenter (IV-D-28) supports the proposed approach to classify process wastewater (but, as noted above, not maintenance wastewater streams) as Group 1 or Group 2, and require control only for wastewater classified as Group 1.

Response: Under the proposed rule, streams with low emission potential were excluded by the 1,000 ppmw and 10 L/min cutoffs. In addition, a facility would not be required to control

any wastewater streams if the total load of Table 9 compounds in Group 1 wastewater (untreated or treated to levels less than required by the standards) from the "total source" (for the final rule, this term is defined to mean the affected source) is less than 1 Mg/yr. The EPA determined that, on average, treatment of streams with concentrations and flows that exceed the cutoffs was cost effective. If a stream contains compounds with low Henry's law constants, the "low potential" for emissions is accounted for by requiring less stringent control based on low Fr values. This approach also is consistent with the HON, which should facilitate compliance for many facilities, and is consistent with one commenter's request that provisions be like the HON wherever possible. Thus, the final rule does not include alternative Group 1 thresholds.

10.3 TREATMENT OPTIONS FOR DISCHARGES TO POTW's

Comment 1: Three commenters (IV-D-16, IV-D-20, and IV-D-27) requested that the enhanced biological treatment option in the proposed pharmaceuticals MACT standard be included in this rule (i.e., for wastewater that contains soluble HAP and less than 50 ppmw of partially soluble HAP) for discharges to a POTW. According to commenter IV-D-20, the HON provisions essentially preclude discharge to POTW's because POTW's could not reasonably be expected to understand, implement, and certify compliance with this regulation. Furthermore, the commenter stated that the detailed analysis performed for the proposed pharmaceuticals rule indicated that air emissions for certain wastewater streams would be negligible; thus, there is no need to essentially ban discharge to POTW's.

Response: Except for minor differences in applicability cutoffs, one of the treatment options in the HON (and thus in the proposed rule) is similar to the enhanced biotreatment option under the proposed pharmaceuticals rule. Both the HON and the proposed pharmaceuticals rule regulate two groups of HAP compounds in wastewater. For the HON, the groups are called "list 1" and "list 2" compounds. For the proposed pharmaceuticals standard, they are called "partially soluble HAP" and "soluble HAP." All 52 of the compounds on list 2 are also classified as partially soluble HAP. List 1 contains all 14 soluble HAP as well as the 10 remaining partially soluble HAP. (Note that for the final pharmaceuticals rule, epichlorohydrin has been moved from the solubles list to the partially solubles list.) Under the HON, an owner or operator is exempt from the performance test requirement if (1) wastewater is treated in an enhanced

biological treatment process and (2) compounds on list 1 comprise at least 99 percent by weight of the HAP compounds (list 1 plus list 2) in the wastewater. Under the proposed pharmaceuticals standard, an owner or operator would be exempt from the performance test requirement if wastewater containing soluble HAP and less than 50 ppmw of partially soluble HAP is treated in an enhanced biological treatment unit, and the owner or operator demonstrates that less than 5 percent of the soluble HAP is emitted from the municipal sewer system. The definition of an enhanced biotreatment unit is also the same under both rules, and waste treatment units that qualify as enhanced biotreatment units are subject to the same compliance requirements under both rules. Therefore, EPA disagrees with the commenter's assertion that the treatment provisions in the proposed rule reduce the burden on POTW's, and EPA has not revised the treatment provisions for today's final rule.

Comment 2: Commenter IV-D-16 cited the results of a study conducted by Pharmaceutical Research and Manufacturers of America (PhRMA) (and discussed in detail in PhRMA's comments on the proposed pharmaceuticals rule) showing that streams discharged to POTW's have the potential for significant emissions only from "totally open" collection and municipal sewer systems. Therefore, if the collection and municipal sewer system is totally open, the commenter recommended adding a provision that would allow an owner or operator to use the enhanced biotreatment option only if the owner or operator demonstrates that less than 5 percent of the soluble HAP is emitted from the system (and would not impose this requirement if the system is not "totally open").

Response: Under the proposed rule, an offsite facility that treats wastewater would be required to comply with the same requirements as an affected source, including the emission suppression requirements from the collection system. The EPA has reexamined municipal sewer systems and determined that the primary potential for emissions from the collection system is from the headworks at the POTW. Thus, the final rule specifies that either the waste management units up to the activated sludge unit must be covered, or the owner or operator must demonstrate that less than 5 percent of the total list 1 HAP is emitted from these units.

10.4 STANDARDS FOR NEW SOURCES

Comment: Several commenters (IV-D-16, IV-D-21, IV-D-27, IV-D-28, and IV-D-29) consider the proposed wastewater standards for new sources with HAP loading greater than 2,100 Mg/yr to be too restrictive. Commenter IV-D-27 believes only Group 1 wastewater, not all wastewater, should be subject to the standards. The commenter claims that requiring control of all wastewater will result in negligible additional environmental benefits, but would likely cause greater secondary air and resource impacts (e.g., from fuel usage and emissions of combustion products).

All five commenters requested that additional treatment options be allowed. Commenter IV-D-28 requested that EPA add a treatment option that allows an owner or operator to reduce the mass flow rate by the Fr values; the commenter stated that a 99 percent reduction might be achievable for an individual facility with a certain combination of HAP, but it would not be achievable by all facilities. Commenters IV-D-16, IV-D-21, IV-D-27, and IV-D-29 recommended adding at least an enhanced biotreatment option. Commenter IV-D-27 believes all of the treatment options for existing sources should be allowed for new sources. Commenters IV-D-16, IV-D-21, IV-D-27, and IV-D-29 requested the additional options because they believe that limiting treatment options significantly impacts compliance flexibility with little, or no, environmental benefit. For example, commenter IV-D-27 realizes that a steam stripper would not meet the standard for compounds that have Fr values less than 0.99, but believes that because the remaining HAP in the treated streams are less volatile, they would have negligible air impacts. Several commenters (IV-D-16, IV-D-21, and IV-D-29) stated that EPA had agreed during the development of revised wastewater provisions for the HON that the various treatment options under the HON are equivalent from an air emissions standpoint (e.g., 95 percent reduction in a biological treatment unit is equivalent to 99 percent reduction in a non-biological treatment unit).

Response: According to the Act, the MACT floor for new sources is to be based on the emission control that is achieved by the best controlled similar source. In the PAI production industry, the best controlled source is achieving 99 percent control. This source also is treating all of its wastewater from PAI processes, the HAP load in this wastewater is 2,100 Mg/yr, and this wastewater contains a mixture of compounds with a range of Henry's law constants. Thus,

the proposed MACT floor for new sources with a HAP load exceeding 2,100 Mg/yr consisted of the requirements to treat all wastewater and to achieve a 99 percent reduction in the HAP content in the wastewater; for new sources with lower HAP loadings, the MACT floor is no control, as for existing sources. The EPA continues to stress that the proposed MACT floor is consistent with the Act, and it is retained in the final rule.

If a facility has a HAP load that exceeds the cutoff, the enhanced biotreatment option (i.e., the option that exempts an owner or operator from initial compliance demonstrations) is not allowed because the EPA does not have information showing that enhanced biotreatment units achieve 99 percent removal for mixtures of compounds with low Fr values. Otherwise, the final rule allows any treatment option (including enhanced biotreatment) for such affected sources, provided the owner or operator demonstrates that it achieves 99 percent removal of all HAP in the wastewater. The EPA also points out that the requirement to achieve 99 percent removals applies only to facilities that have extremely high HAP loads and thus, high potential for emissions. Few new sources are likely to exceed the applicability cutoffs for the MACT floor because 2,100 Mg/yr was more than three times higher than the load at any other surveyed facility.

Finally, the commenter's statement about the equivalence of treatment options needs clarification. Under the HON, the 95 percent option for biological treatment units requires that the reduction be achieved from all wastewater sent to the treatment unit, not just the Group 1 wastewater. The 95 percent reduction also applies to all Table 9 compounds (in subpart G) in the wastewater, not just compounds with high Fr values. Thus, on average, this option is considered equivalent to other treatment options in the HON. This option is not considered equivalent to the 99 percent option for new sources described above because the 99 percent reduction is required for all wastewater and all compounds.

10.5 OVERLAP WITH OTHER REGULATIONS

Comment 1: Commenter IV-D-27 believes the rule should state that routing regulated wastewater (and associated emissions and residuals) to a RCRA incinerator constitutes compliance with the standards, and no additional performance testing, monitoring, recordkeeping, or reporting is required.

Response: The proposed rule cross-referenced § 63.138(h) of the HON, which specifies that RCRA units used to treat wastewater streams and residuals are exempt from design evaluation or performance test requirements, monitoring requirements, and associated recordkeeping and reporting requirements. This cross-reference is retained in the final rule.

Comment 2: Commenter IV-D-28 suggested adding a paragraph to § 63.1362(d) to avoid an overlap between this rule and subpart DD (Off-Site Waste and Recovery Operations). The commenter noted that all organic HAP-containing wastes that are sent to an offsite facility for treatment become subject to subpart DD, unless stated otherwise in subpart DD. Subpart DD contains an exemption for wastewater from a HON facility. However, it does not contain an exemption for wastewater from other facilities subject to MACT standards, even those, like the proposed rule, that require compliance with the wastewater provisions in the HON. Therefore, the additional provision recommended by the commenter would stipulate that an offsite facility is not subject to the requirements of subpart DD for wastewater streams and residuals received from an affected source.

Response: The PAI rule cannot include a provision that modifies the requirements of another rule. However, EPA will consider amending subpart DD at a later date.

10.6 CLARIFICATION OF CROSS-REFERENCES

Comment: Commenter IV-D-28 believes § 63.1362(d) of the proposed rule should cross-reference only §§ 63.131 through 63.147 because §§ 63.148 and 63.149 are not wastewater provisions. Commenter IV-D-28 also requested clarification of how to deal with provisions for Table 8 compounds in the cross-referenced sections. Similarly, other commenters (IV-D-16 and IV-D-27) believe EPA should clarify that references to Table 8 compounds are not applicable to this rule.

Response: The EPA agrees with the commenters, and these changes have been incorporated in the final rule. However, cross-references to § 63.148 from §§ 63.131 through 63.147 are still applicable, and the provisions in § 63.149 have been incorporated directly into the final rule.

11.0 STANDARDS FOR BAG DUMPS AND PRODUCT DRYERS

11.1 JUSTIFICATION FOR THE STANDARDS

Comment: Four commenters (IV-D-16, IV-D-21, IV-D-22, and IV-D-29) stated that EPA should not issue regulations for bag dumps and product dryers because: (1) data are available for only one source, which is not (commenter IV-D-21 said "may not be") representative of the source category; (2) the terms particulate HAP and bag dump are not defined; and (3) no test data are available to verify estimates. Commenters IV-D-16, IV-D-21, and IV-D-29 also quoted the following statement from the ruling in Portland Cement Association v. Ruckleshaus, 486 F. 2d 375, 396 (D.C. Cir. 1973): "[A] significant difference between techniques used by the Agency in arriving at standards, and requirements presently prescribed for determining compliance with standards, raises serious questions about the validity of the standard." As a result, the three commenters noted that the Court remanded the rule, and the commenters concluded that the test method used for compliance must be closely linked to the test method used as the basis for the standard. Commenters IV-D-21 and IV-D-29 also recommended that EPA repeal the proposed provisions for bag dumps and product dryers because they believe the MACT floor was not established properly per EPA protocol.

Other commenters (IV-D-14, IV-D-20, and IV-D-27) stated that bag dumps should not be regulated. Commenter IV-D-14 stated that it was inappropriate to include bag dumps in this standard when no bag dump data were used to determine the MACT floor. According to commenter IV-D-27, basing a standard for bag dumps on the data from a single product dryer is inappropriate because the two types of emission points are not comparable. The commenter explained that a dryer vent is typically a point source that can be easily vented to a control device, but a bag dump typically is a fugitive emission source that is often difficult to capture and

route to a control device. According to commenter IV-D-20, EPA should not regulate bag dumps unless they are a found to be a significant source of emissions; the commenter noted that there was no data on bag dumps in the PAI data base, and therefore no basis on which to regulate such emissions. This commenter also cited the following reasons why regulating bag dumps would be difficult and would not result in any meaningful emission reduction: (1) use of bag dumps is avoided or minimized to the greatest extent practicable for ergonomic and worker exposure reasons; (2) any particulate emissions are small and would be controlled to reduce workplace exposure; (3) if dusting and workplace exposure are not a concern for a particular material, there may be no process vent associated with the bag dumping operation; and (4) PM_{10} regulations are generally applied to larger sources with actual vents. Another commenter (IV-D-16) also stated that bag dumps should not be regulated as part of this rule because they are a source of fugitive emissions.

Response: Standards for product dryers and bag dumps were included in the proposed rule because these emission points can be a source of HAP emissions, specifically particulate matter HAP emissions. The MACT floor for these emission points was developed for equipment that emits particulate matter HAP; this equipment was limited to product dryers and bag dumps because these are the only known sources of particulate matter HAP emissions at PAI facilities. The MACT floor also was based on the level of control for these emission points at the MACT floor facilities (i.e., the nine facilities with the best overall control of PAI process units). One of the MACT floor facilities dried a PAI that is also a HAP. Emissions from this product dryer were controlled with a fabric filter, and emissions tests showed the outlet PM concentration was less than 0.01 grains per dry standard cubic foot (gr/dscf). The floor for particulate matter HAP emission sources was based on this value because both product dryers and bag dumps are controlled with fabric filters, and 0.01 gr/dscf is a typical level for fabric filters.

The EPA is not persuaded by the commenter's argument that bag dumps should not be regulated because they are (or may be) sources of fugitive emissions and are thus not comparable to product dryers. The EPA knows of two bag dumps where a HAP raw material is added to a PAI process, and both are controlled with fabric filters. At a minimum, a hood or partial enclosure can be placed above or around a bag dump to capture the emissions and route them to

the control device. Furthermore, one of the commenters also stated that particulate emissions from bag dumps would be controlled to reduce workplace exposure.

Uncontrolled emissions (i.e., the pre-control emissions) from one of the two known bag dumps exceed 1.6 Mg/yr. The EPA considers this to be a significant source, and the required emission reduction to be meaningful. The fact that some facilities may have found more desirable alternatives to the use of bag dumps does not justify exempting facilities that still use them from regulation.

As a result, EPA maintains that standards are appropriate for bag dumps and product dryers that emit HAP, that the MACT floor is valid, and that the standard should be based on the MACT floor. However, EPA has decided to make one change for the final rule. At proposal, the standard was for "particulate matter HAP." For the final rule, the standard is for "particulate matter" because the material captured in the fabric filters is essentially all HAP, and test methods are for "particulate matter," not "particulate matter HAP." (The EPA assumes this is why the commenters mentioned linking the test method used as the basis of the standard with the method used to demonstrate compliance.) The final rule also specifies that the particulate matter standards are for product dryers that dry a PAI or integral intermediate that is a HAP and for bag dumps that introduce a HAP to a PAI process unit. See section 5.1 for definitions of "product dryer" and "bag dump," and see section 16.3 for a discussion of changes in the monitoring provisions for these types of emission points.

11.2 LEVEL OF THE STANDARD

Comment: Commenters IV-D-22 and IV-D-27 believe the rule should include an applicability cutoff. Commenter IV-D-22 stated the cutoff level should be derived from data. Commenter IV-D-27 stated that it should be set at the lowest uncontrolled emissions level for a source that has MACT controls (i.e., the uncontrolled emissions from the single product dryer used to establish the MACT floor control level) because EPA has no data to support the 0.01 gr/dscf standard on sources with lower emissions. Another commenter (IV-D-14) stated that the 0.01 gr/dscf standard is not readily achievable using commercially available equipment and that this level is not typical of fabric filter control. The commenter stated that a typical vendor guarantee is an outlet particulate concentration of 0.02 gr/dscf for particles above

2 microns (μm) in diameter, with no guarantee for smaller particles. Consequently, the commenter recommended that EPA consult with manufacturers of particulate control devices to ensure that the emission standard is set at a level consistent with vendor guarantees for readily available equipment.

Response: No mass emission rate cutoff was established because all known bag dumps that introduce a HAP raw material to a PAI process unit, and all product dryers that dry a product that is a HAP, are controlled with fabric filters, and EPA believes 0.01 gr/dscf is a reasonable level for all fabric filters in such applications. An emissions test for the fabric filter used to control the product dryer at the MACT floor facility provides evidence that this concentration is achievable. The outlet concentration was less than 0.01 gr/dscf for each of the 12 runs in the test. The EPA expects that the existing fabric filters were designed to meet this outlet concentration, but the standard and associated monitoring requirements are included in the rule to provide assurance that they will continue to perform at this level. As a result, EPA did not change the level of the standard, or add an applicability cutoff, for the final rule.

12.0 POLLUTION PREVENTION STANDARD

Status at proposal. The proposed rule contained a pollution prevention alternative standard that would allow owners and operators the opportunity to comply with the standards by demonstrating reductions in the amount of HAP used per unit of product for a given process. The pollution prevention alternative standard consisted of two options. Under the first option, the owner or operator would be required to demonstrate an 85 percent reduction in the consumption of HAP. The second option would allow a 50 percent reduction in consumption combined with traditional emission controls to achieve an overall reduction equivalent to the 85 percent reduction specified under option 1. By demonstrating compliance with either of the pollution prevention options, an owner or operator would satisfy the requirements for all process vents, storage vessels, wastewater, equipment leaks, and heat exchanger systems associated with a PAI process unit.

12.1 FORMAT OF THE STANDARD

Comment 1: Two commenters, IV-D-16 and 20, asserted that the 85 percent reduction in HAP consumption factor should be changed to 75 percent for both pollution prevention options to be consistent with the Pharmaceutical MACT proposal.

Response: The 85 percent reduction was not changed in the final rule to be consistent with the value specified in the Pharmaceutical MACT standard because both values were developed using industry-specific data. The basis for the 85 percent reduction target is the overall nationwide reduction from uncontrolled emissions that is estimated as a result of the implementation of the standards in this industry. Although the required reduction "target" was calculated using the same methodology as that in the Pharmaceuticals MACT standard, the difference in numerical value is simply due to differences in the impact of the two rules on each

respective industry. For the PAI production industry, the standards achieve slightly greater reductions relative to the uncontrolled baseline, which is carried forward to the reduction target for the P2 alternative.

Comment 2: Commenter IV-G-03 stated that the mechanism to realize pollution prevention reductions must be maintained in a system that can be managed and provide data that regulated entities and EPA can use. The commenter asserted that States may not be prepared to support this regulation with the training requirements of their already overworked staffs.

Response: The Agency agrees with the commenter that the information necessary to demonstrate compliance with the pollution prevention alternative should be identified, collected, and managed in a way that minimizes burdens on both the industry and the regulatory agencies charged with enforcement. Therefore, the final rule requires sources seeking to comply with the P2 alternative to submit, as part of the Precompliance plan, a P2 demonstration summary that describes how the P2 alternative will be applied at the facilities, and what tracking mechanisms will be used to demonstrate compliance with the alternatives. This summary should include descriptions of how the facility will measure and record HAP consumption and production on a daily, monthly, and annual basis. The summary should also include appropriate documentation of how consumption will be tracked such as, but not limited to, operator log sheets, daily, monthly, and annual inventories of materials and products, and shipment and purchasing records. The P2 demonstration summary report allows the owner or operator some flexibility in deciding the most reasonable and efficient way to demonstrate compliance, while incorporating the regulatory agency's review and approval prerogative. Regarding the agency burden, the Agency believes that compliance with the P2 alternative may actually reduce much of the burden on the enforcement agency, in that the monitoring, reporting and recordkeeping burden will be reduced to a material tracking effort, potentially minimizing the amount of data needed to demonstrate continuous compliance (e.g., monitoring data) for an entire process.

Comment 3: Commenter IV-G-03 requested that EPA strengthen and encourage pollution prevention alternatives in lieu of command and control regulations. Several commenters, IV-D-01, IV-D-27, and IV-D-28, recommended allowing any combination of P2

and end-of-pipe controls to meet the required 85 percent reduction (or lower value, as noted in comment 1 above) for P2 because:

1. The requirements of option 2 would be impossible to achieve if less than 70 percent of the remaining HAP after P2 is in the air stream (even if it were all controlled). Also, if more than 90 percent control is needed, there is no incentive to use P2.

2. Implementing P2 practices that achieve less than 50 percent of required reductions in conjunction with add-on controls would bring overall removals to levels equal to or greater than that required by the standard.

3. Option 2 places unnecessary constraints on the type of control device that can be used to obtain required reductions, beyond that achieved by P2.

4. Proposed P2 is only viable if a fundamental change has occurred; sources should be allowed to take credit towards the conventional standards for more limited P2 activities.

5. If P2 achieves reduction of 65 to 85 percent, it would be impossible to achieve the additional requirement for 35 percent reduction from add-on controls.

