United States
Environmental Protection
Agency

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

EPA-453/R-94-003a
March 1994

Air

EPA

Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry-- Background Information for Final Standards

Final
EIS

Volume 2A: Comments on Process Vents, Storage Vessels, Transfer Operations, and Equipment Leaks

NESHAP

OLS #2486

EPA-453/R-94-003a

Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry-- Background Information for Final Standards

Volume 2A: Comments on Process Vents, Storage Vessels, Transfer Operations, and Equipment Leaks

Emission Standards Division

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March 1994

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ENVIRONMENTAL PROTECTION AGENCY

Background Information and Final Environmental Impact Statement for Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry
Volume 2A: Comments on Process Vents, Storage Vessels, Transfer Racks, and Equipment Leaks

Prepared by:

2/8/94

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(Date)

1. The standards regulate emissions of organic hazardous air pollutants (HAP's) emitted from chemical manufacturing process units in the Synthetic Organic Chemical Manufacturing Industry (SOCMI) and from other processes subject to the negotiated regulation for equipment leaks. Only those chemical manufacturing process units that are part of major sources under Section 112(d) of the Clean Air Act (Act) will be regulated. The standards will reduce emissions of 112 of the organic chemicals identified in the Act list of 189 HAP's.

2. Copies of this document have been sent to the following Federal Departments: Labor, Health and Human Services, Defense, Transportation, Agriculture, Commerce, Interior, and Energy; the National Science Foundation; and the Council on Environmental Quality. Copies have also been sent to members of the State and Territorial Air Pollution Program Administrators; the Association of Local Air Pollution Control Officials; EPA Regional Administrators; and other interested parties.

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4. Paper copies of this document may be obtained from:

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5. Electronic copies of this document may be obtained from the EPA Technology Transfer Network (TTN). The TTN is an electronic bulletin board system which is free, except for the normal long distance charges. To access the HON BID:

- Set software to data bits: 8, N; stop bits: 1
- Use access number (919) 541-5742 for 1200, 2400, or 9600 bps modems [access problems should be directed to the system operator at (919) 541-5384].
- Specify TTN Bulletin Board: Clean Air Act Amendments
- Select menu item: Recently Signed Rules

OVERVIEW

Emission standards under section 112(d) of the Clean Air Act (Act) apply to new and existing sources in each listed category of hazardous air pollutant (HAP) emission sources. This background information document (BID) provides summaries and responses for public comments received regarding the Hazardous Organic National Emission Standard for Hazardous Air Pollutants (NESHAP), commonly referred to as the HON. The HON will primarily affect the Synthetic Organic Chemical Manufacturing Industry (SOCMI). However, the provisions for equipment leaks also apply to certain polymer and resin production processes, certain pesticide production processes, and certain miscellaneous processes that are subject to the negotiated regulation for equipment leaks.

This BID comprises six volumes as follows:

- Volume 2A: Comments on Process Vents, Storage Vessels, Transfer Operations, and Equipment Leaks (EPA-453/R-94-003a);
- Volume 2B: Comments on Wastewater (EPA-453/R-94-003b);
- Volume 2C: Comments on Emissions Averaging (EPA-453/R-94-003c);
- Volume 2D: Comments on Applicability, National Impacts, and Overlap with Other Rules (EPA-453/R-94-003d);
- Volume 2E: Comments on Recordkeeping, Reporting, Compliance, and Test Methods (EPA-453/R-94-003e); and
- Volume 2F: Commenter Identification List (EPA-453/R-94-003f).

Volume 2A is organized by emission point and contains discussions of specific technical issues related to process

vents, storage vessels, transfer operations, and equipment leaks. Volume 2A discusses specific technical issues such as control technology, cost analysis, emission estimates, Group 1/Group 2 determination, compliance options and demonstrations, and monitoring.

Volume 2B addresses issues related to controlling emissions from wastewater. Specific technical issues include control technology, cost analysis, emission estimates, Group 1/Group 2 determination, compliance options and demonstrations, and monitoring.

Volume 2C contains the EPA's decisions regarding emissions averaging. Specific issues include the scope of emissions averaging in the HON, specific provisions related to credits and banking, and enforcement of an emissions averaging system for the HON.

Volume 2D discusses applicability of the HON in terms of selection of source category, selection of source, and selection of pollutants. Volume 2D also addresses the process for determination of the MACT floor and selection of the specific applicability thresholds for process vents, storage vessels, transfer racks, wastewater operations, and equipment leaks.

Volume 2E discusses the provisions for compliance, recordkeeping and reporting. Volume 2E also discusses issues related to the use of EPA test methods.

Volume 2F of each volume contains a list of commenters, their affiliations, and the EPA docket and item number assigned to each comment.

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ACRONYM AND ABBRIEVIATION LIST

ACRONYM	TERM
Act	Clean Air Act
ALAPCO	Association of Local Air Pollution Control Officers
ASPEN	advanced system for process engineering
BACT	best available control technology
BAT	best available technology
BD	butadiene
BID	background information document
BIF	boilers and industrial furnaces
CEM	continuous emissions monitoring
CFR	Code of Federal Regulations
CMA	Chemical Manufacturers Association
CMPU	chemical manufacturing process unit
CO	carbon monoxide
CTG	control techniques guideline
CWA	Clean Water Act
DMS	dual mechanical seal
DOT	Department of Transportation
DRE	destruction and removal efficiency
EB/S	ethylbenzene/styrene
EDC	ethylene dichloride
EFR	external floating roof
EO	ethylene oxide
E.O.	Executive Order
EPA	Environmental Protection Agency
Fe	fraction emitted
Fm	fraction measured
FR	FEDERAL REGISTER
Fr	fraction removed
FTIR	Fourier transform infrared
HAP	hazardous air pollutant

ACRONYM AND ABBRIEVIATION LIST, CONTINUED

ACRONYM	TERM
HON	hazardous organic national emission standards for hazardous air pollutants
IFR	internal floating roof
LDAR	leak detection and repair
LAER	lowest achievable emission rate
MACT	maximum achievable control technology
MIBK	methyl isobutyl ketone
MR	mass removal (actual)
NCS	Notification of Compliance Status
NESHAP	national emission standards for hazardous air pollutants
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRDC	Natural Resources Defense Council
NSPS	new source performance standards
NSR	new source review
OCCM	Office of Air Quality Planning and Standards Control Cost Manual
OCPSF	organic chemicals, plastics, and synthetic fibers
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
P.L.	Public Law
PAV	product accumulator vessel
POM	polycyclic organic matter
POTW	publicly owned treatment works
PRA	Paperwork Reduction Act
PRV	pressure relief valve
PSD	prevention of significant deterioration
QIP	quality improvement program

ACRONYM AND ABBRIEVIATION LIST, CONTINUED

ACRONYM	TERM
R & D	research and development
RCRA	Resource Conservation and Recovery Act
RCT	reference control technology
RIA	Regulatory Impact Analysis
RMR	required mass removal
SARA	Superfund Amendment and Reauthorization Act
SIP	State Implementation Plan
SMS	single mechanical seal
SOCMI	synthetic organic chemical manufacturing industry
STAPPA	State and Territorial Air Pollution Program Administrators
TAC	total annual cost
TACB	Texas Air Control Board
TCI	total capital investment
THC	total hydrocarbon
TIC	total industry control
TOC	total organic compound
TRE	total resource effectiveness
TRI	toxics release inventory
TSDF	treatment, storage, and disposal facility
VHAP	volatile hazardous air pollutant
VO	volatile organics measurable by Method 25D
VOC	volatile organic compound
VOHAP	volatile organic hazardous air pollutant

ABBREVIATION	UNIT OF MEASURE
bbl	barrel
BOE	barrels of oil equivalent

ACRONYM AND ABBRIEVIATION LIST, CONTINUED

ABBREVIATION	UNIT OF MEASURE
Btu	British thermal unit
Btu/kW-hr	British thermal unit per kilowatt-hour
^{o}C	degrees Celsius
^{o}F	degrees Fahrenheit
gal	gallon
gpm	gallons per minute
hr	hour
kg/hr	kilograms per hour
kPa	kilopascals
kW-hr/yr	kilowatt-hour per year
ℓ/hour•m^2	liters per hour per square meter
ℓpm	liters per minute
gal	gallons
m^3	cubic meters
Mg	megagrams
mg	milligrams
mg/dscm	milligram per dry standard cubic meter
MW	megawatts
ppb	parts per billion
ppm	parts per million
ppmv	parts per million by volume
ppmw	parts per million by weight
psia	pounds per square inch absolute
scm/min	standard cubic meter per minute
TJ	terajoules
yr	year

LIST OF FREQUENTLY USED TERMS

Act means the Clean Air Act as amended in 1990.

Administrator means the Administrator of the U. S. Environmental Protection Agency or his or her authorized representative (e.g., a State that has been delegated the authority to implement the provisions of part 63).

Enhanced monitoring rule means the rule to be located in sections 64.1 through 64.9 of part 64 of title 40 of the Code of Federal Regulations. This rule implements section 702(b) of title VII of the 1990 Clean Air Act Amendments. This rule establishes the criteria and procedures that owners or operators must satisfy in evaluating, selecting and demonstrating enhanced monitoring, and includes appendices containing enhanced monitoring performance and quality assurance requirements. The enhanced monitoring rule does not apply to sources subject to 40 CFR part 63, and therefore does not apply to sources subject to the HON. The proposed rule was published in the Federal Register on October 22, 1993 (58 FR 54648).

General Provisions means the general provisions located in subpart A of part 63 of title 40 of the Code of Federal Regulations. These General Provisions codify national emission standards for hazardous air pollutants (NESHAP) for source categories covered under section 112 of the Act as amended November 15, 1990.

Implementing agency means the Administrator of the U. S. Environmental Protection Agency or a State, federal, or other agency that has been delegated the authority to implement the provisions of part 63. Under section 112(l) of the Act, States and localities may develop and submit to the Administrator for approval a program for the implementation and enforcement of emission standards. A program submitted by

the State under section 112(l) of the Act may provide for partial or complete delegation of the Administrator's authorities and responsibilities to implement and enforce emission standards.

Operating permit program rule means the rule located in sections 70.1 through 70.11 of part 70 of chapter I of title 40 of the Code of Federal Regulations. This rule implements section 502(b) of title V of the 1990 Clean Air Act Amendments. Under this rule, States are required to develop, and to submit to the EPA, programs for issuing operating permits to major stationary sources (including major sources of hazardous air pollutants listed in section 112 of the Act), sources covered by New Source Performance Standards (NSPS), sources covered by emissions standards for hazardous air pollutants pursuant to section 112 of the Act, and affected sources under the acid rain program. The final rule was published in the Federal Register on July 21, 1992 (57 FR 32250).

Permitting authority means: (1) the State air pollution control agency, local agency, other State agency, or other agency authorized by the Administrator to carry out a permit program under part 70; or (2) the Administrator, in the case of EPA-implemented permit programs under part 71.

Section 112(g) rule means the rule to be located in subpart B of part 63 of title 40 of the Code of Federal Regulations. This rule implements section 112(g) of the 1990 Clean Air Act Amendments. This rule will impose control technology requirements on "constructed, reconstructed or modified" major sources of hazardous air pollutants not already regulated by a section 112(d) or 112(j) MACT standard.

Section 112(l) rule means the rule located in subpart E of part 63 of title 40 of the Code of Federal Regulations. Under this rule, a State or locality may submit a program to the Administrator to request partial or complete delegation of the Administrator's authorities and responsibilities to implement and enforce section 112 emission standards. The final rule was published in the Federal Register on November 26, 1993 (58 FR 62262).

Title III means title III of the 1990 Clean Air Act Amendments. Section 112 of the Act authorizes the EPA to establish MACT standards.

Title V means title V of the 1990 Clean Air Act Amendments, which authorizes the EPA to establish the operating permit program.

Title VII means title VII of the 1990 Clean Air Act Amendments. Section 702(b) of the Act authorizes the EPA to establish compliance certification procedures. The part 64 enhanced monitoring rule implements section 702(b).

1.0 INTRODUCTION

On December 31, 1992, the U.S. Environmental Protection Agency (EPA) proposed the Hazardous Organic National Emission Standard for Hazardous Air Pollutants (NESHAP) for process units in the synthetic organic chemical manufacturing industry (SOCMI) under section 112(d) of the Clean Air Act (57 FR 62608). Public comments were requested on the proposed standard and comment letters were received from industry representatives, governmental entities, environmental groups, and private citizens. Two public hearings were held, one in Research Triangle Park (RTP), North Carolina, on February 25, 1993, and another in Baton Rouge, Louisiana, on March 18, 1993. Both hearings were open to the public and 5 persons in RTP and 45 persons in Baton Rouge presented oral testimony on the proposed NESHAP.

On August 11, 1993, the General Provisions for part 63 (58 FR 42760) were proposed. In order to allow the public to comment on how the General Provisions relate to the Hazardous Organic NESHAP (HON), a supplemental notice (October 15, 1993; 58 FR 53478) was published. Public comments were requested on the overlap between the General Provisions and the HON and on some specific emissions averaging issues. Comment letters regarding the supplemental notice were received from 80 commenters.

The written comments that were submitted and verbal comments made at the public hearings regarding the technical and policy issues associated with process vents, storage vessels, transfer operations, and equipment leaks in the proposed rule and supplemental notice, along with responses to these comments, are summarized in the following chapters. The

comments that were submitted regarding process vents are summarized in chapter 2.0 and the comments regarding storage vessels are summarized in chapter 3.0. The comments that were submitted regarding transfer operations and equipment leaks are summarized in chapters 4.0 and 5.0, respectively. The summary of comments and responses serves as the basis for the revisions made to the NESHAP between proposal and promulgation.

Within each chapter, the comments are organized into sections such as: emission control technology; impacts analysis; applicability and Group 1/Group 2 determination; compliance demonstrations; recordkeeping and reporting; wording of the provisions; and miscellaneous. The emission control technology section focuses on comments regarding the applicability and performance of the reference control technologies. The impacts analysis section addresses comments concerning cost analysis, emissions estimates, other environmental impacts, and energy impacts. The applicability and Group 1/Group 2 determination section addresses comments on the emission points covered by the NESHAP as well as which emission points should be required to apply control. The compliance demonstrations section focuses on performance testing, design evaluations, inspections, and monitoring. The reporting and recordkeeping section addresses comments relating to the specific emission sources. General recordkeeping and reporting issues are presented in BID Volume 2E. The wording of the provisions section addresses comments concerning clarification or consistency of the NESHAP requirements and definitions, and the miscellaneous section covers comments which did not fit in the other sections.

2.0 PROCESS VENTS

2.1 EMISSION CONTROL TECHNOLOGY

Comment: One commenter (A-90-19: IV-D-32) supports the RCT sited for process vents, but requested that further consideration be given to the requirements of vents with existing control devices with a DRE between 95 and 98 percent. Two commenters (A-90-19: IV-D-32; and IV-D-112) suggested that facilities with catalytic incinerators achieving 95 percent DRE be allowed to continue to operate for a period of time (e.g., 10 years) or until replacement is necessary. Another commenter (A-90-19: IV-D-97) advocated a 95 percent control for existing facilities for a period of 10 years. The commenter (A-90-19: IV-D-32) acknowledged the possibility of using emissions averaging to make up the short fall between 95 percent and 98 percent control, but claimed that emissions averaging may not be a viable option, especially for a small facility, and alternatives should therefore be made available.

Response: Existing process vent control devices that are used to comply with the distillation or air oxidation NSPS or State regulations in Texas, California, Illinois, and Louisiana are required to have a removal efficiency of 98 percent. The Ohio regulation also requires 98 percent control of all air oxidation vents that are subject to the regulation. Therefore, the EPA has concluded that there are few existing control devices for process vents that are achieving a control efficiency less than 98 percent.

For those existing process vent control devices that are achieving less than 98 percent, the EPA has provided emissions averaging as an alternative compliance option. An emissions credit from control of another emission point in the facility

can be used to offset the emission debit generated by the use of a process vent control device with less than 98 percent efficiency. For small production facilities, the magnitude of the emissions debit generated by controlling process vents to efficiencies between 95 and 98 percent should be small. Therefore, emissions averaging is also a viable option for these facilities.

Comment: One commenter (A-90-19: IV-D-32) stated that the EPA has not demonstrated that RCT achieves 98 percent control for each HAP and that the 98 percent level of control appears to be based only on the VOC removal levels used in past NSPS. One commenter (A-90-19: IV-D-70) supported the use of thermal incineration for control of process vents and other streams where reasonable.

One commenter (A-90-19: IV-D-107) agreed that the proposed emission limits are achievable and should be promulgated as part of the final rule. Two commenters (A-90-19: IV-D-70; IV-D-99) stated that thermal incinerators can provide control greater than 98 percent DRE if properly operated, while another commenter (A-90-19: IV-D-90) requested that a 99.9 percent DRE be required for all combustion devices.

Response: The EPA would first like to reiterate that control by thermal oxidation is not specifically required by the HON process vents provisions. Thermal oxidation is simply the RCT whose performance level must be met by any controls intended to comply with the HON process vents provisions. The commenter correctly states that 98 percent control is based on studies used to determine VOC control levels for past NSPS and has not been proven by testing for each individual HAP. These two issues do not weaken the EPA's decision for 98 percent control of HAP's for the following reasons: (1) nearly all organic HAP's are also VOC; and (2) HON compliance is not based upon control of each individual HAP. Compliance with the HON may be based upon either total organic HAP or TOC. Clearly, a control device might have a higher level of control for one particular HAP than for another, but compliance is

based on the overall reduction of total organic HAP or TOC from an emission point.

The 98 percent level of control was chosen because it has been shown to be uniformly achievable by combustion devices. As stated earlier, test data to demonstrate efficiency in a thermal incinerator is not available for each individual HAP. However, the efficiency conclusions for a thermal incinerator (98 percent DRE or an outlet concentration of 20 ppmv) were based on test data using the most difficult VOC compounds to combust, which included several HAP's. Therefore, it was concluded that the 98-percent reduction can be achieved for total HAP (memorandum from David Mascone, EPA/CMS, to Jack Farmer, EPA/CPB, "Thermal Incinerator Performance for NSPS, Addendum," July 1990, Docket Number IV-90-19: IV-B-1). The EPA recognized that thermal incineration may achieve greater than 98 percent DRE, but test data show that levels greater than 98 percent may not be uniformly achievable.

Comment: Two commenters (A-90-19: IV-D-90; IV-D-100) claimed that by focusing technical analysis of controls on combustion, the EPA has limited the flexibility in applying alternative control technologies that are cost effective, including pollution prevention.

Response: The technical analyses performed focused on control by combustion because combustion is considered to be the most universally applicable control for process vent emissions, and accurate information was available for estimating costs and impacts. This in no way limits the application of alternative controls provided that the alternative control achieves the same level of control as combustion: 98 percent emission reduction or 20 ppmv HAP at exit of device. Pollution prevention is in fact encouraged by the EPA since it recovers valuable resources while reducing emissions. From this perspective, pollution prevention may be viewed in the same light as recovery devices such as condensers or carbon adsorbers. If a pollution prevention technique is employed within a facility's control strategy, it must alter the characteristics of a Group 1 stream such that

the stream is then classified as Group 2. If this can not be achieved by pollution prevention alone, then either emissions averaging or an add-on control device must be used in addition to the pollution prevention technique.

Comment: One commenter (A-90-19: IV-D-113) stated that the requirements for demonstration of alternative control technology are both burdensome and unnecessary if a technology meets a specified treatment objective. The commenter (A-90-19: IV-D-113) recommended that the EPA establish a treatment threshold for halogen removal in the process vents section of the HON, but not dictate a specific technology to achieve it.

Response: The process vent provisions are expressed as a HAP or TOC percent reduction or concentration limit, and do not require use of a specific technology. The control technology must be demonstrated to achieve the 98 percent reduction or a concentration below 20 ppmv during the performance testing to ensure it can meet this level. If the commenter's alternative technology is one where performance testing at the inlet and outlet would be infeasible, but there is evidence that it achieves equivalent control, then the commenter can apply for approval of the alternative technology under §63.6(g) of the General Provisions. This process includes Agency Review and a Federal Register notice.

However, because the proposed standard for halogenated streams in §63.114(c) was written as an equipment standard (scrubber following a combustor) use of any other technology would have required an application and Federal Register notice. Therefore, the final rule is being revised to use an emission limit (percent reduction or mass limit) format instead of requiring a scrubber. This will allow use of technologies other than a scrubber to meet the halogen limits.

Comment: One commenter (A-90-19: IV-D-50) proposed that an "Alternate Means" provision be added to allow application of control technology less stringent than MACT if the facility can demonstrate that thermal oxidation is unsafe and that

applicable alternative technology cannot achieve a level of control equivalent to RCT.

Response: The EPA again points out that thermal incineration is not exclusively required by the HON regulation. Thermal incineration provides the basis for the technical analyses and for comparisons to other control technologies. Possible alternatives include use of recovery devices to increase the TRE to greater than 1.0, or emissions averaging.

Comment: One commenter (A-90-19: IV-D-34) suggested that the incinerator definition be modified so that it would include regenerative incinerators.

Response: The purpose of the definition is to distinguish between incinerators and boilers. The incineration definition will be modified to include the following sentence provided by the commenter (A-90-19: IV-D-34) at the end of the definition to allow the use of regenerative incinerators:

> "The above energy recovery section limitation does not apply to an energy recovery section used solely to preheat the incoming vent stream or combustion air."

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) stated that because many boilers and process heaters employ staged combustion, which may lower the overall temperature and lengthen the flame zone of the combustion section, the vented VOHAP stream should be introduced into the combustion flame zone as near to the burner fuel inlet as possible while maintaining good mixing.

One commenter (A-90-19: IV-D-86) considered the definition of flame zone too restrictive and suggested that a residence time requirement be established as an alternative.

Response: It was determined that as long as the process vent stream passes through the flame zone, the temperature and residence time achieve the required level of combustion efficiency. The EPA references "Reactor Processes in the Synthetic Organic Chemical Manufacturing Industry - Background Information for Promulgated Standards," EPA-450/3-90-016b,

March 1993 to support the decision. The definition of flame zone in the regulation was written broadly enough to include various types of boiler configurations. As proposed, the definition allows the stream to be introduced as near to the burner fuel inlet as possible while maintaining good mixing. However, in certain configurations, it may be too restrictive to adopt these suggested requirements into the definition, especially since another commenter thought that the proposed definition of flame zone was too restrictive. Furthermore, such wording is very subjective and would therefore be difficult to enforce. The EPA determined that the requirement that the vent stream be introduced into the flame zone was a simpler requirement to follow than establishing and measuring the residence time. For these reasons, the definition of flame zone remains unchanged.

Comment: One commenter (A-90-19: IV-D-69) suggested that a vent stream be allowed to be introduced with secondary combustion air when required by compatibility or safety reasons if compliance with the 98 percent DRE or 20 ppmv exit concentration requirement is maintained.

Response: The proposed and final process vent provisions permit a vent stream or streams to be introduced with secondary combustion air if a facility so chooses. For boilers with heat input capacities less than 44 MW or if the vent stream is introduced with the combustion air, a performance test and more monitoring, reporting, and recordkeeping are required than if the stream were introduced as or with primary fuel.

Comment: Two commenters (A-90-19: IV-D-32; IV-D-34 and IV-G-4) requested that flares be allowed as the primary control device for halogenated streams, if the aggregated halogen content at the flame tip under routine operating conditions would not exceed 4 lb/hr as halogen atoms. The commenters (A-90-19: IV-D-32; IV-D-34 and IV-G-4) pointed out that such a change would be consistent with some existing State regulations. For example, one commenter (A-90-19: IV-D-32) said TACB Standard Exemption 80 exempts from new

source review up to 0.45 Kg/yr (1.0 lb/hr) of HCl emissions. Another commenter (A-90-19: IV-D-88) cited a RCRA limitation on hazardous waste incinerators in proposing that a 4 lb/hr halogen emission limit be applicable to any combustion device. Another commenter (A-90-19: IV-D-32) said that existing controls in similar facilities were not considered in selecting the halogen cutoff level. One commenter (A-90-19: IV-D-34 and IV-G-4) stated that a flare is the only practically applicable control device for streams with highly variable flow and heat content, regardless of halogen content.

One commenter (A-90-19: IV-D-113) cautioned that experience with scrubbing and other halogen controls has demonstrated that the required 99 percent removal efficiency is extremely prescriptive for many halogenated process vents, especially those at or near the 200 ppmv threshold and those containing elemental bromine or chlorine (Br_2 or Cl_2). One commenter (A-90-19: IV-G-4) stated that Texas regulations require halogen control devices with 95-percent removal efficiency. One commenter (A-90-19: IV-D-113) further stated that the 0.5 mg/Nm^3 (mg/scm) halogen emission limit is ten times more stringent than the most stringent requirement they are aware of. The commenter (A-90-19: IV-D-113) proposed that the emissions limit be revised to 5 mg/Nm^3 (mg/scm) to provide a limit that is technically achievable and provide consistency between European and U. S. standards so as to not hinder competitiveness. One commenter (A-90-19: IV-D-88) questioned the validity of the 0.5 mg/scm halogen emission limit because it was derived from the halogen detection limit rather than on a consideration of the characteristics of waste streams.

Response: The EPA agrees with the commenters that a mass limit for defining halogen streams will provide greater flexibility for compliance without reducing the stringency of the rule. Based on an analysis of scrubber performance reported in the ethylene dichlorine questionnaire responses supplied by SOCMI facilities, 11 of the 12 scrubbers were achieving a 99-percent reduction of hydrogen chloride or a

total halogen mass flow rate below 0.45 kg/hr (1.0 lb/hr). The median mass emission rate exiting those scrubbers was about 0.45 kg/hr of total HCl and Cl_2. Based on the available data, it is not demonstrated that values lower than that would be uniformly achievable. The commenter (A-90-19: IV-D-32) said TACB has a 0.45 kg/hr exemption. Therefore, the rule will be revised to define a halogen stream as a stream containing 0.45 kg/hr or greater of halogen atoms and require a 99-percent reduction of total halogen atoms or reduce the halogen emissions to less than 0.45 kg/hr.

However, an allowance will be made for existing scrubbers. As indicated by the questionnaire responses and comments, there are some SOCMI units that currently have scrubbers that achieve between 95- and 99-percent reduction and that would not achieve a 99-percent reduction or 0.45 kg/hr emission rate. The EPA's national cost estimate did not include costs to replace existing scrubbers. The emission reduction obtained from replacing a 95-percent efficient scrubber with a 99-percent efficient scrubber would be small. Therefore, the final rule will allow sources that had halogen control devices as of proposal of the HON to achieve 95-percent reduction or an emission rate below 0.45 kg/hr.

Comment: One commenter (A-90-19: IV-D-88) questioned the appropriateness of requiring a scrubber on process vents with halogen emissions less than some combustion sources. The commenter (A-90-19: IV-D-88) stated that a coal-fired boiler exhaust may contain 70 ppmv HCl or more.

Response: The EPA's decision to require a combustor and scrubber on a process vent stream that has halogen emissions less than some combustion sources was based on the results of analyses of cost effectiveness of the combustor/scrubber combination. The TRE index value is a measure of cost effectiveness of control and the TRE calculation for halogenated streams is based on application of a combustor followed by a scrubber. Halogenated process vent streams are required to be controlled only if they have TRE index values

less than or equal to 1.0. For Group 1 streams (those with TRE $\leq$ 1.0), application of a combustor and a scrubber is reasonable. The halogenated stream definition has been revised based on a mass emission rate, as described in previous responses.

Comment: One commenter (A-90-19: IV-D-34 and IV-G-4) suggested that provisions be made for flares to be used as a backup control device for halogenated streams while the primary control device is not operating, such as process start-up and shutdown and primary control device malfunction or maintenance.

Response: In the proposal regulation, an owner or operator is not allowed to use a flare as a primary control device on a halogenated vent stream. However, as provided in the proposed General Provisions found in subpart A, it may be possible to flare such a stream as an alternate, back-up control in case of start-up, shutdown, and malfunction of the primary control device. In order to gain approval for the use of flaring as an alternate control during a start-up, shutdown, and malfunction episode, the owner or operator would need to submit a start-up, shutdown, and malfunction plan as described in §63.6(e)(3). Each plan would be reviewed and approved on a site-specific basis to determine if it is an appropriate back-up plan in case of start-up, shutdown, and malfunction of the primary control device.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) stated that flare operational standards and parameters and parameter monitoring should conform to 40 CFR 60.18.

Response: The EPA agrees with the commenter. The flare operational standards in 40 CFR 63.11(b) are the same as those in 40 CFR 60.18.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) suggested that scrubbers used to control halogenated emission streams use either a continuous purge of the scrubbing fluid or maintain a two to ten day supply of scrubbing fluid on site. Additionally, the commenters (A-90-19: IV-D-70; IV-D-99) recommended that an extra scrubbing fluid pump and

spare parts be required to be on hand at the site or available within one working day in order to minimize scrubber downtime.

Response: The EPA understands the commenters' concerns over control device downtime; however, the EPA has chosen not to include specific requirements in the HON such as those listed by the commenters. The potential for assessing non-compliance fees should provide sufficient incentive for owners or operators to keep scrubbers operating properly with timely maintenance.

Comment: One commenter (A-90-19: IV-D-77) suggested that a water scrubber should be allowed as a process vent control if it can be proven that the scrubber removes 98 percent of the organic HAP. The scrubber underflow would be sent to the plants wastewater treatment facility.

Response: This type of control is allowed under the HON process vents provisions, provided that the device demonstrates 98 percent control through performance testing, and it is not used as a product recovery device. (Product recovery devices are considered part of the chemical manufacturing process and can be used to achieve a TRE greater than 1.0, but cannot be used to comply with the 98 percent emission reduction provision.)

Comment: Four commenters (A-90-19: IV-D-70; IV-D-85; IV-D-99; IV-G-7) presented concerns about the inability of condensers and carbon adsorbers to meet RCT for process vents. Possible problems mentioned by the commenters (A-90-19: IV-D-70; IV-D-99) occur when condenser coils freeze up and when a mixture of compounds is controlled by a carbon adsorber.

Response: The EPA is aware of the fact that condensers and carbon adsorbers may not meet the 98 percent reduction/20 ppmv level of control required by the process vent provisions; however, for process vents, if these devices are used for product recovery, they are not considered to be control devices, and cannot be used to meet 98 percent reduction/20 ppmv provisions. As recovery devices, they can be used to maintain a level of performance such that the

outlet stream from the device has a TRE greater than 1.0. A condenser or carbon adsorber applied to a storage vent or transfer rack must meet the RCT requirements for those source types, 95 percent or 98 percent control, respectively. In any case, if the device is used to comply with the 98 percent reduction or 20 ppmv level of control, the level of control of these devices must be proven through a performance test.

Comment: Three commenters (A-90-19: IV-D-70; IV-D-85; IV-D-99) also expressed concern over the use of ozone depleting chemicals in condensers applied as controls.

Response: The EPA is providing neither an incentive nor disincentive for the use of ozone depleting chemicals in condensers. The use of those chemicals is addressed under Title IV of the Act.

Comment: One commenter (A-90-19: IV-D-107) claimed that catalytic incineration is a proven, effective control technology already in use within the SOCMI as an effective VOC control and will prove to be an efficient HAP control as well; however, two commenters (A-90-19: IV-D-70; IV-D-99) pointed to problems with catalyst poisoning when catalytic incineration was used (see section 2.4.1).

Response: To meet the requirements of the regulation, any type of control device, including a catalytic incinerator, can be used as long as it reduces HAP emissions by 98 weight-percent or to a concentration of 20 ppmv, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent. To ensure proper operation of the selected control device, the regulation requires that ranges for certain parameters must be established in a performance test and then monitored periodically. When a catalytic incinerator is used to achieve compliance, a daily average temperature difference across the catalyst bed must be established based on the performance test and other documentation and reported in the NCS or established in the operating permit. Once the temperature difference is established, it must be measured continuously, and a daily average must be calculated each day. If the catalyst bed becomes poisoned, the temperature difference measured across

the catalyst bed would likely be outside the range established in the NCS or the operating permit, indicating a problem.

2.2 IMPACTS ANALYSIS

2.2.1 Cost Analysis

Comment: Two commenters (A-90-19: IV-D-58; IV-D-62) argued that the incremental emissions reduction gained by exceeding the MACT floor is unjustified and that if the EPA regulates at a stringency above the floor requirements, the EPA must show that the cost of exceeding the floor requirements are outweighed by substantial emission reduction benefits. One commenter (A-90-19: IV-D-58) said the incremental emissions reduction of 1.3 percent from the floor to the selected option is likely to be in the realm of a statistical aberration given emission estimation uncertainties.

Response: The average characteristics of the floor was equivalent to about $3,000/Mg of organic HAP reduced. The EPA believes the estimates of emission reduction and costs are sufficiently accurate for use in regulation development, and the commenter did not provide specific details regarding their concern about estimation uncertainty. The EPA further believes that the incremental cost associated with the incremental emissions reduction is acceptable and justified and brings the HON level of stringency more in line with the cost-effectiveness in previous NSPS and the CTG.

Comment: One commenter (A-90-19: IV-D-32) stated that the EPA's cost analysis was generally correct but contended that there were two exceptions. First, the commenter (A-90-19: IV-D-32) contended that some of the EPA's assumptions were too conservative and lacked substantiation. Second, the commenter (A-90-19: IV-D-32) claimed that baseline controls for nonattainment areas were applied to facilities that are not in nonattainment areas.

Response: The EPA thanks the commenter for the general support of the EPA's cost analysis. Although the commenter disagreed with some of the EPA's assumptions, no specifics were given concerning which assumptions were being questioned

and no alternatives were suggested by the commenter. Secondly, the commenter incorrectly stated that controls required for facilities in non-attainment areas were considered when evaluating baseline control level. Only existing State regulations were included in the baseline control analysis.

Comment: Two commenters (A-90-19: IV-D-32; and IV-D-112) stated that the HON did not consider the costs of upgrading existing controls to 98 percent DRE performance and presented an example of a catalytic incinerator (95 percent DRE) installed for compliance with the Air Oxidation NSPS. One commenter (A-90-19: IV-D-32) also suggested that the TRE measurements be allowed at the exit of a control device achieving at least 95 percent control efficiency.

Response: The Benzene NESHAP, vinyl chloride NESHAP, and regulations in five states were reviewed. All of these regulations required 98-percent control, except for one State regulation that requires 85-percent control. Therefore, all vents included in the HON baseline were assumed to be controlled to 98 percent except vents in the State requiring 85-percent reduction. These latter vents were assumed to be controlled with condensers, and costs were estimated for upgrading to incinerators. Thus, the HON does consider the costs of upgrading existing controls to 98-percent DRE effectiveness.

The Air Oxidation NSPS, which requires 98-percent reduction of VOC emissions from new air oxidation process vents, was not considered for the HON baseline, which means any vents that would be "caught" by this NSPS were assumed to be uncontrolled in the HON baseline analysis. Incorporating controls under the Air Oxidation NSPS, or any additional rule in the HON baseline analysis, would cause the HON control cost estimates to be lower. The HON costs of control are overestimated.

Comment: Two commenters (A-90-19: IV-D-69; IV-D-75) stated that the EPA erroneously assumed that all process vent streams are centrally collected and routed to a single control

device. One commenter (A-90-19: IV-D-32) gave the following reasons why vent streams may not be collected together: mixed streams may create serious safety concerns, vent proximity or energy requirements may make central collection impractical, and various streams may be incompatible with the design of a single control device. Two other commenters (A-90-19: IV-D-79; IV-D-97) also pointed out the potential safety hazards of plant-wide manifolding of vent streams. One commenter (A-90-19: IV-D-86) supported the determination of MACT control device cost effectiveness on a dedicated vent basis. The commenter (A-90-19: IV-D-86) acknowledged that vents may at times be combined cost effectively and safely, but stated that it would be inappropriate to assume all small vents may be manifolded together.

Response: The EPA believes the commenters have misinterpreted the cost analysis. For estimating cost of control, the EPA assumed that reactor vents from the same CMPU were combined, air oxidation vents from the same CMPU were combined, and distillation vents from the same CMPU were combined. The EPA did not combine vent streams from different CMPU's, nor did the EPA combine vent streams from different vent types (air oxidation, distillation, reactor). The EPA did assume that reactor vents from the same CMPU would be located near each other, and no information was received to discredit this assumption. Therefore, the EPA does not believe that safety, vent proximity, and stream incompatibility are of concern because of the methodology used for the national impacts analysis.

Comment: One commenter (A-90-19: IV-D-68) stated that the purchase of computers, running of conduit, installation of wiring, programming, and all auxiliary equipment required for monitoring will raise costs of control to TRE's of 10.0 or greater, yet these costs do not appear to be included in the TRE calculation or cost model.

Response: The burden for an individual vent should be small since many plants already have process control computer systems or would purchase and program computer systems because

of the need to monitor other emission points. Most vent parameter monitors (e.g., temperature monitors) are very inexpensive (relative to the control device costs included in developing the TRE equations). Therefore, including these costs would not be expected to significantly increase the TRE index values.

Also, the standards do not require use of computers. Provisions have been added to §63.151(f) allowing sources to request alternative monitoring for non-automated systems. Costs for computerized recordkeeping and reporting were calculated as part of the national burden estimate and were considered in developing the standards.

2.2.2 Emission Estimates

Comment: One commenter (A-90-19: IV-D-71) disagreed with the assumption that uncontrolled emissions are linearly related to the production capacity of a give production process.

Response: A linear relationship was considered to be the best estimate based on the available data. Although a linear estimate may not be precise for a given production process, the EPA regards these estimates as a reasonable representation of emissions on a nationwide basis. The commenter did not provide data relating production capacity and uncontrolled emissions on which to base a revision in the emission estimation methodology.

2.3 APPLICABILITY AND GROUP 1/GROUP 2 DETERMINATION

2.3.1 Applicability

Comment: One commenter (A-90-19: IV-D-92) asked how the TRE applies to particulate HAP's.

Response: The EPA does not expect organic HAP particulate emissions from the regulated processes. The TRE would not apply if such emissions should occur.

Comment: Two commenters (A-90-19: IV-D-73; IV-D-113) requested that the standard be clarified by expressing all applicability and treatment criteria on a ppmv basis, specifically changing the 50 ppmw organic HAP concentration in the process vents definition. Another commenter (A-90-19:

IV-D-71) asked that the 0.005 weight percent exemption included in the process vent definition be expressed in ppmv instead of in ppmw. One commenter (A-90-19: IV-D-77) recommended that the 50 ppmv Group 2 criteria be used <u>in lieu of</u> the 0.005 weight percent (50 ppmw).

<u>Response</u>: The ppmw unit was used to express the applicability criteria of 0.005 ppmw because the data on which the decision was based were expressed as ppmw. The ppmw unit has been retained in the final HON in order to avoid using an arbitrary conversion from ppmw to ppmv.

<u>Comment</u>: One commenter (A-90-19: IV-D-86) pointed out that under certain circumstances a vent stream could be both greater than 0.005 percent HAP by weight and less than 50 ppm HAP by volume. The commenter (A-90-19: IV-D-86) thought the proposed HON would in this case be unclear as to whether or not the vent stream is subject to control, and recommended adding a 0.002 percent by volume clause to the process vent definition.

<u>Response</u>: The commenter is correct in stating that a stream could be both greater than 0.005 weight percent and less than 50 ppmv. In this case, the stream would be a Group 2 process vent. The following protocol must be followed in making the above determination: (1) does the HON apply to the stream; and (2) is the stream Group 1 or Group 2. If the stream contains less than 0.005 HAP weight percent, the stream is not considered a process vent, the HON is not applicable, and no further determination is required. Assuming the stream meets the weight percent applicability criteria, a group determination must be made. This may be done using the TRE equation, the low-flow level criterion, and/or the low concentration level criterion. The commenter's example uses the low concentration criterion of 50 ppmv HAP. If the stream in question is below 50 ppmv HAP, it is classified as a Group 2 stream and must comply with the Group 2 process vent requirements. If the stream is equal to or greater than 50 ppmv HAP and has a flow greater than 0.005 scmm and a TRE

less than or equal to 1.0, it would have to comply with the Group 1 process vent requirements.

Comment: Three commenters (A-90-19: IV-D-32; IV-D-98; IV-D-112) favored including a *de minimis* flow rate of 0.005 scmm in the subpart F process vents definition instead of using the 0.005 scmm flow rate to identify Group 2 vents without TRE calculations.

Response: A flowrate of 0.005 scmm is given in the regulation to distinguish Group 2 process vent streams that are not required to perform a TRE calculation. However, it was not the EPA's intent to exempt those Group 2 process vent streams with a flowrate of 0.005 scmm from all requirements of the HON. The EPA's intent was to exempt such streams from the Group 1 control requirements, but to require minimal reporting and recordkeeping necessary to verify that the process vent was correctly classified as Group 2 and to require reporting of flow rate changes that cause such a vent to become Group 1. In order to accomplish this intent, the process vent stream definition does not incorporate a flowrate criterion.

Comment: One commenter (A-90-19: IV-D-77) noted that the weight percent applicability and low concentration Group 2 criteria seem to indicate the criteria are based on individual HAP's while the testing methods give results in total HAP concentration. The commenter (A-90-19: IV-D-77) asked that the methodology be changed to match the definitions, or vice versa.

Response: The EPA has revised the definition of process vent in §63.101 and Group 2 process vent in §63.111 to clarify that the applicability criteria are based on total organic HAP.

Comment: Two commenters (A-90-19: IV-D-32; IV-D-69) asked that a halogen mass flow rate be included in the definition of a halogenated stream to allow certain 200 ppmv and higher halogen vent streams with low mass flow rates to be vented to a flare (i.e., a control device without an acid scrubber).

Response: The EPA agrees with the commenters and the definition of a halogenated stream has been revised to include a halogen atom mass flow rate of 1.0 lb/hr or greater instead of a concentration basis.

Comment: One commenter (A-90-19: IV-D-85) stated that the EPA offers no justification for exempting vents associated with wastewater treatment from the requirements for process vents.

Response: Vents associated with wastewater treatment are exempt from the process vents requirements, but not exempt from control. Control requirements for vents associated with wastewater treatment are in §63.139.

Comment: One commenter (A-90-19: IV-D-112) claimed that it is not economically or environmentally feasible to control vents with insignificant emissions.

Response: The commenter has used some subjective and vague terms such as "insignificant emissions" and "environmentally feasible" without supporting data for clarification. With regard to "insignificant" emissions, the EPA assumes that the commenter supports the establishment of mass emission rates below which controls would not be required. The economic feasibility of controlling a vent stream is determined by the TRE calculation. The EPA has attempted to identify streams with high or "unreasonable" cost-effectiveness through the establishment of a Group 1/Group 2 classification based either on TRE or on low flow and low concentration levels. The emissions from streams qualifying as Group 2 under these criteria would likely be considered "insignificant" by the commenter.

2.3.2 Group 1/Group 2 Determination

Comment: Two commenters (A-90-19: IV-D-86; IV-D-92) said that since the TRE calculation is based on individual vents, it would be inappropriate to apply the TRE determination to combined vents.

Response: The EPA agrees that the TRE should be applied on an individual vent basis as the proposed rule states. The point of measurement is the outlet of the final product

recovery device (if any recovery device is present) and prior to any subsequent combination or release to the atmosphere. In cases where vents are already grouped to a common header, compliance may be achieved through the application of a combustion device in order to avoid the TRE calculation altogether; or the TRE's of individual streams may be determined, and if any are Group 1, these can be controlled or included in an emissions average.

Comment: One commenter (A-90-19: IV-G-4) requested that the proposed HON be revised so that mixing of streams prior to a product recovery device not be considered dilution and that TRE determination be performed after the last product device. The commenter (A-90-19: IV-G-4) noted that compliance for new sources desiring to use product recovery on a number of streams would be very costly if duplicate product recovery devices would be required.

Response: The EPA intended for the measurement for TRE determination to be taken following the final product recovery device. Prior to this final product recovery device, mixing of streams is allowed; however, once the process vent stream passes through the final product recovery device, the measurement for TRE determination must be taken prior to any further mixing of streams. The final rule has been revised to clarify this requirement.

Comment: One commenter (A-90-19: IV-D-92) asked for clarification as to whether individual streams from distillation columns are measured or whether group vents from the "process unit" are measured. The commenter (A-90-19: IV-D-92) added that this is also a point of ambiguity in NSPS, subpart NNN.

Response: The point at which all testing must be done for the purpose of group determination is after the final recovery device and prior to mixing with any other stream or streams. Therefore, the individual streams from each recovery device would be tested if testing is necessary.

Comment: One commenter (A-90-19: IV-D-62) reasoned that since the DRE for boilers and process heaters is already

proven to meet or exceed 98 percent, there is no need for TRE determination for vents routed to fuel gas systems where the fuel gas is used as the primary fuel and the process vent definition should be rewritten to exclude these streams.

Response: A TRE determination is not necessary for vent streams complying with the 98 percent reduction requirements, regardless of the control device used. However, such process vent streams are still considered process vents, and are subject to monitoring, reporting, and recordkeeping requirements in the rule. A performance test is not required for boilers/process heaters with a heat input greater than 44 MW or where the vent stream is combined with the primary fuel.

Comment: Two commenters (A-90-19: IV-D-64; IV-D-73) supported the exclusion for recalculating TRE for changes that are within the range on which the original TRE calculation was based. Another commenter (A-90-19: IV-D-34) requested that the same exclusions be allowed for any changes included in an operating permit or permit application.

Response: Any time that a change is made such that the value of any parameter used in the TRE equation for a process vent stream (e.g., flow, organic HAP emissions, TOC emissions, or heating value) is outside the range on which the original TRE calculation in the NCS was based, the TRE index value must be recalculated. If the change is within the range used to determine the original TRE, then the TRE does not need to be recalculated. If a parameter is within the range included in the operating permit but outside of the range used as the basis for the TRE determination, the TRE value would still need to be recalculated.

As stated in §63.4 of the General Provisions, an owner or operator who is subject to an emission standard would comply with the requirements of the emission standard regardless of whether: (1) an operating permit had been issued to that source, or (2) the operating permit has been revised to include the emission standard requirements. In most all cases, the requirements given in the HON would override the

requirements given in the operating permit. An exception would be where the operating permit contains more stringent requirements than those included in HON.

Comment: One commenter (A-90-19: IV-D-34) objected to adjusting O_2 concentration to 3 percent for the purpose of determining Group 1/Group 2 status via the low HAP concentration exemption. Another commenter (A-90-19: IV-D-70) added that the correction is inappropriate in cases where very little O_2 is present, such as nitrogen blanketing.

Response: The commenters' objection is well-founded. The correction to 3 percent O_2 in §63.115(c) was inappropriate for determining Group 1/Group 2 status and has been removed from the final rule.

Comment: Four commenters (A-90-19: IV-D-52; IV-D-79; IV-D-86; IV-D-97) requested that testing for the purpose of determining group status by the TRE calculation be allowed after any existing control devices (if any controls are present) for vents which have applied controls to existing sources.

Response: If the device is the final recovery device, TRE testing is to be performed after the final recovery device (i.e., at the outlet prior to release to the atmosphere or prior to a combustion device) and prior to mixing with any other streams. If the control device is an existing combustion device, no TRE determination is required provided the combustion device is achieving a 98 percent level of control. If an existing control device does not achieve 98 percent HAP reduction or 20 ppmv, then a group determination must be made for the stream prior to the combustion device. If this is not done, a situation could exist such that a stream is Group 1 at the inlet and Group 2 at the outlet of a less than 98 percent efficient combustion device. If group status were determined at the outlet of the device, it would be allowed to continue to operate at a level of performance less than MACT. This would be contrary to the intent of the HON regulation.

In the case of an existing combustion device with less than 98 percent efficiency, the following options are available: (1) alter the process or apply a recovery device so that the stream is Group 2 prior to the combustion device; (2) upgrade the existing device so that it achieves 98 percent HAP or TOC reduction or 20 ppmv outlet concentration; (3) replace the existing combustion device with a new one that achieves 98 percent efficiency; or (4) utilize an emissions averaging plan so that the emissions debits from the underperforming devices are compensated for by credits elsewhere in the source.

Comment: Several commenters (A-90-19: IV-D-48; IV-D-92; IV-D-112; IV-D-113) supported the use of engineering estimates for calculating TRE where TRE is greater than 4.0. One commenter (A-90-19: IV-D-32) said that within the expected accuracy of engineering estimates, their analysis indicates that a TRE cutoff value of 3.0 will capture all Group 1 vents in the EPA BID draft with the exception of a single high flow, low HAP concentration vent. The commenter (A-90-19: IV-D-32) recommended that a TRE of 3.0 be used to establish the calculation-based cutoff to provide relief to limited testing resources from the TRE testing determination procedure for those process vents that are obviously Group 2. The commenter (A-90-19: IV-D-32) suggested that an alternative cutoff value be developed to exclude high flow, low HAP concentration vents from the calculation-based alternative, but did not suggest an alternative cutoff value. Another commenter (A-90-19: IV-D-86) supported TRE testing when the calculated TRE is less than 4.0.

Response: The TRE value of 4.0 has not been changed since the EPA considers this value reasonable. Engineering judgement is allowed in determining group status provided that the TRE of the stream is calculated and shown to be greater than 4.0. If the TRE calculation results in a TRE less than or equal to 4.0, the TRE inputs must be measured and the TRE recalculated, or the flow or concentration must be tested to qualify for Group 2 status. This does not penalize the

facility, but in fact allows the facility to avoid full TRE testing that would otherwise be required for a Group 2 process vent with TRE greater than 1.0 and less than or equal to 4.0. Additional calculation-based cutoffs for high flow, low HAP concentration streams would complicate the rule by requiring additional calculations or testing to determine which process vent streams are high flow, low HAP concentration.

Comment: Several commenters (A-90-19: IV-D-48; IV-D-58; IV-D-64; IV-D-73; IV-D-78) proposed that engineering calculations or operational data be used for the process vent flow rate and process vent HAP concentration Group 1/Group 2 determination. One of the commenters (A-90-19: IV-D-64) suggested that it would then be up to the discretion of the regulatory agency to judge the technical accuracy of the data used in the calculation.

Response: If only flowrate or concentration is selected for process vent group determinations, testing is required. Engineering judgement is allowed in determining the TRE index value because a margin for inaccuracies in estimation has been included. If the TRE index value is less than 4.0, testing is required to ensure the accuracy of the TRE index value. Engineering judgement is allowed for flowrate and concentration estimates used in the calculation.

Comment: Three commenters (A-90-19: IV-D-32; IV-D-33; IV-D-112) suggested that engineering judgement or process knowledge be allowed for determining the classification of a halogenated vent stream. Commenters (A-90-19: IV-D-32; IV-D-112) stated that this could be used specifically when halogen status made no difference in Group 1/Group 2 classification via the TRE calculation.

Response: Although the proposed rule did not contain the explicit language to allow the commenter's suggestion, it was, in fact, the EPA's intent to permit engineering judgement for halogenated streams when halogen status does not affect the outcome of the group status determination and the calculated TRE is greater than 4.0. The final rule has been revised to allow the engineering judgement in these cases. When the

calculated TRE is less than 4.0, testing is required to more accurately establish the TRE value.

Comment: One commenter (A-90-19: IV-D-74) said that the regulatory scheme in the proposed rule requires that the owner estimate or measure emissions from every uncontrolled vent on the plant site, and periodically recheck the estimate to ensure its continued accuracy. The commenter (A-90-19: IV-D-74) then referred to 57 FR 62615 (§63.112).

Response: The EPA maintains the position that no owner or operator would calculate emission estimates for every emission point at the source in order to comply with the HON and that the allowable emission level in §63.112 is one way of expressing the standard. The owner may elect to comply with the RCT by adding a control device to each Group 1 vent and not calculate emission estimates for those process vents. The owner may also measure only the process vent stream flowrate to determine group status. If the owner uses emissions averaging, emissions only need to be calculated in debits and credits for those points included in the average.

Comment: One commenter (A-90-19: IV-D-64) suggested that the halogenated vent stream definition be revised so that streams that are scrubbed to reduce halogens to less than 200 ppmv prior to a control device would not be considered halogenated vent streams.

Response: The EPA agrees with the recommendation made by the commenter that the halogenated vent stream definition and requirements should be revised so that a scrubber to reduce halogens prior to a control device can be used to comply. The scrubber used in this case does not need to be a product recovery device. In the final rule, a halogenated stream is defined as having a mass emission rate of 0.45 kg/hr (1.0 lb/hr) or greater instead of a 200 ppmv concentration. Streams with halogen emissions above 0.45 kg/hr must reduce halogen emissions by 99 percent or to a level of 0.45 kg/hr. A scrubber prior to a combustor could be used to meet this emission reduction requirement.

Comment: Two commenters (A-90-19: IV-D-32; IV-D-88) stated that the EPA has not provided a sufficient basis for the establishment of the 200 ppmv halogen concentration threshold in the definition of a halogenated vent stream. One commenter (A-90-19: IV-D-32) advocated the following: (1) establishment of a halogen mass emission rate (4 lb/hr) for the halogenated vent stream definition, (2) allowing combustion by flare or incinerator of halogenated streams below the suggested emission rate.

Response: The EPA reviewed scrubber efficiency data provided in the ethylene dichloride questionnaire responses. Based on the scrubber outlet halogen emissions data, the EPA has established a 0.45 kg/hr (1.0 lb/hr) or greater mass emission rate as the definition of a halogenated stream. Therefore, a stream containing 0.45 kg/hr or greater of halogen atoms is considered halogenated and if combusted, must reduce the halogen atom content by 99 percent or below 0.45 kg/hr of halogen atoms. If a vent stream contains less than 0.45 kg/hr of halogen atoms, this vent stream is not considered halogenated and may be flared.

Comment: One commenter (A-90-19: IV-G-4) suggested that Group 1 and Group 2 status for existing halogenated streams that are currently collected in a flare or fuel gas header for control purposes should be determined after mixing and before the emission control device.

Response: Group determination is not necessary if the vent stream is controlled in a manner meeting the Group 1 control requirements in the regulation. Group status is determined on an individual vent basis to prevent dilution from a Group 2 vent stream mixing with a Group 1 vent stream and the resulting mixed stream being measured as a Group 2 stream and not being controlled. The rule states that any process vent stream containing halogens must be tested individually prior to any mixing to determine the concentration of halogens. If the stream contains less than 0.45 kg/hr (1.0 lb/hr) of halogen atoms, then the stream is not considered halogenated and would be subject to the

requirements for nonhalogenated streams. However, if the stream contains 0.45 kg/hr or greater of halogen atoms, then the stream would be considered a halogenated stream; if the owner or operator routed the stream through an incinerator, a scrubber or other control combination achieving the 99-percent reduction or reducing the halogen emission rate to less than 0.45 kg/hr would be required.

Comment: One commenter (A-90-19: IV-D-88) proposed a cost/reasonableness test that takes into consideration the impact of requirements due to a particular component of a mixed stream. The commenter's (A-90-19: IV-D-88) specific concern is the requirement of an incinerator and scrubber for a mixed stream of both halogenated and non-halogenated HAP's. The commenter (A-90-19: IV-D-88) reasoned that although the halogenated HAP content is sufficient to define the entire stream as halogenated, the stream would not be classified as Group 1 when only the halogenated compounds were considered alone. However, the commenter (A-90-19: IV-D-88) also stated that the overall characteristics of a stream should be considered when determining the appropriate control for a vent stream. The commenter (A-90-19: IV-D-88) also suggested that the EPA provide opportunities for special relief from the rule if the halogenated process vent stream definition is not changed from 200 ppmv.

Response: All TRE calculations for group determination are to be based upon TOC and total organic HAP, regardless of halogenation status. In order to determine the appropriate TRE index value (which is an index of cost-effectiveness of control), the total flow, total HAP emissions, TOC emissions, net heating value, and halogen concentration of the stream must be used in the calculation. No revisions have been made to this aspect of the regulation. Controls are required only for Group 1 emission points which have been shown to have a TRE of 1.0 or less. The definition of a halogenated process vent stream is revised as having a mass emission rate of 0.45 kg/hr or greater of halogen atoms. Analyses indicate that control of such emission points is reasonable, and

therefore special relief as requested by the commenter (A-90-19: IV-D-88) from the rule is not applicable.

Comment: Two commenters (A-90-19: IV-D-74; IV-D-86) supported the determination of MACT control device cost effectiveness on a dedicated vent basis. One commenter (A-90-19: IV-D-86) acknowledged that vents may at times be combined cost effectively and safely, but stated that it would be inappropriate to assume all small vents may be manifolded together.

Response: The EPA agrees with the commenter and thanks them for their support.

2.4 COMPLIANCE DEMONSTRATIONS

2.4.1 Performance Testing

Comment: One commenter (A-90-19: IV-D-113) stated that Method 2 is neither necessary nor the most accurate method for high flow gas streams, such as air oxidation vents. The commenter (A-90-19: IV-D-113) recommended that the EPA allow air oxidation process flow rates to be measured through established mass balances or other means which can be demonstrated to provide accurate measures in place of the use of Method 2, 2A, 2C, or 2D. Another commenter (A-90-19: IV-D-77) also warned of difficulties of measuring flows that are highly variable, low volume, or near ambient pressure with Method 2 and urged the use of methods developed and validated for the operating conditions more typical of process vents. The commenter (A-90-19: IV-D-77) stated that using Method 2 may induce system upsets, i.e., non-steady state flow.

Response: The EPA agrees with the commenter that Method 2 is less likely to give a good average if the process vent stream is highly variable. However, other alternatives for determining stream characteristics are available in the HON besides Method 2. First, if an owner or operator can document estimates of the flowrate and concentration of the process vent stream derived from engineering assessment (including process knowledge), and the resulting TRE is greater than 4.0, then the owner or operator does not need to

use Method 2 to measure the process vent stream flow rate. Note that the owner or operator would be required to test the process vent stream if the resulting TRE is less than or equal to 4.0. However, most vent streams with a TRE of 4.0 or less will be relatively large vent streams from continuous processes, which are not highly variable, and Method 2 will be applicable to most of these streams. Furthermore, if the owner or operator encounters difficulties when using Method 2 under certain conditions, such as measuring low flow or highly variable flow streams, alternate methods for measuring may be validated according to Method 301 of 40 CFR part 63, appendix A. Once validated, those methods could be used instead of Method 2.

In addition, any owner or operator who wishes to use an alterative monitoring method other than those discussed above can submit an application for alternative monitoring requirements to the Administrator as detailed in §63.8 of subpart A of the General Provisions.

Comment: Two commenters (A-90-19: IV-D-34; IV-D-71) disagreed with the use of the O_2 concentration adjustment to 3 percent O_2 for non-combustion control devices.

Response: The commenter is correct. The final rule has been revised so that only combustion devices are required to correct to 3 percent O_2.

Comment: One commenter (A-90-19: IV-D-33) recommended that each facility's permit be allowed to include bypass provisions under certain sets of circumstances that take into account the pollutants emitted, potential off-site impacts, and volume of emissions and that bypasses permitted in such provisions not be considered excursions for compliance purposes.

Response: The General Provisions allow for a malfunction, start-up, shut-down plan and bypasses covered in that plan would not be considered excursions. Bypasses not covered under the plan would likely be considered excursions or violations.

Comment: One commenter (A-90-19: IV-D-92) suggested allowing a limit switch to be attached to a bypass valve (i.e., vent gas bypass) attached to a computer monitor because it may be helpful in minimizing data gathering requirements.

Response: The rule does not require emissions monitoring of bypass valves, but requires a flow indicator to ensure the vent stream is routed to the control device and not bypassed to the atmosphere. Provisions for monitoring parameters are provided in the rule.

Comment: One commenter (A-90-19: IV-D-92) reasoned that variable flows and concentrations to combustion devices cause testing of those devices to be non-representative, and suggested that engineering judgement be allowed as a supplement for, or in lieu of, combustion device testing.

Response: The EPA acknowledges that varying flows and concentrations exist in process vents. It is up to the facility to use engineering judgement in choosing the process conditions under which the source testing will be conducted. These conditions should be chosen so that they are representative of typical process operations. With regard to combustion device testing, if the combustion device achieves the required emission reductions under one set of process conditions judged to be representative of the process, then the EPA is confident that the combustion chamber temperature during which the test was performed is adequate and the standard will be achieved under normal operation of the unit. The combustion chamber temperature is sufficient for monitoring since variations in flow will cause the chamber temperature to vary.

Comment: One commenter (A-90-19: IV-D-92) pointed out that non-flare combustion devices must prove 98 percent DRE by performance testing, while flares are assumed to be 98 percent effective with no required testing performance test. The commenter (A-90-19: IV-D-92) suggested that the 98 percent DRE for flares could be a flare temperature of 1500 ^{o}C with a residence time of 0.75 seconds as in NSPS subpart QQQ or a

temperature of 1400 °C with a residence time of 0.5 seconds as in NESHAP subpart V.

Response: The proper flare operation guidelines are presented in §63.11 of the General Provisions. These guidelines must be followed to maintain compliance with the HON regulation.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) supported the establishment of compliance parameters for incinerators, boilers/process heaters, and scrubbers by performance testing and advocated the determination of compliance based on hourly averages calculated from data collected every fifteen minutes.

Response: As discussed in the reporting and recordkeeping section (see section 7), compliance parameters are established during the performance test, although engineering assessment can also be used in establishing parameter ranges. For purposes of complying with the HON, daily averages are used. The commenter gives no rationale for selecting hourly averages over daily averages. The EPA's rationale for selecting daily averages is discussed in the above mentioned section.

Comment: One commenter (A-90-19: IV-D-70) stated that the DRE of boilers and process heaters (regardless of heat duty) should be required to be established through initial performance testing. Three other commenters (A-90-19: IV-D-35; IV-D-64; IV-D-99) supported the testing exemption for boilers and process heaters with heat input greater than 44 MW.

Response: The initial performance test exemption is appropriate for a boiler or process heater with heat input capacity of 44 MW (150 million Btu/hr) or greater in which all process vent streams are introduced into the flame zone and for all boilers or process heaters in which the process vent streams are introduced with or as the primary fuel. Emission factor calculations (AP-42), submitted test results, and temperature and residence time calculations indicate that the

expected DRE for boilers and process heaters with heat input capacities greater than 44 MW would be greater than 98 percent. The EPA references "Reactor Processes in the Synthetic Organic Chemical Manufacturing Industry - Background Information for Promulgated Standards," EPA-450/3-90-016b, March 1993 to support the decision. When the vent stream passes through the flame front it would, on average, be combusted at higher temperatures and longer residence times than if introduced with combustion air. This information indicates that a process vent stream would achieve combustion efficiency greater than the required 98 percent level. For this reason, it is not necessary to establish the emission reduction of these boilers and process heaters through initial performance testing.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) recommended that ranges for the following monitoring parameters be established during the initial performance test for thermal incinerators, boilers, and process heaters: firebox exit temperature, and CO and O_2 concentrations in the outlet stack gas.

Response: Based on previous incinerator performance studies, temperature and residence time are the key parameters which influence performance. During the performance test for combustion devices, the temperature is monitored and a range established. Any fluctuation in process vent flow rate will be reflected by a change in temperature. Therefore, the EPA determined that temperature alone is sufficient to monitor compliance for combustion devices which require a performance test. Other monitoring parameters, such as CO or O_2 outlet concentrations may be requested under the alternative monitoring parameter requirements in §63.114 and §63.151 of subpart G.

It is not appropriate to include specific values in the regulation for the combustion parameters mentioned by the commenter. These combustion parameters need to be established on a site-specific basis during the performance test, because they would not be applicable to every situation. These

parameters are highly variable from one process to another depending on the constituents of the vent stream.

Combustion devices which do not require a performance test (such as boilers and process heaters with a heat capacity design greater than 44 megawatts and a vent stream that is introduced with the combustion air or a vent stream introduced as or with the primary fuel) also do not require monitoring of the combustion device, because the temperature and residence time of these devices exceed the levels needed to achieve at least a 98 percent reduction.

Comment: Two commenters (A-90-19: IV-D-22; IV-D-73) asserted that units that have undergone performance testing for NSPS should not need to be tested for the HON if there have been no process changes since the compliance tests. One commenter (A-90-19: IV-D-22) stated that NSPS compliance testing is rigorous, costly, and requires the same EPA methods as the HON. Another commenter (A-90-19: IV-D-35) suggested that any incinerator, boiler, or process heater that has obtained an operating permit (such as a State air permit or a RCRA permit) and has existing data to prove 98 percent DRE should not be required to conduct a performance test.

Response: The EPA agrees with the commenters that it would be unnecessarily burdensome to require the owner or operator of a unit to repeat identical tests required for other compliance purposes, such as NSPS or RCRA, if no process changes had been made to the unit since the test was performed. For this reason, the regulation has been revised so that it does not preclude the use of previously conducted tests if those tests were performed using the same test method and no process changes have been made to the unit in the interim.

Comment: One commenter (A-90-19: IV-D-22) recommended that text be added to §63.116(b)(2) to clarify that a boiler or process heater need not be tested when a process vent stream serves as the primary fuel. Another commenter (A-90-19: IV-D-34) pointed out that table 3 of §63.117(a)(4)(i) and the text of §63.117(a)(4)(iv) were not

consistent in presenting the monitoring requirements for boilers and process heaters. Another commenter (A-90-19: IV-F-7.33) claimed that monitoring requirements for boilers did not exist.

Response: Only boilers or process heaters smaller than 44 MW and combusting a process vent stream that is not used as or mixed with the primary fuel are required to conduct a performance test. To clarify this requirement, the language of the regulation text and the table have been revised so that they are consistent. Monitoring of firebox temperature is also required for boilers meeting these specifications.