6. Option 2 provides incentives for unsound environmental practices (destruction of recovered material instead of reuse).

Commenter IV-D-27 suggested allowing sources to comply with 90 percent of any applicable standard if at least 50 percent of the reductions are the result of P2, as an alternative to the above comment.

Response:. In response to the comments, EPA stresses that the P2 alternative is an alternative to the standards in the rule. As such, the Agency has flexibility in developing requirements that may provide alternative approaches for compliance, but is charged with preserving the reductions that would have been achieved through compliance with the standards themselves. Under Option 2, EPA required that a significant portion (50 percent) of the reductions be achieved using P2 techniques, not add-on controls. Without such a restriction, owners and operators could attempt to use add-on controls entirely in meeting the P2 target reductions, which might result in reductions that are less than those required by the standards.

For example, the process vent standard requires a 90 percent reduction in the HAP emissions from affected processes, not an 85 percent reduction.

In an effort to ensure the emission reductions from the P2 alternative are at least equivalent to the emission reductions achieved by the standards, the reduction target for the P2 consumption factor was linked to the predicted reductions from the nationwide uncontrolled emissions through implementation of the standards. It was always the Agency's intent that these reductions would be achieved primarily through P2 techniques. In recognition of the difficulties associated with achieving such high consumption reduction targets (85 percent), however, the Agency developed Option 2 to allow some of the reductions to be achieved using add-on controls. For these reasons, the Agency disagrees, in general, with the comments suggesting lesser reductions in both the overall target of 85 percent and the requirement that at least 50 percent of the reduction be attributed to the P2 alternative. However, the Agency agrees with the comments that option 2 as proposed is unworkable if the reduction achieved by P2 exceeds 50 percent of the required amount. For the final rule, option 2 was revised to require that *at least* 50 percent of the reduction be achieved using P2 and that the remainder of the 85 percent, however much is needed, to be achieved using conventional controls.

Secondly, the Agency stresses that the restrictions on the types of add-on controls allowed to be considered in addition to the P2 reductions in meeting the overall target are in place to guard against double-counting of emission reductions; for example, control via a technique that recycles HAP material back to the process is an environmentally beneficial technique and is encouraged. However, the recycling effect will also reduce the consumption of HAP; therefore, the recycling is already considered. To further reduce the consumption factor by the control achieved by the condenser would result in double counting of emissions.

12.2 POLLUTION PREVENTION FOR REACTANTS AND GENERATED HAP

Comment: Commenter IV-D-27 stated that P2 should be allowed for HAP generated in a process. Commenter IV-D-28 indicated that the rule was not clear on how to comply when the HAP generated in the process is the same as that introduced. Commenter IV-D-15 noted that these exclusions would prevent them from using P2 and suggested that the rule include TRE calculations like in the HON as a way to provide more cost-effective alternatives for processes

that are prohibitively expensive to control (i.e., that would exclude such processes from the requirements of the conventional standards).

Response: The Agency reviewed the language contained in the proposed standard and has revised it to capture the Agency's intent in restricting the use of the alternative in situations where HAP's are generated, without prohibiting its use altogether. The Agency's concern, in adding the restriction to the proposed standard, was that HAP generated in a process would not be addressed through the pollution prevention alternative because it requires only a reduction in the consumption of HAP that are actually brought into the process. Therefore, a situation could exist in which a process could be exempted from control because the production-indexed consumption factors were reduced by adequate amounts (85 percent), while a potentially significant amount of HAP, which happened to be generated in the process, could still be emitted. The EPA agrees with the commenter that sources that generate HAP should be eligible for the P2 standard, provided the HAP generated by the source are included in the analysis. Therefore, the final rule allows owners and operators to use the P2 alternative for processes that generate HAP that are not part of the production-indexed consumption factor (e.g., the HAP generated are different from the HAP brought into the process), provided the following conditions are met: (1) emissions of generated HAP are controlled to the levels required by the applicable provisions for storage vessels, process vents, wastewater, and equipment leaks; and (2) the P2 requirements are applied to the HAP that are added to the process. For the final rule, the definition of consumption has been revised to consider quantities of HAP that are generated by the process as well as those that are brought into the process, provided the HAP generated in the process is the same as one (or more) of the HAP added to the process.

A related issue is the tracking of the VOC consumption-indexed production factor and the proposed rule's requirement that this factor should not be increased as a result of pollution prevention. Although this issue was not specifically commented on, EPA also revised the language of the final rule regarding the production-indexed VOC consumption factor. In developing the pollution prevention alternative, EPA's intention was to recognize those processes that have reduced or will reduce the amount of HAP solvents used in the manufacture of PAI's as viable alternatives to add-on controls. By preventing affected sources from

increasing the production-indexed VOC consumption factor, EPA intended to prevent solvent substitutions that merely replaced HAP with VOC. After reviewing the proposed pollution prevention standard, EPA realized that the proposed standard gave an unfair advantage to affected sources that use VOC-HAP solvents as opposed to non-VOC-HAP solvents. As proposed, the rule did not allow affected sources using non-VOC-HAP solvents to switch to low-VOC solvents and still qualify under the pollution prevention alternative because such a switch would increase the production-indexed VOC consumption factor. However, affected sources that use VOC-HAP solvents could switch to low-VOC solvents as long as the production-indexed VOC consumption factor did not increase. The EPA's intention in the final rule is that pollution prevention be accomplished through reductions in solvent usage as opposed to solvent substitution. After consideration, EPA changed the final rule to require an equivalent reduction in the production-indexed VOC consumption factor, if the reduction in the production-indexed HAP consumption factor is achieved by reducing a HAP that is also a VOC. If the reduction in the production-indexed HAP consumption factor is achieved by reducing HAP that is not VOC, the consumption-indexed VOC factor may not be increased. In making these changes to the final rule, EPA essentially eliminated the possibility of receiving credit, through the pollution prevention alternative, for substituting VOC for HAP.

12.3 COMPLIANCE PROCEDURES

Comment: Commenter IV-D-28 stated that the P2 requirements have insufficient safeguards against cheating. As examples, the commenter suggested that a facility could: (1) claim a reduction for shutting down one process unit, (2) calculate current usage using detailed information while inflating baseline emissions by using conservative assumptions in the calculation, or (3) falsely assigning an inflated proportion of a site's historic emissions to a PAI process without detailed supporting data. Commenter IV-D-28 also asserted that toxic release inventory (TRI) data are not accurate enough to use for compliance determinations.

Response: As stated previously, the final rule requires owners and operators electing to use the P2 alternative standard to submit a plan for demonstrating compliance with the alternative. This plan must be reviewed and approved by the reviewing agency prior to the implementation of the standard. Claiming a reduction for shutting down a process would be

rejected because a facility must show either consumption reductions or emission reductions for a given process; consumption reductions on one process cannot be used to demonstrate compliance for a different process. Also, the Agency believes that TRI data can be used to set the baseline consumption factor if it can be linked to the process. The data contained in the TRI reports essentially provide a mass balance of TRI chemicals brought onsite or produced, and their environmental fates (air emissions, discharges to water, onsite or offsite destruction, etc.). However, because TRI data are reported from the facility as a whole, it may not be feasible to link data to individual processes, negating this approach for many facilities. The EPA also notes that TRI data have been allowed to demonstrate applicability with respect to synthetic minor status for other rules such as the HON. In any case, the regulatory agency will be charged with assessing the adequacy of the compliance method prior to approval.

12.4 RECORDKEEPING

Comment: Commenter IV-D-28 suggested that the rule allow at least a couple of weeks from the end of each 30-day period before the owner or operator has to complete the rolling average calculation.

Response: The EPA believes that it is important to determine if a violation has occurred as soon as possible. For the P2 alternative, compliance is determined by calculating the production-indexed consumption factors for operation over every 30 days for continuous processes and every 10 batches for batch processes. These calculated factors must be reported in the semiannual periodic reports, and each periodic report is due 60 days after the end of the applicable reporting period. The consumption and production data must be collected for each applicable 30-day or 10-batch period, but the calculations may be performed at any time prior to submission of the periodic report. However, a violation will be charged to all days in which the P2 factor was exceeded. Therefore, it is in the operator's best interest to discover an exceedance and correct the problem as soon as possible to minimize the number of days that are included in the period of violation.

12.5 BASELINE YEAR

Comment: Commenter IV-D-28 stated that the compliance options appear to reward "laggards" while penalizing companies that implemented pollution prevention early. A company that has not paid as much attention to pollution prevention may be able to comply by implementing only pollution prevention, whereas a company that implemented pollution prevention changes early may not have room for further improvement by pollution prevention and thus be forced to install expensive emission control equipment to comply with the standard.

Response: During the development of the standard, EPA considered 1987 to be the earliest year to set the baseline factor. The final rule has been revised to comprise a 3-year average beginning no earlier than 1987, or the first year the process was operating, if 3 years of data are not available, to account for sensitivity in data quality. The Agency notes that the P2 standard actually rewards people for making a noticeable improvement over time. For companies that have been proactive in minimizing wastes, including air emissions, from periods of time prior to 1987, and, as a result, may not be able to take advantage of the P2 alternative, the Agency believes that the rule also provides relief in the form of the cutoff based on controlled emissions that is contained in the final rule for process vents. The Agency also notes that the compliance date for the standard, in 2002, is approximately 15 years later than the 1987 baseline and should provide an adequate window for demonstrating reductions.

13.0 EMISSION AVERAGING

13.1 COMPLEXITY OF METHODOLOGY

Comment: Commenter IV-D-28 supported the concept of emissions averaging, but noted that the provisions are so complex and burdensome that many owners and operators may be deterred from using this option.

Response: The emissions averaging provisions provided in the proposed rule are identical to those included in the HON. Further, the requirements are necessarily complex because of the increased flexibility of the compliance approach provided by the provisions. As stated in the HON promulgation preamble discussion, the EPA's goal in crafting the emissions averaging provisions was to make emissions averaging available to sources faced with controlling emission points that are particularly difficult or costly to control, while maintaining the ability to demonstrate compliance with the standard.

13.2 RESTRICTIONS ON EMISSIONS AVERAGING

Comment 1: Commenters IV-D-16 and IV-D-27 suggested that EPA set a nominal control efficiency for combustion devices used for air emission control for storage tanks and/or wastewater at 98 percent. Commenter IV-D-27 asserted that EPA's wording in § 63.1362(k)(2) of the proposed rule inappropriately restricts sources equipped with controls listed in that section from generating emissions averaging credits.

Response: The Agency believes that the commenters would like to equate 98 percent control to the performance specifications provided in the proposed rule for combustion devices used for air emission control for storage tanks and/or wastewater sources. The Agency does not agree that a nominal 98 percent should be assigned to these devices. Although EPA did establish

these performance specifications, EPA maintains that testing is important to ensure that a control device can achieve the reported efficiency. For these reasons, EPA has required performance testing on combustion devices that control greater than 9.1 Mg/yr of HAP. Therefore, EPA will not allow credits based on a control efficiency that has not been demonstrated. Secondly, the provisions of § 63.1362(k)(2) incorrectly referred to the 98 percent and 95 percent control levels as "nominal" control efficiencies. These efficiencies must be demonstrated via performance testing and therefore should not be restricted from obtaining credits in emissions averaging. The final rule corrects this oversight.

Comment 2: Commenters IV-D-16 and IV-D-27 believe EPA should delete the restrictions that prohibit a source from calculating emission averaging credits for emission reductions achieved prior to November 15, 1990 or with equipment installed to comply with other State/Federal rules. The commenters believe these restrictions (1) are arbitrary, (2) are not dictated by the Act, (3) unfairly limit economic incentives and thus impose unreasonable costs, (4) penalize progressive companies, and (5) are inconsistent with procedures to develop the floor (i.e., emission points that would be excluded from emissions averaging are used in setting the standard). In addition, commenter IV-D-27 believes EPA's response to comments in the April 22, 1994 Federal Register notice on the HON are inadequate to justify the restriction.

Response: The Agency's policy on not allowing averaging of emission reductions for controls in place prior to the passage of the 1990 CAA amendments was explained in the April 22, 1994 Federal Register notice for the promulgated HON (59 FR 19426), and this rationale is still applicable. In general, the emissions averaging provisions are designed to provide an owner or operator with flexibility in designing a compliance strategy that optimizes the use of existing controls, rather than replacing them. However, the final rule does not allow credit for emissions reductions achieved by control devices installed before November 15, 1990 because EPA policy is that regulations must achieve additional reductions beyond what would have occurred in the absence of the amended Act. Emission reductions achieved by controls that were in place prior to November 15, 1990 would have occurred regardless of whether or not the CAA was amended. If the rule allowed a source to take credit for these preexisting emission reductions, the source could increase its emissions above the 1990 baseline levels. Regarding the

commenter's view that the restrictions penalize progressive companies, the Agency notes that, at least for process vents that meet the applicability criteria for 98 percent control, owners and operators who can demonstrate that controls achieving the MACT floor level of control (90 percent) were in place prior to the proposal date of these standards, are not required to achieve the higher efficiency requirement of 98 percent. In this manner, companies who have taken proactive measures to control emissions are actually rewarded. Additionally, the pollution prevention alternative standard also rewards facilities who have demonstrated significant reductions in their production-indexed consumption factors. Finally, these provisions have been included in numerous regulations beginning with the HON, and they have been reviewed and approved by OMB.

Comment 3: Commenters IV-D-16 and IV-D-27 objected to restrictions on emissions averaging for "new sources." The commenters disagreed with EPA's rationale in the preamble that this approach holds new sources to a stricter standard and that flexibility is unnecessary for new sources. The commenters argued that using emissions averaging is the more stringent approach because of the 10 percent discount factor that is applied to credits. Furthermore, the commenters stated that new sources also need flexibility to comply with the standard in the most economical and efficient manner; for example, if a new source is added to an existing facility there may be opportunities to route emissions from the new source to existing controls, or to overcontrol certain existing or new emission points to provide equal or greater environmental benefit at lower cost. Also, commenters believe this restriction unfairly limits economic incentives and imposes unreasonable costs.

Response: The EPA's policy on not allowing averaging of emission reductions for new sources was explained in the April 22, 1994 Federal Register notice for the promulgated HON (59 FR 19427), and this rationale is still applicable. As noted above, EPA designed emissions averaging provisions to provide existing sources with flexibility in achieving compliance. Instead of requiring the replacement of all existing controls that do not meet the level of the standard, the emissions averaging provisions allow an existing source to optimize the use of existing controls in the most economical and technically feasible fashion. The EPA maintains that this concern does not apply to new sources because the owner or operator of a new source

would be able to integrate state-of-the-art controls into the design of the new source. However, nothing in the rule prevents an owner or operator from routing emissions from a new PAI process unit to an existing control that meets the required control levels. Finally, as noted in the previous response, these provisions have been included in numerous regulations beginning with the HON, and they have been reviewed and approved by OMB.

Even if emissions averaging were allowed for new sources, certain other factors may limit its feasibility for new sources. For example, new sources are subject to PSD/NSR review that may require levels of control similar to those in the rule for new sources. In addition, because the level of stringency in the new source standards is high (98 percent), achieving credit above and beyond the 98 percent levels is probably unrealistic in most situations.

14.0 TESTING PROVISIONS

14.1 TESTING CONDITIONS

Status at Proposal: Under the proposed rule, inlet and/or outlet emissions testing on a control device would be required if the HAP load to the control device from all sources exceeded 10 tons/yr. This testing would be required under absolute, representative, or hypothetical peak-case conditions. Any device could be tested under absolute or hypothetical peak-case conditions; testing under representative conditions would be limited to thermal incinerators, wet scrubbers, and carbon adsorbers.

Absolute peak-case conditions were defined by any of three conditions: (1) the period in which the inlet to the control device contains at least 50 percent of the maximum HAP load capable of being vented to the control device over any 8-hour period, (2) a 1-hour period in which the inlet to the control device contains the highest HAP mass loading capable of being vented to the control device, or (3) for a condenser as the control device, the 1-hour period of time in which the gas stream capable of being vented to the condenser would require the maximum heat removal capacity to cool the stream sufficiently, based on calculations, to achieve the required removal efficiency. Hypothetical peak-case conditions would be simulated test conditions that contain the highest hourly HAP load predicted to be vented to the control device. For both absolute and hypothetical peak-case, the owner or operator would be required to develop an emissions profile to identify the appropriate time period, and the profile would be based on all streams vented to the control device, not just streams from PAI processes. The owner or operator would develop the emissions profile based on process knowledge, engineering analyses, or test data. Existing test data could be used, provided the data characterize current process vent stream conditions.

Representative peak-case conditions would be based on the 1-hour period that contains the highest HAP mass loading rate from a single process, or for a condenser, the 1-hour period in which the vent from a single process requires the maximum heat removal to cool the stream sufficiently to achieve the required removal efficiency. In both cases, testing would be conducted while that single process is venting, with or without simultaneous vents from other processes.

Compliance would be demonstrated based on the results of a single run for runs that exceed 1 hour, and three runs would be required if the duration of a run was less than 1 hour. The owner or operator would not be required to conduct test runs exceeding 8 hours, even if the duration of emissions from a process vent exceeded 8 hours.

Comment 1: Three commenters (IV-D-16, IV-D-20, and IV-D-27) requested that EPA simplify the performance testing requirements. Commenter IV-D-20 stated that the performance testing requirements for process vents must be simplified and aligned with the annual average survey data on which the standards are based. Commenters IV-D-16 and IV-D-27 found the "absolute," "representative," and "hypothetical" peak-case testing conditions in § 63.1364(b)(11)(ii) of the proposed rule to be extremely confusing. They suggested simplifying the provisions; commenter IV-D-27 provided the following language, and commenter IV-D-16 provided a slight variation:

Testing shall be performed under actual or simulated conditions (based on an emissions profile) that includes any of the following at a minimum:

(1) at least the 1-hour time period with the highest mass loading rate (or maximum heat removal requirement for condensers) of regulated pollutant to the control device, or

(2) the time period that contains at least 50 percent or the maximum mass loading rate (or maximum heat removal for condensers) of regulated pollutant vented to the control device over any 8-hour period.

Response: The Agency agrees that the wording in this portion of the proposed rule is confusing. Therefore, in the final rule, EPA has made several changes to the testing language that generally cover the commenter's suggested revisions, but also allow more flexibility in defining the peak-case. These changes include the elimination of the option to test under representative peak-case conditions and the elimination of testing requirements for condensers. Additionally, EPA has expanded the testing language to cover factors other than the highest HAP

load that also impair control efficiencies (i.e., the most challenging conditions for the control device). These other factors that limit control efficiencies relate to characteristics of components and the operating principles of the control devices. For example, the solubility of an emission stream component in scrubbing media, or the affinity of an emission stream component for carbon can also define the most challenging conditions for a particular control device. These changes are described in more detail in the responses to comments 2 and 3 in this section and to the response to comment 1 in section 14.5. The EPA is not sure what the commenter means by aligning the performance testing with annual average survey data; however, as discussed in responses to comments in sections 7.5 and 16.1, EPA does not believe the survey data are applicable only on an annual basis.

Comment 2: Commenter IV-D-28 believes the requirement to test under peak-case conditions should be deleted from the rule and replaced with a provision that allows testing under representative conditions. The commenter cited the following reasons: (1) the peak-case conditions might mistakenly be interpreted to mean they apply during startup, shutdown, and malfunction; (2) the validity of a performance test depends more on the operating conditions of the control device than on the operating conditions of the process; (3) other regulations have allowed testing under representative conditions; (4) planned production schedules may not produce the peak-case conditions before the deadline to demonstrate compliance, which would mean operating for a test at higher or lower production rates than demand would dictate; and (5) typically, the organic HAP reduction efficiency of a control device is fairly stable across a wide range of HAP concentrations. Alternatively, if the peak-case concept is retained in the final rule, the commenter recommends adding three provisions limiting the timing of testing. Specifically, the commenter seeks assurances that a facility would not be required to operate (1) at a rate, or in a manner, that could reasonably be expected to damage the process, control device, or monitoring system; (2) in a manner that would produce unmarketable product (i.e., does not meet customer specifications); or (3) at a rate that would produce product in excess of demand.

Response: The intent of compliance testing under peak-case conditions is to document the reduction efficiency of the control device under the most challenging conditions. This

documentation is necessary to assure compliance in cases where the process operations yield emission stream characteristics that may vary significantly over time, and where conditions approaching absolute peak-case may occur. Subsequent to the initial compliance test, continuous monitoring of operating parameters established during the test is a reasonable measure of continuous compliance with the efficiency requirement under all conditions. Presumably, the control device should function as well or better under conditions that are not as challenging.

Although EPA is sensitive to unnecessarily increasing the burden associated with testing of control devices for little benefit, the Agency still has concern that testing under "representative" conditions (where "representative" is defined either as in the proposed rule for representative peak-case or as a more general concept suggested by the commenter) may not be sufficient to demonstrate that the control device will achieve required efficiencies under all conditions. This is especially important as it relates to the continuous compliance demonstration provision. Therefore, the option to test under representative peak-case conditions has been eliminated for the final rule, and testing under representative conditions has not been added.

The final rule, however, does allow more flexibility in defining absolute and hypothetical peak-case conditions. The definition of absolute peak-case load in the final rule incorporates the possibility that conditions other than the highest HAP loading constitute the most challenging conditions for the device. These conditions include, but are not limited to, periods when the emissions to the device may contain the highest combined VOC and HAP load, periods when the streams contain HAP constituents that approach limits of solubility for scrubbers, or periods when the streams contain HAP that approach limits of adsorptivity for carbon systems.

The hypothetical peak-case conditions have also been expanded. In addition to establishing hypothetical peak-case testing conditions based on a calculation of maximum actual emissions, the final rule allows hypothetical peak-case conditions to be defined based on equipment design features that limit the maximum hourly emissions that can be routed to the control device. For example, a fan may limit the flowrate, and the concentration may be limited to a certain percentage of the lower explosive limit before a bypass valve opens.

The Agency does not believe that the testing provisions in the final rule require operation in a manner that could damage equipment, because the testing is only required for conditions that

have some reasonable likelihood of occurring. Thus, the design of the system should have considered the possibility of operating under these conditions.

Regarding the comment that the testing provisions should not require operation in a manner that produces excess or unmarketable product, or in a manner that will not occur within the time frame allotted prior to the compliance date, the Agency concedes that some inconvenience to the source may occur, but believes that in most situations, facilities will be able to work within the confines of the definitions to arrive at a set of testing conditions that minimize production disruptions. The EPA notes that the requirement for submittal of the site-specific test plan is also an opportunity for the facility to present site-specific information that may influence the selection of testing conditions. The EPA encourages owners and operators to work with the permitting agencies to arrive at solutions that meet the intent of this regulation.

Comment 3: Two commenters (IV-D-16 and IV-D-27) believe testing under representative peak-case should not be limited to only thermal incinerators, carbon adsorbers, and wet scrubbers.

Response: As discussed above, EPA has not allowed representative peak-case testing under any circumstances because the Agency believes that the initial compliance demonstration, which is used, in part, to set conditions for the continuous compliance demonstration, must be conducted at the most challenging conditions. Therefore, testing is required under absolute peak-case conditions or under simulated hypothetical peak-case conditions.

Comment 4: According to commenter IV-G-03, peak-case conditions that are not relevant to an 8-hour or 1-hour condition need to be addressed.

Response: As described above, the final rule requires that control devices used to control emissions from batch operations must be conducted under either absolute or hypothetical peak-case conditions. These peak-case conditions are identified based on the results of an emissions profile. All sources of emissions to the control device, including scheduling restrictions, are considered in the emissions profile; alternatively, limitations of the equipment are identified. From the emissions profile, the 1-hour or 8-hour period that defines the peak-case conditions is determined. Thus, by definition, peak-case conditions are relevant to 1-hour or 8-hour periods.

If the most challenging conditions are not based on the highest load, the emissions profile and the peak-case conditions are still determined over hourly periods.

14.2 TEST PLAN

Comment: Commenter IV-D-28 believes that preparation of a site-specific test plan is unduly burdensome, produces no discernible benefit, and should not be required. Therefore, Table 1 also should indicate that § 63.7(c) of the General Provisions is not applicable.

Response: All section 112 MACT standards require the owner or operator to develop a site-specific test plan in accordance with § 63.7(c) of the General Provisions. In the PAI rule EPA requires that this site-specific plan be submitted. The test plan is needed because of the complexity of identifying the most challenging conditions for testing.

14.3 EMISSION PROFILE

Comment 1: Section 63.1364(b)(11)(iii) of the proposed rule specified how to develop an emission profile. One sentence in that section was the following: "Previous test results may be used provided the results are still relevant to the current process vent stream conditions." Commenter IV-D-28 requested that the phrase "with or without adjustment" be added to the end of that sentence.

Response: Generally, the Agency's position regarding the requirement of testing under the most challenging conditions will not allow the use of data that have been collected under test conditions that do not meet those specified in the final rule. However, if the conditions under which the testing was originally conducted represent more challenging conditions than the current operation, the rule provides a mechanism for owners and operators to extrapolate the results of the initial test down to current operations, provided the methodology is presented in the Precompliance plan and approved.

Comment 2: According to two commenters (IV-D-16 and IV-D-27), the rule should state that development of an emission profile is not required if testing will be performed over the duration of a complete batch cycle.

Response: An emission profile is needed to identify the period of time that constitutes the most challenging conditions for the control device. The content of the emission profile will

vary depending on the circumstances. The most straightforward control scenario is one in which a control device is dedicated to vent streams from a single process, and a test run can encompass all of the emission events that are vented to the control device. For this situation, an acceptable emission profile would describe the situation and explain how it meets at least one of the criteria that define the absolute peak-case conditions. This simplified approach would not be acceptable if streams from multiple processes are routed to the control device, even if the test were to be conducted over the duration of the batch.

14.4 TEST DURATION

Comment: Several commenters (IV-D-16, IV-D-27, and IV-D-28) requested clarification of the test duration requirements in §§ 63.1364(b)(11)(iv) and (v) of the proposed rule. Commenters IV-D-16 and IV-D-27 stated that for continuous process vents, sources should be allowed to test for longer than 1 hour per run, and commenter IV-D-28 asked for clarification of this provision because it sounds as if three runs must be conducted in the same period of 1 hour or less. These two commenters also stated that for batch process vents, sources should be allowed to test for the entire length of a batch, even if it is longer than 8 hours. Similarly, commenter IV-D-28 requested that EPA revise the language of the provision for batch process vents to indicate that sources are not required to test for more than 8 hours per run, but that they are not prohibited from conducting longer tests. Commenter IV-D-28 requested clarification that the 8 hours of testing applies only to vents from batch processes, not continuous processes. Commenter IV-D-28 also requested that EPA edit the phrase ". . . process vents of duration . . ." because it is the emission episode, not the vent, that has a duration.

Response: The final rule requires that three test runs with a minimum duration of 1-hour each be conducted during the initial compliance demonstration. For consistency, each run must be conducted over the same set of conditions.

14.5 CLARIFICATIONS

Comment 1: Commenters IV-D-16 and IV-D-27 requested clarification of the ways to characterize the various peak conditions for condensers. They noted that in §§ 63.1364(b)(11)(ii)(A) and (B) of the proposed rule absolute and representative peak-case conditions for condensers are based on the maximum heat load, rather than the HAP load, that is

used to define these conditions for other types of control devices. However, in § 63.1364(b)(11)(ii)(C) of the proposed rule, hypothetical peak-case for all control devices is only based on the HAP load. The commenters believe maximum heat load should be used to characterize hypothetical peak-case for condensers.

Response: The commenters identified an oversight in the proposed rule. However, rather than implement the change the commenters requested, EPA has decided, for other reasons, to delete the requirement to identify the period of maximum heat removal in an emissions profile for absolute peak-case conditions (and as noted above, the final rule does not allow testing under representative peak-case conditions). See the response to the comment in section 15.2.5 for a discussion of the initial compliance procedures specified in the final rule for condensers.

Comment 2: Commenters IV-D-16 and IV-D-27 requested that EPA modify the language in the testing conditions section of the rule to clarify that use of the terms "HAP load" and "HAP concentration" means the specific class of HAP (either organic HAP or HCl/Cl_2) for which the performance test is conducted.

Response: Section 63.1365(b)(11) in the final rule includes a statement specifying that the term "HAP mass loading," as used in that section, refers to the class of HAP that the control device is intended to control. As a result of the revisions to the provisions for condensers (see section 15.2.5), the term "HAP concentration" is not used in § 63.1365(b)(11) of the final rule.

Comment 3: Commenter IV-D-28 requested clarification of the phrase "capable of being vented" in the description of maximum HAP loads for absolute peak-case in §§ 63.1364(b)(11)(ii)(A)(2) and (3) of the proposed rule. The commenter speculated that it could mean legal limits, maximum production, abnormal venting during a malfunction, hypothetical scenarios, or control device capacity.

Response: The intent of the phrase "capable of being vented" is that the absolute peak-case conditions are to be based on the most challenging conditions for the control device. The emissions profile is to be used to determine and document these conditions, and in developing the emissions profile the owner or operator may consider factors such as legal limits, maximum production rates, hypothetical scenarios, and/or control device capacity. All of these factors are related to production scheduling. Therefore, the final rule clarifies the description of absolute

peak-case by specifying that the emission profile for absolute peak-case is to consider production scheduling. The most challenging conditions for absolute peak-case conditions are not based on "abnormal venting during a malfunction" because the emission limitations do not apply during periods of malfunction. In § 63.1365(b)(11)(i) of the final rule, the phrase "capable of being vented" has been changed to "that may be vented."

Comment 4: Commenter IV-D-28 believes the testing requirements are covered so completely in § 63.1364 of the proposed rule that there seems to be no need to say § 63.7(e)(3) of the General Provisions is also applicable. If anything from § 63.7(e)(3) not yet in § 63.1364 is needed, the commenter suggests that the rule more precisely identify it.

Response: Section 63.7(e)(3) of the General Provisions contains additional requirements for test data reduction that are not completely covered in § 63.1364 of the regulation. The Agency commonly references various portions of the General Provisions without re-writing the contents of each reference verbatim in the regulation. Therefore, the final rule retains a reference to the applicable portions of the General Provisions.

Comment 5: Section 63.134(b) of the proposed rule would require that Methods 2, 2A, 2C, 2D, 3, and 4 be performed twice during each test period. Commenter IV-D-28 asked why this provision is necessary.

Response: For the final rule this provision was deleted to be consistent with the sampling times in Appendix A of 40 CFR Part 60.

Comment 6: Commenter IV-D-28 requested that the rule not require the use of specific units except when necessary. For example, in § 63.1364(b)(11), the commenter indicated that there is no reason to require that maximum heat removal, mass loading rates, and duration be expressed only in kilowatts, kg/hr, and hours, respectively.

Response: The Agency agrees with the commenter that many of the quantities that an owner or operator is required to calculate (such as mass loading rate) do not need to be expressed in only one set of units. The Agency has modified the final rule where appropriate to allow owners or operators the option to choose the specific units that they want to use, and that are acceptable to the implementing agency.

15.0 INITIAL COMPLIANCE DEMONSTRATIONS

15.1 GENERAL

Comment 1: Commenter IV-D-28 believes that an owner or operator should be allowed to deem a stream to be a Group 1 stream, and that for such streams there should be no requirement to calculate, estimate, or otherwise determine Group status.

Response: Since proposal, EPA re-examined the procedures for determining Group 1 process vents, storage vessels, and wastewater streams. The proposed rule would allow owners or operators to designate a wastewater stream to be a Group 1 stream, and this provision is retained in the final rule. As a result of the review, EPA changed the final rule to allow owners and operators the option to designate any storage vessel as a Group 1 storage vessel, but determined there is no reason to designate Group 1 process vents. Rationale for the decisions regarding storage vessels and process vents are described in the remainder of this response.

For storage vessels, Group status is required for determining applicability of the standard, and it is used in emissions averaging. As noted in chapter 8, the applicability cutoffs for the storage vessel standard have been changed from both the annual mass emissions and tank size under the proposed rule to both the maximum true vapor pressure and tank size under the final rule. These characteristics are also used to determine Group status. Designating that a storage vessel stores material with a maximum true vapor pressure above the applicability cutoff (or below the size cutoff) is acceptable because it results in control that is equal to or more stringent than the standard and has no impact on emissions averaging calculations. Thus, the final rule allows an owner or operator to designate a storage vessel as a Group 1 storage vessel, but the owner or operator may still need to determine the maximum true vapor pressure for a compliance demonstration. For example, if the owner or operator conducts a design evaluation or controls

emissions from the storage vessel with a condenser, the owner or operator may elect to use the maximum true vapor pressure in emissions calculations.

Determining Group status for process vents is needed only to identify Group 1 process vents for which debits must be calculated; it is not needed to comply with the regular standard. To determine Group status, the owner or operator must calculate the uncontrolled emissions from all process vents within a process. Because this same information is needed to calculate debits for emissions averaging, designating process vents does not reduce the burden to comply with the emissions averaging provisions. However, there are situations for which the owner or operator would not be required to calculate uncontrolled emissions as part of the compliance procedures. For example, uncontrolled emissions are not needed if the owner or operator complies with the alternative standard; thus, this compliance procedure has the same effect as designating the vents as Group 1 process vents.

Comment 2: Commenter IV-D-18 believes the regulation should include compliance procedures for catalytic incinerators. The commenter indicated that the design evaluation would include a minimum temperature requirement for the destruction efficiency, the stream's flow rate, and a minimum residence time.

Response: Catalytic incineration is a viable control option for the PAI production industry, just as it is for the synthetic organic chemicals, pharmaceuticals, and other industries. The rules that apply to these other industries include design evaluation criteria (and monitoring criteria) for catalytic incinerators. To be consistent, these criteria have also been added to the final PAI rule,

Comment 3: Commenters IV-D-18 and IV-D-28 addressed the provision in § 63.1364(c)(3)(ii)(B) of the proposed rule that requires an owner or operator to correct the outlet TOC emissions to 3 percent oxygen. Commenter IV-D-18 disagrees with this provision because many thermal and catalytic incinerators properly operate with higher oxygen levels in the exhaust stream. Therefore, this commenter believes that the measured outlet concentration of TOC should be corrected to the design oxygen content in the outlet stream. Commenter IV-D-28 stated that § 63.1364(c)(3)(ii)(B) should require concentration corrections to 3 percent oxygen only for combustion devices.

Response: The general provisions prohibit the use of dilution as a means of achieving compliance with a standard (see 40 CFR 63.4(b), Circumvention). However, EPA also recognizes that there are valid reasons for introducing air or inert gases into manifolds for safety or design considerations. For example, supplemental combustion air may be required for proper operation of an incinerator. The intent of the proposed requirement for correction to 3 percent oxygen was to allow an owner or operator to add supplemental combustion air, but only take credit for the amount that is needed for proper operation. As one commenter noted, this correction was not intended to apply to other types of control devices.

The correction to 3 percent oxygen concentrations was drawn from the HON and the earlier SOCMI NSPS. Under these rules, this correction is required for purposes of demonstrating compliance with a 20 ppmv outlet concentration standard. The value of 3 percent originates from good engineering practices. For oxygen deficient streams, if the proper amount of supplemental combustion air is added, the outlet stream would contain approximately 3 percent oxygen. Typically, SOCMI facilities have low oxygen, high VOC/HAP concentration streams that generally require supplemental combustion air when they are combusted. Therefore, a correction to prevent dilution was needed in rules for the SOCMI industry.

A similar requirement to correct the outlet concentration was included in the Polymer Manufacturing NSPS. Commenters on the proposed NSPS asserted that an oxygen correction may be appropriate for oxygen deficient streams to which supplemental combustion air is added to ensure combustion of the emissions, but it is not appropriate for high oxygen, low VOC concentration streams. The commenters on the proposed NSPS further stated that requiring an oxygen correction for processes with inherently high oxygen concentrations would prevent facilities from being able to use the 20 ppmv outlet concentration compliance option. Because at some point the combination of low VOC/HAP concentration and technology limitations of control devices makes it impossible to achieve a high percentage reduction (98 percent in the case of the Polymers NSPS), the 20 ppmv outlet concentration may be the only compliance option for some streams. As a result of considering these comments, the final rule for the Polymer NSPS was changed to require a correction to 3 percent oxygen only if supplemental air was used to combust emissions.

Other available information indicates that for some pharmaceuticals processes, dilution is needed for safety or design considerations other than for use as supplemental combustion air. Typically, this dilution occurs in manifolds conveying emission streams from unit operations that already have high oxygen concentrations, and it occurs for control devices other than incinerators. Although EPA does not have similar information for the PAI production industry, the information from the surveyed plants supports the commenters contention that there are process vent streams with high oxygen concentrations. It is also possible that some of these streams are diluted for reasons other than to supply supplemental combustion air.

It is not EPA's intent to prohibit the introduction of dilution air or other gases, only to ensure that outlet concentrations are corrected for such dilution. As a result, EPA made a number of changes in the requirement to correct outlet concentrations to prevent dilution. First, a definition of "supplemental gases" has been added to the final rule; this term includes any nonaffected streams that contain less than 20 ppmv TOC and less than 20 ppmv HCl/Cl_2 that are combined with affected streams. Second, the final rule clarifies that the correction to 3 percent oxygen applies only for incinerators, and only if supplemental gases are added. Third, the final rule explicitly describes procedures to correct for dilution in noncombustion devices.

Comment 4: Three commenters addressed the issue of compliance procedures when the control device is in compliance with RCRA provisions. Commenter IV-D-27 believes the rule should specifically state that test methods and compliance provisions under RCRA can be followed instead of the corresponding provisions in this rule for air emissions and/or wastewater routed to RCRA incinerators covered under 40 CFR part 264, subpart O or 40 CFR part 265, subpart O (40 CFR 264/265 subpart O). Commenter IV-D-16 echoed this position for wastewater and associated residuals and air emissions. According to commenter IV-D-27, this change would avoid overlapping or contradictory requirements. Commenter IV-D-16 requested the change because the cross-referenced sections of the HON provide exemptions from performance testing for other types of units (e.g., BIFs), but do not mention RCRA incinerators. Commenter IV-G-05 asked if an affected source that conducts a trial burn to demonstrate compliance with RCRA regulations can use this same demonstration to comply with the performance testing requirements of the PAI NESHAP.

Response: Under the proposed rule, the owner or operator would be exempt from the requirement to conduct performance tests to demonstrate compliance with the process vent and storage tank standards if the emission streams are vented to a RCRA control device. Specifically, the exemption would apply for hazardous waste incinerators subject to subpart O and boilers and process heaters subject to subpart H. The cross-referenced wastewater provisions in § 63.138(h) of the HON would exempt an owner or operator from design evaluation and performance test requirements (as well as monitoring requirements, and associated recordkeeping and reporting requirements) for wastewater and residuals treated in RCRA incinerators, boilers, process heaters, and underground injection wells. In addition, cross-referenced provisions for wastewater vent streams in § 63.139(d)(4) of the HON are identical to the provisions described above for process vents and storage tanks, except that they exempt the owner or operator from design evaluations as well as the performance test requirements.

All of the provisions in the proposed rule have been retained in the final rule. In addition, to be consistent with other standards, the final rule exempts an owner or operator from all initial compliance requirements (i.e., emission calculations and design evaluations as well as performance tests) for process vents and storage tank vents controlled by a RCRA unit. After making this change, EPA believes that the initial compliance provisions in the final rule are consistent with the concepts requested by the commenters. Similar comments for monitoring, recordkeeping, and reporting provisions are discussed in sections 16.10, 17.8, and 18.8, respectively.

Comment 5: If a facility is using a combustion control device that is capable of burning liquids, commenters IV-D-21 and IV-D-29 recommended that EPA allow initial compliance demonstrations based on a metered liquid performance test. According to the commenters, this approach would be more consistent with the data provided by the industry in response to the section 114 information request and used to develop the MACT floor. They also note that it would be a way to streamline the compliance process at lower cost to the facilities.

Response: The EPA rejects the commenters suggestion. The final rule requires that testing be conducted under the most challenging conditions for the control device, which are intended to be either the highest hourly HAP load (in vapor phase), or, if the most challenging

condition is not defined by load, other challenging conditions (such as component solubility for liquid scrubbers or affinity for carbon). Unless the owner or operator can demonstrate that a test conducted under conditions in which liquid waste is metered represents the most challenging conditions for a control device, it may not be used for a compliance determination.

A metered liquid test would not be consistent with the MACT floor determination. As for many standards, the MACT floor was determined based on reported control efficiencies from surveyed facilities in the industry. The surveyed facilities based reported control efficiencies on a variety of information. At most, the reported process vent control efficiencies for only two processes at one facility were based on the results of a metered liquid test. These reported values were comparable with those for hazardous waste destruction efficiencies in a RCRA incinerator. However, for the MACT floor analysis, EPA considered the efficiencies to be only 98 percent. Based on historical data, this is a typical value for a well designed and operated combustion-based control device. Even if this value is still high, it would be only slightly high, and the difference would not affect the MACT floor determination.

15.2 INITIAL COMPLIANCE WITH PROCESS VENT STANDARDS

15.2.1 Emission Estimation Calculations

Status at Proposal: The proposed rule included equations for calculating emissions from five types of emissions episodes: vapor displacement, purging, heating, depressurization, and vacuum systems. Alternatively, if the owner or operator could demonstrate that the proposed methods were inappropriate, the proposed rule specified that an owner or operator conduct an engineering assessment to estimate emissions. The proposed rule stated that the specified equations would be considered inappropriate if either of two criteria are met: (1) if available test data and the estimated value differ by more than 20 percent, or (2) the owner or operator developed any other means to show the equations are not appropriate for a given batch emissions episode.