No monitoring or testing is required of boilers 44 MW or greater, or of those boilers below 44 MW that introduce the process vent stream as the primary fuel or that mix the vent stream with the primary fuel and introduce it through the same burner. The EPA decided that monitoring of these units was not necessary because their burning characteristics would ensure a 98 percent reduction in the organic content of the process vent stream. Monitoring for all other boilers below 44 MW is described in §63.114.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) indicated that experience with catalytic incineration has been problematic due to the degradation of the catalyst bed (poisoning) that occurs under normal operation of this type of control device. As a result, the commenters (A-90-19: IV-D-70; IV-D-99) recommended repeated performance testing to detect catalyst poisoning and to verify the percent reduction achieved. The commenters (A-90-19: IV-D-70; IV-D-99) asserted that the performance testing should establish the inlet catalyst bed temperature and the VOHAP and TOC concentrations in the outlet stack gas; while another commenter (A-90-19: IV-D-34) claimed that the catalytic bed inlet temperature is inconsequential to catalytic incinerator performance and therefore need not be monitored.

Response: The temperature difference across the catalyst bed has been determined to be sufficient for determining proper operation of a catalytic incinerator, and additional

performance tests would be unnecessary and burdensome. A change or drift in this temperature differential would generally indicate cases of catalyst poisoning. During the initial performance test, owners or operators of catalytic incinerators must establish a site-specific parameter range for temperature difference across the catalyst bed. This established range becomes their operating requirement. The owner or operator would be required to continuously monitor inlet and outlet bed temperature and calculate the temperature difference. If the temperature difference is ever outside the established range, this would be a violation of the operating standard.

2.4.2 Monitoring

Comment: One commenter (A-90-19: IV-D-92) requested that alternative monitoring protocol, subject to the EPA's approval, be allowed if the proposed monitoring requirements are not feasible or economical for a particular facility.

Response: The EPA agrees and has provided for alternative monitoring in §63.151(f).

Comment: One commenter (A-90-19: IV-D-41) said there should be clearly established emission limitations for process vents and suggested that emission monitoring at the exit of the last control device be performed regularly, no less than annually. The commenter (A-90-19: IV-D-41) added that product recovery devices or vapor collection devices should be required for concentrated streams prior to any combustion device.

Response: To allow for site-specific situations, the regulation does not require mass emission limits for organic HAP's (e.g., pound per hour limits). Instead, the regulation establishes a percent reduction limit. The regulation lists operating parameters to be monitored for each control device and requires the source to establish site-specific parameter ranges to ensure that the control device is properly maintained and operated. Continuous monitoring is required for most controls.

If an owner or operator selects to monitor a parameter that is not listed in the regulation, that owner or operator can request approval of such monitoring, to include establishing a range and monitoring frequency for the parameter that would indicate proper operation of the control. In most cases, parameter monitoring will be continuous rather than annual.

An owner or operator has the option of using a recovery device to achieve a TRE greater than 1.0 or achieve a 98-percent reduction, but is not required to do so because a recovery device may not meet the control TRE requirements in all cases.

Comment: One commenter (A-90-19: IV-D-73) supported the monitoring exemption for boilers and process heaters that introduce all vent streams with primary fuel, and one commenter (A-90-19: IV-D-73) strongly supported the monitoring exemption for boilers and process heaters with greater than 44 MW heat input. To the contrary, two commenters (A-90-19: IV-D-85; IV-F-7.33) urged that monitoring be required for all boilers and process heaters, including those with heat input greater than 44 MW and those introducing vents with or as primary fuel. The commenter (A-90-19: IV-D-85) stressed that boiler or process heater performance will decline if not operated and maintained properly and said that the EPA should require monitoring of these devices so that operators have the incentive to maintain the devices properly and replace them before they deteriorate.

Response: The EPA agrees that there would be technical and cost incentives to maintain the equipment properly because boilers are usually used to generate heat and energy needed for the process. Sources must keep such boilers operating properly in order to run their processes, especially if the vent stream is used as or introduced with the primary fuel. Therefore, by reducing the monitoring requirements, the burden on the facilities is also reduced.

Comment: One commenter (A-90-19: IV-D-89) proposed lowering the monitoring exemption for boilers and process

heaters from less than 44 MW heat input to less than 8 MW heat input.

Response: The 44 MW was selected based on information available during development of the SOCMI NSPS on the temperature and residence times required by the boiler to achieve the desired combustion efficiency. The designs of boilers larger than 44 MW are such that they would consistently achieve over 98 percent reduction and monitoring is unnecessary. The commenter included no data to support lowering the monitoring exemption for boilers to a heat input capacity of 8 MW. If the owner or operator does not want to monitor temperature for the boiler, the owner or operator can apply to monitor an alternative parameter.

Comment: One commenter (A-90-19: IV-D-117) requested that CEM's be used to measure THC at the inlet and outlet of a thermal incinerator and that the monitoring data be submitted on a monthly basis. The commenter (A-90-19: IV-D-117) also suggested that for catalytic incinerators the THC and flow rate be monitored continuously and the data be submitted regularly. Additionally, the commenter (A-90-19: IV-D-117) suggested that the flow rate to a flare be monitored continuously and submitted monthly. One commenter (A-90-19: IV-F-10) requested better monitoring of release points, including flares, to ensure they are working efficiently.

Response: HON requires semiannual reporting for most plants, but quarterly reporting for those that are poor performers. This is frequent enough to enforce the standard in a timely fashion, but it is less burdensome for sources and enforcement agencies than monthly reports (see recordkeeping and reporting BID volume 2E). In addition, monthly reports would increase the reporting and recordkeeping burden without necessarily increasing any emission reduction benefits. The EPA considers temperature monitoring less burdensome than THC monitoring, and adequate for compliance demonstration.

Comment: One commenter (A-90-19: IV-D-12) stated that the wording in §63.114(a)(2) could be construed as excluding infrared monitoring as a flare pilot flame detection device.

The commenter's (A-90-19: IV-D-12) reasoning was that thermocouple and ultraviolet monitoring were specifically given as examples, which could be confusing to any persons considering the application of infrared monitoring. The commenter (A-90-19: IV-D-12) suggested that either infrared monitoring also be included as an example, or no specific examples be given.

One commenter (A-90-19: IV-D-12) disagreed with the use of the phrase "at the pilot light" in §63.114(a)(2) and suggested that the phrase be removed from the above stated paragraph or be rewritten to indicate that the thermocouple needs to be "at the pilot light", but other sensors could be remote while monitoring the pilot flame.

Response: The EPA did not intend to exclude infrared monitoring as a possible flare pilot flame detection device. In the regulation, thermocouple and ultraviolet monitoring were mentioned as examples of possible detection devices; however, other types of devices could be used as long as their function is to ensure that the pilot flame remains lit. For this reason, infrared monitoring has been added into the regulation as an example of a flare pilot flame detection device.

In addition, language has been added into the regulation stating that the detection device used must ensure the pilot flame is lit. Such language would ensure that all possible pilot flame detection devices, including those not on the list, would achieve their desired function.

Section 63.11(b)(5) of the General Provisions does not include the phrase "at the pilot light." If a thermocouple is used as a detection device, then it must be positioned at the pilot light to sense the flame. However, there are other detection devices, such as ultraviolet and infrared monitors, that could be positioned remote from the pilot flame while still monitoring its presence.

To ensure that the wording of the regulation does not preclude the use of infrared devices and other devices that indicate the continuous presence of the flame but are not

positioned at the pilot light to sense the flame, §114(a)(2) has been reworded as follows:

> (2) Where a flare is used, the following monitoring equipment is required: a device (including but not limited to a thermocouple, ultraviolet beam sensor, or infrared sensor) capable of continuously detecting the presence of a pilot flame.

Comment: One commenter (A-90-19: IV-D-54) pointed out that scrubbers are not always used to control halogenated streams and that in these cases, the scrubber is not necessarily a recovery device. If the scrubber controls a non-halogenated stream, then pH is not an appropriate monitoring parameter. One commenter (A-90-19: IV-D-70) also suggested that the scrubbing fluid maintain a minimum pH of 13.

Response: In the regulation, requirements are given for three different control device scenarios that include scrubbers. These three different scenarios, their monitoring requirements, and where the requirements are given in the rule are outlined as follows: First, for a halogenated stream routed through a combustion device and then a scrubber, monitoring of pH and L/G ratio is required [see §63.114(a)]. Second, for a stream with a TRE between 1.0 and 4.0 that is routed through a scrubber for recovery, liquid temperature and exit specific gravity are monitored [see §63.114(b) for absorbers]. And third, for a scrubber used in a configuration other than the two mentioned above (including a non-recovery scrubber used as a control device for a non-halogenated stream and a scrubber used as a control device for a halogenated stream prior to combustion), the provisions for monitoring alternate control technologies must be followed. In such cases, site-specific parameters must be selected and monitored based on approval from the Administrator as described in §63.114(c)(1) of the rule.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) suggested that performance testing and compliance parameters for absorbers include solvent type and flow rate, specific gravity of exiting solvent, and system pressure drop; but

another commenter (A-90-19: IV-D-34) stated that monitoring of scrubbing liquid specific gravity for absorbers was unnecessary. Another commenter (A-90-19: IV-D-35) argued that pH monitoring of the final scrubber effluent is sufficient for determining adequate scrubber performance. This commenter (A-90-19: IV-D-35) added that it is unrealistic to expect flow meters to withstand the harsh conditions of both hot and acid service.

Two commenters (A-90-19: IV-D-79; IV-D-86) stated that gas flow to a scrubber is not necessarily a parameter that indicates proper scrubber operation. One commenter (A-90-19: IV-D-86) stated that scrubber liquid flow, scrubber pressure drop, and pH are typically monitored to assure proper operation and suggested that monitoring of either gas flow <u>or</u> pressure drop be allowed in §63.114(a).

<u>Response</u>: The first three commenters are referring to scrubbers used as recovery devices. According to table 4 and §63.114(b) of subpart G of the regulation, these sources must monitor specific gravity and exit temperature of the absorbing liquid. However, provisions for monitoring of alternate parameters are included in §63.114(c)(3) of the regulation. If, based on site-specific conditions, an owner or operator believes that it would be more appropriate to monitor a parameter other than the ones mentioned above, then the owner or operator could request approval from the Administrator to monitor a different parameter.

The next two commenters are referring to scrubbers used following a combustor to control HCl and other halogens and hydrogen halides in the stream. In this case, the owner or operator is required to monitor pH and scrubber liquid/gas ratio [see §63.114(a) and table 3]. These monitoring requirements are included in the rule to ensure that halogens and hydrogen halides are being removed from the combustor outlet. A variety of flow meters constructed from different materials are available for use in a caustic scrubber. The final two commenters are correct in pointing out that gas flow alone is not necessarily an indication of proper operation.

However, the intent of the regulation is to monitor the scrubber liquid/gas ratio rather than the gas flow. As previously mentioned, §63.114(c) allows owners or operators to apply to monitor an alternative parameter on a site-specific basis.

Comment: One commenter (A-90-19: IV-D-77) maintained that monitoring of the scrubbing liquid temperature and specific gravity is not appropriate for non-recirculating or "once through" scrubbers. The commenter (A-90-19: IV-D-77) suggested that only liquid flow be monitored for a non-recirculating scrubber. One commenter (A-90-22: IV-D-13) recommended that the EPA allow alternate monitoring methods in some situations where the methods already listed in the regulation will not work. The commenter (A-90-22: IV-D-13) stated that for absorbers temperature and specific gravity must be monitored; however, if the organic content is very low, there will not be sufficient changes in these parameters to make them good indicators of absorber performance. The commenter (A-90-22: IV-D-13) contended that a minimum scrubbing flow that will achieve 98-percent efficiency can be determined, and that monitoring scrubbing flow should be acceptable.

Response: The EPA assumes that if an absorber is used in a recovery system, then the absorber recycles (or has the potential to recycle) a portion of its effluent and is not a once-through scrubber. Furthermore, the EPA assumes that absorbers used to scrub halogens from an incinerator's effluent is a once-through scrubber. As such, there are two sets of monitoring and testing requirements for the two absorber types just described. For absorbers used in recovery systems, a scrubbing liquid temperature monitor and a specific gravity monitor are required, both with continuous recordkeeping. For absorbers used after an incinerator (a once-through scrubber), a pH monitoring device and flow meter to measure scrubber liquid influent and inlet gas flow rates are required, both with continuous recordkeeping.

As stated in §63.114(c) for process vents and §63.127(c) for transfer operations, owners or operators may request approval to monitor parameters other than those listed in §63.127(a) or (b).

The commenter (A-90-22: IV-D-13) did not specify what they consider a "very low" organic content. However, if the exit organic content is 20 ppmv or less (higher for streams that are originally greater than 1,000 ppmv), the compliance requirement is being met. A change of organic content within that range is irrelevant. If the source or the permit authority has concerns regarding any monitored parameters, alternate parameters can be requested as specified in the above paragraph of this response.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) suggested that exit stack gas VOHAP concentration be monitored continuously on regenerable carbon adsorption systems and that nonregenerable systems utilize backup canisters in series with primary canisters. The commenters (A-90-19: IV-D-70; IV-D-99) further suggested that for nonregenerative systems, hourly monitoring occur between the primary and secondary canisters with replacement of the primary canister in like kind when the primary outlet TOC concentration exceeds 20 ppmv. Another commenter (A-90-19: IV-D-33) suggested that monitoring provisions be added to §63.114(b) and §63.127(b) providing the same opportunity for off-site regeneration of carbon canisters used in a carbon adsorption system.

Response: The canisters referred to by the commenters (A-90-19: IV-D-70; IV-D-99) are generally used on very small vent streams, batch processes, or small malodorous streams rather than on continuous process vent streams subject to HON monitoring requirements. However, if such canisters are used on continuous vent streams subject to HON monitoring requirements, then the owner or operator could request approval to monitor alternate parameters as described in §63.114.

Comment: One commenter (A-90-19: IV-D-113) stated that while temperature is an appropriate monitoring parameter for

all types of adsorbers, specific gravity is not. The commenter (A-90-19: IV-D-113) suggested that the EPA either limit monitoring parameters for carbon adsorbers to temperature only, or offer a secondary parameter appropriate to the given technology, such as flow.

Response: Temperature and specific gravity monitoring are required for absorbers, not adsorbers. As discussed in §63.114(d) and shown in table 4 of the proposed rule, carbon adsorbers are required to measure regeneration stream (e.g., steam) mass flow during regeneration and the temperature of the carbon bed after regeneration.

Comment: One commenter (A-90-19: IV-D-64) requested clarification of why the rule requires all the monitoring records in table 7, §63.130(a)(2)(v) for carbon adsorber regeneration stream flow and carbon bed regeneration temperature, instead of requiring only daily averages.

Response: Detailed records are needed to assure that the parameters remain within their established range. A daily average is not used because flow and temperature after regeneration pertain only to the regeneration cycle, not to other periods of operation during the day.

Comment: One commenter (A-90-19: IV-D-35) requested that the EPA clarify the provisions in §63.118(b) requiring that readily accessible records be kept for a product recovery device or other means to achieve and maintain a TRE index value greater than 1.0 but less than 4.0. The commenter (A-90-19: IV-D-35) asserted that the phrase "or other means" is confusing and should be clarified by stating that if a process has a TRE value greater than 1.0 without using recovery devices (i.e. absorbers, condensers, etc.) it is exempt from these provisions, or the phrase "or other means" should be deleted from the section.

Response: A facility with a process vent stream achieving a TRE greater than 1.0 without using a recovery device (e.g., due to inherent process design or a process modification) would have to apply to monitor and report a

site-specific parameter under §63.114(c) and is not exempt from monitoring provisions.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) recommended that, due to process fluctuations, Group 2 vents with TRE greater than 4.0 should be allowed to follow the monitoring provisions for Group 2 vents with TRE values between 1.0 and 4.0. Another commenter (A-90-19: IV-D-48) opposed the monitoring requirements for Group 2 vents with TRE between 1.0 and 4.0. The commenter (A-90-19: IV-D-48) reasoned that the requirements are burdensome and unnecessary because reevaluation is required to determine if group status changes when a process change is made.

Several commenters (A-90-19: IV-F-1.1 and IV-F-3; IV-D-32; IV-D-48; IV-D-58; IV-D-62; IV-D-63; IV-D-69; IV-D-83; IV-D-92; IV-D-112; IV-D-113) suggested that monitoring, recordkeeping, and reporting requirements for Group 2 process vents be reduced or eliminated. In particular, three commenters (A-90-19: IV-D-32; IV-D-48; IV-D-69) thought it was overly burdensome for Group 2 process vents to be required to perform the same continuous monitoring, recordkeeping, and reporting as Group 1 vents, because: the Group 2 emission points have been judged not to require additional control; the rule requires TRE to be re-evaluated when process changes are made; and the 112(g) modification program, residual risk determination, and future reviews of MACT standards are sufficient to require future control of Group 2 vents, if warranted. Two commenters (A-90-19: IV-D-58; IV-D-62) suggested that reporting for these Group 2 process vents needs to be limited to notification of changes that may potentially lead to Group 1 designation of the source and develop reporting and testing requirements for sources altered or changed into potential Group 1 sources. Two commenters (A-90-19: IV-D-32; IV-D-113) also supported the requirements to monitor Group 2 process vents only where a recovery device is used to maintain Group 2 status (TRE between 1.0 and 4.0).

Response: The rule requires monitoring, recordkeeping, and reporting requirements for Group 2 vent streams with TRE

index values between 1.0 and 4.0 to ensure those vents do not become Group 1 vents due to process or recovery device operating variations and remain uncontrolled. Group 2 vents with TRE index values greater than 4.0 are not required to be monitored. An analysis was performed prior to proposal that shows that a vent with a TRE greater than 4.0 is unlikely to become Group 1 due to process or recovery device operating fluctuations or measurement uncertainties, whereas if a vent has a TRE is less than 4.0, it is important to monitor recovery device operating parameters, because variations in process or recovery device operations could cause such streams to become Group 1. The EPA recognizes the uncertainty present in TRE calculations, but decided that a large enough safety factor has been included for vents with a TRE greater than 4.0. The decision not to require monitoring for process vents with a TRE greater than 4.0 reduces the burden of the regulation for both the industry and regulatory agencies.

Comment: One commenter (A-90-19: IV-D-92) stated that it is not reasonable to require extensive controls for Group 2 process vents because the classification of vents as Group 2 implies that they cause a minimal environmental concern. The commenter (A-90-19: IV-D-92) then asked what is the value added by extensive reporting requirements if there is no problem.

Response: The EPA agrees that controls for Group 2 process vents are not reasonable, and accordingly, the proposed regulation did not require controls for Group 2 vents. Monitoring, reporting, and recordkeeping are required for Group 2 vents to ensure a Group 2 vent does not become a Group 1 vent and go unregulated. A Group 2 vent with a TRE greater than 4.0 is not required to monitor the vent, but must still follow the specified reporting and recordkeeping requirements.

Comment: One commenter (A-90-19: IV-D-34) opposed the monitoring requirements for process vents that qualify as Group 2 through the low flow or low concentration determination and stressed that engineering judgement should

be adequate since facilities face penalties if the engineering assessment is found through testing to be incorrect.

One commenter (A-90-19: IV-D-78) proposed that if engineering judgement were allowed for the purpose of Group 1 and Group 2 determination through either the low flow or low concentration clause, a safety factor of 4 be used to exempt streams from monitoring, i.e., for vent streams with flow rates less than 0.00125 scmm or HAP concentration less 12.5 ppmv.

Response: The rule allows three means for determining that a vent is Group 2: TRE calculation, or measurement to verify that the stream is below either the specified flow or concentration level. If an owner or operator wishes to use engineering assessment to determine group status, they can calculate the TRE based on estimates of flow, emissions, and heating value of the vent stream. If the TRE is greater than 4.0, such engineering assessment is sufficient. If the TRE is less than 4.0, tested measurements are required. The low flow and concentration levels are included to reduce the testing burden for small vent streams. They can test only flow or concentration to show the stream is below the 0.005 scmm or 50 ppmv levels instead of doing all of the testing that would be needed to determine TRE. These choices provide sufficient flexibility. To further reduce the burden for Group 2 streams that are unlikely to become Group 1, no monitoring is required for streams with TRE's greater than 4.0 or streams that are below the low flow or concentration levels. Such safety factors as the commenter refers to have already been included in selecting the TRE cut-off value of 4.0 for testing and monitoring.

2.5 WORDING OF THE PROVISIONS

Comment: One commenter (A-90-19: IV-D-68) recommended that exclusions from regulatory requirements, such as monitoring exclusions, be included in each relevant section because the rule is an "enormous document." The commenter included an example that the monitoring exemption for the low

flowrate and concentration limits are presented in §63.113(f) and (g) but not in §63.114.

Response: The EPA believes that the monitoring requirements are clearly laid out in the rule. The EPA believes that since there are no flowrate (not to be confused with flow indicator) or concentration monitoring provisions, there is no need to add the exemptions to the monitoring section and increase the volume of the document with redundant information.

Comment: One commenter (A-90-19: IV-D-33) asked that the wording in §63.111 and §63.114(d) referring to "flow indicators" be revised to "flow indication system," which would include computerized flow-metering systems as well as traditional "flow indicators".

Response: The intent of the regulation is not to preclude the use of "flow indicator systems." Rather, the term "flow indicators" includes computerized flow metering systems as well as traditional flow indicators. The intent of the term "flow indicators" is to determine whether or not a flow is present, and record this on a continuous basis. A flow meter capable of measuring flow rate (e.g., scmm) could be used but is not required, because the simple presence of flow in a bypass line is sufficient to detect the bypass of a control device.

Comment: One commenter (A-90-19: IV-D-33) reasoned that the word "replacement" as used in §63.115(e) should be taken to mean a replacement of equipment not in kind, as in the case of changing equipment service or upgrading equipment, since replacement in kind should not be considered a process change.

Response: If the new equipment configuration is identical to the original equipment configuration, and the owner or operator can show by calculation that the parameters are identical between the old and the new configurations, then testing and recalculation of TRE would not be required.

Comment: One commenter (A-90-19: IV-D-33) indicated that the term water vapor had been used incorrectly in a description of Method 4 and should be revised.

Response: The commenter is correct that the term was used incorrectly. The intent is to use Method 4 to measure the moisture content of the stack gas. The regulation has been revised.

Comment: One commenter (A-90-19: IV-D-33) suggested eliminating the word "or" from §63.115(d)(2)(v)(B).

Response: The regulation has been revised to eliminate the word "or" from §63.115(d)(2)(V)(B) since it is unnecessary.

Comment: One commenter (A-90-19: IV-D-33) agreed that the definitions of closed-vent system, control device, process unit, and process unit shutdown should appear in both §63.111 and §63.161 but asked that the definitions be made consistent or the same in both sections.

Response: The EPA agrees with the commenter (A-90-19: IV-D-33) where the differences in the definitions are not necessary. The definitions of closed-vent system and process unit shutdown has been made consistent in §63.111 and §63.161. However, there are intentional differences in the definitions of control device and process vent. The difference in the control device definition is necessary for the process vent requirements and the difference in the process unit definition is based on the subpart in which the term is used.

Comment: One commenter (A-90-19: IV-D-73) stated that production rate should be deleted as an example of a process change in §63.115(e) because production rates are continuously changing in most SOCMI processes.

Response: Section 63.115(e) specifies that if a process change (including production rate) is within the range used to determine inputs to the TRE calculation, the process change does not have to be reported and the TRE does not have to be recalculated. In addition, unintentional temporary changes in production rate are excluded from this process change reporting requirement. However, a change in production rate outside the range used to calculate the TRE for the NCS could result in a change in TRE. For this reason, recalculation of

the TRE would be required if a production rate change causes the equation inputs to exceed their initial range.

Comment: One commenter (A-90-19: IV-D-77) requested that the definition of "vent stream" in §63.111 to be the same as "process vent" in §63.101.

Response: The EPA agrees, and the definition of "vent stream" in §63.111 was modified to refer to the "process vent" definition in §63.101.

Comment: One commenter (A-90-19: IV-D-77) requested that the requirements in §63.113 be reorganized to show that proposed paragraphs 63.113(e), (f), and (g) have equal weight and that a source may meet any one of the three criteria, not all criteria.

Response: The EPA believes that the requirements for §63.113 are clear as written in the proposal package; and they remain the same for promulgation.

Comment: One commenter (A-90-19: IV-G-4) recommended a change to the definition of "reactor process." The commenter (A-90-19: IV-G-4) expressed concern that the proposed definition could be interpreted to include product treatment in storage tanks. The commenter (A-90-19: IV-G-4) explained that it is common practice to add hydrogen peroxide, sodium borohydrate, or various inhibitors to storage tanks to maintain product quality or stability. The commenter (A-90-19: IV-G-4) claimed that, although a minor reaction may take place between the product and the added material, the emissions and control techniques are characteristic of storage tanks. The commenter (A-90-19: IV-G-4) suggested that the definition of reactor process should be clarified to exclude the addition of materials to product storage tanks for quality or stability.

Response: The intent of the reactor process definition is to cover a unit operation in which one or more chemicals or reactants are added and the molecular structures are altered to form one or more new organic compounds. Compounds formed during a minor reaction with a treatment chemical described by

the commenter (A-90-19: IV-G-4) would be assumed to be present as impurities.

3.0 STORAGE VESSELS

3.1 EMISSION CONTROL TECHNOLOGY

Comment: One commenter (A-90-19: IV-G-4) stated that the EPA should include cooling as a compliance option for storage vessels. The commenter (A-90-19: IV-G-4) explained that this option would involve lowering the temperature of the stored liquid so that the vapor pressure is below the Group 1 applicability level. The commenter (A-90-19: IV-G-4) reasoned that this control strategy would be similar to the one allowing installation of a product recovery device following a process vent to raise the TRE index. The commenter (A-90-19: IV-G-4) stated that adding such a control option would provide an important opportunity for pollution prevention.

Response: The EPA agrees with the commenter (A-90-19: IV-G-4) that lowering the storage temperature of a stored HAP should be allowed to affect Group 1/Group 2 determination. Though the proposed rule did not specify cooling as a compliance option, the proposed rule did allow cooling to be used to lower the HAP's "maximum true vapor pressure" which, in turn, would affect a storage vessel's Group 1/Group 2 status. As defined in the proposed rule, the "maximum true vapor pressure" of a stored liquid is based on the storage temperature of the liquid. A facility that chooses to lower the storage temperature of a liquid HAP in order to reduce the HAP's maximum true vapor pressure below the Group 1 applicability level may treat the storage vessel as a Group 2 vessel and comply with the Group 2 requirements.

Comment: Two commenters (A-90-19: IV-D-32; IV-D-112) recommended that the EPA modify the RCT requirements for

control devices to specify 90-percent removal for storage vessels at existing sources and 95-percent removal for storage vessels at new sources. One commenter (A-90-19: IV-D-112) claimed that most existing storage vessels with refrigerated condenser units can only achieve 90- to 93-percent efficiency. The commenter (A-90-19: IV-D-112) claimed that the proposal BID indicated that refrigerated condensers are not capable of meeting the 95-percent efficiency requirement. The commenter (A-90-19: IV-D-112) claimed that existing refrigerated condensers would need to be replaced with new cascade two-stage systems in order to achieve 95-percent efficiency. Another commenter (A-90-19: IV-D-32) made reference to a company that claimed that existing condensers would need to be replaced with new cascade two-stage systems in order to achieve 95-percent efficiency, but the commenter (A-90-19: IV-D-32) did not express concurrence or non-concurrence with the claim. The commenter (A-90-19: IV-D-32) rather stated that many existing refrigerated condensers would need to be replaced with new ones.

One commenter (A-90-19: IV-D-32) stated that the EPA had assumed and not demonstrated that refrigerated condensers that were installed to comply with requirements for 80- to 93-percent removal efficiencies could achieve 95-percent efficiency. Both commenters (A-90-19: IV-D-32; IV-D-112) claimed that the EPA did not consider or justify, as required by section 112(d) of the Act, the cost impact to facilities that would need to replace existing refrigerated condensers with new condensers. The commenters (A-90-19: IV-D-32; IV-D-112) stated that this replacement cost is not warranted based on the small increase in control efficiency.

Response: The impacts of the proposed HON regulation did account for the cost to replace condensers currently achieving 80- and 85-percent control efficiencies with new condensers that can achieve 95-percent efficiency. Furthermore, in assigning new 95-percent-efficient condensers to existing model tanks that previously had 80- and 85-percent-efficient condensers, the EPA assigned both one-stage and two-stage

cascade condensers. Multistage systems are discussed on page 2-31 of volume 1B of the proposal BID. As described in the proposal BID, the type of condenser that was assigned to a storage vessel depended on the properties and concentration of HAP's in the vent stream from the storage vessel. Regarding one commenter's (A-90-19: IV-D-112) assertion that the proposal BID indicated that refrigerated condensers are not capable of meeting the 95-percent efficiency requirement, the EPA assumes that this is a misunderstanding on the part of the commenter. The EPA considers this assertion inaccurate.

Regarding condensers that are currently achieving 90-percent control efficiency, in developing the proposed HON regulation, the EPA had assumed that recovery devices required by State regulations to achieve an emission reduction of 90 percent could actually achieve an emission reduction of 95 percent with only a small increase in operating cost, by simply lowering the temperature of the coolant. This original assumption is documented in docket item A-90-19: II-B-6.

After reevaluating the available information, the EPA has concluded that not all condensers currently achieving 90-percent control efficiency will be capable of achieving 95-percent control efficiency. While the EPA has determined that many of these 90-percent efficient condensers could achieve 95-percent control efficiency simply by lowering the temperature of the coolant, there will be certain instances where adjusting the coolant temperature will not achieve the required emission reduction, due to a characteristic of the condensers or of the stored chemical (e.g., high vapor pressure).

The EPA recognizes, based on currently available information, that requiring replacement of existing well-operated and maintained control devices that meet the control efficiency achieved by sources at the floor (i.e., 90 percent emission reduction) would not be justified. This additional control was estimated to cost about $38,000 for each additional Mg of emission reduction achieved by existing sources. Therefore, the EPA has provided an exemption in the

final rule for control devices installed on a storage vessel on or before December 31, 1992 achieving at least 90-percent emission reduction.

However, for those storage vessels with a control device achieving less than the floor (i.e., less than 90-percent emission reduction) or for fixed roof tanks not equipped with any control device, the EPA maintains that it is more economically efficient to require 95-percent control, which is based on the existing requirements in 40 CFR part 60 subpart Kb, rather than 90-percent control.

Comment: One commenter (A-90-19: IV-D-58) contended that the proposed storage vessel provisions should allow covers on access hatches and automatic gauge float wells to be either attached or bolted when they are closed. The commenter (A-90-19: IV-D-58) explained that some companies use attached devices rather than bolts to attach a cover or lid to the roof.

Response: The EPA will allow fastening devices in place of bolts to fasten hatches if these devices provide complete compression of the gasket when in use. The wording in §63.119(b)(6) and §63.119(c)(2)(ii) of the storage provisions has been changed, as follows, to allow these fastening devices: "Covers on each access hatch and each gauge float well shall be bolted or fastened so as to be air-tight when they are closed."

Comment: One commenter (A-90-19: IV-D-58) asserted that the proposed requirement that "each roof drain" be provided with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening should apply only to "emergency overflow roof drains". The commenter (A-90-19: IV-D-58) reasoned that a standard roof drain under normal operation does not contain product and should be left unrestricted at all times.

Response: The EPA interpreted this comment (A-90-19: IV-D-58) to mean that a roof drain that does not contain product does not drain into the stored liquid but, rather, drains to a location outside of the storage vessel. The EPA

agrees with the commenter (A-90-19: IV-D-58) that a roof drain that drains to the outside of the tank should not require a slotted membrane. The wording of §63.119(c)(2)(vi) of the storage vessel provisions has been changed to reflect this exemption. The phrase "each roof drain" was changed to read "each roof drain that empties into the stored liquid."

Comment: One commenter (A-90-19: IV-D-58) asserted that the storage vessel provisions should provide specifications for how far a metallic shoe seal on an EFR should extend into the stored liquid. The commenter (A-90-19: IV-D-58) stated that this specification was provided for how far the seal should extend above the liquid and explained that the lack of specification about how far it should extend into the liquid could produce "misunderstanding of the concept in the proposed rule".

Response: The EPA determined that §63.120(b)(5)(i) of the storage vessel provisions should not specify the distance that the lower end of a metallic shoe seal on an EFR should extend into the stored liquid. The EPA did not provide this specification in the proposed HON because the distance that the metallic shoe seal extends into the stored liquid has no effect on emissions from the storage vessel. Rather, it is only important that the lower end extends into the liquid or it would be a vapor-mounted seal. The distance a metallic shoe seal must extend into the stored liquid varies according to the seal mechanism. A metallic shoe seal must extend into the stored liquid far enough to allow the weighted mechanism to be attached.

The EPA did specify the vertical distance the upper end of the metallic shoe seal must extend above the liquid surface in order to ensure that adequate contact area is provided between the shoe and the vessel wall.

Comment: One commenter (A-90-19: IV-D-58) contended that the proposed provisions specifying that there shall be no holes, tears, or other openings in the shoe, seal fabric, or seal envelope of the primary or secondary seals of an EFR tank

should be changed to allow fabricated holes in the seal for the roof anti-rotation device, i.e., bazooka guide bar.