Comment 1: One commenter (IV-D-14) believes facilities should be allowed to calculate emissions based on all available information, including, but not limited to, the equations in the proposed rule, and they should not have to demonstrate that the equations in the rule are inappropriate. According to the commenter, it is not logical to require facilities that produce a

variety of products, only a small portion of which are PAI's, to modify their calculation methodology; nor is it logical to require recalculation on a large scale when the existing emissions estimates are based on fundamentally sound principles. The commenter also noted that facilities may already have invested significant resources to develop methodologies for calculating emissions.

Another commenter (IV-D-28) had several comments on the provisions for estimating emissions if the emission estimation equations are inappropriate. First, the commenter requests clarification of the statement that specifies the emission estimation equations shall be considered inappropriate if certain criteria are met because it could have several interpretations. For example, the commenter suggested it could mean "not applicable for any one equation," "not met for any equation at all," or "not met for every equation at the same time." Second, the commenter supports the provision that allows any method of demonstrating the emission estimation equations are inappropriate. Finally, the commenter noted that the concept that the emissions estimation equations are inappropriate if there is a greater than 20 percent discrepancy between a test value and the calculated value was also used in the P&R I and P&R IV rules, which are in litigation. If the litigation results in changes to this concept, the commenter believes EPA should take comment on incorporating the same changes into this rule.

Response: For the final rule EPA did not change the requirement to use equations to estimate emissions when the emission episodes fit the descriptions provided in the rule. The EPA believes that the equations in the rule are the most appropriate methods to estimate emissions from seven specific types of emission episodes. The requirement to use the equations, when appropriate, also is important in standardizing compliance procedures for the industry and in providing replicable procedures which the regulated community and EPA can follow to assure compliance. However, the rule also allows owners or operators to request approval to use alternatives for estimating emissions. The EPA believes it is important that the owner or operator be able to make a case for any alternative approach. Finally, as noted in the response to comment 1 in section 15.1, there are situations where uncontrolled emissions do not have to be estimated.

To clarify when an engineering assessment *must* be conducted and when it *may* be conducted, § 63.1365(c)(2)(ii) of the final rule has been changed to read as follows:

(ii) Engineering assessments. The owner or operator shall conduct an engineering assessment to determine uncontrolled HAP emissions for each emission episode that is not due to vapor displacement, purging, heating, depressurization, vacuum operations, gas evolution, or air drying. For a given emission episode caused by any one of these seven types of activities, the owner or operator also may request approval to determine uncontrolled HAP emissions based on an engineering assessment. All data, assumptions, and procedures used in an engineering assessment shall be documented in the Precompliance plan in accordance with § 63.1367(b). An engineering assessment includes, but is not limited to, the information and procedures described in paragraphs (c)(2)(ii)(A) through (D) of this section.

(A) Test results, provided the tests are representative of current operating practices at the process unit. If test data show a greater than 20 percent discrepancy between the test value and the estimated value, the owner or operator may estimate emissions based on the test data; the results of the engineering assessment shall be included in the Notification of Compliance Status report, not the Precompliance plan.

The information and procedures in subparagraphs (B) through (D) are the same as in the proposed rule. (Note that equations for gas evolution and air drying have been added since proposal. Also, the second criterion from the proposed rule has been deleted from the final rule because it is redundant. Note that nothing in the rule prohibits an owner or operator from requesting approval for any alternative method, but only the 20 percent discrepancy criterion is "preapproved.") Following a decision concerning the litigation on other rules that contain the concept that test data may be used if there is more than a 20 percent discrepancy between a test value and a calculated value, EPA will determine if any changes to the final rule are necessary and determine the procedure for implementing any such changes.

Comment 2: Commenter IV-D-28 requested clarification of the requirements for calculating emissions from vacuum systems. The proposed rule states that emissions from vacuum systems "may be calculated if the air leakage rate is known or can be approximated, using Equation 11." According to the commenter, this could be interpreted to mean that emissions from vacuum systems do not have to be calculated, but if that is true, it is not clear what would be required. The commenter also asked what an owner or operator is supposed to do if the air leakage rate is not known or cannot be approximated.

Response: For the final rule this provision has been simplified to state that "emissions from vacuum systems shall be calculated using Equation 24." The revised statement is more consistent with the statements associated with equations for the other types of emission episodes. The owner or operator is responsible for determining how to estimate the value for this variable, just as the owner or operator is responsible for determining the temperature or volume to use in other equations.

Comment 3: For purge streams with flow rates greater than 100 scfm, commenter IV-D-28 believes an owner or operator should not be required to assume the mole fraction is 25 percent of the saturated value if they have data or have conducted an engineering assessment to support another value. The commenter also recommended that EPA consider adding an assumed value (and allow the use of test data or engineering assessments) for situations where the purge is beneath the liquid level; below the contact area of a scrubber, absorber, or distillation column; or another location with sufficient liquid/vapor contact.

Response: The proposed and final rules acknowledge that emission episodes may arise that are not covered by the equations provided in the rule or where the assumptions used to develop the equations do not apply. Under these circumstances the rule allows the owner or operator to calculate uncontrolled emissions by conducting an engineering assessment. For example, if an owner or operator has information to support a different mole fraction than the default of 25 percent, the owner or operator may submit an engineering assessment in the Precompliance plan requesting approval to use the alternative value. The Agency decided not to include an equation for the sparging situations described by the commenter because these are likely to be site-specific events that do not easily lend themselves to a generalized equation.

Comment 4: Commenter IV-D-28 believes EPA needs to clarify the procedures for demonstrating compliance when PAI and non-PAI emissions are combined prior to control. If the PAI contribution to the combined emission streams entering a control device is small, the commenter wants to know how to demonstrate that the control device achieves the required reduction for the HAP from the PAI process, not the other process(es). To address this issue, the commenter suggested adding provisions similar to those in the distillation NSPS (subpart NNN). As a related point, the commenter stated that the rule should specify how to determine the

uncontrolled emissions if PAI and non-PAI emissions are combined prior to the final recovery device.

Response: The distillation NSPS specifies procedures for establishing sampling sites and determining outlet emissions when both nondistillation and distillation vent streams are combined before a recovery device. There are two inlet sampling sites–one in the distillation vent stream prior to the combination and the second in the combined stream. The concentration at the second site is used with the outlet concentration to determine the efficiency of the recovery device. This value is applied to the concentration from the sampling site in the distillation vent stream to determine the outlet emissions associated with that specific stream.

Under the proposed rule, the owner or operator would demonstrate compliance with the percent reduction format of the standard by first using the specified equations or an engineering assessment to determine the uncontrolled emissions from each emission episode. These values are equivalent to the emissions based on testing at the sampling site in the distillation vent stream under subpart NNN. For large control devices, the owner or operator would then determine the efficiency based on testing at the inlet and outlet of the control device. The "inlet" in this case would be after all streams to be controlled are combined. Thus, if streams are mixed before a control device, the performance of the device is evaluated over the mixture. The resulting efficiency, which is based on the most challenging conditions, regardless of whether they are due to the PAI vent stream or other vent streams, would then be applied to the uncontrolled emissions from individual emission episodes to determine the outlet emissions associated with those episodes. Although the language in the proposed rule differed from subpart NNN, EPA believes the effect is the same. Therefore, the procedures in the proposed rule have been retained in the final rule.

The concept of recovery devices for process vent streams has been deleted from the final rule; the reasons for this change are described in responses to the comment in section 3.4 and the response to comment 4 in section 5.2. As a result, estimating uncontrolled emissions prior to a recovery device is not an issue under the final rule. The final rule does retain the concept of process condensers. However, by definition, a process condenser is an integral part of a process, which means it would not receive combined streams from multiple processes.

15.2.2 Compliance with Outlet TOC Limit

Comment 1: Three commenters (IV-D-16, IV-D-27, and IV-D-28) believe EPA should justify why a performance test to demonstrate compliance with the outlet TOC concentration under § 63.1364(c)(1)(viii) of the proposed rule must be conducted only under absolute peak-case conditions. Commenters IV-D-27 and IV-D-28 also believe this section unnecessarily restricts the choice of test methods that may be used to demonstrate compliance with the outlet TOC concentration. Both commenters requested that this section be modified to allow combinations of test methods to measure TOC, consistent with § 63.1364(b)(6). Commenter IV-D-27 also requested that this section be modified to allow measurement of total organic HAP using Method 18.

Response: The final rule has been modified to include two options for demonstrating compliance with the outlet TOC concentration: (1) continuously monitor outlet concentration using an FID or other device; or(2) perform an initial performance test at absolute or hypothetical peak-case conditions and continuously monitor operating parameter levels to demonstrate continuous compliance with outlet TOC concentration. Initial testing at the absolute or hypothetical peak-case conditions is not necessary for Option 1 because continuous compliance is determined through the use of an FID or other device that continuously monitors outlet concentration (however, if the monitor is to be calibrated on the predominant HAP, it may be necessary to perform an initial test to identify the HAP). Conversely, EPA believes testing under the absolute or hypothetical peak-case conditions is necessary for the second option to ensure that operating parameter levels are established that will ensure compliance under all operating conditions. The monitoring requirements for Option 2 are the same as the monitoring requirements for complying with the percentage reduction format of the standard. Therefore, EPA believes the initial testing that is used to establish the monitoring parameters should also be the same in both cases.

Finally, EPA has modified the final rule so as not to restrict the choice of methods that the owner or operator may use to determine TOC (i.e., Method 18 is allowed for speciation). However, EPA emphasizes that the concentration limit is based only on TOC, not total organic HAP.

15.2.3 Exemption from Performance Testing

Comment 1: The provisions in §§ 63.1364(c)(5)(i) and (d)(5)(iii) of the proposed rule would exempt a facility from the requirement to conduct a performance test if a previous test was conducted using the same procedures. Three commenters (IV-D-21, IV-D-28, and IV-D-29) believe these provisions are useless because it is unlikely that a previous performance test would have been conducted using the same procedures and under the same peak-case conditions. Commenter IV-D-28 believes that any test conducted on the subject control device to demonstrate compliance under any EPA-supervised program (e.g., NSPS, NESHAP, RCRA, new source review) should be sufficient to demonstrate compliance with this regulation. Furthermore, this commenter stated that a shared control device should not be subject to multiple compliance demonstrations; one should be sufficient to show compliance with all standards. Commenter IV-D-29 suggested adding another option in § 63.1364(b)(11)(ii) which provides for an alternative site-specific test and/or design evaluation plan developed by the company for the following situations: (1) when batch process units share common abatement with continuous process units (because batch emissions cannot be separated from continuous emissions), (2) for batch processes which campaign different products with different HAP that use the same equipment (perhaps even with years between production runs), or (3) for batch processes which have unique circumstances where the prescribed methods in § 63.1364(b)(11)(ii)(A) through (C) are not feasible.

Response: The Agency maintains that performance testing under peak-case conditions is necessary to ensure compliance over a range of conditions, especially when variability in emission stream characteristics cannot be predetermined. If a test was not conducted under the specified peak-case conditions, it does not provide assurance that the required level of control can be met under such situations.

The EPA also is not convinced that there are circumstances under which it would be necessary to allow an alternative to testing under peak-case conditions. As noted in section 14.1 of this document, the final rule allows testing under absolute or hypothetical peak-case conditions, and these conditions are established based on an emissions profile. The final rule also provides several options for developing the emissions profile. The goal is to identify the

most challenging conditions that the control device will encounter, regardless of the emissions source. Thus, manifolding batch and continuous process vents is acceptable; the batch emissions do not have to be evaluated separately. Also, the approach can accommodate different batch processes operating at different times with different HAP. Even if the owner or operator determines that the most challenging conditions only occur for a process that is run infrequently and at a time that is not convenient for testing, the owner or operator may simulate conditions for the test that are similar to (or more challenging than) the actual most challenging conditions (i.e., test under hypothetical peak-case conditions). Thus, the final rule was not changed to incorporate the commenters suggestions.

Comment 2: Commenter IV-D-28 supports the provision that allows initial compliance demonstrations for small control devices to be based on design evaluations, but three commenters (IV-D-14, IV-D-16, and IV-D-27) requested changes in the cutoff that defines the minimum size of a control device for which a performance test must be conducted to demonstrate compliance. Commenters IV-D-16 and IV-D-27 recommended that the cutoff be changed from "greater than 10 ton/yr of HAP" to "greater than 10 ton/yr of any individual HAP or greater than 25 ton/yr of aggregated HAP" because this would be consistent with rationale in the Basis and Purpose document, which is that this criterion is based on the application of the major source cutoffs. These two commenters also believe the rule should be clarified to indicate that the cutoffs are for the class of pollutant for which the performance test is being conducted (i.e., organic HAP or HCl/Cl_2); this clarification is needed to avoid the situation where a performance test would be required to demonstrate control of a negligible amount of organic HAP simply because the quantity of HCl present is above the cutoff. Commenter IV-D-14 believes the proposed cutoff should apply only to HAP emissions from PAI processes if the control device is used to control emissions from both PAI processes and other types of processes.

Response: The EPA continues to believe that the testing cutoff for control devices is proper. In developing the regulation, EPA could have required testing for all control devices. However, EPA proposed the testing cutoff to decrease the testing burden on the industry. For devices handling lesser loads, EPA believes that the design evaluation will be adequate to demonstrate compliance.

The applicability cutoff for performance testing applies to the inlet stream to the control device, regardless of the amount from PAI manufacturing contributing to the total emissions or the type of HAP (i.e., organic HAP or HCl/Cl_2) . The intent of the cutoff is to identify larger emissions sources where PAI and other emission occur, not only what is emitted from the source category. However, if both organic HAP and HCl/Cl_2 emissions are vented to a control device, the owner or operator is only required to conduct a performance test for the class of pollutant that the control device is being used to control. To clarify this point, the final rule states that the owner or operator may assume the control efficiency of HCl/Cl_2 to be zero percent if the control device is intended to reduce only organic emissions and vice versa.

15.2.4 Provisions for Flares

Comment: Section 63.1364(c)(4)(v) of the proposed rule would exempt an owner or operator from an initial compliance test for a flare that complies with the criteria in § 63.11(b) of the General Provisions. Commenter IV-D-28 questioned whether this provision requires an initial compliance demonstration when the control device is a flare. According to the commenter, this provision could be interpreted to mean that if the flare ever fails to meet the criteria in § 63.11(b) that a performance test would have been required for initial compliance, which would not be appropriate for flares anytime, and also would be an unfair retroactive violation. The commenter notes that this provision also refers to the performance criteria for a flare in the General Provisions. However, the commenter believes the General Provisions do not require a compliance demonstration; therefore, that requirement needs to be stated in this regulation. If it is required, the commenter recommends adding a new paragraph to the section on testing provisions in the rule instead of revising paragraph (c)(4)(v) because a flare could be used to control more than process vents. It should require an owner or operator to demonstrate compliance by passing a visible emissions test and determining the exit velocity and net heating value using the appropriate procedures from § 63.11(b).

Response: The Agency agrees with the commenter that § 63.11(b) is not clear on whether an initial compliance demonstration is required. In response, the Agency has revised the final rule to clearly state that Test Method 22 in appendix A of 40 CFR part 60 shall be used to

determine opacity, Test Method 18 in appendix A of 40 CFR part 60 shall be used to ensure the proper heating value of the gas being combusted, and Method 2, 2A, 2C, or 2D of appendix A of 40 CFR part 60 shall be used to determine exit velocity. The EPA also agrees with the commenter that the provisions should not be limited to flares used for process vent emissions. As a result, paragraph (c)(4)(v) in the proposed rule has been replaced with revised provisions in an introductory paragraph in § 63.1365 so that they are applicable to all flares.

15.2.5 Provisions for Condensers

Comment: Commenter IV-D-28 believes the rule should allow an owner or operator the option to demonstrate compliance for a condenser using either the temperature measurement option or a performance test. According to the commenter, the temperature measurement option is beneficial because it may reduce the compliance burden in some cases, but the traditional testing method is also needed because the temperature measurement method may result in false determination of noncompliance and is not necessarily always less burdensome.

Response: Under the proposed rule, EPA included three options for sources to determine emissions and control efficiencies for condensers: (1) performance testing including measurement of HAP concentration and flowrate under peak-case conditions, (2) direct measurement of temperature of the outlet gas under peak-case conditions, or (3) emission estimation. Since proposal, EPA identified the following problems with the proposed options: (1) direct measurement of temperature is a procedure to demonstrate ongoing compliance, not initial compliance; (2) for condensers, determining the control efficiency during the peak-case conditions does not ensure that the same or higher control efficiencies will be achieved under other conditions; (3) options 2 and 3 are not independent because the outlet temperature is needed to estimate emissions from a condenser; and (4) performance testing is not a replicable procedure for batch processing operations and is unnecessary for establishing the control efficiency. To address these concerns, the final rule was revised to include only one procedure for demonstrating initial compliance when using a condenser. This procedure requires calculation of the outlet temperature that is needed to achieve the required control efficiency for an emission episode (or group of episodes).

Determining the control efficiency for condensers under the peak-case conditions does not ensure that the control efficiency under other conditions will be the same or higher. Under the proposed rule, the peak-case conditions were defined based on the stream from which the maximum amount of heat must be removed over a specified time period to achieve the required emissions reduction. However, to achieve the required control efficiency for another emission stream with a different pollutant and/or temperature may require a significantly lower outlet temperature, even though less heat is removed. Basing the monitoring on the temperature for the stream with the maximum heat removal requirement would not ensure that the lower outlet temperature could be achieved for the other stream.

The revised procedure for the final rule is a replicable protocol in that for identical inlet conditions, every source will estimate the same controlled emissions and control efficiency when using the same outlet temperature. Performance testing for batch processing operations, on the other hand, can be difficult and can lead to considerable variability in results. In addition to concerns about replicable results, the performance testing provisions in the proposed rule were not structured to properly account for control efficiency of condensers under all conditions. Under the performance testing option in the proposed rule, the control efficiency would be determined for the peak-case conditions. Then, using the heat removal rate that occurred during the test, the outlet temperatures, and thus control efficiencies, could be calculated for other inlet conditions. However, a performance test is not needed because these temperatures can be calculated based on the properties of the emission streams. For these reasons, the final rule does not specifically require testing of condensers (e.g., measurement of flowrate and concentration to generate a mass rate) as a means of compliance with the standards. However, as with other practices, owners and operators can propose alternative means of demonstrating compliance with the standards for approval on a case-by-case basis. 15.2.6 Provisions for Thermal Incinerators

Comment: Commenters IV-D-16 and IV-D-27 requested that EPA justify the provision that restricts the maximum allowable flowrate into a thermal incinerator to design values if testing is conducted under representative peak conditions. Commenter IV-D-28 believes this provision is meaningless for control devices that are designed with excess capacity, which is what the commenter typically does.

Response: The final rule specifies that performance testing shall be conducted under peak-case conditions for all control devices. As discussed in the responses to comments in section 14.1, the language allowing for testing of incinerators under representative peak-case conditions has been deleted because of Agency concerns regarding operation at levels higher than the levels under which the compliance demonstration occurred. Therefore, the requirement to restrict maximum allowable flowrate into the incinerator is no longer necessary and has been deleted from the final rule.

15.2.7 Clarifications

Comment: Commenter IV-D-28 requested each of the following editorial clarifications in § 63.1364(c) of the proposed rule. The first sentence in paragraph (c)(1) should cross-reference the exemptions in paragraph (c)(5) as well as those in paragraph (c)(4). The second sentence in paragraph (c)(1)(ii) should mention the 94 and 99.9 percent reduction requirement for HCl as well as the corresponding emission limit cutoffs of 6.8 and 191 Mg/yr.
Paragraphs (c)(2)(i)(A)(*3*) through (*5*) should be revised to state that the owner or operator is to determine HAP partial pressures in accordance with one of the following subparagraphs; as written it sounds like all three must be used simultaneously. In the variables list for Equation 3, the definitions of T1 and T2 should refer to the temperature of the material in the vessel, not to the temperature of the vessel itself. Paragraph (c)(3)(ii) describes control devices that "meet" an outlet concentration of 20 ppmv, but it should say "are intended to meet." Paragraph (c)(3)(ii)(B) requires sampling for oxygen and TOC at the same time; however, it would be better to require the sampling at "substantially" the same time because there will always be slight differences between the starting (or ending) times of the two samples, which should not be considered violations. Paragraphs (c)(3)(iii)(B), (C), and (D) indicate that an owner or operator may "also" choose to test over representative peak-case conditions, but this suggests that two tests would be conducted; these paragraphs should say testing under representative peak-case conditions is an alternative to testing under absolute or hypothetical peak-case conditions.

Response: The percent reduction requirements for HCl were specified in paragraph (c)(1)(iv) of the proposed rule. However, the Agency agrees that this provision and most of the other provisions identified by the commenter need to be clarified. Some of the

suggested changes have been incorporated verbatim into the final rule. In other cases, more substantial changes to provisions make it impossible to incorporate the suggested changes verbatim. For example, as noted elsewhere in this document, the final rule does not allow testing under representative peak-case conditions. However, for the provisions that have been retained in the final rule, the intent of each suggested change has been incorporated. The final rule has not been changed to specify that sampling for oxygen and TOC is to be conducted at "substantially" the same time because other rules do not use this qualifier. Also, slight differences in sampling time are to be expected, and are not considered violations.

15.3 INITIAL COMPLIANCE WITH STORAGE TANK STANDARDS

Comment 1: If an owner or operator uses a floating roof to comply with the storage tank standards, paragraph (d)(4) in § 63.1364 of the proposed rule would require the owner or operator to demonstrate initial compliance by complying with various provisions in §§ 63.119 and 63.120 of the HON. Commenter IV-D-28 believes a sentence should be added to the end of § 63.1364(d)(4) to indicate that compliance with the provisions of this section (i.e., the cross-reference to floating roof provisions in the HON) shall be deemed to constitute compliance with the percentage HAP emission requirements of this subpart.

Response: The EPA disagrees with the commenter's suggestion. The standard is to install either a floating roof or a closed vent system with a control device. Thus, installing a floating roof in accordance with provisions in the regulation demonstrates compliance with the standard; it is not a means of demonstrating compliance with the percent reduction standard.

Comment 2: Paragraphs (d)(2)(iii) and (iv) in § 63.1364 of the proposed rule would exempt sources from performance test requirements for storage vessel control devices if either: (1) the control device is also used to control process vent emissions and the owner or operator demonstrates initial compliance with the process vent standard, or (2) the control device is a RCRA unit or a boiler or process heater that meets certain criteria. Commenter IV-D-28 believes the following sentence should be added to the end of both paragraphs: "This constitutes compliance for the purposes of this subpart."

Response: The Agency believes the sentence the commenter wants to add to the rule is either unnecessary or incorrect, depending on the meaning the commenter intended. For

example, the commenter may want to clarify that compliance with either of the subject provisions constitutes initial compliance. However, EPA believes the additional sentence is unnecessary for this purpose because an introductory sentence in the section that contains these provisions clearly states that the owner or operator demonstrates initial compliance by fulfilling the requirements of either of the subject paragraphs. Alternatively, the commenter may want EPA to specify that compliance with the subject paragraphs constitutes compliance with *all* provisions of the subpart. The EPA believes this would be confusing because § 63.1365 deals only with initial compliance provisions, and it would be incorrect because other regulatory requirements still apply to the control devices (although not specifically to the control of emissions from the storage vessels). The commenter may believe the statement is needed to ensure that an owner or operator is not subject to duplicative monitoring, recordkeeping, and reporting requirements for multi-use control devices. However, the monitoring, recordkeeping, and reporting provisions in §§ 63.1366 through 63.1368 focus on individual control devices, not the type(s) of emission points venting to the device, and § 63.1362(l) of the final rule exempts RCRA incinerators and boilers from the initial compliance, monitoring, and recordkeeping requirements of the final rule. In addition, monitoring is not required for the subject boilers and process heaters. Finally, the commenter may be concerned that the subject paragraphs exempt the owner or operator from only performance tests, but not design evaluations. For the final rule, a number of changes have been made in § 63.1365, one of which was to clarify that the exemptions apply to all initial compliance demonstrations for affected storage vessels (i.e., to design evaluations as well as performance tests). Therefore, EPA did not add the sentence that the commenter suggested.

Comment 3: Commenters IV-D-21 and IV-D-29 found the compliance procedures for new Group 1 storage tanks to be unnecessarily convoluted. The commenters requested confirmation of their interpretation that the provisions mean a design evaluation may be used to demonstrate compliance.

Response: The commenters are correct; initial compliance with the standards for storage tanks at new sources may be demonstrated using either a design evaluation or a performance test. For the final rule, § 63.1365 has been reorganized and edited to clarify numerous provisions, including the one cited by the commenter.

15.4 INITIAL COMPLIANCE WITH WASTEWATER STANDARDS

Comment: Commenter IV-D-28 stated that section 63.1364(e) of the proposed rule is unclear because it says to "demonstrate compliance" with the wastewater requirements by "complying" with the wastewater requirements. The commenter suggested that this section should say compliance should be demonstrated by complying with the applicable provisions of § 63.145.

Response: The Agency agrees with the commenter that the language in § 63.1364(e) of the proposed rule is unclear; therefore, the suggested change has been incorporated into the final rule.

15.5 PLANNED ROUTINE MAINTENANCE

Comment: The proposed rule specified that an owner or operator would demonstrate compliance with the planned routine maintenance provisions by including the periods of planned routine maintenance in each Periodic report. Commenter IV-D-28 requested clarification of whether facilities are to report anticipated (planned) numbers, actual (as happened) numbers, or both.

Response: As noted in the response to the comment in section 6.4, the planned routine maintenance provisions in the final rule only apply to storage tanks. Section 63.1365(d)(7) of the final rule specifies that an owner or operator demonstrates initial compliance with these provisions by reporting in the NOCS report the anticipated periods of planned routine maintenance for the first reporting period (i.e., the 6 months after the NOCS report is due). Ongoing compliance is demonstrated by including both the actual hours for the previous reporting period and anticipated hours for the next period in each Periodic report. The sum of the actual hours in the previous 12 months must be less than 240 hours for the facility to be in compliance. The reports also must describe the type of maintenance to be performed and that was performed. These provisions are similar to the provisions in §§ 63.120(d)(4) and 63.122(g)(1) of the HON.

16.0 MONITORING

16.1 IMPACT OF MONITORING REQUIREMENTS ON CONTROL LEVELS

Comment: Several commenters (IV-D-16, IV-D-20, and IV-D-27) believe that the requirement to set compliance parameter levels based on performance testing at peak conditions for batch processes will result in significant over control during most of the operation. Commenters IV-D-16 and IV-D-20 indicated that the following requirements also increase the stringency: (1) using the average of three test runs for setting parameter limits, and (2) determining compliance on a daily basis. Commenters IV-D-16 and IV-D-27 suggested that the impact could be minimized by not restricting the length of the test runs and by calculating compliance on an annual basis rather than daily. The commenters suggested an annual basis because they believe the data provided in response to the section 114 information request were based on annual averages. Commenter IV-D-27 suggested daily calculations of rolling annual averages, and commenter IV-D-16 suggested monthly calculations of rolling annual averages. Another commenter (IV-D-28) supports the proposed provisions to base compliance on the daily average of parameter values, not each individual monitored data point.

Response: As noted in the responses in sections 7.4 and 8.3, EPA believes the data provided in response to the survey are as valid on a daily basis as on an annual basis. Testing for initial compliance determinations may be as short as three 1-hour runs. In such cases, the regulation could require that continued compliance be demonstrated using hourly average monitoring parameter levels to be consistent with the data from the initial compliance determination. The proposed rule would require a less stringent approach of averaging over an operating day because EPA believes this minimizes the impact of momentary disruptions and variability, yet also gives a reasonable assurance of continued compliance with the standard.

Therefore, the final rule retains the requirement to demonstrate continued compliance with the standard on a daily basis.

In the final rule, EPA requires that testing be conducted under absolute or hypothetical peak-case conditions for all control devices because EPA firmly believes that if the conditions under which the device will be operatedcannot be predetermined, the device must be demonstrated to achieve the required efficiency over peak-case conditions. If inlet stream conditions can be predetermined, the owner or operator has the option of setting multiple monitoring levels for different operating conditions. This option was provided in the proposed rule and has been retained in the final rule. Therefore, EPA does not believe the requirement results in over control. Also, as noted in section 14.4, the final rule has been changed to remove the provision restricting test runs to no more than 8 hours.

Regarding averaging periods, EPA has modified the compliance period of the standard to allow averaging on either a 24-hour basis or a "block" basis, where the block may be any length of time less than the time from the beginning to the end of a batch process. For batch operations, an annual compliance period was determined by EPA to be too difficult to implement and therefore not practical. The annual compliance period implies that owners and operators could control a process to varying degrees during the course of a year, as long as the yearly percent reduction target would be met. Although this format would offer flexibility to owners and operators who want to change control strategies to accommodate production scheduling and operational changes, EPA believes that the demonstration of compliance over such an extended time period would result in delayed determination of exceedances and the possibility for extended periods of violations. The EPA notes that the final rule offers numerous compliance options to provide flexibility for owners and operators to address variability within their processes.

Regarding the setting of parameter levels, the purpose of monitoring operating parameters is to provide evidence of continued compliance with the rule. Monitoring parameters are set based on test data, calculations, or information from the evaluation of the control device design. The final rule requires sources to establish maximum or minimum operating parameter levels based on the average of the average parameter values for each of the three test runs (i.e., average

values are to be determined for each of the three test runs, and the monitoring parameter level is to be based on the average of those three values). The Agency believes that setting monitoring levels based on the average of three test runs is necessary because the control efficiency is also based on the average from the three test runs. Basing the monitoring parameter on the results of only one of the test runs would be inconsistent with the average control level.

16.2 ESTABLISHING PARAMETER LEVELS

Comment 1: Commenter IV-D-28 found it difficult to determine when parameter limits are to be determined based on performance tests and when other methods may be used. For example, the commenter believes § 63.1365(a) of the proposed rule could be interpreted to mean every parameter limit has to be based on a performance test, even though a test may not have been conducted to demonstrate initial compliance. The commenter urged EPA to clarify these provisions using language similar to that in previous MACT standards (e.g., the Group I and Group IV P&R rules).

Response: One sentence in § 63.1365(a) of the proposed rule stated that "test data, calculations, or information from evaluation of the control device design shall be used to establish the operating parameter." Another sentence specified how to establish the parameter level if performance testing has been required. The intent of these statements was to indicate that monitoring parameter levels are to be established during the initial compliance demonstration. If the initial compliance demonstration is a performance test, the parameter levels are based on the operation during the test (although, as noted in another response in this chapter, some levels may also be based on extrapolation of data obtained during a test). If the initial compliance demonstration is a design evaluation, the parameter levels are to be based on the design evaluation. To clarify this requirement, the final rule specifies that monitoring parameter levels are to be established based on test data, calculations, or other information from the initial compliance demonstration.

Comment 2: Three commenters (IV-D-16, IV-D-20, and IV-D-28) questioned and expressed concern about setting monitoring parameter levels based on the average of the values from three test runs rather than the least stringent value. Commenter IV-D-16 stated that using the average value to establish the limit is problematic because affected sources would have no

opportunity to compensate for potential process deviations that occur with the use of multi-purpose equipment and other factors that would influence compliance with the measured parametric levels. Thus, commenter IV-D-16 believes that a source should be able to establish parameter ranges other than those measured during a performance test. Commenter IV-D-20 believes there is no basis for using the average value because performance testing will always be biased to indicate a parameter value more than sufficient to achieve compliance.

Response: The EPA disagrees with the commenters. The least stringent monitoring parameter value is not necessarily indicative of conditions needed to demonstrate continued compliance with the standard, just as demonstrating initial compliance using results from a performance test with only a single run would not be considered acceptable. This is especially true under certain situations. For example, to demonstrate compliance with the 90 percent reduction standard for process vents, a test might yield control efficiencies of 88, 89, and 93 percent. Perhaps the least stringent monitoring parameter level would be associated with the run that produced the 88 percent control efficiency. Using this least stringent level would not be consistent with the conditions that were needed to achieve a 90 percent reduction. Furthermore, if an owner or operator believes the control device will achieve an efficiency well above that needed to demonstrate compliance, nothing in the rule prohibits the owner or operator from conducting a test under less than optimum conditions in an effort to minimize the stringency of the operating parameter level.

The proposed rule also included an error that has been corrected in the final rule. The proposed rule states that a minimum is to be based on the average of the minimum values from each of the three test runs, and that a maximum is to be based on the average of the maximum values from each of the three test runs. The statements should have specified that the minimum (or maximum) is to be based on the average of the values from each of the three runs (i.e., the average of the averages for the three runs). This change has been made in the final rule.

Comment 3: Commenter IV-D-16 requested that additional control device parameter monitoring options be added to the rule (e.g., pH for scrubbers and coolant temperature for condensers) because the few parameters mandated by the proposed rule would be very expensive and inappropriate for many sources.

Response: As suggested by the commenter, pH as a parameter for acid gas scrubbers was added to the rule. In addition, parameters for catalytic incinerators were added. If an owner or operator believes it would be appropriate to monitor parameters other than those specified in the rule, the owner or operator may request approval to monitor other parameters in accordance with the General Provisions or by using the Precompliance plan. Monitoring the coolant temperature for condensers was not included in the rule because coolant temperature is not a direct indicator of condenser efficiency. The EPA believes that, while monitoring coolant flow to ensure compliance with the standard may be a reasonable alternative for some systems, sources must demonstrate that the measurement of coolant temperature for each condenser system will achieve the required outlet gas temperature. This demonstration most likely would involve appropriate heat transfer calculations and verified condenser (heat exchange) system specifications (i.e., heat transfer coefficients and heat transfer area) in addition to providing actual temperature measurements verifying the relationship between coolant temperatures and gas temperatures.

Comment 4: Commenters IV-D-16 and IV-D-27 support the provisions that allow owners and operators the opportunity to request approval to monitor parameters other than those specified in the rule (i.e., by following the procedures in § 63.8(f) of the General Provisions or by using the Precompliance plan). However, commenter IV-D-16 believes that all facilities will use the Precompliance plan because the procedures in § 63.8(f) are too narrow and restrictive. To accommodate future changes, commenter IV-D-16 also requested that the rule state that alternative monitoring parameters can be implemented via amendments to the Precompliance plan.

Response: The final rule specifies how to request approval to change parameters or procedures that were submitted for approval in the Precompliance plan, or that would have been included in the Precompliance plan if the change had been implemented prior to the compliance date. The new provision requires an owner or operator to submit a notification 60 days before the scheduled implementation date. The notification must contain the same information that would have been included in the Precompliance plan.

Comment 5: Commenter IV-D-29 urged EPA to exclude batch processes that vent to a combustion device or share a common combustion device with continuous processes from

§ 63.1365(b)(2) of the proposed rule. The commenter explained that this section of the proposed rule, which specifies the procedures to establish a parameter level, is meaningless for a control device such as a flare because the monitoring parameter would be the presence of a pilot flame, which is not related to the characteristics of the vent stream from a single emission episode.

Response: The EPA agrees with the commenter that procedures to establish a parameter level for flares is not needed because only the presence of a pilot flame is required. The final rule clarifies this point. However, it is not clear why the commenter requested the elimination of procedures for monitoring combustion devices that are used to control emissions from batch processes. Monitoring is as feasible for these devices as for those that control vents from continuous vents.

Comment 6: Commenter IV-D-28 requested clarification of the provision in § 63.1365(b)(2)(iv) of the proposed rule that monitoring levels be established at the conditions of the test when the performance test is conducted at "routine" conditions.

Response: Section 63.1365(b)(2)(iv) is an artifact of a draft approach and should not have been included in the proposed rule. It is not included in the final rule.

Comment 7: The EPA solicited comment on the use of alternative parameters without the requirement of prior notification in the Precompliance plan. The preamble to the proposed rule also requested comment on the adequacy of the following alternative parameters: (1) for condensers, coolant temperature and flow (only with emissions testing); (2) for scrubbers, pressure drop, scrubber fluid composition or pH; and (3) for carbon adsorbers, adsorption cycle and regeneration frequency, bed temperature, regeneration stream flow, periodic test for bed poisoning, and periodic vent testing and/or predetermined scheduled replacement. Commenter IV-G-05 believes the suggested alternative parameters are adequate to demonstrate continuous compliance with the rule. However, the commenter wondered why EPA solicited comments on the use of alternative parameters without prior notification in the Precompliance plan when the proposed rule also clearly would require the owner or operator to determine the most appropriate method of verification and propose this method for approval in the Precompliance plan.

Response: The alternatives for scrubbers and carbon adsorbers have been included in the final rule. However, the alternative for condensers has not been included because, as noted in section 15.2.5 of this document, EPA has decided that the most appropriate method for estimating outlet emissions and the percent reduction is to use the results of temperature measurements, not emissions tests.

Under the proposed rule, the requirement to conduct a periodic verification to demonstrate that the control device is operating as designed applied only to small control devices (i.e., those with inlet HAP emissions less than 0.91 Mg/yr). For larger control devices, the proposed rule specified default parameters to be monitored. If an owner or operator elected to monitor these parameters, no approval would be necessary. However, an owner or operator would have to request approval to monitor different parameters, either by including the request in the Precompliance plan or by following the procedures in § 63.8(f) of the General Provisions. This concept is also included in the final rule.

16.3 MONITORING FOR SPECIFIC CONTROL DEVICES

16.3.1 Bag Dumps and Product Dryers

Comment 1: Commenters IV-D-16 and IV-D-28 believe the requirement to initiate corrective action within 1 hour of a bag dump alarm is unnecessarily rigid and will not always be necessary. Commenter IV-D-28 believes it is too stringent because: (1) an alarm is conservatively set so it does not always mean emissions are occurring; (2) there may be times (especially in batch operations) when an alarm trips even though the system is not currently in use; (3) there may be other things happening in the process unit that justifiably require priority attention (e.g., a serious overpressure in the reactor area); and (4) depending on what EPA means by "initiate," some corrective actions cannot be initiated within 1 hour (e.g., if a problem occurs after normal business hours that requires a replacement part that is not on hand at the site). Commenter IV-D-16 suggested changing the 1-hour time period to 3 hours.

Response: When an alarm on a bag leak detection system is triggered, the proposed PAI rule would require owners or operators to inspect the control device to determine the cause of the deviation and initiate corrective actions specified in the corrective action plan that is submitted with the Notification of Compliance Status report. The definition of initiate is to be specified by

the owner or operator in the plan. To clarify this point, the final rule specifies that the owner or operator is to initiate procedures to identify the cause of the alarm and take correction action as specified in the corrective action plan. The final rule does not specify the time when these actions are to be initiated or implemented; the owner or operator should specify that information as part of the procedures for responses to different types of events that trigger the alarm. The final rule also specifies that the corrective action plan is to be submitted with the Precompliance plan, which includes other procedures that must be approved by the implementing agency.

Comment 2: Commenter IV-D-28 believes the rule should allow either visual or audible bag dump alarms, not just audible alarms.

Response: The Agency believes that both a visual and audible alarm are necessary because staff may not be in a control room or other areas where visual alarms can be seen. In addition, this requirement is consistent with other NESHAP requiring leak detection systems; no changes have been made in the final rule.

Comment 3: Commenter IV-D-28 believes two of the monitoring provisions for bag dumps and product dryers are unlawful. First, the commenter believes the requirement in § 63.1365(a)(7)(iv) of the proposed rule to install, operate, calibrate, and maintain the bag leak detection system according to either available guidance from EPA or the manufacturer's written specifications and instructions is unlawful because EPA cannot impose a legally binding requirement to follow unspecified "guidance," and EPA cannot empower manufacturers to make law. Therefore, the commenter suggested adding a third option to allow the owner or operator to "follow other written procedures that provide reasonable assurance that the bag leak detection system will function appropriately." Second, the commenter believes the requirement in § 63.1365(a)(7)(viii) of the proposed rule to develop a QIP consistent with the draft approach to compliance assurance monitoring is unlawful because EPA cannot require compliance with a draft document. The commenter believes EPA should either publish a supplemental proposal specifying the features of an acceptable QIP and make it part of the rule or delete the requirement.

Response: The EPA has completed guidance entitled "Fabric Filter Bag Leak Detection Guidance." This document provides guidance on the use of triboelectric monitors as fabric filter

leak detection systems. Where this document is not applicable, EPA has allowed for the use of manufacturer's written specifications and instructions. Proper setup and operation of a bag leak detector can vary with site-specific conditions, and those conditions may dictate variances from EPA guidance or manufacturer's specifications and instructions. For such cases, EPA has added a provision that would allow for the development of site specific procedures. These procedures must be included in the Precompliance plan and approved by the Administrator.

The final rule does not require the development of a QIP program.

Comment 4: Commenter IV-D-28 believes it is both unnecessary and inconsistent with other aspects of the rule to require written approval before adjusting the range, averaging period, alarm set points or alarm delay time contained in the Notification of Compliance Status report. According to the commenter, the rule should only require that changes be reported in the next Periodic report, and, if prior approval is needed, it will be handled under the Operating Permit program.

Response: The intended use of the bag leak detector is to identify upset conditions in the baghouse operation. The EPA is concerned that unrestricted adjustment of the bag leak detector could result in improper use, possibly resulting in the alarm and sensitivity settings being set such that leaks or malfunctions could occur undetected. Based on further review, EPA has determined that periodic adjustment may be necessary. Therefore, EPA has revised the bag leak system adjustment requirements to: (1) allow for routine minor adjustments to the detector system, (2) require owners and operators to identify all routine adjustments in an operating and maintenance plan that is to be submitted with the Precompliance plan, and (3) require that owners and operators perform complete baghouse inspections to ensure proper operation of the baghouse prior to any significant adjustments to the sensitivity or range.