Response: The EPA would like to clarify for the commenter (A-90-19: IV-D-58) that prefabricated holes are allowed to be part of the seal for the purpose of installing the roof anti-rotation device; however, the storage provision in §63.119(c)(1)(iii) that the seal be "continuous" requires that any prefabricated hole be filled with the anti-rotation device and that a gasket be installed around the anti-rotation device at the prefabricated hole, in order to ensure that the seal is "continuous". As long as each prefabricated hole is filled with and gasketed at the anti-rotation device, the prefabricated hole is not considered to be a "hole" for the purposes of the storage provisions [e.g., paragraph (a)(4) of §63.119 of subpart G], because the prefabricated hole is sealed and would not result in significant HAP emissions.

Comment: Three commenters (A-90-19: IV-D-60; IV-D-86; IV-D-97) advocated the use of vapor balancing as a means of eliminating working losses from storage vessels. One commenter (A-90-19: IV-D-60) recommended that the EPA add a new RCT for storage vessels combining vapor balancing with incremental control of breathing losses to achieve a total emission reduction of 95 percent. The commenter (A-90-19: IV-D-60) added that there should be no requirement to demonstrate compliance of the vapor balancing system but that the engineering demonstration in §63.120(d)(1)(i) of the proposed rule be required for the control device used to control breathing losses. The commenter (A-90-19: IV-D-60) stated that including vapor balancing as an RCT would provide industry with the flexibility to utilize cost-effective technologies to achieve MACT. The commenter (A-90-19: IV-D-60) also stated that this approach would allow industry to utilize existing equipment and equipment with a design criteria less than 95 percent. The commenter (A-90-19: IV-D-60) provided an example calculation to illustrate combining vapor balancing with a separate control device for incrementally controlling breathing losses.

Response: The EPA will respond to two possible interpretations of the commenters' (A-90-19: IV-D-60; IV-D-86; IV-D-97) suggestions: (1) vapor balancing should be allowed within a tank farm; or (2) vapor balancing should be allowed during transfer between a storage vessel and a transportation vehicle. Regarding the use of vapor balancing within a tank farm, the EPA concluded that this is not a practical way to achieve 95-percent reduction of total organic HAP emissions. Vapor balancing within a tank farm would require excessive monitoring and coordination to ensure that each time liquid is pumped into one tank, liquid is also pumped out of another tank. Therefore, the EPA did not allow vapor balancing as an RCT for storage vessels in the HON.

Regarding the use of vapor balancing during transfer from a storage vessel to a transport vehicle, the EPA allows vapor balancing in the transfer provisions.

Comment: One commenter (A-90-19: IV-D-113) expressed support for the storage vessel provisions allowing floating roofs and capture devices as RCT. The commenter (A-90-19: IV-D-113) considers these controls to meet pollution prevention goals and to have little or no cross-media impact. Another commenter (A-90-19: IV-D-32) expressed support for the EPA's proposal to allow facilities to comply with the storage vessel provisions by installing IFR's or EFR's as an alternative to installing a closed-vent system and control device.

Two commenters (A-90-19: IV-D-86; IV-D-97) requested that the EPA specifically designate pollution prevention measures in the storage vessel provisions. One commenter (A-90-19: IV-D-103) expressed concern that the proposed storage vessel provisions are inconsistent with pollution prevention goals. The commenter (A-90-19: IV-D-103) asserted that flares and other treatment systems to control collected emissions should not be allowed for new vessels and suggested that closed-loop recovery systems be required for new storage vessels. The commenter (A-90-19: IV-D-103) added that the EPA should explore the possibility of requiring closed-loop

vapor recovery systems for multiple new storage vessels since the cost would be the same as installing floating roofs on the individual new storage vessels.

Two commenters (A-90-19: IV-D-86; IV-D-97) suggested that control of liquid level in a tank is another pollution prevention measure that can eliminate working losses with minimal investment and cost. The commenters (A-90-19: IV-D-86; IV-D-97) also suggested tying vents of tanks in a farm together with overall inlet/outlet control and inert gas blanketing. The commenters (A-90-19: IV-D-86; IV-D-97) added that in the context of the proposal BID model, using these methods would reduce emissions by only 80 percent. One commenter (A-90-19: IV-D-97) explained that this was due to other important operating practices not being recognized. The commenter (A-90-19: IV-D-97) implied that, if these other operating practices were recognized, that vent gas blanketing could achieve greater than 80-percent emission reduction.

Response: The EPA allows pollution prevention measures in the HON storage provisions. The storage provisions require floating roofs as RCT's; floating roofs are also pollution prevention measures. The storage provisions also allow condensers to be used to achieve 95-percent reduction of total organic HAP emissions from storage vessels, and condensers are closed-loop recovery systems. The EPA considered the possibility of allowing control of liquid level to achieve emission reductions but concluded that control of liquid level could not achieve 95-percent reduction of total organic HAP emissions from storage vessels.

Regarding the use of inert gas blanketing, the EPA did not include this pollution prevention measure in the storage provisions because the EPA has no data demonstrating that this measure can reduce total organic HAP emissions from storage vessels by 95 percent. The commenters (A-90-19: IV-D-86; IV-D-97) did not provide any information or data to specify that inert gas blanketing could actually achieve 95-percent emissions reduction. The EPA contacted the commenter for

clarification on this issue, but the EPA did not receive any clarifying information.

Comment: One commenter (A-90-19: IV-D-103) stated that the HON provisions for existing storage vessels should include specific requirements that slotted guidepoles contain a float to reduce emissions.

Response: The EPA agrees with the commenter's (A-90-19: IV-D-103) statement. The proposed HON storage provisions for EFR vessels at new and existing sources do include the requirement for slotted guidepoles to be equipped with a float (see §63.119(c)(2)(viii)(B) of the proposed HON regulation). This requirement has been retained in §63.119(c)(2)(x) of the final rule.

Comment: One commenter (A-90-19: IV-D-103) contended that the EPA is required by the Act to require submerged fill pipes for new and existing storage vessels between 250 and 40,000 gallons that are not controlled via floating roofs or closed-vent systems and control devices. The commenter (A-90-19: IV-D-103) explained that Louisiana, which contains 16 percent of the country's SOCMI process units, has this requirement for vapor pressures greater than 10.3 kPa, and Texas, which has 34 percent of the country's SOCMI process units, has the same requirements for storage vessels between 1,000 and 25,000 gallons and vapor pressures greater than 10.3 kPa.

Response: Regarding storage vessels with capacities under 10,000 gallons, the EPA did not collect data on control levels achieved by these storage vessels and is not regulating these smaller storage vessels. Regarding vessels with capacities between 10,000 and 40,000 gallons, these vessels are not splash-filled; rather, submerged fill is the standard practice and represents the baseline level of control. Therefore, the EPA concludes that there would be no emission reduction benefits from the suggested requirement and that the additional requirement would represent only an additional recordkeeping burden.

Comment: One commenter (A-90-19: IV-D-103) asserted that the HON must require that all new storage vessels have both liquid-mounted primary seals and secondary seals, and that all new vessels not using a closed-vent system and control device have welded rather than bolted deck seams and no column penetrations. The commenter (A-90-19: IV-D-103) contended that these additional controls are required to meet MACT as prescribed in the Act, which is "the maximum degree of reduction in emissions" achieved by the "best controlled similar source." The commenter (A-90-19: IV-D-103) further asserted that the EPA is obligated to investigate the possibility that 12 percent or more of existing sources meet the emission level achieved with these additional controls and to require these more stringent controls for existing vessels if at least 12 percent are currently achieving these higher control levels.

Response: The EPA has concluded that these additional controls are not required as the MACT floor for new or existing sources and are not incrementally cost-effective enough to require above the MACT floor. There is no existing standard that requires welded deck seams, no column penetrations, liquid-mounted primary seals, and secondary seals; the EPA has not located any one source that implements all four additional controls.

3.2 IMPACTS ANALYSIS

3.2.1 Cost Impacts

Comment: One commenter (A-90-19: IV-D-41) stated that the HON cost estimates did not account for the cost savings in products or reactants associated with the application of recovery devices or the application of more efficient controls such as floating roofs on storage vessels. The commenter (A-90-19: IV-D-41) explained that failure to account for such cost savings prejudices the cost analysis toward overestimating costs.

Response: The EPA agrees with the commenter (A-90-19: IV-D-41) that the cost savings incurred by the use of recovery devices and floating roofs should be included in the cost

analysis of the HON. The EPA did include this cost savings in the cost analysis for applying recovery devices (i.e., condensers and floating roofs) on storage vessels. As described in the proposal BID (BID volume 1C, section 4.4, pp. 4-17 and 4-20), the value of the recovered chemical was either the actual market price of the chemical or, if the market price was not available, a default value for the average chemical price (i.e., $1.57/kg), and the value of the chemical recovered was subtracted from the total cost of the recovery device.

Comment: Three commenters (A-90-19: IV-D-32; IV-D-86; IV-D-97) urged the EPA to use more accurate investment estimates when evaluating costs of control systems. The commenters (A-90-19: IV-D-32; IV-D-86; IV-D-97) recommended that the EPA redo its cost analysis because, in their opinion, the EPA had underestimated capital investment for control systems by a factor of 2 to 5. Two commenters (A-90-19: IV-D-86; IV-D-97) stated that because the annual cost effectiveness for storage vessels is sensitive to investment, it is important that the EPA use more accurate investment estimates.

Three commenters (A-90-19: IV-D-32; IV-D-68; IV-D-97) provided the same data indicating that the EPA's estimate of the capital costs for installing an IFR on an existing fixed roof storage vessel is low for two reasons: (1) the EPA's estimated capital cost, which is based on vendor quotes, is lower than the vendor quote obtained by the commenters, and (2) in general, vendor quotes underestimate the installation cost for IFR's because they do not account for additional tank repairs (i.e., upgrading column supports) that are discovered after a tank has been emptied for the retrofit. The data provided by two commenters (A-90-19: IV-D-32; IV-D-97) indicates that for the capital cost of purchasing and installing a 100-foot diameter fiberglass IFR on a 2,000,000 gallon tank containing methanol, the EPA-estimated capital investment is $50,000, whereas the vendor-quoted cost was $150,000 and the actual cost was $250,000. The data provided

by two commenters (A-90-19: IV-D-32; IV-D-68) indicate that the cost for installing an IFR on a 1,500,000 gallon storage vessel containing methyl methacrylate is $180,000 (excluding the cost of tank repairs performed to accommodate the IFR).

One commenter (A-90-19: IV-D-97) asserted that the EPA underestimated the cost to install a control device on a fixed roof storage vessel, because the EPA did not account for start-up costs such as "prove-out" and "haz-op".

Response: The EPA considered the comment that EPA's capital cost estimates for installing an IFR into an existing fixed roof storage vessel are lower than the commenters' (A-90-19: IV-D-32; IV-D-68; IV-D-97) vendor-quoted estimates. The EPA determined that the difference in estimates for capital costs is due to the type of IFR being costed. The EPA's cost estimate of $50,000 is for a 100-foot diameter aluminum IFR, while the vendor-quoted estimate of $150,000 provided by the commenters (A-90-19: IV-D-32; IV-D-97) is for a 100-foot fiberglass IFR, which is much more expensive. The EPA speculates, due to lack of information provided by the commenter (A-90-19: IV-D-68), that the vendor-quoted estimate of $180,000 provided by the commenter (A-90-19: IV-D-68) is for a fiberglass or steel IFR, rather than for an aluminum IFR. The EPA's cost estimates are based only on aluminum IFR's because, as described in the cost analysis in the proposal BID, IFR's were assigned to storage vessels only when the stored chemical would be compatible with aluminum. Therefore, the EPA will not change its vendor quotes for aluminum IFR's.

The EPA's cost analysis indirectly accounts for the added expense of installing a fiberglass or steel IFR, in those cases where an aluminum IFR would be incompatible with the stored chemical. In its cost analysis, the EPA assigned and costed aluminum IFR's only for those existing storage vessels that contained compounds that would not be corrosive to aluminum, such as halogenated chemicals and some glycol ethers. For all vessels containing chemicals corrosive to aluminum, the EPA assigned and costed refrigerated condensers,

rather than fiberglass or steel IFR's. The cost of refrigerated condensers is comparable to the cost of fiberglass and steel IFR's. For example, for an 85-foot diameter vessel storing a chemical with a vapor pressure of 1.51 psia, the EPA's cost estimate for installing a condenser is $83,500. For a 32-foot diameter vessel storing a chemical with a vapor pressure of 7.12 psia, the EPA's cost estimate for installing a condenser is $264,000. These costs for condensers are comparable with the cost of installing fiberglass or steel IFR's reported by the commenters ($130,000 to $180,000).

Regarding the comment that the EPA should not use vendor quotes because actual costs are higher than vendor quotes due to additional repairs, the EPA determined that these additional repairs are not necessarily typical for installing IFR's. The EPA's cost estimate for installing IFR's includes the cost of those repairs typically necessary to convert a fixed roof tank to an IFR tank (i.e., the cutting of vents and openings for modifying a vessel). The commenter (A-90-19: IV-D-97) provided a list of additional repairs and their associated costs, including, for example, upgrading the leg supports of a floating roof for a cost of $100,000. However, the EPA concluded that the additional repairs suggested by the commenter are not typically necessary for retrofitting a storage vessel with an IFR. In some cases, these repairs would need to be performed regardless of the IFR retrofit. Therefore, the EPA considers its vendor quote for installing IFR's to be valid.

Regarding the comment that the EPA underestimated the cost of installing a control device on a fixed roof storage vessel due to the added costs for equipment start-up, the EPA agrees with the commenter (A-90-19: IV-D-97) that the installation cost for condensers, which was the only type of control device included in the EPA's cost analysis for storage vessels, should reflect additional costs for start-up. At proposal, the EPA had utilized the costs provided in chapter 8 of Supplement 1 to the EPA's OCCM, Fourth Edition, PB92-

137181, November 1991 for installing packaged (i.e., non-custom) refrigerated condensers. In reviewing the OCCM's costing equations for condensers, the EPA determined that the cost equation for non-packaged refrigerated condensers includes more of the start-up costs (e.g., for testing the equipment after installation) than the cost equation for packaged systems. The EPA concluded that these additional start-up costs should be accounted for, because sources will be required to test their new equipment to ensure that it consistently operates as described in the design evaluation provided to the implementing agency for compliance purposes. Therefore, the EPA has changed the equation for the installation cost to include start-up costs by utilizing the equation provided in the OCCM for non-packaged condensers.

Comment: One commenter (A-90-19: IV-D-97) contended that the price of the product used in the model tank in the proposal BID is not a reasonable value. The commenter (A-90-19: IV-D-97) noted that the price for methanol, which is a common chemical used throughout the industry, is one-third the value used for the model tank product.

Response: The EPA agrees with the commenter that the price of methanol is less than the price of the example product indicated in the proposal BID. As indicated on pages 4-17 and 4-20 of section 4.0 of volume 1C of the proposal BID, in its analysis, the EPA used chemical prices specific to the chemicals stored in the model tank farms whenever they were available. In the case of methanol, EPA used a price of $0.35/kg. For those chemicals for which no price was available, such as for the model tank farm described referred to by the commenter (A-90-19: IV-D-97), an average price of $1.57/kg was used.

Comment: Two commenters (A-90-19: IV-D-32; IV-D-97) suggested that the cost in the proposal BID for cleaning a tank for conversion is low. One commenter (A-90-19: IV-D-97) indicated that the cost seems to be based on conversion of gasoline or light petroleum products and therefore underestimates cleaning costs for other products. The

commenter (A-90-19: IV-D-97) stated that cleaning a 50,000-gallon tank at a specific site costs $100,000. The commenter (A-90-19: IV-D-97) stated that this cost is more than the EPA's estimate. One commenter (A-90-19: IV-D-32) compared the EPA's estimated cost of $13,000 for cleaning a 2,000,000 gallon vessel to two companies' actual cleaning costs of $1,000,000 (cleaning and disposal) for a 1,000,000 gallon vessel and $208,000 (cleaning and repairs/changes to accommodate the new IFR) for a 1,500,000 gallon vessel.

Response: The EPA agrees with the commenters that the cost of sludge disposal should be added to the cost of cleaning and degassing a storage vessel. The EPA has added the cost of sludge disposal, based on the assumption that disposal will cost $5 per gallon of sludge and that each storage vessel will contain two inches of sludge for disposal. These assumptions are documented in the EPA document entitled "Internal Instruction Manual for ESD Regulation Development: Storage Vessels," Office of Air Quality Planning and Standards, Research Triangle Park, NC, January 1993. These costing assumptions result in a total cleaning and degassing cost (including sludge disposal) of about $3,500 (1989 dollars) for a 40,000-gallon tank assumed to have a diameter of 19 feet, and $26,400 for a 1,000,000-gallon tank assumed to have a diameter of 60 feet.

The EPA's revised estimates for cleaning and degassing storage vessels, which includes sludge disposal costs, are lower than the costs provided by the commenters. However, the cost estimates for cleaning and degassing storage vessels provided by the commenters (A-90-19: IV-D-32; IV-D-97) were not substantial enough to justify the EPA's changing its own cost estimates, which were reviewed by tank service companies that handle SOCMI storage vessels. The cost estimates provided by the commenters were not substantial enough because: (1) they were not detailed enough to explain why the costs were high for the specific storage vessels mentioned (e.g, the nature of the stored chemical); and (2) they only

represented a couple of example tanks that do not necessarily represent typical costs for the whole industry. Therefore, the EPA will continue to utilize its own cost estimates for cleaning and degassing storage vessels.

Comment: One commenter (A-90-19: IV-D-97) stated that the EPA failed to consider that tanks in the chemical industry, unlike the gasoline refining industry, may have been in a variety of chemical services since being built, and as a result, when conversion is required, old nozzles, etc. may have to be removed, upgraded, or replaced.

Response: The EPA did not include the cost of removing or upgrading nozzles on storage vessels in estimating capital costs for installing IFR's because the EPA does not consider upgrading nozzles to be a change that will be made for the average fixed roof storage vessel retrofit. Additionally, the EPA does not anticipate that, for those vessels requiring a nozzle upgrade, the cost will be significant relative to the total capital cost of installing IFR's.

3.2.2 Emission Estimates

Comment: Two commenters (A-90-19: IV-D-32; IV-D-62) recommended that the EPA update the storage vessel equations in the final HON to reflect the latest changes in the EPA document entitled "Compilation of Air Pollutant Emission Factors (AP-42)." The commenters (A-90-19: IV-D-32; IV-D-62) noted that the EPA published a "Supplement E" to AP-42 in October 1992 which contains a new Chapter 12 entitled "Storage of Organic Liquids". One commenter (A-90-19: IV-D-62) indicated that the new equations for fixed roof storage vessels would impact the EPA's cost and emissions analysis for storage vessels.

Response: The EPA has determined that the 1992 version of the AP-42 equations for fixed roof storage vessels would not significantly impact the EPA's cost and emissions analysis for storage vessels. As discussed in a memorandum entitled, "Review of API Publication 2518--Evaporative Loss from Fixed Roof Tanks--Preliminary Technical Evaluation of New Emissions Data and New Emission Factors," the EPA considered the

difference between the 1992 and the 1985 AP-42 equations for fixed roof storage vessels by calculating breathing loss emissions with both sets of equations, using both actual test parameters and default values. After comparing the results of the two sets of equations with the actual test results of the breathing losses, the EPA concluded that the 1985 and 1992 AP-42 equations provide comparable predictions of breathing loss for petrochemicals.

Additionally, in comparing the 1985 and 1992 AP-42 equations, the EPA determined that the 1992 AP-42 equations are more site-specific than the 1985 AP-42 equations and will require sources to make more measurements of tank parameters because the EPA cannot provide default values for some of the variables in the 1992 equations. Therefore, the EPA will retain the 1985 AP-42 equations for storage vessel emissions in the regulation. However, the EPA has decided that sources should be given a choice to use either set of equations for the breathing losses from fixed roof storage vessels, by incorporating by reference the American Petroleum Institute Publication 2518: Chapter 19, Section 1 - Evaporative Loss from Fixed-Roof Tanks, Second Edition, October 1991. Although the EPA will allow sources to choose either set of equations for breathing losses from fixed roof storage vessels, the source must use the same set of equations for estimating both credits and debits from storage vessels for emissions averaging.

3.3 APPLICABILITY AND GROUP 1/GROUP 2 DETERMINATION

3.3.1 Applicability

Comment: One commenter (A-90-19: IV-D-68) stated that the vapor pressure threshold for Group 2 tanks should be set above 1.0 psia. The commenter (A-90-19: IV-D-68) contended that the EPA had underestimated the cost to retrofit a methyl methacrylate tank with a floating roof. The commenter (A-90-19: IV-D-68) reported that such a retrofit would cost $389,000 (including installation of a floating roof, tank cleaning, and sludge disposal) and would result in emissions reductions of 11.2 Mg per year, yielding a cost-effectiveness

of $35,000/Mg. The commenter (A-90-19: IV-D-68) indicated that this cost-effectiveness exceeds the $3,400/Mg listed in the proposal preamble to justify the Group 1/Group 2 applicability criteria. The commenter (A-90-19: IV-D-68) concluded that in order to maintain the $3,400/Mg cost, the vapor pressure cutoff should be set above 1.0 psia which is approximately the vapor pressure of methyl methacrylate.

Response: The EPA wishes to clarify that cost-effectiveness is based on annualizing capital costs over the life of the equipment (i.e., 10 years). The cost-effectiveness value of $35,000 suggested by the commenter (A-90-19: IV-D-68) was not calculated in this manner. Using the values provided by the commenter (A-90-19: IV-D-68), the EPA calculated the cost-effectiveness for the single storage vessel containing methyl methacrylate. If the capital cost of $389,000 is multiplied by 0.263 (0.163 for capital recovery; 0.04 for taxes, insurance, and administrative charges; 0.05 for maintenance charges; and 0.01 for inspection charges), the total annual costs (without considering the cost savings associated with the product saved) are $102,310. The value of the product saved (assuming a product value of $1.28/kg) is $1,280/Mg multiplied by 11.2 Mg of emissions reduced, which yields $14,336/yr. The annual cost savings from saved product, $14,336/yr, is subtracted from $102,310/yr, which yields $87,974 as the net annual costs. The cost-effectiveness is calculated by dividing the net annual costs, $87,974/yr, by the estimated annual emissions reduction, 11.2 Mg/year, which yields approximately $7,900/Mg.

The EPA understands that the cost-effectiveness varies for specific chemicals and specific storage vessels. However, the decision to establish a standard above the MACT floor is based on the average cost-effectiveness, not on the cost-effectiveness of an individual chemical. The corrected value of $7,900/Mg, based on the commenter's (A-90-19: IV-D-68) provided data is not unreasonably higher than the average cost-effectiveness value of $3,400/Mg cited in the proposal BID. Therefore, the EPA will not revise the cost-

effectiveness value of $3,400/Mg developed for the proposed rule. The EPA maintains that this is a reasonable cost for controls above the MACT floor.

Comment: One commenter (A-90-21: IV-D-1) requested that the vapor pressure cutoff for determination of Group 1 status of storage vessels at new sources be increased to 5.2 kPa for vessels with capacity greater than 151 cubic meters. The commenter (A-90-21: IV-D-1) questioned the need to require control of vessels storing chemicals with vapor pressures below 5.2 kPa, stating that emissions from such vessels would be low. The commenter (A-90-21: IV-D-1) specifically objected to the fact that formaldehyde storage would be subject to the rule. The commenter (A-90-21: IV-D-1) reasoned that closed-vent systems and control devices would be very expensive, and floating roofs would be impossible to use because formaldehyde is stored in heated and agitated vessels. The commenter (A-90-21: IV-D-1) explained that the concentration of HAP in the head space over a liquid with such a low vapor pressure would be very low, offering no fuel value such that thermal destruction would require the added expense of supplemental fuel. The commenter (A-90-21: IV-D-1) also stated that the use of wet scrubbers on low concentration vent streams is generally not efficient, and consistent achievement of 95-percent removal of total organic HAP emissions would be unlikely. The commenter (A-90-21: IV-D-1) further reasoned that, since floating roofs may not be used on formaldehyde, those vessels located at a distance from control devices would require investment in extensive piping and blower systems.

Response: In proposing the vapor pressure threshold of 0.7 kPa for large storage vessels at new sources, the EPA considered the cost of control. For storage vessels that will store liquids incompatible with an aluminum floating deck (e.g., formaldehyde), the EPA assigned and costed a closed-vent system and control device (i.e., refrigerated condenser). The EPA determined that the cost of requiring control devices is reasonable, given the emission reduction achieved.

The commenter (A-90-21: IV-D-21) did not supply any data indicating that a control device would be more expensive for a storage vessel storing formaldehyde than for a storage vessel storing other HAP liquids incompatible with aluminum. Therefore, the EPA sees no need to change the proposed vapor pressure cutoff of 0.7 kPa for large storage vessels at new sources.

Comment: One commenter (A-90-19: IV-D-97) asserted that the vapor pressure threshold for large existing tanks should be raised to 1.0 psia and for large new tanks to 0.5 psia. The commenter (A-90-19: IV-D-97) explained that the economic analysis associated with the model tanks in the proposal BID contain underestimates of cost and overestimates of the savings. Section 3.2.1 of this BID volume lists specific cost examples provided by the commenter (A-90-19: IV-D-97).

Response: As discussed in section 3.2.1 of this BID volume, the EPA revised some of the assumptions in the cost analysis for storage vessels. As a result, the average cost-effectiveness of the selected vapor pressure threshold for MACT for large storage vessels at existing sources increased only slightly, from $1,500/Mg at proposal to $2,000/Mg at promulgation.

Comment: One commenter (A-90-19: IV-D-103) contended that the EPA is required by the Act to regulate new and existing storage vessels with capacities of 25,000 to 40,000 gallons containing organic HAP's with vapor pressures of 10.3 kPa or greater, rather than 13.1 kPa or greater. The commenter (A-90-19: IV-D-103) explained that Texas, which presumably has more than 12 percent of the nation's storage vessels, requires control of such tanks. The commenter added that Congress did not intend for the EPA to consider "economic efficiency" in regulatory decision-making.

Response: The EPA wishes to clarify that although Texas has more than 12 percent of the storage vessels in the SOCMI, it does not necessarily follow that these 12 percent of SOCMI vessels all are in the size category between 25,000 and 40,000 gallons capacity. The EPA found the MACT floor for

both new and existing sources in the smaller size category to be 13.1 kPa and determined any additional control above the MACT floor not to be cost-effective. Contrary to the commenter's statement, the EPA is directed to consider cost-effectiveness when considering whether to establish a MACT standard above the MACT floor.

3.3.2 Group 1/Group 2 Determination

Comment: One commenter (A-90-19: IV-D-68) stated that the EPA should include turnover rate as a criterion in the determination of Group 1/Group 2 status for storage vessels. The commenter (A-90-19: IV-D-68) claimed that the EPA overestimated tank emissions and therefore underestimated the cost per Mg of emission reductions by basing the analysis on a worst case turnover factor.

Response: In order to include turnover rate in the determination of Group 1/Group 2 status for storage vessels, a source would need to be able to ensure its turnover rate for each vessel. The EPA based the analysis on worst-case turnover rates (e.g., ranging from 11 turnovers per year for 2,000,000-gallon tanks to 372 turnovers per year for 10,000-gallon tanks) because the EPA concluded that no practical method exists for a source to ensure its turnover rate.

Comment: Three commenters (A-90-19: IV-D-79; IV-D-86; IV-D-97) favored use of a mass emission limit and/or concentration cutoff, as alternatives to storage vessel size and vapor pressure, for Group 1/Group 2 status determination for the storage vessel provisions.

Two commenters (A-90-19: IV-D-86; IV-D-97) contended that the cost of controlling smaller tanks with the specified RCT is unjustified. The two commenters (A-90-19: IV-D-86; IV-D-97) maintained that the HON proposal BID states that emissions from smaller tanks are half the emissions from the model tank. Both commenters (A-90-19: IV-D-86; IV-D-97) considered concentration, mass, or flows more appropriate.

Response: The EPA had considered the option of using a concentration threshold or mass emission limit as the format

for the storage vessel standard; however, the EPA concluded that this format either would result in higher cost or would be technically infeasible.

The EPA concluded that establishing an emission limit for IFR storage vessels would be economically infeasible. Equipping each storage vessel with a capture and stack system would require that the vessel vents be sealed and that the emissions be transported to a measurement system. In most cases, the closure of the vessel vents would require the vessel to be blanketed with inert gas to prevent the formation of explosive flammable mixtures in the vessel or the measurement system. This would be economically impracticable considering that the sole purpose of the system would be for emissions testing.

The EPA concluded that establishing an emission limit for EFR vessels would be technically infeasible. It is technologically impossible to equip EFR vessels with a closed-vent system because these vessels are open to the atmosphere. Whereas it is possible to equip EFR vessels with fixed roofs, such a change would convert the vessels into IFR vessels, and the rationale for not establishing an emission limit for IFR vessels would still hold.

The EPA concluded that establishing an emission limit for storage vessels that are controlled with closed-vent systems and control devices would be impracticable due to the considerable variability in mass emissions from fixed roof vessels. Mass emissions from these vessels vary as a function of vessel capacity, vapor pressure of the stored liquid, molecular weight of the stored liquid, and utilization rate of the storage vessel. Because of the wide variation in the amount of emissions of HAP vapors, a mass emission limit could not be selected that would be achievable on a worst-case basis (i.e., large vessel capacity, high vapor pressure, and high utilization rate), and at the same time would not allow the construction of closed-vent systems and control devices that are less effective than MACT for other vessels.

The EPA disagrees with the comment (A-90-19: IV-D-86; IV-D-97) that the cost of controlling smaller tanks with the specified RCT is unjustified. In the analysis to determine the MACT floor level of control for storage vessels, the EPA divided the population of model vessels into three size ranges: small, medium, and large. For the small and medium size ranges, the EPA concluded that both new and existing storage vessels should be controlled at the MACT floor level, which is the least stringent level of control allowed by section 112 of the Act. The EPA chose not to establish emission control requirements more stringent than the MACT floor for new and existing small and medium storage vessels because the costs were considered high given the very small potential emission reductions.

Regarding the comment (A-90-19: IV-D-86; IV-D-97) that the HON proposal BID states that emissions from smaller tanks are half the emissions from the model tank, the EPA assumes that this is a misunderstanding on the part of the commenter. The EPA considers this statement inaccurate.

Comment: One commenter (A-90-19: IV-D-58) objected to the proposed provision that vapor pressure determination be based on true vapor pressure. The commenter (A-90-19: IV-D-58) asserted that the vapor pressure value for Group 1/Group 2 determination should rather be based on a normalized temperature value, such as 70 ^{o}F. The commenter (A-90-19: IV-D-58) acknowledged that normalizing temperature may require different vapor pressure values according to geographic region to reflect temperature differences between climates. The commenter (A-90-19: IV-D-58) reasoned that the true vapor pressure could vary for a product depending on storage conditions, thus pushing the maximum true vapor pressure above a HON applicability threshold for vapor pressure. The commenter (A-90-19: IV-D-58) reasoned that a normalized value would avoid changes that temperature effects could have on control requirements.

Response: The EPA concluded that one vapor pressure value based on maximum true vapor pressure is the most

practical format for the provisions. The commenter's (A-90-19: IV-D-58) suggestion to establish regional vapor pressure values according to a normalized temperature does not address those storage vessels that store liquid HAP's below or above the ambient temperature. Furthermore, developing multiple vapor pressure values according to geographic region would add unnecessary complication to the storage provisions.

The EPA considered the commenter's (A-90-19: IV-D-58) concern that, because temperature varies from year to year, the maximum true vapor pressure will vary enough to affect the control requirements necessary to comply from year to year with the HON provisions. However, the EPA has determined that the local maximum monthly average temperature, by which the maximum true vapor pressure is determined for the purpose of Group 1/Group 2 determination, does not vary enough year to year to change the maximum true vapor pressure enough to affect a storage vessel's Group 1/Group 2 status or specific control requirements under the HON.

Comment: One commenter (A-90-19: IV-D-33) contended that the proper basis for determining Group 1/Group 2 status is not the true vapor pressure of the organic HAP being stored but rather the partial pressure of the component of concern in the vapor above the liquid. The commenter (A-90-19: IV-D-33) defined the partial pressure as equivalent to the vapor pressure of the component of concern, multiplied by the concentration of the component of concern in mole fraction, multiplied by the activity coefficient for the component of concern in the liquid mixture. The commenter (A-90-19: IV-D-33) suggested rewording for proposed §63.119(a)(1) and (2) and §63.120(b)(1) of subpart G.

Response: The EPA agrees with the commenter (A-90-19: IV-D-33) that the regulation should be based on the equilibrium partial pressure exerted by the total organic HAP's in the stored liquid. Both the proposed and promulgated versions of the HON include this specification in the definition of "maximum true vapor pressure" in §63.111 of subpart G.

3.4 COMPLIANCE

3.4.1 General

Comment: Regarding the compliance requirements for closed-vent systems and control devices, one commenter (A-90-19: IV-D-89) contended that smaller combustion devices with a minimum residence time of 0.5 seconds and a minimum temperature of 560 °C should meet the 95-percent emission reduction requirement.