Comment 5: Commenter IV-D-28 asked for clarification of the requirement that a bag leak detection system sensor must provide output of relative or absolute PM emissions.

Response: The final rule has clarified this statement by requiring that "The bag leak detection system sensor must provide output relative to PM emissions."

16.3.2 Flares

Comment 1: Commenter IV-D-28 believes §§ 63.1365(a)(5) and (b)(7) of the proposed rule should refer to the loss of "all" pilot flames, because losing one flame should not be a violation if there are other flames at the pilot of the flare.

Response: The EPA agrees with the commenter. The final rule indicates that an exceedance occurs upon the loss of all pilot flames and that records must be kept of periods when all pilot flames are absent.

Comment 2: Commenters IV-D-21 and IV-D-29 believe the rule should specify that a pilot flame is not required when a process is shutdown. These commenters also pointed out that this change would be consistent with the HON.

Response: As noted in the response to the comment in section 16.4 of this chapter, the final rule specifies that monitoring is only required when the control device is functioning in achieving the HAP removal required by the rule. Thus, the final rule does not require an owner or operator to demonstrate the presence of a pilot flame during periods when the process is not operating. However, while implementing shutdown, the owner or operator must follow the procedures described in the startup, shutdown, and malfunction plan. These procedures may specify that the pilot flame be maintained during the shutdown process.

16.4 MONITORING FREQUENCY

Comment: Commenter IV-D-16 suggested two changes to the frequency of monitoring. First, the commenter believes that the requirement in § 63.1365(b)(3) of the proposed rule to monitor batch episodes less than 15 minutes in duration should not be required. Second, the commenter believes the monitoring frequency is excessive for control devices controlling less than 10 ton/yr of an individual HAP or 25 ton/yr of aggregate HAP; "periodic" monitoring would be sufficient because many parameters do not vary frequently, and it would allow for the use of simpler monitoring systems that are less prone to design and maintenance problems.

Response: When only one monitoring level is established for a parameter, the EPA agrees with the commenter that monitoring of batch episodes less than 15 minutes in duration should not be required because the practical limit of monitoring frequency is one reading every 15 minutes of operation. Instead of requiring that each batch episode be monitored at least once, the final rule requires an owner or operator to measure and record the parameter level at least

once every 15 minutes during the period in which the control device "is functioning in achieving the HAP removal required" by the rule. This means that one reading must be taken for every 15-minute period of continuous venting from any combination of emission episodes manifolded to the control device. Thus, even when individual emission episodes are shorter than 15 minutes, one reading is required if venting occurs for at least 15 minutes due to overlapping or "contiguous" episodes. On the other hand, no monitoring would be required if each of the emission episodes that an owner or operator is controlling to comply with the rule last less than 15 minutes, and they are separated by periods of no flow or venting from vents that do not need to be controlled. For storage tanks, a control device is considered to be functioning in achieving the HAP removal required at all times material is stored in the tank; although working losses occur only during relatively short periods when the tank is being filled, breathing losses may occur at any time. To identify periods of no flow, a flow indicator (not necessarily a flow monitor) would be required.

An exception to the procedures described above exists if the owner or operator establishes separate monitoring levels for different emission episodes. In this case, at least one reading must be taken each time the level changes, even if episode lasts less than 15 minutes. This exception is included to counteract the possibility of setting multiple levels in order to avoid monitoring.

As a result of the change in monitoring frequency, the definition of a valid hour of data as used in the definition of an excursion also has been modified in the final rule. At proposal, monitoring data would not constitute a valid hour of data if measured values are unavailable for any of the 15-minute periods within the hour. For the final rule, the word *required* has been added before the phrase "15-minute period" to address the fact that less than four data points per hour may be allowed in some situations.

The EPA believes that the requirement to take 15-minute readings for devices controlling more than 1 ton/yr of HAP is reasonable. The cutoff for continuous monitoring was set because EPA wanted to reduce the compliance burden on facilities with smaller control devices. The EPA also notes that "periodic" monitoring could increase the potential for being out of compliance with the standard, because a reduction in the number of data points places a

significantly higher emphasis on each reading for compliance determination. Additionally, because emission stream characteristics in this industry are variable, the use of "periodic" readings may not represent true conditions over the monitoring period.

16.5 QUALITY CONTROL PROGRAM AND PERFORMANCE EVALUATIONS OF CONTINUOUS MONITORING SYSTEMS

Comment: According to commenter IV-D-28, §§ 63.8(d) and (e) and 63.10(e)(2)(i) of the General Provisions should not apply because the quality assurance program and performance standards for continuous monitoring systems (CMS) are directly regulated through the startup, shutdown, and malfunction plan and the requirement to report any exceedances in the Periodic reports.

Response: The quality control and performance evaluation procedures for CMS in §§ 63.8(d) and (e) are not covered in the startup, shutdown, and malfunction plan, nor are they addressed by the requirement to report exceedances in the Periodic reports. Therefore, these provisions are applicable in the final rule. The final rule also specifies the required accuracy and calibration procedures for selected parameter monitoring devices that must be taken into consideration in the quality control plan.

16.6 MONITORING DURING STARTUP, SHUTDOWN, AND MALFUNCTION

Comment 1: Commenter IV-D-16 stated that § 63.1365(d) of the proposed rule should be revised to clarify that startup, shutdown, and malfunction provisions apply to monitoring equipment as well as process and control equipment.

Response: The EPA agrees with the commenter. The final rule specifies that startup, shutdown, and malfunction provisions apply to monitoring equipment as well as process and control equipment. This change makes the final rule consistent with other regulations such as the HON, pharmaceuticals and polymers and resins.

Comment 2: Commenter IV-D-28 raised several issues about how the startup, shutdown, and malfunction provisions relate to data availability requirements and violations. First, the commenter stated that monitoring data collected during any startup, shutdown, or malfunction and during periods of nonoperation of the process should be excluded from the daily averages. Second, the commenter believes the rule should clearly specify that there is no violation if an

event such as a malfunction results in insufficient data or an exceedance of a parameter. Third, the commenter expressed concern about the requirement in § 63.1365(d) of the proposed rule, which stated that an excursion is not a violation if it happens during a startup, shutdown, or malfunction and the facility follows its startup, shutdown, and malfunction plan. The commenter interprets this provision to mean that EPA could assess two penalties if the plan is not followed--one for not following the plan, and, because the plan was not followed, a second for the excursion.

Response: If monitoring data obtained during a startup, shutdown, or malfunction result in an exceedance, the exceedance is not a violation as long as the facility follows the startup, shutdown, and malfunction plan. However, if the facility does not follow the plan, an exceedance would be a violation, but it would not be two violations. Thus, the final rule retains the requirement to use data obtained during any startup, shutdown, and malfunction in daily averages.

Similarly, if a startup, shutdown, or malfunction results in the inability to collect monitoring data, it may cause an excursion. This excursion would not be a violation if the facility followed its startup, shutdown, and malfunction plan, but it would be a violation if they did not follow the plan.

As noted in the response to the comment in section 16.4, the final rule requires monitoring when the control device is functioning in achieving the HAP removal required by the rule. Thus, data obtained during time when the process is not operating are not to be used in determining the daily average of the parameter level.

16.7 MONITORING FOR STORAGE VESSEL CONTROLS

Comment: Commenter IV-D-28 believes the proposed rule lacks appropriate monitoring provisions for control devices that are used to control emissions from storage vessels. According to the commenter, the proposed provisions address only continuous monitoring, which often will not be appropriate for storage vessels because the emissions occur primarily during filling. Furthermore, if emissions are controlled using a disposable carbon canister, the monitoring may consist only of replacing the canister before the end of its rated life, not periodically checking a parameter. Therefore, the commenter recommended that EPA include some of the concepts from

the storage tank monitoring provisions in § 63.120(d) of the HON. For example, these provisions specify that the owner or operator must prepare a monitoring plan that describes how the monitoring will be done. In addition, the commenter indicated that the rule needs to define "excursion" for situations where monitoring is not continuous (e.g., the rule should specify that the monitoring plan "shall define an excursion in terms of the relevant operating parameter").

Response: The monitoring provisions in § 63.1365(b) of the proposed rule were intended to apply to all types of control devices except those used for continuous processes. In the final rule, the provisions from §§ 63.1365(a) and (b) have been consolidated into one section that specifies monitoring provisions for all control devices. The final rule also includes monitoring provisions for nonregenerative carbon canisters; the owner or operator is required to determine the maximum time interval between replacement based on operation under absolute or hypothetical peak-case conditions and to replace the canister before this time elapses.

Unlike the HON, the final PAI rule requires the same type of monitoring regardless of the purpose for which the control device is used. The EPA does not believe it is necessary to have different procedures for storage tank control devices because the types of emission episodes from storage tanks are comparable to those from batch process vents. Furthermore, most storage tanks at the surveyed PAI plants emit less than 0.91 Mg/yr. Under the final rule, if the total uncontrolled HAP emissions entering a control device are less than 0.91 Mg/yr, the owner or operator may elect to conduct a periodic (at least daily) verification that the control device is operating properly. The verification procedures are to be described in the Precompliance plan. This provision is comparable to the monitoring plan concept described in § 63.120(d)(2) of the HON. As noted in the response to the comment in section 16.4, if the total uncontrolled HAP emissions entering the control device exceed 1 ton/yr, the owner or operator must monitor the appropriate parameter(s) every 15 minutes during which the control device is functioning in achieving the HAP removal required by the rule. Based on information from the surveyed PAI facilities, this situation would apply to very few storage tanks in the PAI industry. Most of the few tanks with emissions greater than 0.91 Mg/yr are vented to the same control device that is used to control process vent emissions. Thus, a separate set of monitoring requirements for storage tank control devices is not needed.

For devices that control more than 0.91 Mg/yr of HAP, the definition of excursion in the final rule is the same as that in the proposed rule, and it is applicable to all control devices. Specifically, a valid hour of monitoring data must be obtained for 75 percent of the hours that a control device operates during a day (or, if the control device operates less than 4 hours, at least 3 hours of valid data must be obtained). As noted in the response to the comment in section 16.4 of this chapter, the control device operation is based on the time when the control device is functioning in achieving the HAP reduction required by the rule. For storage tanks, this means all of the time that the storage tank contains material. When compliance for small control devices is demonstrated by conducting a periodic verification, the final rule has been revised to clarify that not conducting the verification is an excursion.

The final rule also clarifies that exceedances of operating parameters are those times when (1) the parameter level, averaged over the operating day, is above a maximum or below a minimum established during the initial compliance demonstration, or (2) the required operating characteristic is not met (e.g., loss of all pilot flames for a flare). If compliance is demonstrated by conducting a periodic verification, an exceedance occurs any time the daily, or more frequent, demonstration does not confirm that the control device is operating properly.

16.8 DATA AVAILABILITY REQUIREMENTS

Comment: Commenter IV-D-16 indicated that the applicability of § 63.8(c)(7) in Table 1 should be changed to "yes" to indicate that "recorded data shall not be used in data averages or calculations, or to meet any data availability requirement when the data are recorded during out-of-control periods, repairs, maintenance periods, calibration checks, and zero (low-level) and high-level calibration drift adjustments."

Response: Section 63.8(c)(7) of the General Provisions describes out-of-control situations for continuous monitoring systems. It also indicates that during out-of-control periods, recorded data are not to be used in data averages or other data availability requirements established under part 63. This section of the General Provisions was not applicable in the proposed rule, and is not applicable in the final rule, because the out-of-control situations described in this section (i.e., zero and high-level calibrations and audits) are not applicable to parameter monitors. In addition, maintenance and repair periods are covered by the startup,

shutdown, and malfunction plan. As noted in the response to comment 2 in section 16.5, the rule itself includes language requiring the use of data collected during any startup, shutdown, or malfunction.

16.9 VIOLATIONS

Comment 1: Several commenters (IV-D-14, IV-D-16, and IV-D-28) addressed situations that would result in violations under the proposed rule. All of the commenters asserted that excursions or exceedances of an operating parameter should not be violations of the emission standard; commenter IV-D-28 also stated that failure to take corrective action after a bag dump alarm should be a violation of a work practice requirement, not the particulate HAP emission standard. Commenter IV-D-28 stated that such excursions should not be a violation of an emission standard because the parameters are only indicators of proper operation, they do not prove compliance with an emission standard. Commenter IV-D-14 stated that the proposed provision conflicts with the basis of the compliance assurance monitoring (CAM) regulation. Commenters IV-D-16 and IV-D-28 stated that the requirement in § 63.1365(a) to "operate processes and control devices within the parameters" must be revised because they interpreted this statement to mean that each datapoint must be within the established limit. Commenter IV-D-16 indicated that the source must be allowed to demonstrate continued compliance with the emission standard despite exceedance of a monitoring parameter. Commenter IV-D-28 indicated there are startup, shutdown, and malfunction exceptions (as described in comment 2 in section 16.6), and only the daily average value (not each data point) is used to demonstrate compliance.

Response: The EPA's policy is that new part 63 rules, in particular those that require the use of a control device to reduce pollutant emissions, will include compliance determinations on two levels. The first level is the "traditional" performance test requirement that is based on the use of a specific test method over a set period of time and operating conditions. A performance test is generally conducted when the rule is effective (e.g., at facility startup or after an effective date for an existing facility) and may be repeated periodically thereafter. The results of the performance test are compared with an emission limitation (e.g., concentration, control

efficiency, or mass rate). The second level of the compliance determination in part 63 rules is the continuous compliance obligation, which is implemented through monitoring.

In general, the EPA recognizes two basic approaches to monitoring. One method is to establish monitoring as a direct measure of continuous compliance. Under this continuous compliance monitoring approach, an enforceable value of the monitored parameters is defined and measured. The Agency has adopted this approach in part 63 standards, and is committed to following this approach whenever appropriate in future rulemakings. Another approach is to establish monitoring to provide a reasonable assurance of compliance by documenting continued proper operation of the control devices, indicating excursions from proper operating conditions, and correcting the problems that cause excursions. This second approach is the basis of the CAM rule, which applies to sources that are not currently subject to part 63 standards.

When a part 63 rule specifies a surrogate pollutant continuous emissions monitoring system(s) (CEMS) or parameter monitoring for demonstrating continuous compliance, the rule includes specific limitations and averaging times for these alternative situations. The surrogate pollutant or operating parameter limit becomes an enforceable limit for the rule. There is no requirement that an alternative limit, whether a surrogate pollutant or an operational parameter, be statistically correlated with emissions or the compliance level of the regulated pollutants(s). The alternative limit is a separately enforceable requirement of the rule. The alternative is not secondary to the emission limit; rather, it is applied in lieu of continuous emission limit obligation.

The enforceable level for the surrogate pollutant or operating parameter may be based on measurements made during a performance test or other conditions specified by the part 63 rule. In any case, the alternative limit *becomes* the continuous compliance obligation and fulfills the second level of compliance for the rule.

The EPA has considered the commenters' argument that an exceedance of a monitoring parameter is not necessarily an exceedance of an emission limit. The Agency acknowledges that a parameter exceedance does not necessarily mean that the source has exceeded the emission limit. However, as discussed above, under EPA's approach to continuous compliance in part 63 rules, the continuous parameter monitoring limit is a separate requirement that is not rebuttable

through contrast with actual or estimated HAP emission values. In addition, EPA believes that given the flexibility the owner or operator has to select operating parameters, including the option that allows the owner or operator to set different parameter levels for different operating conditions, the burden is on the source to remain within the operating limit defined for the parameter or parameters.

To address the potential disparity between parameter limit exceedances and emission limit exceedances, the final rule contains two different types of continuous compliance violations. When a source is using a CEMS to monitor compliance with the 20 ppmv alternative standard, an exceedance is defined as a violation of the emission limit. Similarly, because the exit gas temperature of a condenser is so closely correlated with emissions, a condenser temperature exceedance is considered a violation of the emission limit. Exceedances of other types of parameter limits are defined as violations of an operating limit. Failure to initiate the corrective action plan after a bag leak detector alarm also is a violation of an operating limit.

Finally, for the final rule, §§ 63.1365(a) and (b) of the proposed rule have been combined and revised to clarify the monitoring requirements. It was never EPA's intent to base compliance on each individual datapoint. Therefore, the first paragraph in the monitoring section of the final rule has been changed to read as follows:

> To provide evidence of continued compliance with the standard, the owner or operator of any existing or new affected source shall install, operate, and maintain monitoring devices as specified in this section. During the initial compliance demonstration, maximum or minimum operating parameter levels or other design and operating characteristics, as appropriate, shall be established for emission sources that will indicate the source is in compliance. Test data, calculations, or information from the evaluation of the control device design, as applicable, shall be used to establish the operating parameter level or characteristic.

The section then goes on to describe the types of parameters to monitor; it explains how to establish the parameter levels and averaging periods; and it defines exceedances, excursions, and violations.

Comment 2: Commenter IV-D-28 believes the rule should allow for a specified number of excused excursions per reporting period, as in other MACT standards.

Response: The final rule does not included excused excursions. Excused excursions were allowed in the HON to allow facilities time to become familiar with the new monitoring provisions in the HON. The excursions were not meant to be precedent setting for all future rules. The EPA believes that industry in general has had sufficient time to develop strategies for complying with monitoring requirements, and that excused excursions are no longer necessary. Other recent rules also have been issued without excused excursions.

Comment 3: Section 63.1366(d) of the proposed rule specifies that for unit operations occurring more than once per day, exceedances of established parameter limits shall result in no more than one violation per operating day for each monitored item of equipment utilized in the unit operation. Commenter IV-D-28 supports the concept that there should be no more than one violation per day for exceedances of operating parameters, but suggested incorporating it into a different part of the rule. The commenter pointed out that § 63.1367(b)(2) addresses this concept for excursions (i.e., periods of "insufficient data"). The commenter suggested that exceedances of operating parameters be called a "parameter level" excursion, specify that § 63.1367(b)(2) applies to parameter level excursions, and delete § 63.1366(d). The commenter also believes § 63.1366(d) is unclear because "unit operations" are equipment, they do not "occur."

Response: Several changes have been made in the final rule to clarify the definitions of exceedances, excursions, and violations. For the final rule, the definition of excursions has been moved from the reporting section to the monitoring section, and a definition of exceedances has been added to the monitoring section. The provision in § 63.1366(d) of the proposed rule has been revised and moved to the monitoring section as well. For the final rule, this provision reads as follows: ". . . for emission episodes occurring more than once per day, exceedances of operating parameters or excursions will result in no more than one violation per operating day for each monitored item of equipment utilized in the process."

Comment 4: Commenter IV-D-16 urged EPA to add a provision to protect an affected source that discharges to a POTW from compliance violations under this rule if the POTW has a violation of their permit.

Response: The final rule cross-references the offsite treatment provisions in § 63.132(g) of the HON, which is identical to the proposed requirements. These provisions require a

"transferee" (e.g., a POTW) to submit a written certification to EPA stating that the transferee will manage and treat any Group 1 wastewater stream or residual removed from a Group 1 wastewater stream in accordance with the requirements in subpart G. Furthermore, if a POTW provides such a written certification, § 63.132(g)(3) states that the POTW accepts responsibility for compliance with the wastewater provisions in the HON for any wastewater covered by the certification, and is subject to enforcement action for violations.

16.10 MISCELLANEOUS

Comment 1: According to commenter IV-D-28, the provisions for heat exchangers and equipment leaks in §§ 63.1365(d) and (e) are out of place because the monitoring for this equipment is the emission limitation (or means of reducing emissions); the monitoring is not used to demonstrate compliance with an emission limitation. For this equipment, there is no "monitoring" to demonstrate compliance, except recordkeeping and reporting, which are stated elsewhere.

Response: The commenter is correct that the standards for equipment leaks and heat exchangers consist of monitoring requirements. Therefore, §§ 63.1366(d) and (e) in the final rule state this fact and indicate that no additional monitoring is required to demonstrate continued compliance with the standards.

Comment 2: Commenters IV-D-14 and IV-D-27 requested changes in the monitoring requirements to more closely match the requirements in the CAM rule. Commenter IV-D-27 believes that cutoffs in § 63.1365 for requiring continuous monitoring should be the same as those in the CAM rule (i.e., 10 or 25 ton/yr, not 1 ton/yr). The commenter based this comment on a statement in section II.B of the preamble to the final CAM rule. Commenter IV-D-14 stated that the monitoring requirements should be revised to coincide with the principles of CAM.

Response: As discussed in the response to comment 1 in section 16.9, CAM is one of two basic approaches to monitoring, but it was developed for sources that are not currently subject to part 63 standards. Furthermore, as noted in the response to the comment in section 16.4, the provision allowing a facility to demonstrate compliance by conducting periodic verifications for devices that control less than 1 ton/yr of HAP was included in the proposed rule to minimize the burden on small facilities. The EPA does not believe raising this cutoff is

warranted. Therefore, the cutoffs for the monitoring provisions in the proposed rule are retained in the final rule.