Response: The EPA concluded that the minimum residence time of 0.75 seconds and minimum temperature of 816 °C specified in the storage provisions in §63.120(d)(1)(i)(B) for enclosed combustion devices should be replaced with a minimum residence time of 0.5 seconds and a minimum temperature of 760 °C. The EPA is reducing the residence time and temperature in the storage provisions for control devices in order to make the storage provisions consistent with the transfer and wastewater provisions in the HON. In reviewing the proposed provisions for the three emission points, the EPA determined that two sets of minimum residence time and temperature requirements had been proposed for the three emission points, and both sets of requirements were intended to achieve greater than or equal to 95 percent emission reduction. The EPA chose the least stringent of the proposed requirements for control devices utilized on storage vessels, as specified above.

This change to the minimum residence time incorporates the commenter's (A-90-19: IV-D-89) suggested minimum residence time. However, the EPA concluded that it would not reduce the minimum temperature to 560 °C. The data currently available to the EPA supports a minimum temperature of 760 °C, but does not support or refute the commenter's suggestion of 560 °C. The commenter (A-90-19: IV-D-89) did not provide supporting data to the EPA.

Comment: One commenter (A-90-19: IV-D-78) requested that the storage vessel provisions requiring a closed-vent system and control device include the option of complying with a 20 ppmv outlet concentration limit as an alternative to the

95-percent reduction requirement. The commenter (A-90-19: IV-D-78) reasoned that the proposed provisions for other emission points included an outlet concentration limit in addition to a percent reduction requirement.

Response: The EPA did not specifically require a 20 ppmv outlet concentration as an RCT for storage vessels because this type of RCT would require a more rigorous analysis, including a performance test. The HON storage provisions require only a design evaluation for any control devices utilized to meet the 95-percent emission reduction standard. The EPA maintains that there is no reason to increase the stringency of the storage provisions by requiring a performance test to comply with an RCT. Furthermore, the EPA would consider it unreasonable to demonstrate compliance with a performance test because the flow of organic HAP into a control device from a storage vessel is highly variable.

The EPA interpreted the commenter (A-90-19: IV-D-78) to be concerned that a source would be required to submit two separate initial compliance reports for a control device utilized for both storage vessel and process vent emissions, in which case the HON might appear to require a source to submit both a design evaluation for storage showing 95-percent emission reduction and a performance test for process vents showing 98-percent emission reduction. The EPA does not intend to require this redundant reporting. The EPA has added a provision to §63.120(d)(1) of the final rule that allows a source to submit, in place of a design evaluation, the results from a performance test that are submitted as part of the Notification of Compliance Status for compliance with the process vent, transfer, or wastewater provisions of the HON. The results of the performance test must demonstrate that the control device achieves the emission reduction level required by the storage provisions.

Comment: One commenter (A-90-19: IV-D-77) interpreted the proposed provision in §63.119(b)(2) to preclude normal operation of a storage tank's liquid level below that at which an IFR rests upon its leg supports. The commenter (A-90-19:

IV-D-77) claimed that this requirement would amount to an approximate 5 to 20 percent loss in working inventory capacity in tanks ranging from 10 to 40 feet tall, assuming a typical leg support height of 2 feet. The commenter (A-90-19: IV-D-77) indicated that the liquid level is not routinely kept at the 0 to 2 foot level range and that operating at this low level is not a wise use of equipment resources, but that a small fraction of the operating time some tanks do fall to this level by design because a storage vessel is an inventorying vessel with the intent of matching variable flows to steady flows.

The commenter (A-90-19: IV-D-77) contended that the EPA had not fully considered the economic and environmental impact associated with the provision. The commenter (A-90-19: IV-D-77) contended that the EPA should re-evaluate these impacts and include the cost of, and marginally increased air emissions associated with, new tanks built to recover the lost inventory capacity. The commenter (A-90-19: IV-D-77) reasoned that the operating limitation in §63.119(b)(2) would worsen emissions by its inclusion as opposed to its omission from the rule and contended that the costs and operating management burden associated with the provision were not justified.

Response: The EPA has concluded that the provision in the HON that requires that "the process of filling, emptying, or refilling" a storage vessel shall be "continuous and shall be accomplished as soon as possible" during times when "the floating roof is resting on the leg supports" will not cause a reduction in a source's inventory capacity and will not preclude normal operation of a storage vessel. As stated by the commenter (A-90-19: IV-D-77), normal operation of a storage vessel does not involve routinely resting the floating deck on the leg supports. The EPA agrees with the commenter (A-90-19: IV-D-77) that routinely resting the deck on the leg supports would not be a wise use of the equipment or storage space. The intent of the requirement is to ensure that all facilities establish the standard operating practice of not

resting the deck on the leg supports and minimize the amount of time that the deck does rest on the leg supports.

The EPA would like to clarify the wording of the provisions, that the process of filling, emptying, or refilling "shall be continuous and shall be accomplished as soon as possible." This phrase implies that the activity of filling, refilling, or emptying a vessel must meet both criteria (i.e., "continuous" and "as soon as possible"). The phrase "as soon as possible" is included in the provisions to account for situations where a source has difficulty with continuously filling, refilling, or emptying a vessel. The interpretation of the phrase will ultimately be determined by the implementing agency. Additionally, the EPA added a note prior to both paragraphs (b)(1) and (c)(3) of §63.119 of the final rule that clarifies the meaning of this regulation language, which states that the intent of the provisions is to avoid having a vapor space between the floating roof and the stored liquid for extended periods.

3.4.2 Routine Maintenance

Comment: Several commenters (A-90-19: IV-D-32; IV-D-33; IV-D-34; IV-D-69; IV-D-73; IV-D-79; IV-D-86; IV-D-89; IV-D-92; IV-D-97; IV-D-112; IV-D-113) (A-90-21: IV-D-7; IV-D-17) asserted that the allowance in the proposed storage vessel provisions of 72 hours for routine maintenance of a closed-vent system and control device is insufficient. Several commenters (A-90-19: IV-D-34; IV-D-69; IV-D-79) (A-90-21: IV-D-7) made the general statement that repair of various control devices, including flares, incinerators, boilers, thermal oxidizers, and water scrubbers, would require more than the 72 hours per repair or per year. Three commenters (A-90-19: IV-D-34; IV-D-112) (A-90-21: IV-D-7) stated that boilers and incinerators require time for a systematic cooldown period, for obtaining safety approval to open and enter the combustion chamber, and for start-up without damaging the unit, in addition to the time required for checking and replacing parts. Three commenters (A-90-19: IV-D-32; IV-D-86; IV-D-97) stated that maintenance of a flare

may require up to 7 to 10 days per year. One commenter (A-90-21: IV-D-17) indicated that rebricking a thermal oxidizer occurs approximately once every three years and requires at least one week. One commenter (A-90-21: IV-D-17) indicated that many States require an annual inspection of boilers, and this inspection itself requires more than 72 hours. One commenter (A-90-19: IV-D-89) stated that five days or more would be required to empty a large storage vessel for the purposes of routine maintenance due to limited tankage. One commenter (A-90-19: IV-D-113) indicated that, for certain chemicals such as styrene, there are special maintenance procedures that increase the time required to perform the maintenance. Three commenters (A-90-19: IV-D-32; IV-D-34) (A-90-21: IV-D-17) stated that 72 hours would be adequate for many typical procedures; for replacing a burned tip on a flare; for performing one maintenance incident for an incinerator; or for maintenance of simple equipment such as activated carbon beds. One commenter (A-90-19: IV-D-32) stated that the HON rule should provide an incentive for facilities to complete such maintenance procedures as quickly as practicable.

Several commenters (A-90-19: IV-D-32; IV-D-33; IV-D-34; IV-D-69; IV-D-73; IV-D-79; IV-D-86; IV-D-89; IV-D-92; IV-D-97; IV-D-112; IV-D-113) (A-90-21: IV-D-7; IV-D-17) suggested various ways to change the provisions to accommodate the need for additional maintenance time. Several commenters (A-90-19: IV-D-69; IV-D-86; IV-D-89; IV-D-97; IV-D-112; IV-D-113) (A-90-21: IV-D-7) suggested alternative limits for routine maintenance, including 10 days, 1 week, and 148 hours, with 10 days being the most common suggestion. One commenter (A-90-19: IV-D-34) noted that a limit of 10 days per year for maintenance has been incorporated by States into incinerator air permits.

Several commenters (A-90-19: IV-D-73; IV-D-89; IV-D-112) (A-90-21: IV-D-17) suggested allowing extensions for routine maintenance. Three of the commenters (A-90-19: IV-D-73; IV-D-112); (A-90-21: IV-D-17) recommended allowing the State

or local permitting authority to grant extensions. One commenter (A-90-19: IV-D-89) stated that the HON should include provisions for extensions. Two commenters (A-90-19: IV-D-89) (A-90-21: IV-D-17) reasoned that allowing extensions would be consistent with other air regulations, such as NSPS, and current State agency practices which have proved effective at granting variances within a reasonable time frame.

Three commenters (A-90-19: IV-D-32; IV-D-97) (A-90-21: IV-D-17) suggested requiring that storage vessels not be filled during periods of routine maintenance that exceed the 72-hour limit. However, the commenters (A-90-19: IV-D-32; IV-D-97); (A-90-21: IV-D-17) stressed that sources should be allowed to maintain a constant liquid level in the tank or to lower the liquid level during this period.

One commenter (A-90-19: IV-D-33) suggested that the 72-hour limit be applicable only to times during routine maintenance when a storage vessel is being filled with organic HAP. The commenter (A-90-19: IV-D-33) provided an example calculation of breathing versus working losses indicating that if working losses were restricted, total emissions based on breathing losses would be very low. The commenter (A-90-19: IV-D-33) also indicated that if the EPA changed the 72-hour limit to apply only to periods during routine maintenance when a vessel is being filled with organic HAP, this 72-hour allowance should be applied to and tracked for each storage vessel separately in order to accommodate tank farms served by one control device.

Several commenters (A-90-19: IV-D-86; IV-D-92; IV-D-97) suggested that the 72-hour limit be replaced with a provision that specifies performing maintenance as required by the manufacturer of the control device. Two commenters (A-90-19: IV-D-73; IV-D-79) suggested that there be no limit for routine maintenance. One commenter (A-90-19: IV-D-34) suggested replacing the 72-hour limit with a specific limit for each type of control technology, such as 240 hours per year for incinerators.

Several commenters (A-90-19: IV-D-79; IV-D-86; IV-D-92; IV-D-97) (A-90-21: IV-D-7) interpreted the 72-hour limit to apply to all maintenance, including non-routine maintenance. Two commenters (A-90-19: IV-D-86; IV-D-97) suggested that the rule require documentation of all periods when equipment is not operating properly, rather than establishing a limit. One commenter (A-90-19: IV-D-79) suggested that the rule should include provisions for unforeseen circumstances, such as natural disasters, which would require control devices to be out of commission for repair for periods of time in excess of 72 hours. Three commenters (A-90-19: IV-D-86; IV-D-92; IV-D-97) were concerned that the 72-hour limit would require equipment to operate more than 99 percent of the time.

Response: The EPA wishes to clarify that "routine maintenance," as it is referred to in the storage provisions, refers to planned, routine maintenance of control devices, excluding unplanned repairs due to malfunction. Several commenters (A-90-19: IV-D-79; IV-D-86; IV-D-92; IV-D-97) (A-90-21: IV-D-7) interpreted the proposed 72-hour limit for routine maintenance to apply to non-routine maintenance such as malfunctions and repair due to natural disasters as well as to routine maintenance. The HON storage provisions include provisions in §63.119(e)(5) of subpart G for control system malfunction. These provisions specify that in the event of a closed-vent system or control device malfunction, the system is not required to meet the specifications in §63.119(e)(1) or (e)(2). This provision implies that control systems are not required to operate more than 99 percent of the time, as three commenters (A-90-19: IV-D-86; IV-D-92; IV-D-97) stated. The EPA has clarified the language in the rule by changing each reference to "routine maintenance" to "planned routine maintenance".

Regarding the issue of routine maintenance, the EPA has concluded that the proposed 72-hour allowance for routine maintenance is inadequate. After reevaluating the available information, the EPA determined that increasing the time allowance to 240 hours per year (i.e., 10 days per year) would

be the most reasonable approach to address the need for more time to complete routine maintenance, and would be consistent with State air permitting activities. The EPA did not choose either of the other two approaches suggested by the commenters because of the additional burden associated with them. Specifically, requiring that storage vessels not be filled during any routine maintenance exceeding 72 hours would require the addition of equipment to monitor the liquid level for enforcement purposes. Further, allowing for extensions for routine maintenance beyond the 72 hours would require added reporting burden for both sources and implementing agencies.

While the EPA is allowing sources to utilize the full 240 hours to perform routine maintenance on each control device, the EPA dos not expect that sources will utilize all 240 hours for all control devices, because many types of control devices do not require this much maintenance time per year. The EPA has included provisions in the regulation that make sources accountable for their utilization of this allowance. Sources are required to periodically (i.e., every six months) report the routine maintenance performed during the previous six months, including the amount of time used to complete that routine maintenance, and the routine maintenance that is planned for the following six months.

Regarding the comment that it takes five days to empty a tank for routine maintenance, for any storage vessel that must be emptied before routine maintenance is performed (i.e., storage vessels for which there are no organic HAP vapor bypass capabilities), the owner or operator will not need any allowance for time to perform routine maintenance because there will be no additional emissions during the routine maintenance operation. The control device may be operating while the tank is being emptied and degassed, and once the storage vessel is emptied and degassed there will be no emissions from the storage vessel. Therefore, the length of time of the allowance for routine maintenance does not

apply to those cases where a storage vessel is emptied and degassed for routine maintenance of the control device.

Comment: One commenter (A-90-19: IV-D-97) contended that the storage vessel provisions should clearly state that routine defrosting of refrigeration systems is not considered part of the 72 hours of routine maintenance. The commenter (A-90-19: IV-D-97) explained that this routine operation is typically done during the morning hours for one hour, on a daily basis, and is not done during the maximum representative conditions.

Response: The EPA considers routine defrosting of refrigeration systems to be a process integral to the operation of a condenser unit rather than routine maintenance for a condenser unit. For those sources that choose to have a backup unit to operate while defrosting the main condenser unit, the defrosting cycle would not result in increased emissions. However, for those sources that do not choose to have a backup condenser unit, the refrigerated condenser unit must be designed to achieve a 95-percent reduction in total organic HAP emissions, including the time that the unit is undergoing the routine defrosting. A source is required to demonstrate any refrigeration system's 95-percent removal efficiency in either a design evaluation or a performance test.

3.4.3 Compliance Schedule

Comment: Three commenters (A-90-19: IV-D-32; IV-D-73; IV-D-97) expressed support for the proposed provision to allow an extension for upgrading seals for EFR's not meeting the required standard as specified in §63.119(c)(1). One commenter (A-90-19: IV-D-97) stated that because many process units are served by only a few tanks, any tank outage could shut down the process unit. The commenter (A-90-19: IV-D-97) indicated that allowing an extension for upgrading the seals could alleviate scheduling problems. One commenter (A-90-19: IV-D-97) stated that the environment would not be compromised by this delay. Another commenter (A-90-19: IV-D-32) explained that the emissions from emptying, cleaning, and

degassing an EFR tank could exceed the emissions reduction achieved by the seal upgrade.

Four commenters (A-90-19: IV-D-32; IV-D-58; IV-D-64; IV-D-73) requested that the same extension allowed for EFR's also be allowed for IFR's that have a vapor mounted primary seal to retrofit a secondary seal or a liquid mounted primary seal. Two commenters (A-90-19: IV-D-32; IV-D-73) explained that a vapor mounted primary seal has been installed on many vessels to comply with NSPS in 40 CFR subparts K and Ka and State and local rules. The commenters (A-90-19: IV-D-32; IV-D-73) asserted that the incremental benefits and costs of making such an upgrade within 3 years of promulgation do not justify this requirement. One commenter (A-90-19: IV-D-73) maintained that if the EPA requires the seal upgrades within only 3 years, the number of storage vessels involved, the cost, and the disruption to plant operations and possibly delivery will be greater than estimated in the proposal BID. The other commenter (A-90-19: IV-D-32) maintained that, because the potential emission reduction from upgrading IFR seals is lower than the potential emission reduction from upgrading EFR seals (roughly 18 percent compared to 25 to 30 percent), it should be reasonable to allow a similar extension for both IFR vessels and EFR vessels.

Two commenters (A-90-19: IV-D-86; IV-D-97) stated that the same extension should be allowed for conversion of any tank to an IFR or EFR.

One commenter (A-90-19: IV-D-103) objected to the proposed extension of up to 10 years for upgrading seals on EFR's. The commenter (A-90-19: IV-D-103) explained that EFR vessels have higher emission rates compared to IFR vessels and that it is important that the seals on EFR's be upgraded as expeditiously as possible. The commenter (A-90-19: IV-D-103) suggested allowing a maximum extension of five years after promulgation for upgrading seals on EFR's.

<u>Response</u>: Storage vessels are routinely emptied and degassed on a 10-year cycle in order for the owner or operator to conduct inspections for corrosion, weld failures, and

standard API operating practices; and to remove sludge. This 10-year cleaning and degassing schedule for performing storage vessel inspections is part of the floor level of control for storage vessels at existing sources. If the final rule were to require sources to upgrade the seal or fittings on an existing IFR with an existing vapor-mounted seal within the 3-year compliance period, sources would not likely be able to coordinate the activities of upgrading the seal or fittings and performing the standard 10-year inspection. As a result, sources would be required to clean and degas a storage vessel twice over a 10-year period, resulting in greater organic HAP emissions than the emission reductions that would then be achieved by the upgraded seals or fittings.

As stated above, the logistics of inspecting and servicing storage vessels according to the standard 10-year schedule are too complex to accommodate changes to the 10-year schedule. The final rule will be affecting very large tank farms, and each cleaning and degassing event will require that tank farms be taken out of service over a period of time, causing process unit shutdowns and affecting production cycles. Consequently, each additional cleaning and degassing would represent a significant burden and added costs to the SOCMI industry, which is already being required by the rule to control large storage vessels at a level above the floor.

For the reasons stated above, previous rulemakings have allowed delays for upgrading the seals on floating roofs of storage vessels at existing sources, with the intention of avoiding premature storage vessel cleaning and degassing. The EPA wishes to uphold this intent in the final rule. The EPA has concluded that the 10-year extension provided in the proposed rule for upgrading the seals of EFR's is also appropriate for IFR's that are equipped with a vapor-mounted primary seal and no secondary seal [see §63.119(b)(3)(iv) of subpart G of the final rule.]

Regarding the comment (A-90-19: IV-D-103) that the extension for upgrading seals on EFR's in the proposed §63.119(c)(1)(v) of subpart G should be reduced from ten years

to five years, the EPA would like to clarify that, as explained above for IFR's, the 10-year extension was chosen because it is standard practice for sources to service storage vessels every 10 years. Requiring a shorter compliance period such as the suggested five years would result in additional HAP emissions from EFR storage vessels due to additional storage vessel emptying and degassings.

In the final rule, a 10-year extension is allowed only for EFR storage vessels that are already equipped with one of the following three seal configurations: (1) a vapor-mounted primary seal and secondary seal; (2) a liquid-mounted primary seal; or (3) a metallic shoe primary seal [see §63.119(c)(1)(iv) and (c)(1)(v) of subpart G of the final rule]. An extension is not allowed for EFR storage vessels equipped only with a vapor-mounted primary seal and no secondary seal. In order to ensure that a single liquid-mounted or metallic shoe primary seal and no secondary seal is effectively reducing HAP emissions, the EPA is requiring in the final rule that seal gap measurements of the primary seal be performed at least once per year, rather than once every five years.

Comment: Three commenters (A-90-19: IV-D-58; IV-D-64; IV-D-73) stated that an extension should also be allowed for the upgrading of IFR fittings, since controls cannot be installed until the vessel has been emptied and degassed. One commenter (A-90-19: IV-D-58) specifically requested an extension for equipping sample wells with slit fabric covers. The commenter (A-90-19: IV-D-58) noted that, although controlled fittings are currently required in 40 CFR part 60 subpart Kb, subpart Kb only applies to new tanks. One commenter (A-90-19: IV-D-73) stressed that it would be environmentally and economically counterproductive to require existing vessels equipped with IFR's in good condition to be removed from service, cleaned, and degassed just to change a deck fitting such as a sample or gauging well or seal mechanism within the 3-year compliance period. The commenter (A-90-19: IV-D-73) argued that it would be more

environmentally beneficial for available resources to be used to install floating roofs where they do not currently exist rather than to gain a small emission reduction by upgrading seals and fittings.

One commenter (A-90-19: IV-D-73) requested that the EPA revise the proposed requirement for providing projections below the liquid level for openings on noncontact EFR's. The commenter (A-90-19: IV-D-73) explained that the incremental benefit of complying with this requirement for existing storage vessels is not justified because the vessels must first be removed from service and degassed. The commenter (A-90-19: IV-D-73) suggested that the proposed provision apply only to new or replacement EFR's or that an extension be allowed for existing storage vessels until the next time the vessel is out of service, or ten years after promulgation, whichever is earlier.

Response: The EPA agrees with the commenters (A-90-19: IV-D-58; IV-D-64; IV-D-73) that, if an extension is allowed for upgrading seals on IFR's, then the same extension should be allowed for upgrading the fittings for the IFR's, because many of the fitting upgrades will require that the storage vessels be emptied and degassed. The EPA also agrees that an extension should be allowed for providing projections below the liquid level for openings on noncontact EFR's. As described above for extending the compliance schedule for upgrading certain seal configurations on IFR's, the EPA determined that it would be unreasonable to require a cleaning and degassing within 3 years of promulgation solely for the purpose of upgrading the fittings on an IFR or for providing projections below the liquid level for non-contact EFR's, because such requirements would result in additional organic HAP emissions and additional costs. The EPA added language to the storage provisions in §§63.119(c)(5)(viii) and 63.119(c)(2)(xii) of subpart G to allow these extensions.

3.4.4 Inspections and Delay of Repair

Comment: One commenter (A-90-19: IV-D-73) expressed support for the delay-of-repair provisions in proposed

§63.120(f)(2)(iii) of subpart G for storage vessel closed-vent systems. The commenter (A-90-19: IV-D-73) explained that most closed-vent systems cannot be repaired within 15 days because most of them serve multiple emission points and process equipment which must first be shut down. One commenter (A-90-19: IV-D-78) implied that clarification was needed regarding the actions that must be taken if a closed-vent system has detectable emissions greater than 500 ppmv. The commenter (A-90-19: IV-D-78) suggested that the storage vessel provisions appear to imply that if repair of such a closed-vent system is not completed within 15 calendar days, then the storage vessel must be emptied and degassed. The commenter (A-90-19: IV-D-78) suggested that in cases where a closed-vent system is found to have emissions greater than 500 ppmv, a delay of repair should be granted, upon reasonable request, during which time a facility can continue storage and use of tank contents, as long as no additional filling activities occur. The commenter (A-90-19: IV-D-78) explained that the greatest emissions occur during filling. The commenter (A-90-19: IV-D-78) stated that if the EPA does not allow such a delay and the storage vessel must be emptied, the result would be an excessive burden for facilities and possibly overall greater emissions.

Response: The EPA would like to clarify that, in the proposed provisions, delay of repair is allowed if one of the following is true: (1) repair would be technically infeasible without a process unit shutdown; or (2) emissions of purged material resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. According to the proposed provisions, if one of those two criteria were met, then repair could be delayed, upon request, until the end of the next process unit shutdown. If a source does not meet one of these criteria, the source will not get a delay for repair of the closed-vent system. For these sources, the EPA does not consider the cost of temporary alternate storage capacity to be unreasonable if repair of the closed-vent system cannot be completed within 15 days.

The delay of repair provisions have been moved to a new section (§63.148) of subpart G of the rule, which includes all provisions concerning closed-vent systems that were previously located in the storage provisions.

Comment: Two commenters (A-90-19: IV-D-32; IV-D-113) expressed support for the proposed provisions which would allow two 30-day extensions to repair equipment failures that are discovered during annual inspection of an IFR or 5-year inspection of an EFR. One commenter (A-90-19: IV-D-32) gave examples of circumstances that could prevent facilities from being able to complete repairs during the initial 45 days: (1) lack of alternate storage capacity and (2) safety considerations such as tank shell corrosion restricting safe access to the tank roof and exposure of repair personnel to harmful vapors.

Two commenters (A-90-19: IV-D-92) (A-90-21: IV-D-1) requested that the overall period for repair of floating roofs be lengthened from 45 days plus two 30-day extensions to a period of 90 days plus two 45-day extensions. One commenter (A-90-21: IV-D-1) explained that the longer repair period would ensure that facilities could do repairs during the common down periods, Christmas and July 4th holidays. One commenter (A-90-19: IV-D-92) explained that tank seals typically cannot be obtained within 45 days from the suppliers and there are storage/degradation problems if spares are stored on site. The commenter (A-90-19: IV-D-92) added that it would be very difficult to empty tanks because SOCMI facilities do not have spare tankage.

Response: The EPA established the schedule of a maximum of 90 days for completing repairs of floating roofs based on a reasonable estimate of the time sources would require to order and install needed parts. This same schedule for repair is included in the National Emission Standard for Benzene Emissions from Benzene Storage Vessels (54 FR 38077, September 14, 1989) in subpart Y of 40 CFR part 61 and the Standards of Performance for Volatile Organic Liquid Storage Vessels (52 FR 11429, April 8, 1987) in subpart Kb of 40 CFR

part 60. Based on discussions with vendors of IFR vessels, parts for floating roofs are readily available and can be ordered and received within two weeks. The EPA understands that certain types of seals (i.e., liquid-mounted seals) are bulky and require too much space for storage on-site. However, since the lead time for ordering and receiving parts is relatively short, it is not necessary for sources to store these parts on-site. For these reasons and because the EPA received support for the proposed repair schedule, the EPA has retained the proposed repair schedule in the promulgated standard.

Comment: One commenter (A-90-21: IV-D-1) urged the EPA to reconsider the storage vessel provisions in proposed §63.120(a)(7) requiring needed repairs discovered during internal 10-year inspections of an IFR to be completed before refilling of the storage vessel. The commenter (A-90-21: IV-D-1) contended that the storage vessel provisions should allow refilling prior to repair with repairs to be completed at a later date. The commenter (A-90-21: IV-D-1) explained that, if spare parts were not readily available, loss of storage capacity could inhibit plant operation. The commenter (A-90-21: IV-D-1) suggested that, if a repair could not be made before refilling a vessel, the operator be required to provide notice to the Administrator of the reasons the repair could not be achieved prior to refilling and that the operator then have six months to complete repair. The commenter (A-90-21: IV-D-1) added that a six-month extension would allow repairs to be conducted during common down times.

Response: As stated in a previous response in this section, the EPA has concluded that spare parts for floating roofs are readily available, and may be ordered and obtained within two weeks. If this short-term loss of storage capacity would inhibit plant operation, a facility may choose to rent additional tankage in the interim. However, the EPA does not anticipate this schedule to be a problem. This same schedule for repair is included in the National Emission Standard for Benzene Emissions from Benzene Storage Vessels (54 FR 38077,

September 14, 1989) in subpart Y of 40 CFR part 61 and the Standards of Performance for Volatile Organic Liquid Storage Vessels (52 FR 11429, April 8, 1987) in subpart Kb of 40 CFR part 60. Additionally, the EPA would consider it unreasonable for a source to empty and degas a storage vessel for its 10-year internal inspection, to refill the vessel without completing repairs, and then to empty and degas the vessel a second time within six months to complete the repair. This additional degassing would be costly and would result in additional HAP emissions. For these reasons, the EPA is retaining the repair schedule specified in proposed §63.120(a)(7) for floating roofs.

Comment: One commenter (A-90-19: IV-D-62) recommended that internal inspections requiring emptying and degassing of IFR vessels be required only once every 20 years, rather than every 10 years. The commenter (A-90-19: IV-D-62) explained that these internal inspections can be costly and dangerous, and can result in additional emissions of criteria pollutants and HAP's from the degassed vessel. The commenter (A-90-19: IV-D-62) added that additional tankage may have to be built to make up for lost capacity. The commenter (A-90-19: IV-D-62) also claimed that the cost to prepare a single storage vessel can be as high as several hundred thousand dollars.

The commenter (A-90-19: IV-D-62) explained that a 20-year inspection schedule is part of an industry-recommended practice, included in American Petroleum Institute (API) Bulletin 653, which requires that storage vessels undergo internal inspections every 10 years, unless it can be demonstrated that there are no corrosion problems, in which case inspections take place every 20 years. The commenter (A-90-19: IV-D-62) suggested that coordination of such corrosivity inspections with the seal inspections of the HON would provide an incentive for facilities to adopt improved storage vessel management practices and would reduce the cost of compliance.

Response: The EPA determined that storage vessels are typically emptied, degassed, and cleaned every 5 to 10 years,

and that the 10-year internal inspection requirement is not an undue burden. The EPA determined that, in many cases, alternate tankage will be available. Otherwise, additional tankage may be rented. The EPA concluded that the suggested 20-year inspection schedule for vessels where the source has demonstrated that there are no corrosivity problems would not be an acceptable substitute for internal inspections, which ensure that the floating deck and seals are operating properly.

Comment: Two commenters (A-90-19: IV-D-64; IV-D-73) stated that the applicability for an exemption from inspecting difficult-to-inspect closed-vent systems should be based on the status of the entire closed-vent system, not on the status of the storage vessel, as in proposed §63.120(f)(4)(ii). One commenter (A-90-19: IV-D-73) explained that it is the closed-vent system and not the storage vessel to which these proposed provisions would apply. One commenter (A-90-19: IV-D-64) referred to the exemption as a "temporary" exemption from performing annual leak inspections.

One commenter (A-90-19: IV-D-73) suggested that this exemption should apply to new closed-vent systems as well as existing closed-vent systems. The commenter (A-90-19: IV-D-73) explained that certain components will continue to be located in difficult-to-inspect locations on new closed-vent systems because these design locations serve a purpose. The commenter (A-90-19: IV-D-73) offered as an example that high point bleeds, which are used for placing a piping system in service or taking it out of service, are frequently difficult to inspect, and this type of component, by definition, must be located at the high point in the piping system, whether it is a new or existing system. The commenter (A-90-19: IV-D-73) further explained that the only way to make such a component accessible, in some cases, is to build a very large platform or scaffold. The commenter (A-90-19: IV-D-73) contended that there would be little environmental benefit from requiring monitoring of these small components. The commenter (A-90-19:

IV-D-73) suggested that paragraph (f)(4)(ii) of proposed §63.120 be deleted from the storage vessel provisions.

Response: The EPA agrees with the commenter (A-90-19: IV-D-73) that there are some types of equipment associated with closed-vent systems that will be difficult to inspect even in new sources. The EPA will therefore apply the difficult-to-inspect provisions for existing sources in the proposed §63.120(f)(4) to storage vessels at new sources as well. The EPA has omitted the provisions that limited this exemption only to storage vessels at existing sources. Furthermore, in the final rule, the EPA has moved the Method 21 leak inspection provisions for closed-vent systems associated with storage vessels from the storage provisions (i.e., §§63.119 through 63.123) to a new §63.148 of subpart G. This new section includes the Method 21 leak inspection provisions for closed-vent systems associated with the transfer and wastewater provisions as well the storage vessel provisions. The provisions for difficult- and unsafe-to-inspect parts are included in the new §63.148 provisions for emission points at both new and existing sources.

The EPA wishes to clarify for the commenter (A-90-19: IV-D-64) that the exemption for difficult-to-inspect parts is not a "temporary" exemption. The exemption is associated with a requirement to perform a less frequent inspection of the closed-vent system.

Comment: One commenter (A-90-19: IV-D-32) expressed support for the provisions in §63.120(b)(7) of the proposed HON allowing an extension of the inspection period when an owner or operator determines that it is unsafe to perform the seal gap measurements required under §63.120(b) for EFR vessels.

Response: The EPA agrees and appreciates this support.

Comment: One vendor (A-90-19: IV-D-8) provided information to the EPA on a leak detection device to be used instead of Method 21 for compliance with the inspection provisions for closed-vent systems. Others (A-90-19: IV-D-14; IV-D-15; IV-D-17; IV-D-18; IV-D-19; IV-D-20; IV-D-23;

IV-D-24; IV-D-25; IV-D-27; IV-D-28), (A-90-20: IV-D-2; IV-D-4) commented on procedures and requirements of Method 21.

Response: The EPA has provided a discussion on Method 21 and this alternate leak detection device in section 5.0 of this BID volume.

Comment: Three commenters (A-90-19: IV-D-32; IV-D-33; IV-D-73) contended that the storage vessel provisions should not include inspection requirements for closed-vent systems. The commenters (A-90-19: IV-D-32; IV-D-73) suggested that, instead, only the requirements of subpart H should apply. The commenters (A-90-19: IV-D-32; IV-D-73) added that, in order to reduce confusion, the EPA should delete from the storage provisions the references to closed-vent systems having no detectable emissions. One commenter (A-90-19: IV-D-73) suggested that the storage provisions state explicitly the applicability of §§63.171 and 63.172 of subpart H for monitoring all components of closed-vent systems for detectable emissions.