Comment 3: Commenter IV-D-27 believes the rule should state that monitoring and inspection provisions under RCRA can be followed instead of corresponding MACT provisions for air and/or wastewater routed to RCRA incinerators covered under subpart O of either 40 CFR part 264 or part 265.

Response: The RCRA provisions are as stringent or more stringent than the requirements in the final rule. Therefore, § 63.1362(l) of the final rule specifies that a RCRA incinerator used to control emissions is exempt from monitoring requirements of the rule. The final rule also cross-references § 63.138(h) of the HON, which exempts RCRA units that are used to treat wastewater from the monitoring provisions.

Comment 4: Commenter IV-D-28 supports the concept of allowing periodic verifications rather than monitoring for small control devices, but suggested that this section also specifically state that continuous monitoring is allowed.

Response: The Agency appreciates the support of the commenter in allowing periodic verifications rather than monitoring for small control devices. In addition, the final rule states that, for small control devices, the owner or operator may elect to comply with the continuous monitoring provisions rather than the periodic verification requirements.

Comment 5: Section 63.1365(b)(2)(iii) of the proposed rule specifies that an owner or operator may establish monitoring parameters based on "the performance test supplemented by engineering assessments and manufacturer's recommendations." Commenter IV-D-28 suggested adding the words "if desired" after the word "supplemented" and change the word "and" to "and/or." This commenter also recommended deleting the words "The procedures in this section have not been approved by the Administrator" because this suggests that the provisions are unacceptable or have been disapproved.

Response: The words "if desired" are not necessary because the provision already states the owner or operator *may* use the procedure as an alternative to establishing parameter levels based solely on performance test data. In the final rule, the word "and" has been replaced with "and/or" because the test data may be supplemented using an engineering assessment,

manufacturer's recommendations, or both. The words "The procedures in this section have not been approved by the Administrator" were deleted because they are considered to be unnecessary. The final rule retains the statement that any procedures an owner or operator uses to develop additional monitoring parameter levels are subject to approval by the Administrator.

16.11 EDITORIAL CLARIFICATIONS

Comment: Commenter IV-D-28 requested all five of the following editorial clarifications in § 63.1365; commenters IV-D-21 and IV-D-29 also requested the fifth clarification:

1. The term "parameter level" (not just "parameter" or "operating parameters") should be used consistently to describe the limit within which the daily average parameter value must be maintained.

2. The first sentence of § 63.1365(b) needs clarification because it is not clear how an owner or operator may "choose" to comply with the emission limit or emission reduction.

3. The type of emissions needs to be specified every time a quantity of emissions is specified (e.g., 9.1 tons of organic HAP, not just 9.1 tons of HAP).

4. Add "as specified in this section" to the end of the first sentence in § 63.1365(a).

5. Section 63.1365(a)(6) should be corrected to indicate that a deviation occurs when combustion chamber temperatures are lower, not greater, than the parameter value.

Response: The EPA agrees with the commenters' suggestions. As noted elsewhere in this chapter, the monitoring provisions have been significantly rearranged and clarified in the final rule. All of the editorial changes and corrections suggested by the commenters have been incorporated in the final rule.

17.0 RECORDKEEPING

17.1 RECORDKEEPING BURDEN

Comment: Two commenters (IV-D-28 and IV-G-03) commented on the burden to comply with the recordkeeping requirements. Commenter IV-G-03 stated that over 100 different records must be maintained daily, monthly, quarterly, or annually; therefore, the commenter urged EPA to review the recordkeeping requirements to ensure that such extensive recordkeeping is necessary. Commenter IV-D-28 supports provisions in §§ 63.1366(a) and (a)(3) that require an owner or operator to maintain records of only the daily average of the parameter values, not each datapoint, because this reduces the recordkeeping burden. However, this commenter also stated that a reduced recordkeeping option, like that in § 63.152(g) of the HON, should be added to the rule if EPA decides to change these provisions and require records of shorter term values.

Response: Detailed records are needed to demonstrate compliance with the regulation. However, prior to proposal, EPA made a concerted effort to eliminate duplicative and unnecessary recordkeeping requirements because EPA recognizes that these requirements would burden both the affected sources and EPA enforcement agencies. Since proposal, EPA has reviewed the recordkeeping provisions and made a number of changes. Many of the changes are editorial revisions designed to clarify the requirements. Some of these clarifications are discussed in more detail in other responses in this chapter. Other clarifications explicitly state recordkeeping requirements that were merely implied in the proposed rule (e.g., records of planned routine maintenance and records of the absolute or hypothetical peak-case conditions for process vent testing).

The final rule also includes additional recordkeeping requirements to document compliance with new or revised provisions in the rule. For example, the final rule includes

recordkeeping to document the primary use for material produced by PAI process units if the primary use is not as a PAI (see section 3.2 for a discussion of the new primary use provisions). Another example in the final rule includes procedures to demonstrate ongoing compliance with the annual emission limit for process vents by calculating an annual rolling summation every day, and records of these calculations must be maintained. Finally, § 63.1362(j) was added to the final rule to specify that bypass lines that could divert a vent stream away from a control device must be monitored either with a flow indicator or by visual inspection of the seal or closure mechanism that secures the valve in the closed position; records of any flow or the results of inspections must also be maintained.

One additional change involves the parameter monitoring records in §§ 63.1366(a) and (a)(3) that were cited by the commenter. After reviewing these requirements, EPA now believes that, even when the daily average is in compliance, it is necessary to maintain all parameter readings, not just the daily averages. This rule requires that owners and operators select only parameter readings that are taken when the control device is controlling HAP emissions from affected emission streams. Emission episodes from batch processes, which predominate in the PAI production industry, are discontinuous. As a result, some monitoring readings may occur during periods of no flow for affected streams (although there may be flow of nonaffected streams). Readings taken during these periods must be excluded from the daily averages. In order to verify that the daily average values were calculated correctly, the rule requires owners and operators to keep all data. The EPA also does not believe that the approach in § 63.152(g) of the HON would be appropriate for this rule because, unlike this rule, the HON regulates emission streams with continuous flow.

17.2 RECORDS OF GROUP 1 DETERMINATIONS

Comment: Commenter IV-D-28 believes that records of Group 1 stream determinations should not be required.

Response: The final rule requires an owner or operator to keep records of the *results* of all Group determinations for process vents, storage vessels, and wastewater streams. The owner or operator is not required to keep records of how streams were determined to be Group 1 streams; in fact, for storage vessels, the final rule allows the owner or operator to designate

Group 1 storage vessels. However, some of the same information may be required for other reasons. For example, as described in section 17.4, records of uncontrolled process vent emission estimates are required if the owner or operator complies with the requirements to reduce emissions from the sum of all process vents within a process by 90 percent. Records of emission estimates are also required for all emission streams that are used in emissions averaging, and records of wastewater stream concentrations and flowrates are needed for some of the treatment options. Alternatively, an owner or operator complying with an outlet concentration standard is not required to keep these records (although records of flow rates may be needed to show compliance with corrections for supplemental gases).

By definition, if a stream is not Group 1, then it is Group 2. Therefore, the owner or operator also must keep records of the Group 2 determinations because these data are needed to demonstrate compliance with the applicability cutoffs.

17.3 RECORDS OF TURNOVERS

Comment: Section 63.1365(b)(5) of the proposed rule would require owners and operators to keep records of tank turnovers. Three commenters (IV-D-21, IV-D-28, and IV-D-29) opposed this provision. Commenter IV-D-28 stated that there is no substantive requirement in the regulation that these records would support, and even if turnovers must be recorded, this commenter questioned whether calculations rather than monitoring results would be acceptable. Commenters IV-D-21 and IV-D-29 stated that turnovers should be required only for tanks complying with the 110 kg/yr cutoff; such records are not needed when emissions are controlled.

Response: The EPA agrees with the above comment for most cases, especially since the storage tank mass emissions applicability cutoff was eliminated in the final rule. Actual emissions from a tank are only needed for emissions averaging and for determining whether emissions from a new PAI process unit exceed 10/25 tons/yr and thus would be subject to new source standards. Turnovers are used to calculate working losses and thus would be one of the parameters that must be recorded only as part of either the emissions averaging calculations or new source determination.

17.4 RECORDS OF PROCESS VENT EMISSIONS

Comment: Section 63.1366(b)(1) of the proposed rule would require an owner or operator to maintain records of "the emissions of gaseous organic HAP and HCl per batch for each process." Commenter IV-D-28 believes this provision implies that CEMS would be installed on every emission point, which conflicts with the compliance provisions. Thus, the commenter believes this provision should be deleted.

Response: The provision is reworded in the final rule to clarify that records must be kept of the initial calculations (and supporting data) used to estimate uncontrolled and controlled emissions of each emission event from Group 1 process vents if the owner or operator is complying with the 90 percent reduction requirement. These are the same data that would be used to determine that the vents within a process are Group 1, but records of Group 1 determinations are not required (as noted in section 17.2) because the data are not needed if the owner or operator is complying with the outlet concentration requirement of 20 ppmv, or is using a flare. The provision is retained in the final rule because these data are needed to demonstrate initial compliance with the percent reduction requirements. A copy of the NOCS report (and updates to these data and calculations contained in Periodic reports) would satisfy this requirement because the same information must be submitted in that report.

17.5 RECORDS OF WASTEWATER CHARACTERISTICS

Comment: Section 63.1366(b)(2) of the proposed rule would require an owner or operator to maintain records of "wastewater concentrations and flowrates per POD and process." Commenter IV-D-28 believes this statement could be interpreted either of two ways, but regardless of which interpretation is correct, the provision should be deleted. For example, it could mean annual average values, but if so, the commenter believes this record would be unnecessary because there must be a requirement elsewhere in the regulation to keep records supporting Group determinations (except for Group 1 determinations, as noted in the comment in section 17.1). Alternatively, it could mean continuous "real time" records, which the commenter points out conflicts with the compliance requirements and should not be required; thus there will be no data from which to create the records.

Response: The provision is referring to the annual average values. Contrary to the commenter's belief, recordkeeping requirements are specified only in § 63.1366. Other sections

of the rule specify that the concentrations and flowrates must be estimated for use in determining compliance. Therefore, the provision is retained in the final rule.

17.6 RECORDS OF BAG LEAK DETECTION ALARMS

Comment: Section 63.1366(a)(5) of the proposed rule would require an owner or operator to maintain records of any bag leak detection alarm and the corrective action taken. Commenter IV-D-28 believes corrective action would not always be necessary and, therefore, the following phrase should be added to the end of the proposed provision: "or the reason why no corrective action was taken."

Response: The provision has been clarified in the final rule but was not changed as suggested by the commenter. In the final rule, the provision requiring the owner or operator to keep records that document the date and time of the alarm, the cause of the alarm, and the corrective action taken is in § 63.1367(b)(5). Note that under § 63.1368(e)(6), a corrective action plan must be submitted with the Precompliance plan. The corrective action plan must describe procedures for the proper operation and maintenance of fabric filters, procedures used to determine and record the time and cause of an alarm, and corrective actions to be taken when the alarm is triggered. If there are situations that the owner or operator believes do not require corrective action (other than resetting the alarm), they must be identified in the corrective action plan.

17.7 LOCATION OF RECORDS

Comment: Commenter IV-D-28 believes that the rule, like the HON, should include provisions specifying where to keep records. For example, the HON defines "onsite" and requires that records from the most recent 6 months be kept onsite (or accessible within 2 hours); records from the preceding 4.5 years may be kept offsite.

Response: Section 63.1366(a) specified that "records shall be kept in accordance with the requirements of applicable paragraphs of § 63.10 of subpart A of this part, as specified in the General Provisions applicability table of this subpart (Table 1)." Section 63.10(b)(1) of the

General Provisions specifies that records must be retained for at least 5 years, and, at a minimum, the most recent 2 years of data shall be retained onsite, and the remaining 3 years of data may be retained offsite. Onsite means the same thing as the "plant site that is a major source," as stated in the definition of the affected source in § 63.1360(a).

17.8 OVERLAP WITH RCRA RECORDKEEPING REQUIREMENTS

Comment: Commenter IV-D-27 believes the rule should state that an owner or operator may follow the recordkeeping provisions under RCRA instead of the corresponding recordkeeping requirements in § 63.1366 for air emissions and/or wastewater routed to RCRA incinerators covered under 40 CFR part 264/265 subpart O.

Response: The EPA agrees with this comment. Therefore, § 63.1362(l) of the final rule exempts streams that are discharged to RCRA incinerators or boilers and industrial furnaces meeting Subpart O from all requirements of the rule, except for identification in the NOCS report.

17.9 CLARIFICATIONS

Comment 1: Commenter IV-D-28 believes the phrase "up-to-date" should be deleted throughout § 63.1366 for two reasons. First, it means nothing for one-time records, and second, it is unnecessary for continuous records because other portions of the rule already require records of successive data.

Response: The EPA disagrees with the commenter. "One-time" records are subject to change based on changes in the process. The requirement to maintain records of continuous monitoring data or results of periodic calculations exists only in § 63.1366 of the proposed rule; other sections of the rule specify only such things as the types of parameters that must be monitored, the types of calculations that must be performed, and the frequency of these activities. Therefore, the phrase "up-to-date" is retained in the final rule.

Comment 2: Section 63.1366(e) of the proposed rule specified that no more than one violation per operating day would be assessed "for certain items of monitored equipment used for

more than one type of unit operation in the course of an operating day." Commenter IV-D-28 requested clarification of this section. For example, the "certain items" of monitored equipment are not defined.

Response: The definitions of exceedances and excursions, and how these occurrences constitute violations are clarified in § 63.1366(b)(6) of the final rule (see chapter 16 for additional information about these changes). The term "certain items" is not used in the final rule.

18.0 REPORTING

18.1 PRECOMPLIANCE PLAN

Comment: Commenters IV-D-21 and IV-D-29 stated that the requirement for a Precompliance report in § 63.1367(a)(2) of the proposed rule should be deleted, as it was for the HON.

Response: The EPA believes the Precompliance report (or precompliance plan in the final rule) is a valuable tool for the regulatory agency responsible for making compliance determinations for the affected source. It provides an enforcement official or inspector with some initial background information about the process being controlled, the types of emissions associated with the process, corresponding control equipment, and the monitoring parameters that have been or will be correlated to the process conditions.

The Precompliance plan is also the mechanism by which the affected source requests approval to use alternative monitoring parameters and to use calculations or other compliance procedures that differ from those prescribed in the rule. Because many of the compliance procedures for this rule are more complicated than those for the HON, EPA believes the Precompliance plan requirement is warranted for this industry and has retained the provision in the final rule.

Comment: Section 63.1367(a)(2)(iii) of the proposed rule would require the owner or operator to include in the Precompliance plan "a description of test conditions and limits of operation for control devices tested under normal conditions . . ." Commenter IV-D-28 requested clarification of what is meant by "normal" conditions.

Response: The language in this section of the proposed rule was an artifact of an earlier approach and should have been deleted from the proposed rule. This provision has been corrected in the final rule to require documentation of how monitoring parameter levels are established under § 63.1366(b)(3)(ii)(B), including the test data, any calculations, and rationale for why the level indicates proper operation of the control device. This section allows an owner or operator to establish monitoring levels based on performance test results supplemented with engineering assessments and manufacturer's recommendations. Because the use of these procedures is subject to approval by the Administrator, it must be included in the Precompliance plan.

18.2 PERIODIC REPORTS

Comment 1: Several commenters (IV-D-21, IV-D-28, IV-D-29, and IV-G-03) addressed the issue of the frequency of periodic reporting. Three commenters (IV-D-21, IV-D-28, and IV-D-29) stated that periodic reporting should be changed from quarterly to semiannually. Commenter IV-D-28 provided three reasons for the change: (1) quarterly reporting would be an unwarranted increase in burden compared to other MACT standards; (2) consistency among standards makes it easier for a facility subject to many standards to comply; and (3) EPA has proposed to harmonize the paperwork burdens of a wide variety of NSPS, part 61 NESHAP, and other part 63 MACT standards. Commenter IV-G-03 noted that the title of § 63.1367(b) is "Quarterly reports" but suggested changing it because § 63.1367(b)(3) would require submittal of a report within 180 days after a process change.

Response: The EPA re-evaluated the overall reporting requirements in the proposed rule and compared the proposed reporting requirements with requirements in rules for similar industries. Based on this evaluation, the Agency decided to change the periodic reporting from quarterly to semiannual. In those cases where the continuous emission monitoring data are used to demonstrate compliance with the 20-ppmv alternative standards, and the source experiences excess emissions, quarterly reporting is required until a request to reduce reporting frequency is approved. Section 63.1368(g) in the final rule is now titled "Periodic reports" and details the submittal schedule and content of the required Periodic reports.

Comment 2: Commenter IV-D-28 believes the rule should indicate that Periodic reports are due 2 months after the end of each reporting period.

Response: As mentioned in the response to comment 1 in this section, the Agency has opted for semiannual Periodic reports. In concurrence with the comment, § 63.1368(g) of the final rule details the submittal schedule and exceptions associated with the Periodic reports. In short, Periodic reports are to be submitted within 60 operating days after the end of the applicable reporting period.

18.3 NOTIFICATION OF COMPLIANCE STATUS REPORT

Comment: Commenter IV-D-28 stated that the NOCS report submittal date in § 63.1367(a)(1) conflicts with the requirement in § 63.7(a)(2) to complete performance testing within 180 days and the requirement in § 63.10(d)(2) to submit performance test reports 60 days after the tests.

Response: The submittal date for the NOCS report in § 63.1368(f) of the final rule does not conflict with the General Provisions requirements in §§ 63.7(a)(2) and 63.10(d)(2), it supersedes it. As noted in Table 1 to Subpart MMM -- General Provisions Applicability to Subpart MMM, "[T]est results must be submitted in the NOCS due 150 days after the compliance date." This means that the performance testing and the compilation of the test results must be completed and submitted as part of the NOCS report which is due within 150 days after the compliance date. Additional language was added to the final rule under § 63.1368(a) to clarify which of the reporting requirements of subpart A (General Provisions) remain in effect for this rule and which requirements have been superseded.

18.4 STARTUP, SHUTDOWN, AND MALFUNCTION REPORTS

Comment: Commenter IV-D-28 stated that § 63.8(c)(1)(ii) should not apply because if it does apply there will be two sets of deadlines for reports of actions inconsistent with the startup, shutdown, and malfunction plan--one affecting CMS and the other affecting all other periods of startup, shutdown, and malfunction. According to the commenter, the deadlines should all be the same and, ideally, the rule would require that all of this information be reported in the semiannual periodic reports.

Response: The Agency agrees that two sets of inconsistent reporting deadlines are cumbersome. As a result, the final rule overrides the 24-hour notification provisions of § 63.8(c)(1)(ii) and requires that all such notifications be reported within 2 days, consistent with the provisions of § 63.6(e)(3)(iv). The Agency was not persuaded by the commenter's suggestion that all such notifications can be reported in the Periodic reports and has maintained the reporting requirements (schedules) from the General Provisions § 63.6(e)(3)(iv) (related to events covered and those not covered in the facility's startup, shutdown, and malfunction plan). Furthermore, monitoring events or activities not covered by a source's startup, shutdown, and malfunction plan should be rare and are likely to be of interest to the enforcement agency. Reporting information to the enforcement agency within 2 working days will allow them to make a timely evaluation (if needed or warranted) of the event, any associated excess emissions, and the source's response to the event. Repeated occurrences of events not covered by a source's startup, shutdown, and malfunction plan could prompt an enforcement agency to request a copy of the startup, shutdown, and malfunction plan to review.

18.5 NOTIFICATION OF PROCESS CHANGE

Comment: Section 63.1367(b)(3) of the proposed rule would require notification of process changes that cause an emission point to become a process vent with an emission rate of 1 lb/yr or more. Two commenters opposed this requirement. Commenter IV-D-16 stated that this provision is not applicable to this standard and should be deleted. Commenter IV-D-15 stated that EPA needs to review and revise the definition of de minimis because l lb/yr is well within the margin of error of the calculation methods and may not be significant. Another commenter (IV-D-28) stated that the rule needs to specify how and when to report information about changes that occur after the submittal deadline for a specific report. The commenter suggested that it might be submitted no later than 60 days after it is obtained.

Response: The Agency decided to revise this section of the final rule based on these comments. The final rule states that whenever a process change is made, or a change is made in any of the information submitted in the NOCS report, a report must be submitted within 90 calendar days after the process change, unless the change requires approval prior to implementation (such as a change that would consist of information submitted in the

Precompliance plan). The report may be submitted as part of the next Periodic report, if one is to be submitted within the 90-day period. This more general or "generic" approach avoids the problems associated with trying to define de minimis emission levels as raised by the commenters. The information to be reported is to include: a brief description of the process change, a description of any modifications to standard procedures or quality assurance procedures, revisions to any of the information reported in the original NOCS report, and information required by the NOCS report for changes involving the addition of processes or equipment.