One commenter (A-90-19: IV-D-73) explained that in many SOCMI plants, there is one plant-wide closed-vent system and that it is essential that the entire system be subject to only one regulatory requirement.

The commenter (A-90-19: IV-D-73) also noted a difference between the inspection provisions for systems serving storage vessels (subpart G) and those serving process equipment (subpart H). The commenter (A-90-19: IV-D-73) stated that §63.160(a) of the proposed subpart H sets a concentration threshold of applicability for §63.172, whereas there is no concentration threshold of applicability for inspecting closed-vent systems under the proposed storage vessel provisions. The commenter (A-90-19: IV-D-73) expressed concern that for a single closed-vent system that serves both storage vessels and process production equipment subject to the equipment leak provisions, the closed-vent system that does not meet the concentration threshold for the equipment leak provision would be subject to inspection under the storage vessel provisions.

One commenter (A-90-19: IV-D-32) questioned why closed-vent systems for storage vessels were treated as different from other types of equipment subject to subpart H and asserted that there was no reason why closed-vent systems on storage vessels should have a separate requirement.

Response: The EPA reviewed the option of consolidating all fugitive emission testing in subpart H. However, due to the structure of subpart H and to the different compliance schedules for subparts G and H, incorporating the leak inspection requirements from subpart G into subpart H would have generated additional confusion in the regulated community. The EPA agrees that the leak inspection requirements which were located in separate sections for each emission point in subpart G should be condensed into a single section. Therefore, in the final rule, the EPA incorporated all leak inspection provisions for subpart G into a new section (§63.148) of subpart G.

Comment: One commenter (A-90-19: IV-D-73) pointed out that, although the storage provisions in proposed §63.120(f)(5) of subpart G indicate that any part of a closed-vent system subject to subpart H is not subject to subpart G, this override provision should also be included in §63.119(e)(1), which specifies the Method 21 monitoring requirement.

Response: As summarized above, the proposed requirements in §63.120(f) of subpart G for closed-vent systems serving storage vessels were moved to a new section (§63.148) of subpart G. The new provisions in §63.148 have incorporated the override provision that any part of a closed-vent system subject to subpart H is not subject to §63.148 of subpart G.

3.5 RECORDKEEPING AND REPORTING

Comment: Three commenters (A-90-19: IV-D-33; IV-D-64; IV-D-73) contended that the notification requirements for refilling a vessel after an inspection and for performing a seal gap measurement were unnecessarily burdensome and should be omitted from the storage vessel provisions. One commenter (A-90-19: IV-D-32) made the same comment concerning only the

notification requirement for seal gap measurements. Two commenters (A-90-19: IV-D-33; IV-D-73) reasoned that these two notification requirements would precipitate many notifications that would seldom be followed up with a regulatory agency observer being present. One commenter (A-90-19: IV-D-32) contended that, specifically for seal gap measurements, it is highly unlikely that a regulatory agency will have the resources to provide an observer for these measurements. One commenter (A-90-19: IV-D-73) claimed that the two notification requirements would merely create an opportunity for a finding of noncompliance against sources.

Two commenters (A-90-19: IV-D-64; IV-D-73) maintained that regulatory agencies can request to be notified on a case-by-case basis. One commenter (A-90-19: IV-D-64) suggested that the HON should allow sources to proceed with the planned inspections or measurements unless the regulatory agency has asked to be notified. The commenter (A-90-19: IV-D-64) remarked that such a provision would protect regulatory agencies' inspection authority and preserve sources' operating flexibility. Two commenters (A-90-19: IV-D-32; IV-D-33) suggested that the notification requirements be replaced with a requirement that the timing and results of the inspections (A-90-19: IV-D-33) and measurements (A-90-19: IV-D-32; IV-D-33) be included in the next periodic report. One commenter (A-90-19: IV-D-32) added that facilities could be required to keep a record on-site of when seal gap measurements are performed.

Response: The EPA has determined that the notification requirements for an owner or operator to inform the implementing agency of an upcoming seal gap measurement (for EFR vessels) and of vessel refilling when a vessel has been emptied and degassed (for both IFR vessels and EFR vessels) is a reasonable requirement that is not unnecessarily burdensome, as stated by three commenters (A-90-19: IV-D-33; IV-D-64; IV-D-73). These notifications are not required to be submitted very frequently. For IFR vessels, which are the most common type of floating roof vessel used by the SOCMI,

the notification requirement for vessel refilling will be required once per ten years, or each time the vessel is emptied and degassed. For EFR vessels, the notification requirement for vessel refilling has no specified schedule, as the notification is required each time this type of vessel is emptied and degassed, according to the schedule established by the facility operating the vessel. The EPA anticipates that EFR vessels will be emptied and degassed no more frequently than once every ten years. Also for EFR vessels, the notification requirement for seal gap measurements will be required once per year. The EPA maintains that this notification requirement is not unnecessarily burdensome, and that these notifications are necessary for effective enforcement of the rule.

The EPA also concluded that these notification requirements are not likely to result in findings of noncompliance against sources, as stated by one commenter (A-90-19: IV-D-73). If a source cannot notify the implementing agency within 30 days due to an unplanned event, a source is not necessarily in noncompliance. Both of these notification provisions specify that if the seal gap measurement or internal inspection associated with the vessel refilling were unplanned, then the notification could be made seven days in advance of the measurement or refilling, rather than the standard 30 days in advance.

The EPA has also concluded that, based on discussions with State agencies, these notifications will result, in many cases, in observers being sent to facilities to be present during the measurement or inspection. The EPA recognizes that some implementing agencies may choose to send observers to these measurements and inspections less frequently than other implementing agencies; however, the EPA anticipates that the majority of implementing agencies will use these notifications for enforcement purposes.

Comment: Two commenters (A-90-19: IV-D-34) (A-90-21: IV-D-17) contended that the EPA revise the notification requirement of a minimum of seven days prior to refilling for

unplanned storage vessel inspections in proposed §63.120(a)(6) and (b)(10)(iii) to allow for more flexibility. The commenters (A-90-19: IV-D-34) (A-90-21: IV-D-17) explained that tanks can be emptied, cleaned, repaired or inspected, and filled in fewer than seven days, and for these tanks, the seven-day wait would require that the vessel remain out of service longer than necessary. One commenter (A-90-19: IV-D-34) claimed that good safety practices require that a storage vessel be returned to service as quickly as possible because when a tank is removed from service, special arrangements must be made for the continued operation of the production unit and for the distribution of the product. The commenter (A-90-19: IV-D-34) explained that, during these periods of time, routine operations are modified and mistakes are more likely to occur. One commenter (A-90-21: IV-D-17) claimed that if a vessel could be inspected and operational in less than seven days, a source would not want to extend the down time and costs because of the seven-day wait period, and would therefore have an incentive to forego the inspection.

One commenter (A-90-19: IV-D-34) suggested replacing the seven-day notification period prior to refilling with a notification of the unplanned inspection when the tank goes out of service, which would include the expected inspection and refilling dates. One commenter (A-90-21: IV-D-17) suggested adding language that would allow the Administrator to authorize refilling in less than seven days or allow the source to forego the delay if the delay would cause substantial economic loss. The commenter (A-90-21: IV-D-17) offered regulatory language that would specify a notification requirement for requesting a shorter time for refilling and explaining why this shorter time was required.

Response: The EPA has concluded that the requirement for a seven-day advance notification of refilling of a storage vessel for which an inspection was unplanned will not cause sources to extend the downtime of their storage vessels. First, the EPA has determined that it will be unusual for owners or operators to choose to complete the process of

emptying, degassing, cleaning, and inspecting a vessel in less than seven days. Second, the storage provisions do not preclude an implementing agency from negotiating with the owner or operator to allow a vessel to be refilled earlier than the seven days, if there is good reason to do so. Finally, the EPA would like to point out that a seven-day time period is the minimum time that could be specified in order for enforcement personnel to arrange to observe the inspection.

Comment: Three commenters (A-90-19: IV-D-86; IV-D-92; IV-D-97) contended that the requirement for sources to submit detailed descriptions of upcoming and past routine maintenance for storage vessels is unnecessary and burdensome. The commenters (A-90-19: IV-D-86; IV-D-92; IV-D-97) stated that the proposed storage provisions already include requirements limiting routine maintenance to a specified number of hours per year and requiring reporting of the total time that routine maintenance was actually performed. Two commenters (A-90-19: IV-D-86; IV-D-97) noted that detailed maintenance plans are not required for other emission points regulated by the HON.

Response: The EPA has included the requirement for owners or operators of storage vessels to submit detailed descriptions of past and upcoming routine maintenance for the storage vessels because of the requirement in the storage provisions that limits the total number of hours that a control device may be inoperable due to planned, routine maintenance. These detailed descriptions of routine maintenance are needed for enforcement purposes in order for a facility inspector to verify what is and what is not routine maintenance, in the case that an inspection of a facility coincides with downtime for a control device. Furthermore, this reporting requirement provides the source with some flexibility to establish a site-specific definition of what maintenance activities are considered routine maintenance. Therefore, the EPA has concluded that this reporting requirement is necessary for enforcement purposes and provides

flexibility to facilities, rather than being unnecessary and burdensome, as stated by the three commenters (A-90-19: IV-D-86; IV-D-92; IV-D-97.)

Comment: Two commenters (A-90-19: IV-D-73) (A-90-21: IV-D-17) contended that the 30-day notification requirement in proposed §63.120(f)(2)(iii)(A) for delay of repair of a closed-vent system is unnecessary and inconsistent with the proposed equipment leaks provisions in §§63.171 and 63.182(b) of the proposed subpart H. One commenter (A-90-19: IV-D-73) recommended that the provision be deleted. The other commenter (A-90-21: IV-D-17) encouraged the EPA to revise the notification requirement by allowing the source to include the necessary information in the semi-annual report, as required in the proposed subpart H for delay of repair of various equipment leak components.

Response: The EPA agrees with the two commenters (A-90-19: IV-D-73) (A-90-21: IV-D-17) that the 30-day notification requirement in the proposed §63.120(f)(2)(iii)(A) for delay of repair of a closed-vent system is unnecessary and inconsistent with the proposed subpart H. The storage vessel provisions allow a source to delay repair of a closed-vent system if the repair would require a process unit shutdown, or if the emissions of purged material resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Because the criteria for eligibility to delay repair are clearly specified in the rule, the EPA concluded that it is not important that the implementing agency review a facility's rationale during the delay of repair. The EPA has revised these provisions for closed-vent systems such that, if a source chooses to delay repair of a closed-vent system for one of these two reasons, the source's rationale for this decision may be included in the periodic report, rather than in a separate notification requirement.

Furthermore, the Method 21 inspection provisions for closed-vent systems that were included in the storage vessel provisions have been moved from the storage vessel provisions

of the promulgated rule to the new §63.148 of subpart G. See section 3.4.4 of this BID volume for further discussion of this move. This new §63.148 requires a source to include the specified information concerning the repair extension in the same periodic reports required by the equipment leaks provisions in subpart H.

Comment: One commenter (A-90-19: IV-D-33) requested that the EPA clarify the wording in proposed §63.120(a)(4), (b)(7)(ii), and (b)(8) of subpart G which specifies how sources may request up to two extensions of up to 30 additional days each for repairing floating roof failures discovered during inspections or seal gap measurements. The commenter (A-90-19: IV-D-33) pointed out that the provisions do not specify an approval deadline by the Agency, what criteria the Agency will use to review the request, whether or not the Agency will provide a written response to the request, or whether the source can proceed under the requested extension without an approval notification. The commenter (A-90-19: IV-D-33) stated that without these details clarifying the responsibilities of both the regulated facility and the regulatory authority, the source is uncertain as to the amount of time available to complete repairs. The commenter (A-90-19: IV-D-33) recommended adding language to §63.122(h)(3) to specify that the source will automatically receive the requested extension unless the Administrator denies the extension within 15 days of receiving the request.

Response: In considering the comment, the EPA determined that the requirements specified in proposed §§63.120(a)(4), (b)(7)(ii), and (b)(8) of the proposed storage vessel provisions, requiring sources to request up to two 30-day extensions for repair of floating roofs, create an excessive burden for the implementing agency. The EPA does not expect that implementing agencies will have the resources to review and approve these requests before the requested time has elapsed, i.e., 30 days. The EPA concluded that sources that use up to two 30-day extensions will be required to report the decision to use each 30-day extension in the next periodic

report. This report shall include the same information that was required, in the proposed storage provisions, to be included in the request for the extension: (1) a description of the failure; (2) documentation that alternate storage capacity is unavailable; and (3) a schedule of actions that the source will take in order to repair the control equipment or empty the storage vessel as soon as possible within the 30-day extension period.

3.6 WORDING OF THE PROVISIONS

Comment: Two commenters (A-90-19: IV-D-64) (A-90-21: IV-D-17) stated that the wording of §63.120(f)(1), describing the proposed frequency of inspecting closed-vent systems for leaks, is ambiguous. The commenters (A-90-19: IV-D-64) (A-90-21: IV-D-17) explained that the wording could be misinterpreted to mean that inspections must be done during all filling operations or just during initial filling, in addition to once per year when the storage vessel is not being filled. One commenter (A-90-19: IV-D-64) suggested excluding the wording "during filling of the vessel." The other commenter (A-90-21: IV-D-17) suggested revising the language of §63.120(f)(1) to read: "Inspections of the closed-vent system shall be done at least once per year while the vessel is being filled."

Response: The EPA would like to clarify that the phrase "during filling" was not intended to mean that inspection was required each time a vessel was filled. Rather, it was intended to require inspection during worst case conditions. While a tank is being filled, the flow rate and pressure of the emission stream are at their highest. Thus, a failure in the closed-vent system will be more easily detected. However, because the proposed language was confusing to some commenters, the EPA concluded that the wording of proposed §63.120(f)(1) should be modified to more clearly reflect the EPA's intended meaning. The requirement is in §63.120(d)(6) of the final rule, and the revised language is: "The initial and annual inspections...shall be done during filling of the storage vessel."

Comment: One commenter (A-90-19: IV-D-64) suggested that the language in proposed §63.122(d) which describes the reporting requirements for inspections of IFR vessels is unclear. The commenter (A-90-19: IV-D-64) explained that the proposed language could be interpreted as requiring the reporting of inspection results for all storage vessels inspected, including storage vessels with no detected failures, in the event that a single storage vessel failed its inspection. The commenter (A-90-19: IV-D-64) suggested alternative wording.

Response: The EPA reviewed the language in proposed §63.122(d) and concluded that the wording in the paragraph does not imply that all inspected storage vessels at a source, regardless of defects, would require reporting. The EPA determined that the language in §63.122(d) clearly refers to a single inspection rather than to a group of inspections (i.e., the whole event of inspecting all storage vessels with the given control equipment). In proposed §63.122(d), the regulation refers to "each inspection conducted in accordance with §63.120(a)," and proposed §63.120(a) refers to only a single storage vessel and never to a group of storage vessels. Therefore, the wording of proposed §63.122(d) will remain the same in the final rule.

Comment: One commenter (A-90-19: IV-D-34) stated that the recordkeeping requirement in proposed §63.123(a) that records be maintained of each Group 1 and Group 2 storage vessel's dimensions and of an analysis showing its capacity, as long as the vessel is in service, needs to be reworded to clarify that these records must be maintained only if the vessel is in organic HAP service. The commenter (A-90-19: IV-D-34) explained that the service of a storage vessel may change several times over its lifetime, depending on the needs of the facility.

Response: The EPA agrees that the language in §63.123(a) should be clarified as suggested by the commenter (A-90-19: IV-D-34). The EPA changed the wording to read: "This record shall be kept as long as the storage vessel retains Group 1 or

Group 2 status and is in operation." A storage vessel that retains Group 1 or Group 2 status is a storage vessel that is covered by the HON and, thus, is in organic HAP service. If a storage vessel discontinues organic HAP service, it no longer retains Group 1 or Group 2 status.

Comment: One commenter (A-90-19: IV-D-87) reported that proposed §63.120(b)(3) of subpart G has a typographical error in that 212 square inches should be replaced with 21.2 square inches.

Response: It is not clear to the EPA why the commenter is suggesting that there is a typographical error in §63.120(b)(3). Because the commenter is suggesting that the accumulated area of gaps per meter of vessel diameter for the primary seal be changed to 21.2, which is the maximum allowed area for the secondary seal in §63.120(b)(4), the EPA has interpreted that the commenter assumed the requirements for primary and secondary seals to be the same. The EPA would also like to point out that the commenter's suggested change should have been presented as 21.2 square centimeters rather than square inches. The EPA wishes to clarify for the commenter that the seal gap requirements are different for primary and secondary seals. For the primary seal, the storage provisions specify an allowance of up to 212 square centimeters of accumulated area of gaps per meter of vessel diameter. For the secondary seal, the storage provisions specify a more stringent allowance of up to 21.2 square centimeters of accumulated area of gaps per meter of vessel diameter. The requirement for a secondary seal is more stringent than that for a primary seal because a secondary seal is exposed directly to the atmosphere. A gap in the secondary seal has a greater potential to cause organic HAP emissions than does the primary seal because the primary seal in a two-seal system is protected from wind effects by the presence of the secondary seal. These requirements are the same requirements specified in 40 CFR part 60 subpart Kb, the NSPS for Volatile Organic Liquid Storage Vessels, and in

40 CFR part 61 subpart Y, the NESHAP for Benzene Emissions from Benzene Storage Vessels.

3.7 MISCELLANEOUS

Comment: One commenter (A-90-19: IV-D-92) requested clarification of the meaning of the term "impurity", as used in the storage vessel provisions.

Response: The EPA agrees with the commenter (A-90-19: IV-D-92) and has revised the definition of the term "impurity". The revised definition in §63.101 of subpart F reads as follows: "a substance that is produced coincidentally with the primary product, 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."

Comment: One commenter (A-90-19: IV-D-92) requested further clarification of the definition of the term "product", as used in the storage vessel provisions. The commenter (A-90-19: IV-D-92) explained that it is difficult to identify the "product" for mixed streams, such as gasoline.

Response: The EPA would like to clarify for the commenter (A-90-19: IV-D-92) that the term "product", as used in the storage provisions of the rule, refers to the material stored in the storage vessel. For mixed streams, such as gasoline, identifying the "product" is the same as identifying the mixed streams included in the gasoline.

Comment: One commenter (A-90-19: IV-D-92) stated that it is important that the HON be consistent with other regulations and asked if the HON is consistent with 40 CFR 112, The Oil Pollution Act.

Response: Although the HON and the Oil Pollution Prevention regulation (40 CFR 112) have different objectives and are unlikely to regulate the same facilities or pollutants, their provisions are not inconsistent. The Oil Pollution Prevention regulation is written to prevent oil discharges into or on navigable waters from facilities engaging in all aspects of acquiring and selling oil and oil products, including storage. The Oil Pollution Prevention

regulation (1) requires that a spill prevention control and countermeasure plan be written and implemented; and (2) provides applicable guidelines for prevention of leaks, such as adequate design, secondary containment, liquid level sensors, and periodic inspections and tests. The HON requirements are designed to limit emissions of HAP vapor from storage vessels, rather than to prevent leaks and spills; however, none of the HON provisions preclude spill plans, secondary containment, inspections, etc., required or suggested in 40 CFR 112. Therefore, a facility could comply with both regulations.

4.0 TRANSFER OPERATIONS

4.1 APPLICABILITY AND GROUP 1/GROUP 2 DETERMINATION

Comment: Two commenters (A-90-19: IV-D-32; IV-D-112) concurred that the EPA had appropriately defined RCT for transfer operations. Two commenters (A-90-19: IV-D-58; IV-D-62) supported the EPA's decision to propose the floor level of control as MACT for transfer operations. The commenters (A-90-19: IV-D-58; IV-D-62) stated that the increased cost of controlling all racks is not justified given the very small emissions reductions. One commenter (A-90-19: IV-D-92) stated that the HON transfer operations provisions appear to be consistent with other NESHAP's.

Response: The EPA appreciates the commenters support.

Comment: Several commenters (A-90-19: IV-D-32; IV-D-112) supported vapor balancing being included in the HON as an option for emissions averaging. The commenters (A-90-19: IV-D-32; IV-D-112) also supported the exclusion of racks using vapor balancing from the transfer operation provisions.

Response: The EPA appreciates the commenters support.

Comment: One commenter (A-90-19: IV-D-85) maintained that in order to escape the conclusion that the floor levels require control, the EPA divided the transfer racks into two groups, those with average vapor pressures above or below 1.5 psia.

Response: It is not practical or cost effective to control all emission points at a facility. Emissions from some points are very small. The cost to control these emissions is relatively large, and the quantity of emissions reduced does not warrant the cost of controlling them. This

is a fact recognized by State environmental agencies and evident in applicability criteria found in existing regulations. In the case of transfer operations, the current regulations generally define applicability based on vapor pressure and throughput. These two factors have the greatest effect on the magnitude of emissions from transfer operations. Most State regulations require control of transfer operations only at liquid vapor pressures above 1.5 psia. Therefore, for the HON analysis, it was a natural division of data; racks transferring chemicals with a vapor pressure less than 1.5 psia have low emissions and are not controlled; racks transferring chemicals with a vapor pressure greater than 1.5 psia have larger emissions and, therefore, require control.

Comment: One commenter (A-90-19: IV-D-85) asserted that the EPA's determination of the floor for new sources is inconsistent with the data presented in a memorandum in the docket. The commenter (A-90-19: IV-D-85) contended that the memorandum shows that racks with vapor pressures less than 1.5 psia are sometimes controlled and the best-controlled rack from a volume standpoint is controlled with a throughput of 160,000 gallons/yr.

Response: The commenter is correct in noting that attachment 2 of the docket memorandum "Analysis of Hazardous Organic NESHAP (HON) Database to Determine the Floors," (Docket item A-90-19: II-B-277) indicates that two racks identified during floor determination with average rack weighted vapor pressure less than 1.5 psia are controlled. However, the information for these two racks is not an accurate representation of what actually occurs at SOCMI facilities, but is an artifact of the data assumptions used in the analysis. These racks were assigned control because there are some chemicals loaded at the racks that have a vapor pressure greater than 1.5 psia, and, therefore, are required by State regulators to be controlled. In reality, transfers of the chemicals with a vapor pressure below 1.5 psia would

not be controlled but transfer of the chemicals with a vapor pressure above 1.5 psia would be.

The commenter is also correct in noting that the lowest throughput for controlled racks with vapor pressures greater than 1.5 psia is 160,000 gallons/year instead of 170,000 gallons/year. The EPA decided to make the applicability criteria for new and existing sources the same for simplicity. The actual difference between the two levels (10,000 gallons/year) is about the same as the capacity of one tank truck. Also, there will be very few facilities with a rack at a new source with a throughput greater than 160,000 gallons/year and less than 170,000 gallons/year. The EPA expects that this change would have only a minimal effect on emissions. Therefore, it was not incorporated into the HON transfer provisions.

Comment: One commenter (A-90-19: IV-D-32) contended that the EPA has not demonstrated that existing control devices on Group 1 transfer racks can actually achieve 98-percent control efficiency of HAP's. The commenter (A-90-19: IV-D-32) recommended that the EPA either verify that 98-percent control of HAP's is achievable for existing control devices or evaluate the retrofit costs and the incremental benefit to the environment for facilities that must remove existing control devices achieving 95 percent and replace them with slightly more efficient control devices.

Response: The 98-percent control is based on studies used to determine VOC control levels for past NSPS and has not been proven by testing for each individual HAP. These two issues do not weaken the EPA's decision for 98-percent control of HAP's for the following reasons: (1) nearly all HAP's are also VOC's; and (2) HON compliance is not based upon control of each individual HAP. Compliance with the HON may be based upon measurements of either total organic HAP or TOC. Clearly, a control device might have a higher level of control for one particular HAP than for another, but compliance is based on the overall reduction of total organic HAP or TOC from an emission point.

The 98-percent level of control was chosen because it has been shown to be uniformly achievable by well-designed and operated combustion devices. Test data to demonstrate efficiency in a thermal incinerator are not available for each individual HAP. However, the efficiency conclusions for a thermal incinerator (98-percent reduction or an outlet concentration of 20 ppmv) were based on test data using the most difficult VOC compounds to combust, which included several organic HAP's. Therefore, it was concluded that the 98-percent reduction can be achieved for total organic HAP for all well-designed and operated systems (A-79-32, II-B-31). The EPA recognizes that thermal incineration may achieve greater than 98-percent reduction, but test data show that levels greater than 98 percent may not be uniformly achievable under all operating conditions.

The commenter is correct that some existing control devices may not be achieving 98-percent control of HAP's and may have to be retrofitted or replaced in order to meet the requirements of the HON transfer operations provisions. The EPA considered costs to these facilities by applying a flare or incinerator to the outlet stream of any existing control device achieving less than 98-percent HAP reduction. Therefore, the estimation of incremental benefits does address the additional costs to these facilities.

Comment: One commenter (A-90-19: IV-D-41) contended that the EPA did not identify the control level achieved by the top 12% of transfer racks. The commenter (A-90-19: IV-D-41) also stated that the EPA provided no analysis of how many facilities have vapor balancing and vapor collection, although these were identified as superior control techniques since transfer racks using this technique are exempt from the HON. The commenter (A-90-19: IV-D-41) questioned why vapor balancing and vapor collection were not identified as the floor or MACT.

One commenter (A-90-19: IV-D-85) noted that the Texas new source review program requires control of transfer racks. Hence, the commenter (A-90-19: IV-D-85) asserted that the

floor level of control should take into account those facilities for which a BACT or LAER determination has been made prior to June 31, 1991.

Response: The top 12% of the transfer racks achieve 98% reduction [see memorandum titled "Analysis of Hazardous Organic NESHAP (HON) Database to Determine the Floors," Docket item A-90-19: IV-B-277]. Using vapor balancing with vapor collection on a transfer rack exempts the facility from the HON transfer provisions because the EPA's technical analysis showed that under typical conditions, vapor balancing reduces emissions by 98 percent or better, (see memorandum titled: "Efficiency of a Vapor Balancing System," Docket item A-90-21: II-B-28). However, data were not available to identify which SOCMI facilities used vapor balance to control emissions.

Due to the strict schedule for the HON to be proposed and promulgated, time was not available to survey SOCMI facilities or BACT and LAER information. In addition, the EPA is not required by the Act to survey all SOCMI facilities. The Act requires the EPA to set the MACT floor for the best-performing 12 percent of existing sources for which the EPA has emissions information. The EPA considers a review of State and Federal regulations to adequately characterize the controls achieved for the SOCMI nationwide. Information supplied by commenters can also be included in the MACT floor analysis. However, the commenter did not provide any information on how widely vapor balancing is used.

4.1.1 Applicability

Comment: Three commenters (A-90-19: IV-D-58; IV-D-63; IV-D-73) requested that the EPA clarify that the HON is applicable only to transfers of materials from SOCMI processes, and not all materials transferred at any given rack or arm. Two commenters (A-90-19: IV-D-58; IV-D-63) suggested wording for changing the "transfer operation" definition to be applicable only to a major source facilities associated with the transfer of product for one or more chemical manufacturing processes specified in §63.100. Another commenter (A-90-19: IV-D-64) suggested that the definitions of "Group 1 transfer

racks" and "rack-weighted average vapor pressure" specify that they do not apply to non-SOCMI product transfers.

Response: The transfer provisions apply to transfer racks as defined in subpart F, when used for transfer of HAP's. It is possible that HAP's associated with chemical manufacturing process units not subject to the HON will be subject to control under the HON if they are transferred at a transfer rack. The definition for "transfer rack" has been revised to clarify this. See section 4.1.2 for further explanation.

The EPA has replaced the "rack-weighted average vapor pressure" definition with a definition for "rack-weighted average partial pressure" as discussed in the response to the next comment.

Comment: One commenter (A-90-19: IV-G-4) contended that the definition of "impurity" in §63.101 of the proposed HON combined with the definition for "Group 1 transfer rack" and "rack-weighted average vapor pressure" in §63.111 of the proposed HON, and the calculation techniques in §63.130(g)(3) of the proposed HON will require control of low HAP content streams. The commenter (A-90-19: IV-G-4) asserted that facilities will be forced to place controls on transfer operations that load materials containing small amounts of HAP's.

The commenter (A-90-19: IV-G-4) suggested that the definition of impurity specify that HAP's considered as impurities not be intended to be part of the product being processed, stored, or transferred. The commenter (A-90-19: IV-G-4) also suggested that the rack-weighted average vapor pressure be defined as the organic HAP's partial pressure considering all materials loaded at the particular loading arm or station. The commenter (A-90-19: IV-G-4) requested that the definition of rack-weighted average vapor pressure or §63.130(g)(3) in the proposed HON include an equation for the calculation of rack-weighted average vapor pressure.

Response: The EPA agrees with the commenter's suggestion for defining an organic HAP rack-weighted average partial

pressure instead of a HAP rack-weighted average vapor pressure. The final transfer operations provisions have been revised to replace the definition of rack-weighted average vapor pressure with a definition on rack-weighted partial pressure. The definition is as follows:

> Rack-weighted average partial pressure means the throughput weighted average of the average maximum true vapor pressure of liquids containing organic HAP's transferred at a transfer rack. The rack-weighted average partial pressure shall be calculated using the equation below:

$$P = \frac{\Sigma P_i G_i}{\Sigma G_i}$$

where:

P	=	Rack-weighted average partial pressure, kilopascals
P_i	=	Individual HAP maximum true vapor pressure, kilopascals
G_i	=	Yearly volume of individual organic HAP transferred at the rack, liters

Also, all requirements referring to rack-weighted vapor pressure have been changed to rack-weighted partial pressure. Because of this change, facilities will only be required to control racks if there is sufficient HAP to make the rack a Group 1 transfer rack (i.e., loads greater than 0.65 million liters per year of liquid products containing organic HAP's, and with a rack-weighted HAP partial pressure of 10.3 kPa or greater).

The definition of impurity already implies that it is not "intended" to be part of the product by stating an impurity is "produced coincidentally." The EPA considers this definition to be clear.

Comment: Two commenters (A-90-19: IV-D-64; IV-D-73) requested that the EPA clarify that the provisions in the HON refer to the reduction of the total HAP content and not to each individual HAP. One commenter (A-90-19: IV-D-64) specifically suggested that §§63.126(b)(1), 63.128(a)(7), and

63.129(a)(4) in the proposed HON be edited by the addition of the word "total" so that they refer to total organic compound concentration and total HAP concentration.

Response: The EPA agrees with the commenters that total HAP concentration should be referred to in the transfer provisions, and these changes have been made in the final transfer operations provisions. The term "total organic compound concentration" is used in the process vents provisions to refer to compounds measured according to the procedures of Method 18 of 40 CFR part 60, appendix A. Therefore, the term "total organic compound concentration" cannot be used in the transfer operations provisions where an organic compound concentration could be measured using Method 18 or Method 25A. The EPA considers the term "organic compound concentration" adequate to imply a total organic compound concentration.

4.1.2 Group 1/Group 2 Determination

Comment: One commenter (A-90-19: IV-D-32) supported the selection of throughput and vapor pressure as reasonable criteria for defining Group 1 transfer racks. However, three commenters (A-90-19: IV-D-32; IV-D-73; IV-G-4) contended that the EPA should clarify whether the provisions refer to transfer racks or arms. One commenter (A-90-19: IV-D-73) stated that the definitions for "Group 1" and "rack-weighted vapor pressure transfer rack" do not address a loading arm criterion as in §63.100(b)(5) in the proposed HON. The commenter (A-90-19: IV-D-73) recommended adding definitions for "Group 1 transfer arm" and "arm-weighted vapor pressure." Another commenter (A-90-19: IV-G-4) recommended that the phrase "loading arms and associated equipment dedicated to specific filling operations" in §63.110(d)(1)(i) and (d)(2)(ii) in the proposed HON be substituted for racks; and in §§63.110(d)(2)(i) and (d)(2)(ii) in the proposed HON the phrase "filling operations in non-dedicated loading arms and associated equipment" be substituted for "operations." One commenter (A-90-19: IV-D-64) asserted that the references to

loading racks should be changed to refer to loading arms because a loading rack may transfer non-SOCMI chemicals.

Response: The EPA has clarified many of the applicability and group determination provisions regarding transfer operations in the proposed HON. The intent of these provisions has not changed.

The intent of the language in proposed §63.100(b)(5) of subpart F and §63.100(h) of subpart F in the final rule is to assign loading racks, loading arms, or loading hoses to a chemical manufacturing process unit. If the chemical manufacturing process unit is subject to the HON, then the loading rack, arm, or hose is also subject to the HON.

Once it is determined that a rack, arm, or hose is subject to the HON, group status must be determined. Group status is determined for a transfer rack. A transfer rack is defined as the collection of all arms or hoses that are assigned to a chemical manufacturing process unit that is subject to the HON. For example, if a facility has a rack that consists of eight arms and six of these arms are assigned to chemical manufacturing process units subject to the HON and the other two load petroleum refinery products not subject to the HON, then the "transfer rack", as defined for the HON, is made up of the six arms that are assigned to the chemical manufacturing process unit subject to the HON. Group status must be determined based on the vapor pressures and throughputs of the HAP's loaded at the arms at a rack that are subject to the HON. In cases where a rack or arm(s) has been assigned to a chemical manufacturing process unit subject to the HON, the rack or collection of arms must be controlled during transfers of all HAP's regardless of whether those HAP's were associated with SOCMI chemical manufacturing process units.

The EPA determined that assigning equipment to be subject to the HON would be easier from an enforcement and control perspective, as opposed to assigning transfer operations. Also, by assigning equipment, applicability will be more

obvious when other rules are promulgated affecting transfer operations under other source categories.

Comment: Three commenters (A-90-19: IV-D-32; IV-D-112, IV-G-4) requested that the EPA clarify the calculation of an annual rack-weighted average HAP vapor pressure. One commenter (A-90-19: IV-D-34) noted that the definition of rack-weighted vapor pressure does not define the temperature to be used in the calculation or specify a method to be used if materials are loaded at different temperatures. Two commenters (A-90-19: IV-D-34; IV-D-112) suggested that the EPA modify the definition of rack-weighted vapor pressure to specify that the vapor pressure should be calculated for each material at the maximum average monthly temperature of the materials loaded. One commenter (A-90-19: IV-D-32) added that loading vapor pressure should be established at the annual average temperature of the material loaded.

Response: The commenters are correct that the proposed transfer operations provisions did not specify the temperature to be used in the calculation of the annual rack-weighted average HAP vapor pressure. The provisions have been changed to specify that the maximum true vapor pressure be used in the calculation for the vapor pressure. The definition of maximum true vapor pressure has been edited to make it appropriate for the transfer calculation.

Also, it has been specified in the emissions averaging provisions §63.150(g)(4) that the temperature to be used is the annual average loading temperature for a given chemical. Specifications have also been added to the emissions averaging transfer calculation provisions in order to handle the calculation of credits/debits for racks that transfer liquids at different temperatures.

Comment: One commenter (A-90-19: IV-D-33) recommended that Group 2 transfer racks that infrequently load materials with vapor pressures greater than 10.3 kPa should not be required to calculate rack-weighted vapor pressure. The commenter (A-90-19: IV-D-33) stated that if a plant routinely uses a Group 2 transfer rack as a dedicated rack to an organic

product with HAP vapor pressures less than 10.3 kPa, the plant would probably not monitor a precise vapor pressure record as long as it could document that it has less than 10.3 kPa.

Response: The requirement for calculating the average rack-weighted partial pressure (the vapor pressure was changed to partial pressure in the final rule) is not overly burdensome, and it would not be additionally burdensome in the situation described by the commenter. It is not necessary to "monitor a precise vapor pressure." The chemical transferred can simply be recorded and then the maximum true vapor pressure can be calculated. The maximum true vapor pressure is also needed under the storage vessel provisions so that it is readily available.

4.2 COMPLIANCE

Comment: Two commenters (A-90-19: IV-D-90; IV-D-100) asserted that the compliance options for transfer operations using vapor balancing are crude and difficult to achieve.

Response: No details were provided by the commenter as to why the vapor balancing compliance options are crude and difficult to achieve. Vapor balancing is frequently used in industry as an emission control and as a product recovery technique. A technical analysis showed that under typical conditions, vapor balancing reduces emissions by 98 percent or better (see memorandum titled: "Efficiency of a Vapor Balancing System," Docket item A-90-21: II-B-28). Therefore, if facilities meet the definition of vapor balancing, they are considered to be in compliance with the provisions.

4.2.1 Performance Testing

Comment: One commenter (A-90-19: IV-D-73) supported the exclusions in §63.128(c) from performance test requirements, particularly the exclusion for combustion with primary fuel in a boiler or heater.

Response: The EPA appreciates the commenter's support.

Comment: One commenter (A-90-19: IV-D-64) stated that the span value for Method 25A in the HON transfer provisions should be allowed to be between 1.5 and 2.5 times the concentration measured, as it states in the method, rather

than exactly twice the concentration measured, as specified in the HON.

Response: The EPA agrees with the commenter, and has changed the regulation. The span value is a derived number based on an assumption of the concentration anticipated to be measured. The calibration gas concentrations needed are then determined based on percentage ranges of this span value. Allowing a range for the span value (and hence calibration gases) facilitates meeting these criteria by potentially allowing the same calibration gases to be used for different tests while not adversely affecting the objective of having the measured concentration bracketed by two of the calibration gases.

Comment: One commenter (A-90-19: IV-D-35) questioned which HAP should be used as the density term in the equation used to calculate the mass of organic compounds emitted during a testing interval. The commenter (A-90-19: IV-D-35) also questioned why the organic compound concentration corrected to 3 percent oxygen was not used in the calculation instead of the total concentration of organic compounds.

The commenter (A-90-19: IV-D-35) recommended that the equation for determining the mass of organic compounds emitted during each testing interval use the concentration of each organic compound emitted during the testing interval (Cjn); and be represented by the following equation:

$$M_j = FVs \sum_{n=1}^{x} KCjn$$

Response: Method 25A, for measurement of C_{jn}, does not speciate the HAP content of the stream. The intent of measuring the mass of organic compounds is for calculation the percent reduction across a control device. In the step where the percent reduction across the control device is calculated, the density cancels out and is not needed. The density term is only provided in the equation so that, in the calculation of the mass of organic compounds, units cancel out. The

transfer operations provisions have been revised to include the density of hexane in the calculation of percent reduction in order to maintain consistent units; however, the value of the density used has no bearing on the percent reduction calculated.

As in the case of density, a correction of the organic concentration to 3 percent oxygen does not affect the percent reduction calculated. The oxygen correction is only necessary for determining compliance with the 20 ppmv exit concentration requirement.

Comment: One commenter (A-90-19: IV-D-69) claimed that performance tests over one loading cycle are sufficient because filling times for large vessels may take several hours, and three multiple loadings may not typically occur at one time. Another commenter (A-90-22: IV-D-13) contended that it is unduly burdensome to require a performance test duration of three loading cycles for infrequent loading operations.

One commenter (A-90-22: IV-D-13) stated that, for small-volume loading operation owners and operators who have to hire contractor help, a significant portion of the costs of conducting a three-loading-cycle performance test would be for setting up and breaking down equipment and additional transportation and living expenses (especially if they are located in a distant city, or out of state), in addition to the monitoring and analytical work. The commenter (A-90-22: IV-D-13) suggested that the EPA provide an option that infrequent loading operations (once a week or less) may be performance tested for only one loading cycle with duplicate samples.

Response: Typically, performance tests are the average of three runs and, because of the variability in the concentration of HAP's over a loading cycle, a run was defined as a loading cycle for transfer operations. The original intent of testing three different loading cycles was to acquire sufficient data to ensure that a control device is operating properly. However, the EPA does consider this

requirement overly burdensome for sources that transfer small amounts of organic HAP's. It is possible for a transfer rack to be considered a Group 1 rack and only transfer into 17 tank trucks or 9 rail cars per year. Requiring testing during three loadings could conceivably be spread out over months. In order to reduce the burden to these sources, the final transfer provisions include an exception for racks that transfer less than 11.8 million liters per year. For these racks, an initial performance test is not required if a design evaluation is provided. The permit authority can require a performance test any time there is a concern that the control device is not working properly.

The suggestion by the commenters to require that only one loading cycle be tested for the performance test was considered; however, the EPA maintains that a test of one loading cycle could not provide sufficient data on the performance of the control device, and therefore would not be meaningful. The EPA opted to require a design evaluation in these situations where sources load less than 11.8 million liters per year through a transfer rack.

A source is required to document that the control device used achieves the required control efficiency during reasonably expected maximum loading conditions. Monitoring parameters can be determined using engineering judgement, or alternatively, a performance test can be conducted to determine monitoring parameters. For carbon adsorbers and condensers, the parameters are provided in §63.128(h) of the final rule.

Comment: One commenter (A-90-22: IV-D-13) contended that the EPA should revise §63.128(a)(8)(ii)(A) regarding the emission testing interval requirements to ensure consistency with §§63.129(a)(4)(iii) and 63.129(a)(6)(iii). The commenter (A-90-22: IV-D-13) contended that in various sections of the proposed transfer provisions 5-minute and 15-minute testing intervals are required but in §63.128(a)(8)(ii)(A) only 5-minute testing intervals are allowed.

Another commenter (A-90-19: IV-D-64) asserted that 15-minute recording intervals are adequate for performance tests. The commenter (A-90-19: IV-D-64) asserted that requiring 5 minute recording intervals for performance tests shorter than 3 hours was unnecessary. The commenter (A-90-19: IV-D-64) suggested that the recording frequency be "no less frequently than every 15 minutes" in §63.129(a)(4)(iii), §63.129(a)(6)(iii), §63.130(a)(1)(i) and §63.130(a)(1)(ii) to allow flexibility to monitor more frequently when it is in the source's interest to do so.

Response: The EPA agrees with the commenters that 5-minute testing intervals are not necessary. The EPA has determined that 15-minute testing intervals should adequately identify performance that is outside of the approved operating parameter ranges. The EPA has also added language to the transfer provisions for recording data "at least every 15 minutes".

Comment: One commenter (A-90-19: IV-D-77) supported the use of either Method 18 or Method 25A for measuring vent stream HAP content from transfer rack applications. However, the commenter (A-90-19: IV-D-77) contended that obtaining certified calibration standards for all the HAP's may not be possible.

Response: The EPA agrees that gaseous standards are not commercially available for all the HAP's. However, section 6.2 of Method 18 allows the option of preparing gaseous standards either from a higher concentration gas cylinder or through liquid or gas injection and provides a procedure for preparing the standards.

Comment: One commenter (A-90-19: IV-D-73) related that many of their plants have a large number of simultaneous fillings of SOCMI and non-SOCMI materials venting to common control devices and loading would have to be suspended for days or weeks to individually evaluate each covered transfer operation. The commenter (A-90-19: IV-D-73) requested that the EPA revise the test methods section for transfer operations to reflect the use of shared control devices for

multiple simultaneous loading operations and for loading, processes, and other operations. The commenter (A-90-19: IV-D-73) recommended that an approach similar to §63.116(c) be used which calls for testing at the inlet and outlet of the control device, where performance testing is required. The commenter (A-90-19: IV-D-73) stated that the test requirements must be uncoupled from the loading cycles to make this feasible for large loading operations with common control devices.

The commenter (A-90-19: IV-D-73) also stated that the definition of loading cycle should be revised to refer to the time at which flow to a transfer operation control device begins to the time it ends, regardless of how many simultaneous or overlapping loadings are occurring.

Response: Although the proposed rule did not preclude shared control devices, it was not clear how an owner or operator would demonstrate compliance. Provisions have been added to the rule to clarify that in case of a control device being shared with process vents, the performance test required under the process vent provisions is adequate for the transfer provisions. For control devices shared among transfer racks or arms where materials are simultaneously loaded, the performance test requirements have been revised to be similar to the process vent provisions: three one-hour performance test runs. Simultaneous loading occurs when the beginning and ending times of loading cycles coincide and overlap such that there is no interruption in vapor flow to the control device; as one loading cycle is completed, another one begins or has already begun.

Comment: Three commenters (A-90-19: IV-D-13; IV-D-64; IV-D-73) discussed issues regarding the compliance determination for flares. Two commenters (A-90-19: IV-D-64; IV-D-73) contended that the integrated sampling to measure flow rate, required in §63.128(b)(1)(ii) was unnecessary. One commenter (A-90-19: IV-D-64) contended that times when a compliance determination must be made are not clear. The commenter (A-90-19: IV-D-64) asserted that the intent of the

provisions was for an initial performance test to determine compliance with the flare provisions in §63.11(b) of the General Provisions and not to require a compliance determination each time HAP's are loaded and controlled by a flare.

One commenter (A-90-22: IV-D-13) suggested that the EPA modify the 2-hour observation period requirements when a loading period is less than 2 hours for flare performance tests. The commenter (A-90-22: IV-D-13) recommended modifying the provisions to allow either 2 hours or until the loading cycle is completed, whichever is less.

Response: The intent of the provisions, as the commenter stated, are to require a performance test for all control devices other than flares and a compliance determination for flares. The requirement that performance tests are initial is stated in §63.103(b) of subpart F of the proposed rule. Section 63.103(b)(1) of subpart F of the proposed rule refers to §63.7(a) of the General Provisions for the schedule and procedures for performance tests. Section 63.103(b)(1) of subpart F of the proposed rule states that "performance testing, or another form of compliance demonstration," be performed within 120 days of the compliance date, affective date, or initial startup, which ever is applicable. This also indicates an initial test.

In reviewing these provisions for response to this comment, the EPA has determined that the provisions are clear for performance tests but could be misinterpreted for compliance determinations for flares. Section 63.103(b) was changed in the final provisions to include initial compliance determinations and now reads:

> Initial performance tests and initial compliance determinations shall be required only as specified in subparts G and H of this part.

In addition §63.103(b)(1) of subpart F was changed to include compliance determinations and now reads:

> Performance tests and compliance determinations shall be conducted according to the schedule and

procedures in §63.7(a) of the General Provisions and the applicable sections of subpart G and H.

The EPA agrees with the commenters that §63.128(b)(1)(ii) from the proposed HON is unnecessary and this paragraph has been removed in the final rule.

The EPA understands the comment regarding the visible emissions test to mean that it seems intuitive that visible emissions will not be present when the flare is shut down. However, the compliance determination is intended to show that the facility is capable of operating in conformance with the requirements specified in §63.11(b) of the General Provisions which requires that there be less than 5 minutes of observed visible emissions in any 2 consecutive hours (as well as other requirements not related to visible emissions). To do this there must be visible emissions documentation covering at least 2 hours.

Flares occasionally exhibit visible emissions. Depending on the type of flare and how it is operated, the most likely period of visible emissions is during the start-up of a flare or when there is a rapid increase in the flow of gases to the flare such as when a second vessel loading is started. The compliance determination is usually scheduled in advance and should be run under representative loading conditions for the facility; e.g., if multiple vessels are loaded simultaneously at the facility, the compliance determination should reflect that the flare is capable of meeting the requirements of §63.11(b) of the General Provisions, including visible emissions, under those conditions. If the routine loading cycle is less than 2 hours, then an observation period for that run including the entire loading cycle is acceptable; if additional loading cycles are initiated within the 2-hour period, then visible emission observations should be conducted. The 2-consecutive-hour period is appropriate for an inspector observing a suspected violation where it would be impractical to precisely coordinate loading cycle start and end.

4.2.2 Monitoring

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) asserted that the HON does not clearly indicate whether or not all connections between the vapor balancing system and tank trucks and tank cars will be monitored. The commenters (A-90-19: IV-D-70; IV-D-99) contended that these connections are likely to be a significant source of toxic fugitive emissions during loading operations, so they should be monitored.

Response: The transfer operations provisions require that all connections in a vapor balancing system used to comply with the rule be inspected. Since Group 1 racks with chemicals being vapor balanced may not be considered subject to the HON, these vapor balancing systems may not be subject to the inspection requirement under the HON transfer operations provisions. Group 2 transfer racks using vapor balancing for credit under emissions averaging are subject to the inspection requirements.

Comment: Several commenters (A-90-19: IV-D-58; IV-D-62; IV-D-73) recommended that the 15-minute monitoring of loading cycles be made standard for all cycles in the final rule. One commenter (A-90-19: IV-D-58) objected to the requirement for 5-minute monitoring of loading cycles of less than 3 hours duration. The commenter (A-90-19: IV-D-58) claimed that the proposed HON contains no rationale for more burdensome monitoring requirements on shorter term loading cycles. One commenter (A-90-19: IV-D-73) contended that the EPA should set a single frequency rather than tailor it to the loading cycle or control device operations. However, the commenter (A-90-19: IV-D-73) continued that if this were not possible, the EPA should retain the options in §63.130(a)(ii).

Response: The EPA has reconsidered the monitoring frequency as requested by the commenters and determined that a 5-minute monitoring frequency is not necessary. The rule also requires that daily averages be recorded and reported. Monitoring at a frequency of 5 minutes instead of 15 minutes does not significantly increase the assurance that the daily

averages will identify performance that is out of the parameter ranges. In fact, allowing a frequency of monitoring at 15 minutes instead of 5 minutes could result in situations where the daily average indicates an out-of-range exceedance when 5-minute monitoring data would not. This is because there may be cases where the owner or operator uses a control device for a short time during the day; for example, for a 1-hour loading period. In this case, performing 15-minute monitoring, the owner or operator will have four data points to base the daily average on, while 5-minute monitoring would give 12 data points; if, during this hour, the control device ran for about 5 minutes outside a monitored parameter range, one of the four points might indicate the parameter to be out of the range. The resulting daily average might be out of the parameter range. In the case of 5-minute monitoring, eleven other data points will most likely be enough to bring the average into the parameter range.

It is less likely that the converse would happen, where the fewer data points under 15-minute monitoring, would indicate that the daily average is not outside the parameter range while the 5-minute monitoring would indicate the daily average is outside the parameter range. In order for the daily average to be outside the parameter range, the monitored parameter would have to be either far out of range or be out of range for over half the time. Fifteen-minute monitoring would be sensitive to either of these situations and is a sufficient frequency for monitored parameters. This change will reduce the monitoring and recordkeeping burden while still assuring compliance.

Comment: One commenter (A-90-22: IV-D-13) requested the EPA clarify in §63.126(h) that PRV's needed for safety purposes may open during loading. The commenter (A-90-22: IV-D-13) contended that if a dangerous overpressure situation develops, the HON should not prohibit PRV's from opening to prevent an uncontrolled release or even an explosion.

Response: The EPA considers the requirement in §63.126(h) that pressure-vacuum vents not open during loading

to be appropriate. During loading the vapor collection system should be collecting vapors with no significant increase in pressure in the vapor collection system, or in the tank truck or rail car. An opening of a safety relief valve indicates that there is a build up of pressure in the line and therefore, the vapor collection system is not working adequately; this can not be allowed.

As in all operations at a source, emergency situations can arise requiring emission releases to avoid dangerous accidents. The General Provisions provide for a start-up, shutdown, and malfunction plan in §63.6(e)(3). This plan is to include a detailed step-by-step procedure for operating and maintaining the source during periods of malfunction and a program for corrective action for malfunctioning process and air pollution control equipment. Owners or operators may be able to include releases from pressure relief valves in their start-up, shutdown, and malfunction plan if they consider these releases possible. However, the releases would have to be considered a malfunction based on the definition as defined in the final General Provisions. The definition in the proposed General Provisions is as follows:

> Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

4.2.3 Inspections

Comment: Several commenters (A-90-19: IV-D-32; IV-D-33; IV-D-112) supported the use of DOT certification as a demonstration of vapor-tightness. Two commenters (A-90-19: IV-D-32; IV-D-112) stated that the HON correctly recognizes the role of vessel owners in ensuring their vessels are adequately pressure-tested. Two commenters (A-90-19: IV-D-58; IV-D-62) asserted that a rack owner's or operator's liability should not extend beyond his area of responsibility, and recommended that beyond recording properly documented DOT certification, the rack owner has no further liability in

connection with the leak performance of a tank truck or railcar. Two commenters (A-90-19: IV-D-62; IV-D-64) recommended that EPA clearly state that fulfilling the recording and recordkeeping requirements associated with the DOT certification will relieve the owner or operator of the loading rack from liability for infractions by the transporter.

Response: The transfer operation provisions clearly state in §63.126(e) that the source owner or operator is responsible for loading organic HAP's into only tank trucks and railcars which either have a current DOT certification, or have been demonstrated to be vapor-tight. In §63.130(e), the provisions clearly state the recordkeeping responsibilities of the source. The EPA does not consider it necessary or advantageous to explicitly state that the source has no further responsibility. The responsibilities under the transfer provisions are explicitly stated in the above mentioned sections of the HON; therefore it is not necessary to make a broad statement of the sources responsibility. Also it is possible that the source has responsibilities under other rules or in specific circumstances. Therefore making a broad statement of the sources' responsibility could be confusing; it is not advantageous for the EPA to make a broad statement in the HON rule regarding the sources' responsibility for leaks that occur.

Comment: One commenter (A-90-19: IV-D-34 and IV-G-4) contended that the pressure change used for the vapor-tightness testing for gasoline trucks is too low compared to the working pressure of tank cars and tank trucks used by the chemical industry, and is therefore inappropriate in the HON rule for transfer operations. The commenter (A-90-19: IV-D-34 and IV-G-4) also asserted that EPA-specified gauges associated with the proposed testing would not be amenable to the high working pressures and may even be damaged during testing.

One commenter (A-90-19: IV-D-34) suggested that the EPA develop vapor-tightness testing procedures based on the

maximum allowable working pressures of the tank trucks and railcars normally used by the chemical industry. The commenter (A-90-19: IV-D-34) elaborated on this suggestion in a subsequent notice (A-90-19: IV-G-4) by specifically suggesting the following:

> "Gas pressure tank trucks to 10 psia and tank cars to 25 psia. Bubble test the vessels. Tighten/repair fittings and seals until bubbles are no longer visually or audibly detectable."

Response: The EPA considers the vapor-tightness test to be adequate for most situations. If a facility feels that the vapor-tightness test is not appropriate for the conditions that their vehicles operate under, the facility can choose to load only into DOT-certified tanks. The facility may also use another test method if they validate it using Method 301. These options provide facilities with enough flexibility to accommodate their specific situation.

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) indicated that significant fugitive loading emissions may result after maintenance activity on transport vehicles if they are not leak tested. The commenters (A-90-19: IV-D-70; IV-D-99) recommended that the regulation be changed to clearly require each and every vehicle loaded with a HAP to be inspected for vapor tightness after each maintenance cycle or on a semi-annual basis at a minimum, and that visual inspections of each vehicle and connection be conducted prior to and during loading.

Response: The transfer operations provisions require annual leak tests. The EPA considers this frequency adequate for inspection of tank trucks and railcars for leaks. The gasoline marketing study (Evaluation of Air Pollution Regulatory Strategies for Gasoline Marketing Industry, EPA-450/3-84-012a, July 1984, p. 3-11) documents a significant decrease in leaks from tank trucks that received an annual inspection. The commenter did not provide data specifying why semi-annual inspections were necessary, nor did they describe their benefits over annual inspections.

In regards to visual inspections of each vehicle and connection prior to and during loading, operators are required to operate the vapor collection system in order to collect the organic HAP vapors displaced during loading §63.126(a)(1) and therefore must connect the vapor recovery hoses properly to the vehicles. It is not necessary to specifically require that this be inspected. If the commenter is concerned that leaks will occur during loading due to a failure in the equipment, these will be difficult to visually identify. Also, during loading, the vapors will be collected through the vapor recovery line and most of the vapors will take this path of least resistance instead of through any failure in the equipment. The EPA considers the annual vapor tightness test or DOT certification to be sufficient.

Comment: One vendor (A-90-19: IV-D-8) provided information to the EPA on a leak detection device they claimed could be used instead of Method 21 for compliance with the inspection provisions for collection systems. Others (A-90-19: IV-D-14; IV-D-15; IV-D-17; IV-D-18; IV-D-19; IV-D-20; IV-D-23; IV-D-24; IV-D-25; IV-D-27; IV-D-28), (A-90-20: IV-D-2; IV-D-4) commented on procedures and requirements of Method 21.

Response: The EPA has provided a discussion on Method 21 and the alternate leak detection device in section 5.0 of this BID volume.

Comment: Several commenters (A-90-19: IV-D-32; IV-D-33; IV-D-73), (A-90-22: IV-D-7) suggested that the requirements in subpart H for leak detection of equipment are applicable to vapor collection systems or transfer racks. The commenters (A-90-19: IV-D-32; IV-D-33; IV-D-73), (A-90-22: IV-D-7) recommended deleting the requirement in §63.126(a)(3)(i) and §63.126(b)(3)(ii) of the transfer provisions. One commenter (A-90-19: IV-D-73) maintained that in many SOCMI plants there is a plant-wide closed-vent collection system and that it is essential that there be only one regulatory requirement for that system.

One commenter (A-90-19: IV-D-33) anticipated that in the future the subpart H requirements may also apply to non-HON processes. The commenter indicated that it would be most expedient and less burdensome if there were only one requirement for leak detection for all MACT standards.

One commenter (A-90-19: IV-D-73) contended that the HON transfer repair provisions would not allow for delay of repair which is needed for components in HAP service or in closed-vent service. Two commenters (A-90-19: IV-D-32; IV-D-73) requested that the EPA add a provision for delay of repair because transfer vapor collection systems may be common with other processes.

Response: Method 21 leak inspection provisions are assembled into a new section, §63.148 of subpart G. The transfer operations provisions have been revised to refer to the closed-vent system provisions in this new section, §63.148.

The transfer operations provisions have also been revised to refer to the delay of repair provisions in §63.148 of subpart G.

Comment: Three commenters (A-90-19: IV-D-64; IV-D-73) (A-90-22: IV-D-13) asserted that the EPA should exempt equipment from transfer provisions consistently in all sections. Two commenters (A-90-19: IV-D-73) (A-90-22: IV-D-13) contended that the intent of §63.126(i) is to exclude PRV's for safety purposes from the requirements to have a flow indicator or car seal. The commenters (A-90-19: IV-D-73) (A-90-22: IV-D-13) stated that bleeds, drains, etc. are excluded from the car seal or lock requirements by §63.127(d); however, no such exclusions are in §63.126(i). The commenters (A-90-19: IV-D-73) (A-90-22: IV-D-13) urged that these two sections be aligned. Another commenter (A-90-19: IV-D-73) requested that the EPA carry over the exclusion in §63.127(d) to the reporting and recordkeeping section [§63.129(d)].

Response: Sections 63.126(i), 63.127(d), and 63.129(d) have been revised to exclude the same equipment.

4.2.4 Compliance Schedule

Comment: Several commenters (A-90-19: IV-D-32; IV-D-34; IV-D-58; IV-D-62; IV-D-112) claimed that it may not be possible to test leaks within the 15-day period directed in the HON because of the intermittent nature of transfer operations. The commenters (A-90-19: IV-D-32; IV-D-34; IV-D-58; IV-D-62; IV-D-64; IV-D-112) protested that if a leak has been worked on but the transfer operation component is shut down because all loading has been completed or if the rack is operated sporadically, there would be no way to screen the component to determine if it had been fixed until the next transfer operation, which may exceed 15 days.

Several commenters (A-90-19: IV-D-32; IV-D-34; IV-D-58; IV-D-62; IV-D-112) suggested that the EPA should allow monitoring to take place within the 15 day limit after repair, or at the beginning of the next transfer operation if loading operations have ceased before screening could take place. Three commenters (A-90-19: IV-D-32; IV-D-34; IV-D-62) claimed that since the transfer rack would not be in operation, there would be little to no escape of organic vapors to the atmosphere during idle time. One commenter (A-90-19: IV-D-63) requested that the EPA grant an automatic extension or exemption from repairing leaks within 15 days of detection for low quantity transfer operations that may only be used once or twice a month.

Response: The transfer operations provisions have been revised to allow for testing leaks within the 15-day limit after repair, or at the beginning of the next transfer operation if loading operations have ceased by the time screening would have taken place.

4.3 RECORDKEEPING AND REPORTING

Comment: Two commenters (A-90-19: IV-D-58; IV-D-64) contended that the recordkeeping and reporting requirements in the HON transfer provisions were excessive and burdensome. One commenter (A-90-19: IV-D-92) specifically asserted that the transfer provisions require excessive recordkeeping if the facility does not have a flare.

One commenter (A-90-19: IV-D-34) contended that recordkeeping and reporting requirements are excessive for Group 2 transfer operations and puts the source in the position of being required to keep extensive records and make calculations on a point for which controls are not applicable. The commenter (A-90-19: IV-D-34) asserted that recordkeeping is a needless requirement for Group 2 racks since the determination of applicability for individual racks is to be made based on utilization that occurred during the year preceding promulgation [§63.100(b)(5)(v) in the proposed HON]. The commenter (A-90-19: IV-D-34) claimed that the applicability does not change unless there is a change in the material loaded at the loading arm or hose, which requires the applicability to be redetermined. The commenter (A-90-19: IV-D-34) expressed concern that extensive recordkeeping and reporting requirements subject the source to potential noncompliance for failure to maintain records for a source which needs no control.

The commenter (A-90-19: IV-D-34) suggested that the EPA delete recordkeeping requirements for Group 2 racks and instead require a certification in a semi-annual report that a change in material loaded has not occurred.

Response: The EPA has made every effort to reduce the recordkeeping and reporting burden and to require only those records and reports necessary to determine compliance. For example, the 5-minute monitoring and recordkeeping frequency for control devices has been changed to a 15-minute monitoring and recordkeeping frequency. The recordkeeping and reporting requirements for all the various control devices reflect what is necessary to determine compliance.

The EPA does not consider the recordkeeping and reporting requirements excessive for Group 2 transfer racks. The records are very limited; only design and actual throughput, weight-percent organic HAP, and the rack-weighted partial pressure of chemicals transferred are required. These records are necessary to determine if there has been a change in the rack's group status. The commenter is incorrect in stating

that group status is determined based on pre-promulgation data. If the amount and/or specific chemicals loaded changes after promulgation, a Group 2 rack could become Group 1.

The commenter has misinterpreted §63.100(b)(5)(v) in the proposed HON and §63.100(h) in the final rule. The intent of proposed §63.100(b)(5) [§63.100(h) in the final rule] is to explain how to assign a rack/arm which transfers chemicals from more than one chemical manufacturing process. Once the rack/arm is assigned to a chemical manufacturing process, it can be determined if the chemical manufacturing process, and therefore the rack/arm is subject to subparts F and G. Once it is determined that a rack/arm is subject to subpart G, then group status is determined. Therefore, if an owner or operator determines that a rack/arm is not subject to subparts F and G based on proposed §63.100(b)(5)(v) [§63.100(h) in the final HON], then the rack/arm is not subject to the requirements of either Group 1 or Group 2 racks. This section of subpart F has been revised to make this more clear.

Comment: One commenter (A-90-19: IV-D-34) contended that recordkeeping requirements for continuous monitoring of transfer operations are excessive and costly. The commenter (A-90-19: IV-D-34) claimed that loading racks are physically remote from control rooms in some facilities and there is no location where data can be easily stored. As a result, intrinsically safe, weatherproof recorders would be required. The commenter (A-90-19: IV-D-34) claimed that simpler control devices would operate well with a reduced level of monitoring that may allow a less expensive and more practical way of ensuring proper emissions control.

The commenter (A-90-19: IV-D-34) suggested that the frequency of monitoring be significantly reduced to the extent that it may be done without expensive continuous data collection systems.

Response: The monitoring frequency has been reduced from 5 minutes in some cases to 15 minutes in all cases. The EPA recognizes that some new equipment may be required to meet the

monitoring, recordkeeping, and reporting requirements of the transfer operations. However, this frequency is considered necessary for ensuring compliance.

The commenter did not provide any specific recommendations for reducing the burden or cost, except for the suggestion to reduce frequency. As explained in the recordkeeping and reporting chapter of the BID, an owner or operator may request site-specific approval to use non-automated monitoring systems if relevant operating parameters are read and recorded no less frequently than once per hour, and daily average values are calculated from the hourly values and recorded, as provided in §63.151. The request must contain: (1) a description of the planned monitoring and recordkeeping system; (2) documentation that the source does not have an automated system; (3) reasons the source is regulating an alternative monitoring and recordkeeping system; and (4) demonstration that the proposed monitoring frequency is sufficient to represent control device operating conditions considering typical variability of the specific process and control device operating parameter being monitored. In approving the request, the permit authority may consider the variability of the parameter, and whether a monitoring frequency that is longer than once every 15 minutes is sufficient to characterize control device operation.

4.4 WORDING OF THE PROVISIONS

Comment: One commenter (A-90-19: IV-D-64) contended that throughout the transfer provisions, the word "recorder" should be changed to "continuous recorder", since "recorder" is an undefined term and "continuous recorder" is defined.

Response: At proposal, the term "continuous recorder" was specifically avoided because it refers to a device capable of generating a record at least once every 15 minutes. In the proposed transfer operations provisions, some records are taken every 5 minutes. Since this was changed in the final transfer operations provisions to records at least once every 15 minutes, all references to "recorder" have been changed to "continuous recorder." As with the other emission points, if

there are no monitoring parameter excursions during the day, the owner or operator has the option to retain hourly averages and discard the 15-minute records.

Comment: One commenter requested that the EPA provide English unit equivalents wherever a metric unit appears.

Response: The regulation specifies only metric units because the EPA enforces standards based on the metric system. Conversions to English units would introduce imprecision and lead to situations where enforcement is unclear.

4.5 MISCELLANEOUS

Comment: Two commenters (A-90-19: IV-D-70; IV-D-99) asserted that the HON should make provisions for the operator to interlock the flow indicator with an automatic system to stop the loading procedure and close all open lines when the flow meter indicates a leak to the atmosphere.