18.6 EQUIPMENT LEAK REPORTS

Comment: According to commenter IV-D-28, § 63.1367(c) of the proposed rule should specify the appropriate reporting deadlines for affected sources subject to the equipment leak standards because the deadlines in the cross-referenced sections in subpart H are not appropriate.

Response: The commenter is correct in that the cross-referenced section in subpart H does not match the rest of the reporting requirements in the proposed rule. With the reporting frequency changed to semiannual (see previous comments and responses regarding Periodic reports in 18.2), EPA decided to make the equipment leak reports consistent with the other reporting requirements in the final rule. The equipment leak report(s) are to be included with the NOCS report (due within 150 days of the compliance date) and with the Periodic reports (due within 60 days after the end of each subsequent semiannual reporting period).

18.7 RECORDS OF REPORTS

Comment: Commenter IV-D-28 believes the requirement in § 63.1367(c) of the proposed rule to maintain copies of properly-submitted reports as records is not appropriate for two reasons. First, it imposes a paperwork burden with no environmental benefit and no purpose except to be able to make a backup copy in the event EPA loses the original. Second, it creates the potential for unfair "paperwork penalties" in the event the owner or operator cannot find it when an inspector asks for it. The commenter recommended adding the following language, based on an amendment to the HON: "If an owner or operator submits copies of reports to the applicable EPA Regional Office, the owner or operator is not required to maintain copies of the

reports. If the EPA Regional Office has waived the requirement of § 63.10(a)(4)(ii) for submittal of copies of reports, the owner or operator is not required to maintain copies of the reports."

Response: The General Provisions (§ 63.10(b)(1)) require the owner or operator of an affected source to maintain files of all information (including all reports and notifications) in a form suitable and readily available for expeditious inspection and review. At a minimum, the most recent 2 years of data shall be retained onsite. The regulatory agency responsible for compliance assurance will be the likely end-user of such information if and when an inspection or site visit is conducted. The paperwork burden associated with keeping copies of the data and reports for the last 2 years onsite is not considered a significant burden. After the 2-year period, electronic copies of the reports may be maintained at an offsite location for the additional 3-year requirement. The EPA believes that the benefits of having the recent compliance reports available onsite to an inspector (if needed) far outweigh the impacts or burden associated with maintaining copies of the reports.

18.8 OVERLAP WITH RCRA REPORTING REQUIREMENTS

Comment: Commenter IV-D-27 believes the rule should state that an owner or operator may comply with the reporting provisions under RCRA instead of the corresponding reporting provisions in § 63.1367 of the proposed rule for air emissions and/or wastewater routed to a RCRA incinerator covered under 40 CFR part 264/265 subpart O.

Response: The EPA agrees with the commenter. Therefore, § 63.1362(l) of the final rule exempts streams that are discharged to RCRA incinerators or boilers and industrial furnaces meeting subpart O from all requirements of the rule, except for identification in the NOCS report.

19.0 IMPACTS

19.1 ENVIRONMENTAL IMPACTS

Comment: Commenter IV-D-27 believes EPA did not adequately consider the secondary air impacts of nitrogen oxides (NO_x) formation caused by combusting nitrogen-bearing HAP (and non-HAP VOC that may also be present) in process vent streams and wastewater.

Response: The impacts analysis was based on a small number of model streams with characteristics that represent typical or average characteristics of streams at the surveyed facilities. Very little nitrogen-bearing HAP is emitted from the surveyed facilities (less than 5 percent of both the total uncontrolled organic HAP emissions from process vents and the HAP load in wastewater streams), and most of these HAP are controlled to the level of the standard. Therefore, the model emission streams that were used to estimate secondary air impacts did not include nitrogen-bearing HAP. In addition, any small underestimate in the NO_x emissions from nitrogen-bearing HAP is likely more than offset by the use of conservative estimates in the original analysis. For example, the estimated increase in NO_x emissions were based solely on the emissions associated with operation of the more efficient controls needed to achieve the level of the standards; emissions from existing controls that would be replaced were assumed to be negligible. The EPA has no evidence that non-HAP VOC compounds in emissions streams contain significant amounts of nitrogen.

19.2 COST IMPACTS

Comment: Commenters IV-D-15 and IV-D-27 believe EPA underestimated the costs to comply with the proposed rule. Based on recent experience installing some of the control devices that are used in the cost analysis, commenter IV-D-27 believes the costs are "significantly" underestimated, especially when the standard is more stringent than the floor.

This commenter said their company would continue to review EPA's cost analysis and might provide their own detailed analysis at a later date; EPA has not received any additional information from this commenter. Commenter IV-D-27 also indicated that, based on the additional secondary air impact described in the comment above, the cost analysis should consider the need to install best available control technology (BACT) or RACT technology to control NO_x emissions.

Commenter IV-D-15 believes none of the models used in the cost analysis adequately address the situation at the commenter's facility. This facility emits carbon disulfide, which, when burned, generates a significant amount of SO_x. The SO_x is not an issue under the proposed regulation, but it is a criteria pollutant that would have to be controlled under state regulations. As a result, the commenter believes EPA's cost analysis underestimates the cost the commenter would face for two reasons. First, the model is based on a thermal incinerator with 70 percent recuperative heat recovery, but the commenter could not use this control device because carbon disulfide has a low auto-ignition temperature; they would have to use either a thermal incinerator with no heat recovery or a regenerative thermal oxidizer with 85 percent heat recovery. Second, the scrubber that follows the incinerator would need to be able to control the SO_x emissions as well as HCl emissions. This commenter also stated that if their intermediate process meets the definition of an intermediate (see comments in Section 3.3), either considerable changes to the existing flare or a new flare would likely be needed to meet the provisions of the regulation.

Response: The cost impacts are based on models that represent a range of characteristics at actual facilities. The models are expected to overestimate costs at some facilities and to underestimate costs at others. It is possible that installing a control device could trigger the requirement for a BACT or RACT analysis. Typically, to trigger BACT analysis the control device would have to cause a net increase in NO_x emissions of 40 tons/yr (or any amount that has an impact of 1 microgram per cubic meter within 10 kilometers of a class I area). To increase emissions by 40 tons/yr would require a very large incinerator; for example, the incinerator to control the large model process with very low HAP concentrations was estimated to increase NO_x emissions by only about 9 tons/yr. Typically, a facility has only two PAI processes. Thus, even if all emission streams are routed to the incinerator, and the emission streams contain nitrogen-bearing HAP, it will be a very unusual situation for NO_x emissions to increase by

40 tons/yr. In the unlikely event that BACT is required, BACT is likely to be the use of low-NO_x burners, which are likely already part of the design of any new combustion devices. Although RACT typically is applied to existing emission units, if it were to be applied to a new combustion control device, RACT would also likely be low-NO_x burners. As a result, EPA did not include BACT or RACT technology in the models for the impacts analysis.

The SO_x control also was not included in the cost analysis because it is not a typical requirement, the amount of SO_2 control that would be needed is unknown, and the cost is not expected to be significantly different from that for an HCl scrubber. The total annual cost of a thermal incinerator with no heat recovery is approximately equal to that for a thermal incinerator with 70 percent recuperative heat recovery. The annual auxiliary fuel costs would be higher for the incinerator without heat recovery, but these costs are nearly offset by lower capital recovery costs as a result of lower capital costs. Although the performance of a given scrubber will be better for HCl than for SO_2, a scrubber can easily be designed to obtain excellent SO_2 removal efficiencies.

Regarding the use of a flare that may not meet the specifications in the rule, if the owner or operator believes it is achieving a 90 percent reduction, the owner or operator may develop and submit for approval a procedure to demonstrate that it is complying with the required reduction efficiency.

19.3 ECONOMIC IMPACTS

Comment: Commenter IV-D-15 believes EPA has not adequately evaluated the impact of the proposed rule on small businesses. The commenter notes that the regulatory flexibility analysis finds minimal impact on small businesses, but the docket states that the two known small firms for which data were available were not surveyed to find the impact of the regulation on them. The commenter believes a survey of small businesses is needed; otherwise the impact on them is unknown. This issue is important to the commenter because at the time facilities responded to the section 114 information request, the commenter's plant was part of a large business, but it has since been sold and is now classified as a small business.

Response: Prior to proposal, EPA estimated that the proposed regulation would affect 78 existing plants. The EPA confirmed company-level revenue data on 45 of the 78 existing

plants that were estimated to be affected; the 45 plants are owned by 29 firms. Additionally, EPA selected 9 large PAI manufacturing companies with multiple plants to collect detailed information, which resulted in obtaining information for 20 plants altogether. This information was used to estimated annualized costs of the proposed regulation. The EPA determined that 2 of the 29 firms are classified as small businesses, and each firm owns one plant. Because these two small firms were not included in the more detailed survey of the 9 large PAI manufacturing companies, direct costs associated with the proposed regulation were not available and average control costs for modeled plants were used as an estimate of the control costs for the small firm plants. Using the average control costs for model plants as an estimate for small firm plants' control costs is a conservative approach (i.e., actual control costs for small firm plants are likely to be smaller) because small firm plants are likely to be smaller in scale and have fewer distinct processes per plant. The commenter's facility was one of the 20 plants for which the more detailed information was collected.

Since proposal, EPA reevaluated the impacts for the commenter's facility. Revenue data for the parent company of the new owner of this facility were obtained from Dun & Bradstreet. Cost impacts were unchanged from the original analysis. The resulting cost-to-revenue ratio for this small business was estimated to be approximately 2.3 percent. As noted at proposal, the control costs for model small businesses were also estimated to be less than 3 percent of revenue. This percentage suggests that the final rule does not significantly impact small firms in the PAI manufacturing industry.

20.0 MISCELLANEOUS

20.1 STANDARDS FOR ENDOCRINE DISRUPTORS

Comment: In the preamble to the proposed rule, EPA solicited comment on whether the risk posed by possible endocrine disruptors warrants more stringent requirements than those proposed. Six commenters (IV-D-16, IV-D-21, IV-D-26, IV-D-28, IV-D-29, and IV-G-05) opposed the development of more stringent requirements; none supported the idea. The commenters cited a variety of reasons for not developing more stringent requirements: (1) the science for determining disrupting properties of chemicals and their risks is still under development; (2) technology-based standards are not appropriate to address endocrine disruption; (3) endocrine disruption is not an adverse endpoint, but a mechanism of action; (4) the compounds are emitted in small quantities; and (5) this has not been an issue under other MACT standards that address essentially the same materials.

Response: In the proposal preamble EPA indicated that available information shows emissions of possible endocrine disruptors is very low relative to other HAP emissions. Based on these data and the comments, EPA has decided not to include more stringent requirements for possible endocrine disruptors in the final rule. However, this decision does not preclude the possibility that EPA may take action on endocrine disruptors in the future as new information becomes available.

20.2 RISK-BASED STANDARD FOR HCl

Comment: The preamble to the proposed rule explained that section 112(d)(4) of the Act provides EPA with authority, at its discretion, to develop risk-based standards for HAP "for which a health threshold has been established," provided that the standard achieves an "ample

margin of safety." Because HCl is a threshold pollutant that is emitted from PAI manufacturing facilities, EPA solicited comment on the adequacy, desirability, and feasibility of developing a risk-based standard instead of a MACT standard for HCl emissions from PAI manufacturing facilities. Three commenters addressed this issue. Commenter IV-D-17 opposed the development of a risk-based standard for HCl emissions because it would delay promulgation of the rule. Commenter IV-G-05 opposed development of a risk-based standard because the proposed requirements are very similar to those proposed in the NESHAP for Steel Pickling Facilities–HCl Process. Furthermore, this commenter believes a risk-based standard is not needed because existing permit limitations based on ambient concentrations are protective of the environment and human health, and the NESHAP limitations will only increase the permit's already protective nature. Commenter IV-D-28 supported EPA's determination of HCl as a threshold pollutant.

Response: The EPA agrees with the commenter that a risk-based approach would delay promulgation of the rule. Given the relatively small potential difference between a MACT-based standard and a risk-based standard, EPA believes that the small benefits are substantially outweighed by the burden to EPA and the industry of collecting and analyzing the data needed for a risk-based standard.

20.3 RELATIONSHIP BETWEEN THIS RULE AND OTHER RULES

Comment 1: Commenter IV-D-28 believes that wherever possible it would be better to cross-reference other rules rather than to repeat or rephrase them in this rule because it will (1) avoid unintentional changes in the language, (2) assure consistency if there are ever any amendments, and (3) avoid tinkering with the wording in an effort to "improve" it. The commenter wants to encourage consistency with other rules, especially the HON, because it would facilitate compliance at the commenter's large manufacturing facilities, each of which is subject to several standards. At a minimum, the commenter believes that additional opportunities for cross-referencing exist in the sections that specify provisions for heat exchangers (i.e., §§ 63.1362(g), 63.1365(f), 63.1366(g), and 63.1367(e) of the proposed rule).

Response: As with all new regulations that overlap with other regulations or have similar or identical requirements for specific emission sources, EPA has to make a decision as to when

and where regulatory text is written out and when it is cross-referenced. The points raised by the commenter are valid concerns and were considered in the rule development and in drafting the proposed regulatory text. For the most part, EPA utilized cross-referencing with the General Provisions, the HON, and a few other rules. This provides uniformity and consistency for the affected sources, as well as reducing the regulatory text to be included in the rule. However, in some instances, specific language from other rules was incorporated directly into the proposed rule in an effort to make it easier for the regulated community to understand the requirements.

Based on this comment, the Agency re-evaluated the heat exchanger provisions. Although much of the language from the HON was incorporated directly into the proposed rule, large sections of the provisions were also cross referenced. The EPA determined that this partial incorporation of language did not have the intended effect of enhancing understanding because not only would the regulated community have to refer to another rule for some of the provisions, but they would also have to read both rules closely to check for differences. Therefore, the final rule cross-references all of the heat exchanger provisions, and notes a few exceptions to those provisions. This approach also is consistent with the approach used on several other recent standards.

Comment 2: Commenter IV-D-28 stated that if any of the provisions that are borrowed from other rules (i.e., restated rather than cross-referenced) are amended in the other rule, EPA should reopen this rule and request public comment on making the same changes. Even if EPA amends other rules that currently have no relationship to this rule (e.g., the P&R rules or the Off-Site Waste and Recovery Operations rule), the commenter believes EPA should consider whether the amendment might be beneficial in this rule as well, especially for the sake of maintaining consistency.

Response: The EPA agrees with the commenter that subsequent amendments of other rules may trigger a need to amend language from those other rules that has been incorporated in this final rule. The decision, however, to amend any rule must be made on a case-by-case basis.

Comment 3: Because the rule references requirements from the HON that are periodic (e.g., those for equipment leaks), commenter IV-D-28 believed there should be a statement as in § 63.100(k)(9) that specifies the meaning of periods of time.

Response: The language from § 63.100(k)(9) has been added to the final rule.

20.4 RELATIONSHIP BETWEEN THE NOTIFICATION OF COMPLIANCE STATUS REPORT AND TITLE V PERMITS

Comment: In the preamble to the proposed rule, EPA solicited comment on how to incorporate the NOCS report into a facility's title V permit and on the types of changes that should trigger review actions under title V. Commenter IV-D-28 believes that questions involving title V programs are best addressed under title V. The commenter noted that States have developed their own operating permits programs, which differ from one another. These differences may include whether and how to incorporate various requirements into a permit. As a result, personnel administering the permit program will need to decide whether, and how, to incorporate the Notification of Compliance Status report into permits. Commenter IV-G-05 does not recommend incorporation by reference of the NOCS report into the title V permits without also requiring the permitting authority to specify the date of the incorporation. The commenter believes the types of changes that should trigger review actions under title V are any process changes, or operating and compliance procedures, that increase the emissions from the facility.

Response: The EPA agrees with commenter IV-D-28 that questions involving title V are best addressed under the title V program.

20.5 OMB REVIEW

Comment: Commenter IV-D-28 noted that it is unusual for Office of Management and Budget (OMB) to classify a rule as a "significant regulatory action" for "novel legal or policy issues." Thus, the commenter is interested in understanding OMB's concerns and requests that EPA make the OMB document publicly available and solicit comment on issues raised by OMB.

Response: No OMB document explaining the rationale behind their classification decision is available. All interagency exchanges, including review material exchanged with OMB, are included in the rulemaking docket.

20.6 EDITORIAL CLARIFICATIONS

Comment: Several commenters (IV-D-16, IV-D-21, IV-D-28, and IV-D-29) identified typographical errors and suggested minor editorial changes.

Response: The commenters' editorial remarks/issues and EPA's responses are summarized in Table 20-1.

20.7 COMMENT PERIOD

Comment: Commenter IV-D-28 was concerned that the public comment period, even with the 30-day extension, which was helpful, was not long enough to ensure that all issues were identified. The commenter would prefer to deal with issues before the rule is promulgated because making the provisions workable after promulgation can be time-consuming.

Response: The EPA believes sufficient time was provided for the public comment period, especially in light of the 30-day extension. As part of the regulatory development process, the Agency has a schedule to meet in promulgating the rule as well. The Agency will continue to work with the industry and the public commenters in finalizing the rule and resolving any issues prior to the promulgation date.

20.8 SUPPORTIVE COMMENTS

Comment: Commenter IV-D-18 supported the rule as proposed and agrees with identifying a broad range of control devices for compliance purposes. Commenter IV-G-01 supported EPA's proposed exclusion of research and development (R&D) facilities from the requirements of the rule. Commenter IV-G-05 endorses EPA's approach for identifying PAI processes subject to the standards because the EPA Form 3540-16 already identifies the affected sources. However, the commenter cautions that a potential drawback of this approach is uncertainty about the reliability of the data because it is self-reported. To lessen the effects of this drawback, the commenter believes regulators can use permits and other information that must be reported to comply with water or RCRA regulations to assist in identifying affected sources.

Response: The EPA acknowledges and appreciates the comments.

TABLE 20-1. EDITORIAL COMMENTS AND RESPONSES

Comment	Commenter	Response
In section 63.1360(d)(4)(i), change "from segregated sewers" to "managed in segregated sewers"	IV-D-28	The proposed language is consistent with the HON and has not been changed in the final rule.
Use the term "storage vessel" rather than "storage tank" for consistency with other regulations	IV-D-28	Change made as suggested in comment.
Paragraph (f)(4) in section 1360 is missing	IV-D-16 and IV-D-28	Paragraph (f)(5) in the proposed rule should have been numbered (f)(4).
Add the word "or" between "foam" and "liquid" in the definition of liquid-mounted seal	IV-D-28	Change made as suggested in comment.
Reference to HON Table 8 compounds in the definition of POD should be deleted	IV-D-16, IV-D-21, IV-D-28, and IV-D-29	This was an oversight in the proposed rule. Change made as suggested in comment.
Change "bottom receiver" to "bottoms receiver" in section 63.1362(e)	IV-D-28	Change made as suggested in comment.
Delete the words "the use of" from the first sentence of section 63.1364(c)(1)(v)	IV-D-28	Edited section to delete this phrase.
In section 63.1364(c)(2)(i)(A)(*6*), change "...can be obtained from standard reference texts." to "...may be obtained from standard references."	IV-D-28	Change made as suggested in comment.
In section 63.1364(c)(3)(i)(G), add units for the gas-to-cloth ratio	IV-D-28	Example units have been included.
In the last sentence of section 63.1364(c)(3)(ii), add "at or" before "below 20 ppmv"	IV-D-28	Edited this section and deleted this sentence.
In section 63.1365(f)(2)(iv), the reference to section 63.1362(f) should be changed to 63.1362(g)	IV-D-16	Commenter is correct, but this provision has been deleted from the final rule and replaced with cross reference to the HON.
In section 63.1367(a)(1), change "within 150 calendar days of the compliance date" to "no later than 150 after the compliance date"	IV-D-28	Change made as suggested in comment.
In section 63.1367(a)(2), add "at least" before "12 months"	IV-D-28	Change made as suggested in comment, but submittal date changed from 12 months to 6 months before the compliance date.
In section 63.1367(b)(1), replace the second comma with "and"	IV-D-28	This provision has been deleted from the final rule and replaced with cross reference to the HON.
In Table 1, delete the word "replace" wherever it occurs and state what does or does not apply	IV-D-28	No changes made; several other rules use this language to describe changes.

TABLE 20.1 (continued)

Comment	Commenter	Response
The terms “HAP” and “organic HAP” are not used consistently; check entire rule	IV-D-28	Checked entire rule and made changes. In some cases “total HAP” was added.
In the definition of “Group 1 storage tank,” change cutoffs from 37 m^3 to 38 m^3 and replace <76 m^3 with ≥38 m^3 to <76 m^3 in the applicability column of Table 2	IV-D-16	Commenter correctly identified typographical errors, but the cutoffs have changed in the final rule.