Response: The flow indicator, car seal or lock-and-key closures required in §63.126(i) ensure that emissions are not diverted to the atmosphere, directly or indirectly, through a valve in the vent system. The EPA does not consider it necessary to require an automatic system with an interlocking flow indicator; however this type of system is not precluded in the transfer provisions.

Comment: One commenter (A-90-19: IV-D-75) asserted that the point of generation for loading operations should be defined as after the point where the stream is destined for disposal, because that point is where emissions may occur. The commenter (A-90-19: IV-D-75) contends that this is the only reasonable definition, and should be adopted.

Response: The EPA does not consider a definition for point of generation to be applicable or necessary to transfer operations. The commenter did not give any details on why point of generation should be defined for transfer operations.

Comment: Two commenters (A-90-19: IV-D-61; IV-D-92) recommended that the HON include more general language to allow for flexibility in controlling vapors from vapor balancing. One commenter (A-90-19: IV-D-92) claimed that the vapors from vapor balancing may be routed back to the process

unit, or may be pressurized to the tank car. Another commenter (A-90-19: IV-D-61) contended that the HON should allow vapor collection and return to process units as an alternative control technology for transfer emissions. The commenter (A-90-19: IV-D-61) stated that, for vapor balancing systems that return material to the process unit, the vapor collection system subject to LDAR requirements [such as specified in proposed §63.126(a)(3)] should be defined as the vapor handling equipment up to the point of commingling with raw feed.

Response: The transfer operations provisions allow for owners or operators to combine vapors with process vent streams which are then sent to a control device. There is nothing in the provisions that precludes shared control devices. Also, transfer operations that are under pressure are not subject to the HON transfer provisions.

The EPA considers allowing vapors to be recycled back to the process unit to be acceptable, except in cases where the vapors are only being vented through a process unit and out to the atmosphere. In order to allow for recycling back to the process unit, an option has been added to the transfer operations provisions allowing vapors from transfer operations to be commingled with the raw feed.

Comment: One commenter (A-90-19: IV-D-64) asserted that vapor collection systems should be operated to minimize, rather than prevent, the incidence of organic HAP vapors collected at one loading arm from being passed through another arm, because it would be impossible to completely prevent minor occurrences of this.

Response: The vast majority of vapors can be prevented from passing from one arm through another to the atmosphere; however the EPA considers requiring all HAP vapors from loading arms be prevented from being lost to the atmosphere overly stringent. The EPA agrees with the commenter that it is impossible to completely prevent every molecule of HAP vapors from being diverted through another arm to the

atmosphere. In order to better communicate this requirement the provisions in §63.126(a)(2) have been revised.

Comment: One commenter (A-90-19: IV-D-33) suggested that the definition of recovery device in §63.101 be used in §63.111.

Response: Recovery device is defined in much the same way in §63.101 of subpart F and §63.111 of subpart G. In order to eliminate redundancy, the definition in §63.111 of subpart G was removed in the final provisions.

In order to be consistent, the definition for control device was moved from §63.111 of subpart G to §63.101 of subpart F.

Comment: One commenter (A-90-22: IV-D-13) suggested that the EPA clarify that manifolded vent lines on loading arms do not require car seals or flow indicators. The commenter (A-90-22: IV-D-13) stated that, for manifold vent lines, a positive closure such as a plug or a cap is preferred over car seals because car seals are impractical. The commenter (A-90-22: IV-D-13) explained that car seals might need to be removed and reapplied several times at a busy loading rack. The commenter (A-90-22: IV-D-13) contended that monthly inspections of car seals and flow indicators on a manifolded vent line are meaningless.

Response: The provisions requiring a car seal, lock-and-key type closure, or a flow indicator do not apply to manifolded vent lines on loading arms. The provisions apply to the vapor recovery lines.

5.0 EQUIPMENT LEAKS

5.1 STANDARDS

5.1.1 §63.162: General

Comment: Several commenters (A-90-19: IV-D-33; IV-D-34; IV-D-57; IV-D-73; IV-D-77; IV-D-79; IV-D-97) requested that a sufficient period of time should be allowed for installation of equipment required to achieve compliance with the standard. One commenter (A-90-19: IV-D-73) argued that the 6 to 18 months allowed in the proposed rule did not take into account implementation problems that might occur. The group of commenters (A-90-19: IV-D-33; IV-D-34; IV-D-57; IV-D-73; IV-D-77; IV-D-79; IV-D-97) requested a compliance time similar to the 3-year compliance schedule allowed under subpart G. Another commenter (A-90-19: IV-D-33) argued that subpart H should allow up to one-year compliance waiver for installation of controls. Examples of equipment requirements cited include installation of a seal system on a compressor, installation of a sampling connection system or equipping a open-ended valve or line with a cap.

Response: The EPA does not agree with the commenters that sources should be allowed up to 3 years to comply with the provisions in subpart H. Subpart H consists of a combination of work practice requirements for many equipment components and equipment standards for compressors, sampling systems, open ended lines or valves, and pressure relief valves. Unlike the requirements in subpart G, the equipment required by subpart H should not involve long periods of time for design, construction, and installation. The commenters did not provide any information that would justify establishing a source-category-wide compliance schedule for

subpart H similar to that provided for subpart G. The EPA recognizes that there may be circumstances present in individual facilities where an extension is appropriate for compliance with certain requirements in subpart H. In such cases, the owner or operator may request an extension of compliance through the provisions of §63.6(i)(4) of subpart A. Section 63.182(a)(6) of subpart H has been added to subpart H to clarify that extensions of compliance may be requested if additional time is necessary for installation of equipment required by subpart H.

Comment: One commenter (A-90-20: IV-D-19) suggested the general standards for process units subject to subpart H were ambiguous and needed clarification. Specific concerns mentioned by the commenter (A-90-20: IV-D-19) were (1) paragraph (a) requires the owner or operator to "demonstrate compliance" but actually is requiring compliance, not the demonstration thereof; (2) paragraph (b) needs to be more explicit as to what records could be reviewed; and (3) paragraph (e) needs to be clarified to specify that it refers to equipment intended to operate under vacuum during normal operations, not that the equipment must be under vacuum at all times including startup or shutdown. In addition, paragraphs (e) and (f) require negative recordkeeping - identification of individual pieces of equipment that are not subject to the subpart.

Response: The EPA considered the commenter's suggestions and, where appropriate, revised the final rule. Specific changes made to the general standards in §63.162 were: (1) Paragraph (a) was deleted because all general compliance requirements are located in subparts F and I; (2) paragraph (b) revised to cite the specific records; and (3) paragraph (e) was deleted. Paragraph (b) was revised to specifically cite the required records to remove any possible ambiguity in the rule regarding required records. Section 63.181 in the final rule specifies all the required records. The requirement in paragraph (e) to document all equipment in vacuum service was removed because it is possible to identify

such equipment by inspection of the process unit and this requirement added an unnecessary recordkeeping burden. The requirement in paragraph (f) of the proposed rule to document equipment in HAP service less than 300 hours was retained, however. It was the EPA's opinion that this record was necessary because it would not be possible to determine this by inspection.

Comment: One commenter (A-90-19: IV-D-73) asserted that it is arbitrary to require 1-year compliance waiver requests to be submitted 1 year before the compliance date. The commenter (A-90-19: IV-D-73) requested that the EPA reconsider these stipulations.

Response: The EPA believes that the commenter misinterpreted the requirement in §63.182(a)(2) for submittal of a notification of applicability as also applying to waiver requests. Section 63.182 has been redrafted to remove this source of confusion and specify the dates by which the request must be submitted and the required information. The final rule specifies that the waiver request must be submitted no later than 3 months before the compliance date. This time period is sufficient to permit review of the application and notification before the compliance dates. The submittal date differs from the time period specified in the general provisions (subpart A) because the compliance dates for subpart H and the provisions in subpart A would not allow any requests for compliance extensions.

Comment: Two commenters (A-90-19: IV-D-79; IV-D-105) reasoned that facilities subject to 40 CFR part 61 subpart F should be exempt from 40 CFR part 63 subpart H. The commenters (A-90-19: IV-D-79; IV-D-105) argued that no benefit would be gained by making these facilities comply with subpart H since they are already subject to a similar program. One commenter (A-90-19: IV-D-79) also requested that the EPA provide a phase-in period for facilities currently complying with existing equipment leak rules.

Response: As part of the general evaluation of overlapping requirements in part 60 and 61 rules, the EPA

considered whether the equipment leak standard in the Vinyl Chloride NESHAP (subpart F of part 61) was more stringent than the requirements in subpart H. It was concluded that for Vinyl Chloride the stringency comparison needs to be on a case-by-case basis. It is not possible to do the evaluation on a national basis because subpart F of part 61 initially required a self-developed program and the requirement to comply with the provisions in subpart V of part 61 was added later, as an additional requirement. Therefore, the final rule provides that sources subject to both subpart F of part 61 and the HON may request a determination by the permit authority of the program to be implemented. Because the phase I provisions for pumps and valves are identical to those in subpart V of part 61, the EPA believes that this evaluation can be conducted during the first year of the standard and no additional burden will result.

The EPA did not provide a phase-in period for facilities currently complying with existing equipment leak standards in part 60 or 61, as requested by the commenter. The EPA thinks a facility that is already complying with existing rules (i.e., NSPS or NESHAP) should have less difficulty achieving compliance under subpart H because they already have a program in place. The commenter did not provide details on why extra time should be allowed for these facilities.

Comment: One commenter (A-90-20: IV-D-19) suggested that it is not necessary to exclude dual mechanical seal pumps and compressors in VOC service from the override of 40 CFR part 60 or 61 requirements in §63.160(d). The commenter observed that requirements for dual mechanical seal pumps and the requirements for compressors are virtually identical and thus, there is no need to require such exceptions.

Response: The standard has been revised to remove this limitation because, as noted by the commenter, there are no practical differences in the requirements.

Comment: Two commenters (A-90-20: IV-D-38; IV-G-3) argued that application of the requirements of subpart H to phosgene-containing equipment at diisocyanate units would not

be useful since these units are presently monitored for any leaks using sensitive perimeter monitoring systems. The commenters suggested that subpart H include a provision that would allow use of area monitoring systems for phosgene containing equipment in lieu of the leak detection provisions that would otherwise apply under subpart H.

Response: The final rule provides provisions that allow establishment of alternative monitoring provisions provided it can be demonstrated that this system can at least detect a 500 ppm leak. This demonstration can be based on dispersion modeling, engineering calculations, or past experience. It is expected that allowable systems will be highly dependent on the HAP's being monitored as well as site layout.

Comment: One commenter (A-90-20: IV-D-27) recommended that an exemption from periodic monitoring be provided for cases where it is not feasible to monitor. The commenter cited 2 examples of cases where monitoring would be infeasible: (1) chemicals which can not be reliably detected by available instruments; and (2) containment areas where the process is isolated due to concerns with health and safety issues or concerns with product contamination. The commenter suggested for these cases the rule require repair if there is visible, audible or olfactory evidence of a leak.

Response: The EPA does not believe that exemption from periodic monitoring is warranted or necessary. For cases where no instrument exists, the rule allows the owner or operator to monitor a surrogate or to request approval of an alternative program. Section 63.179 of subpart H also exempts enclosed process units that are vented through a control device from the periodic monitoring requirements.

Comment: One commenter (A-90-19: IV-D-86) stressed that 6 months to implement the rule for Group I sources is too brief. The commenter (A-90-19: IV-D-86) recommended that small facilities be allowed 3 years to comply, citing the lack of environmental staffing and the cost of instituting the program as reasons to defer implementation. Another commenter (A-90-19: IV-D-92) also noted that a 6-month period was too

brief to implement the rule for facilities that are not yet implementing an LDAR program.

Response: The EPA considers that ample notice has already been given. The original agreement was published in the Federal Register on March 2, 1991. The HON was proposed in December 1992 and will be promulgated at the end of February 1994. This is a time span of 3 years and the EPA maintains that this should have provided ample time to determine applicability and implement the means for achieving compliance.

Comment: One commenter (A-90-20: IV-D-27) recommended that the definition of connector be modified to state that connections between sections of a vessel and between the vessel and head gaskets are not considered connectors. This commenter also suggested that the definition of screwed connector be modified to incorporate the definition of connector. The commenter thought that this change would avoid confusion.

Response: The EPA considers the two definitions to be clear and that the possibility of confusion unlikely. The definition of connector states that: "connector means flanged, screwed, or other joined fittings used to connect two pipe lines or a pipe line and a piece of equipment. . " In other words, a connector is a device that connects two pipes or a piece of equipment. Since a vessel is neither a piece of pipe or a piece of equipment, connections between sections of a vessel and between the vessel and head gaskets cannot be considered connectors. The rule defines equipment as:

> Equipment means each pump, compressor, agitator, pressure relief device, sampling connection system, open-ended valve or line, valve, connector, surge control vessel, bottoms receiver, and instrumentation system in volatile hazardous air pollutant service; and any control devices or systems required by this subpart.

The definition of connector was not added to the definition of screwed connector because the definition of connector clearly states that screwed connectors are one type of connector.

Comment: One commenter (A-90-20: IV-D-19) suggested that all units, not just batch processes, be allowed to monitor anytime the equipment is in service with any detectable material, not just VHAP. The commenter suggested this additional flexibility would make the monitoring more cost-efficient.

Response: The EPA agrees with the commenter that this flexibility should be available for continuous as well as batch processes. Accordingly the rule has been modified to allow use of surrogate monitoring to check for leaking equipment.

5.1.2 §63.163: Pumps in Light Liquid Service

Comment: One commenter (A-90-19: IV-D-60) requested that the rule allow an owner or operator to calculate a percentage of leaking valves, connectors, or pumps for groups of similar process units, citing this option as one method of providing meaningful leak rate data.

Response: The EPA is uncertain just what the commenter meant by "meaningful leak rate data". The pump standard, in §63.163(a)(2) of subpart H, allows the owner or operator to calculate the percent leaking pumps on a process unit basis or a source-wide basis. The Committee agreed to this provision to consider the small number of pumps typically in a process unit and potential problems associated with small populations and site-specific concerns. The commenter's suggestion of another option for the calculations does not appear necessary and will add additional complexity to the standard.

Comment: One commenter (A-90-19: IV-D-89) recommended that §63.163(g) of subpart H be modified to also exempt from the monitoring requirements in paragraphs §63.163(b) through (e) any systems that capture and transport leakage from the seal(s) to the process recovery system.

Response: The provisions in §63.163(g) have been revised to allow the owner or operator to route the leakage back to the process where the material will be recycled as well as to a control device. The EPA considers this change to be a

clarification since the process recovery system meets the definition of control device under subpart H.

Comment: One commenter (A-90-20: IV-D-19) thought the rule should specify that pumps installed after the applicability date are in the same phase as the remainder of the process unit. The commenter (A-90-20: IV-D-19) suggested that paragraph §63.163(a)(3) be added to read:

> (3) All pumps within a process unit are in the same phase, including pumps installed in the process unit after that applicability date.

Response: The EPA does not think that the suggested language needs to be added to the standard. Subpart H specifies that the phases are determined on a process unit basis not by the individual piece of equipment. The EPA believes that the commenter's concern result from difficulties with implementation of the provisions in 40 CFR part 61, subparts J and V, benzene equipment leaks NESHAP. The benzene NESHAP specifies applicability in terms of each piece of equipment and not on a process unit basis. To prevent similar difficulties from arising in implementation of subpart H, the EPA will explain in enabling materials and inspection manuals that the phases of the pump and valve standards are determined on a process unit basis and addition of a new valve or pump does not alter the phase the equipment is considered to be in.

Comment: One commenter (A-90-20: IV-D-19) requested clarification of when follow-up monitoring is required for a pump that has been repaired. The commenter (A-90-20: IV-D-19) suggested amending §63.163(c)(1) by adding the following:

> Repaired shall mean that indications of liquids dripping from the pump seal are no longer present when the pump is returned to VHAP service. Subsequent monthly monitoring may be used to confirm that repair was successful.

The commenter reasoned since monitoring is performed monthly, monitoring during the next scheduled monitoring period should be acceptable.

Response: The term repaired is defined in §63.161 as "equipment is adjusted or otherwise altered to eliminate a

leak as defined in the applicable sections of this subpart." Thus, a pump cannot be classed as repaired until it is monitored and is confirmed to be below the action level. This confirmation monitoring is an inherent part of the LDAR program and should not present an undue burden. The EPA does not consider the suggested change is necessary.

Comment: One commenter (A-90-20: IV-D-19) recommended that the EPA not require monitoring of DMS pumps when a leak is determined visually. The commenter (A-90-20: IV-D-19) observed that §63.163(b)(3) specifies that indications of liquids dripping found during a visual inspection of a pump are considered leaks. The commenter (A-90-20: IV-D-19) thought that this a sensible approach, which eliminates unnecessary extra monitoring, but is not consistent with §63.163(e)(4)(i). The latter section requires monitoring if a DMS seal pump shows indications of liquids dripping at the time of the visual inspection. The commenter (A-90-20: IV-D-19) recommended that the EPA make the two sections consistent.

Response: The two cited sections in the pump standard differ because the DMS seal leak could be a loss of barrier fluid and would not result in loss of volatile materials or an instrument reading of 1000 ppm. In such cases, the DMS seal would not be considered to be leaking. The provisions in §63.163(b) of subpart H apply pumps such as single mechanical seal pumps, reciprocating pumps, etc. In these cases, the presence of a drip will indicate loss of process fluid that is in light liquid service and undoubtedly would be measured as a leak. The EPA, therefore, did not revise the provisions as suggested because some owners or operators subject to the standard would object to the loss of the opportunity to show that the drip from a DMS is not a leak.

Comment: One commenter (A-90-20: IV-D-19) suggested that the percent leaking pumps calculation is not appropriate for process units/plant sites with a large number of DMS or sealless pumps. The commenter (A-90-20: IV-D-19) claimed that some process units/plant sites have a large number of DMS

and sealless pumps. Since these pumps are not included in the P_L term of the percent leaking pumps calculation (monitoring required by §63.163(e)(4)(i) is not included in the definition of P_L), a plant with over 90 percent non-single seal pumps would never exceed the 10 percent limit which triggers the pump QIP. Plants in this situation should not be required to calculate percent leaking pumps, as the data is meaningless. The commenter (A-90-20: IV-D-19) suggested exempting these plants from the requirement to calculate percent leaking pumps.

Response: The EPA agrees that in such cases the calculation is unnecessary. The recommended language was added to the pump provisions in §63.163 of subpart H.

5.1.3 §63.164: Compressors

Comment: One commenter (A-90-19: IV-D-92) recommended that the use of double mechanical seals should not be required. Instead, the commenter (A-90-19: IV-D-92) advocated that the standard be expressed as a performance standard that would necessitate use of the appropriate seal.

Response: As with pumps, a performance standard for compressors is not feasible. Even though compressor seals can be equipped to release emissions into a conveyance mechanism, measurement of these emissions is impracticable. The standard allows use of systems that vent the seal area to a control device as well as dual mechanical systems or sealless compressors.

Comment: One commenter (A-90-19: IV-D-92) asserted that compressors with double mechanical seals should be exempt from monitoring requirements.

Response: Compressors equipped with double mechanical seals are exempt from the LDAR program. The only requirement is for a sensor to detect failure of the seal system or barrier fluid system. These sensors are necessary because seals can fail and large emissions could result.

Comment: One commenter (A-90-20: IV-D-19) recommended several clarifications to the provisions for compressors vented to closed-vent systems. The commenter (A-90-20:

IV-D-19) requested clarification of the type of enclosure that would meet the criteria for exemption: Would a laboratory type hood be considered applicable, or does the enclosure need to fully encase the equipment? The commenter (A-90-20: IV-D-19) also requested that the closed-vent system be allowed to vent back to the process, as well as to a control device. The commenter (A-90-20: IV-D-19) cited provisions in the benzene waste operations NESHAP [See 40 CFR 61.342(c)(1)(iii) of subpart FF of part 61] as an example where the EPA has allowed recycling in lieu of destruction only. The commenter (A-90-20: IV-D-19) questioned the relevance of the requirements of paragraphs 63.164(c) through (f) of subpart H for compressors equipped with closed vent systems. It was also noted that the last phrase of §63.163(h) "except as provided in paragraph (i) of this section" is unnecessary. Paragraphs 63.164(h) and (i) are separate exemptions, not dependent on each other.

Response: The provision in §63.164(h) is deliberately drafted in a manner that does not specify the actual equipment that can be used. That is, the standard does not specify that the compressor be fully enclosed or equipped with a hood, or that other specific equipment be applied. The requirement is to collect any leakage and convey it to a control device. This requirement can be met by any number of different systems. Systems that enclose ports in the seal area and evacuate the collected gases are one acceptable means of compliance as are systems that enclose the entire compressor. While the EPA understands the desire for more specificity as to what is acceptable means of compliance, the EPA is also concerned that the standard be achievable by a number of different systems and allow flexibility. Therefore, the language in §63.164 was not revised to be more explicit as requested by the commenter.

In response to the commenter's concerns, §63.164(h) was edited to allow venting of emissions to the process or to a control device. The cross references to the other provisions

in §63.163 were also revised to clarify the exempted paragraphs.

5.1.4 <u>§63.165: Pressure Relief Valves in Gas/Vapor Service</u>

<u>Comment</u>: One commenter (A-90-20: IV-D-19) thought the monitoring requirements for pressure relief devices in gas/vapor service to be unclear. Specific questions raised by the commenter (A-90-20: IV-D-19) were: Did the EPA intend for pressure relief devices to be monitored initially in order to determine that they meet the less than 500 ppm above background criteria, and if not why does §63.181(b)(4) require retention of documentation of compliance tests required in §63.165. If it was the EPA's intention to require such monitoring, the commenter (A-90-20: IV-D-19) recommended that it be written out in this section.

<u>Response</u>: The intent of the provisions in §63.165(a) is to demonstrate that the PRV has reseated properly after an overpressure discharge. The standard does not require a compliance test or routine monitoring.

<u>Comment</u>: One commenter (A-90-20: IV-D-19) requested that the EPA clarify whether pressure release events are isolated incidents or can occur as a series of discharges over a relatively short time period. For process units that cannot be shutdown immediately upon upset, the commenter thought the present language in §63.165(b) would require monitoring with no benefit under potentially dangerous conditions. Another commenter (A-90-19: IV-D-34) requested that §63.165(b)(2) be edited to require monitoring within 5 days of being repaired or returned to VHAP service.

<u>Response</u>: The EPA believes that the provisions in §63.165(b) already accommodate the situation described by the first commenter since delay of repair is allowed. The purpose of the monitoring is to confirm that the PRV has reseated properly after an overpressure discharge. The definition of pressure release has been revised to clarify that it may be a single isolated discharge or a series of releases over a short time period due to the same process malfunction.

The EPA agrees with the other commenter's that the time period following a process unit shutdown should be clarified. The provisions in §63.165(b)(2) have been revised to clarify that the 5 days is following repair and being returned to HAP service.

Comment: Two commenters (A-90-19: IV-D-32; IV-D-34) suggested that pressure relief valves which are unsafe to monitor or repair should be exempted from these requirements. One of the commenters (A-90-19: IV-D-32) noted that a major safety risk would be posed if a pressure relief valve in gas/vapor service released while monitoring or repair personnel were present.

Response: The intent of the provisions in §63.165 is to ensure that there is no leakage from the PRV during normal operations (i.e., periods when there is not an overpressure discharge). There are two primary alternatives for controlling equipment leaks from PRV's: use of a rupture disk in conjunction with the PRV, or use of a closed vent system. If an owner or operator elects to use either of these control options, there is no requirement to monitor the PRV after repair.

The standard also allows use of a PRV alone provided the PRV is demonstrated to have been returned to less than 500 ppm within 5 days of the overpressure discharge, unless repair is technically infeasible without a process unit shutdown. While the commenters did not provide examples of situations where it would be unsafe to repair or monitor the PRV, the EPA believes that these cases would also be situations where it was infeasible to repair without a process unit shutdown. Thus, the standard already provides the exemption that the commenters requested. The standard does not require routine monitoring of PRV's or annual compliance demonstrations so the EPA does not believe that the provisions pose a major safety hazard to monitoring personnel.

Comment: Two commenters (A-90-19: IV-D-77; A-90-20: IV-D-19) recommended that the rule allow installation of a rupture disk under the pressure relief valve in lieu of

monitoring after a pressure release or monitoring of the closed vent system. Several other commenters (A-90-19: IV-D-69 and IV-D-89; A-90-20: IV-D-9) suggested that rupture disks and sensor systems be exempt from the provisions of this section because these systems detect emissions before they can be released to the atmosphere.

Response: The rule has been clarified to explicitly exempt PRV's equipped with rupture disks from the follow-up monitoring requirements of §63.165(b)(2). For these systems, the standard requires that a new rupture disk be installed upstream of the PRV no later than 5 days after the pressure release, unless the process unit must be shutdown in order to install the replacement rupture disk.

Comment: One commenter (A-90-19: IV-D-77) requested clarification of the requirements for situations in which relief valves are located on a closed vent system for protection of the vent system equipment. The commenter (A-90-19: IV-D-77) proposed that instead of being subject to monitoring, these systems could have a pressure indicator, located between the rupture disk and the PRV, to indicate the need for replacement. The commenter (A-90-19: IV-D-77) noted that these valves are not equipped with an isolation valve, which means the soonest these valves can be repaired would be at the next process unit shutdown.

Response: Rupture disks installed upstream of a PRV are one of two primary alternatives for control of emissions from PRV's. As noted in response to the preceding comment, §63.165 has been revised to clarify that rupture disks are one means of compliance with the standard. Thus, the approach proposed by the commenter is acceptable. Although it is not clear from the comment letter whether there is confusion regarding the applicability of the requirements for PRV's, the EPA would like to clarify that the provisions in §63.165 only apply to PRV's that are in organic HAP service (at least 5 weight percent organic HAP). Thus, these provisions primarily affect PRV's on process equipment.

Comment: One commenter (A-90-19: IV-D-34) requested that an exemption be provided for PRV's connected to a common vent header which discharges to the atmosphere.

Response: Section 63.165(c) exempts PRV's connected to closed vent systems with control devices from the monitoring requirement because if the PRV does not reseat properly the leakage will be controlled. If the commenter's facility connects the PRV's to a control device before discharge to the atmosphere there is no need to monitor the PRV after a discharge. However, if the commenter's facility has PRV's connected to a common header and there is no control before discharge to the atmosphere, the commenter will either have to install rupture disks, a control device, or take another approach toward determining if the PRV has reseated properly. The EPA does not believe that it would be appropriate to exempt PRV's from the requirement merely because it would be inconvenient to comply.

5.1.5 §63.166: Sampling Connection Systems

Comment: Two commenters (A-90-20: IV-D-19; IV-D-27) recommended that the definition of closed-loop system be modified to clarify the intent of the provisions. The commenters'(A-90-20: IV-D-19; IV-D-27) understanding is that the intent is to insure that air emissions from sampling are minimized and the purged material is returned to the process. One commenter (A-90-20: IV-D-27) suggested that the proposed definition of closed-loop system implies there are no air emissions and thus there is no difference between closed-loop and in-situ sampling systems. The other commenter (A-90-20: IV-D-19) thought that §63.166(a) could be interpreted to mean both the purged material and the sample need to be collected in a closed-purge, closed-loop, or closed vent system. The commenter (A-90-20: IV-D-19) requested that this section be clarified. Another commenter (A-90-19: IV-D-34) also requested confirmation that rinsing of sample bottles prior to sample collection is acceptable as long as the rinsate is collected and the container is not left open to the atmosphere.

Response: The EPA agrees with the commenters that the intent of the sampling connection system provisions is to ensure that purged material is captured and returned to the process or destroyed, and does not apply to the sample. Section 63.166 has been clarified regarding the applicability of the requirements to the sample material.

The EPA also agrees that it is acceptable to rinse sample bottles provided the rinsate is collected and properly recycled or destroyed. This approach is fully consistent with the intent of the provisions which is to prevent purging of process fluids to the ground, sewer drain, or atmosphere. The potential for a small amount of emissions during the sampling procedures is recognized and a zero emissions standard is not intended.

Comment: One commenter (A-90-19: IV-D-34) requested that the EPA clarify whether analyzer vents are considered to be part of the sampling system and subject to controls under §63.166. The commenter (A-90-19: IV-D-34) referenced several EPA documents and rules to support his view that sampling connection systems apply at the point the sample is removed from the process.

Response: The EPA agrees that gas streams exiting an analyzer are not considered to be subject to the provisions of §63.166. The commenter is correct in noting that the focus of this provision is at the point where samples are removed from the process. The EPA believes that the question has arisen due to the lack of clarity regarding the meaning of the term analyzer vent. In particular, the term "analyzer vent" has on occasion been used to refer to the gases purged through a sample manifold system. In these systems, the analyzers remove a sample of the gas from the manifold. The provisions in §63.166 would apply to the gas flow through the manifold, but would not apply to the gases exiting the analyzer.

Comment: Two commenters (A-90-19: IV-D-34; IV-D-54) suggested that the EPA provide examples, in the form of diagrams or drawings, showing acceptable sampling systems, including commercially available systems. The commenters

(A-90-19: IV-D-34; IV-D-54) indicated that illustrations are necessary because the definitions in the proposed rule are confusing.

Response: The EPA agrees that drawings could be helpful to supplement the definitions given in the regulation. Although the commenters did not clearly indicate whether they wanted the illustrations to appear in the regulation or the BID, the EPA feels that the BID would be the more appropriate place. An illustration has been provided in the appendix of this document.

Comment: One commenter (A-90-20: IV-D-19) recommended that §63.166(c) be expanded to exempt sampling systems without purges from the equipment standard requirements in paragraphs (a) and (b). The commenter (A-90-20: IV-D-19) also recommended that non-routine grab samples taken during process upset conditions be exempted.

Response: Section 63.166(c) has been revised to also exempt sampling systems without purges from the requirement to use closed-loop, closed-purge, or a closed vent system. The change was made because it is possible in some cases to design sampling systems to collect samples without purging the sample line. It is expected that the owner or operator of the source will be able to show that the system is operated without purges or why it is infeasible to purge materials through this sampling system.

The suggestion that non-routine grab samples also be excluded from the provisions in §63.166 was not adopted. The EPA believes that the owner or operator should include activities such as this in the startup, shutdown, and malfunction plan. The provisions in subpart H are intended to apply during periods of normal operation and not during malfunctions and process upsets, which should be addressed in the source's startup, shutdown, and malfunction plan contained in §63.6(e)(3) of the General Provisions.

Comment: One commenter (A-90-19: IV-D-60) requested that equipment in heavy liquid service, that has a concentration of less than 500 ppm in the line, be exempted

from the sampling connection system requirement. The commenter (A-90-19: IV-D-60) suggested that this exemption would be appropriate because some materials have extremely low vapor pressures and, therefore, essentially no emission potential.

Response: If the commenter is referring to a stream composition less than 500 ppm of HAP, the provisions would not apply. In order for the provisions to apply, the equipment must be in organic HAP service, which is defined as:

> In organic HAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAP's. . .

On the other hand, if the commenter is referring to the concentration of the vapor above the liquid, the EPA does not agree that it would be appropriate to exempt equipment in heavy liquid service from this requirement. Heavy liquid streams have the potential to emit VOC's and organic HAP's to the atmosphere, particularly from purged materials that are at elevated temperatures or materials purged to sewer drains. Since the requirements for sampling connection systems allows the use of closed-purge systems as well as closed-loop sampling, the EPA believes the standard is achievable for equipment in heavy-liquid service.

5.1.6 §63.167: Open-ended Valves or Lines

Comment: One commenter (A-90-19: IV-D-34) requested that an exemption be provided for emergency shutdown systems, which are designed to open automatically during process upsets. These automatically opening vent lines must never be closed even with a second valve.

Response: The EPA agrees that automatically opening vent lines which are part of an emergency shutdown system should not be required to add a second valve or cap. It was also determined that the requirements for block and bleed systems were not appropriate. Section 63.167(d) was, therefore, added to the final rule to address a potential safety hazard.

Comment: One commenter (A-90-19: IV-D-60) requested that equipment in heavy liquid service be exempt from this

requirement due to the very low potential for emissions. The commenter (A-90-19: IV-D-60) reported that a Method 21 survey of their caprolactam plant showed the majority of 5,000 open ended lines had no detectable emissions readings and the single highest concentration recorded was 21 ppm.

Response: According to the analysis that accompanied a previous equipment leak standard (40 CFR part 60, subpart VV, [48 FR 48328]), these controls are cost-effective and it is common practice in the industry to cap lines.

5.1.7 §63.168: Valves in Gas/Vapor Service and in Light Liquid Service

Comment: One commenter (A-90-19: IV-D-92) suggested that the subpart should include a random 200-valve test as an alternative standard for valves. The commenter (A-90-19: IV-D-92) recommended that such an option could allow units that stayed below 2 percent leaking valves (where a leak is defined as 2000 ppmv) for 2 years to randomly test 200 valves or 10 percent of the valves annually. Whenever the unit exceeded 2 percent leaking valves, the owner would be required to resume quarterly monitoring. The commenter (A-90-19: IV-D-92) stated that this option would provide an incentive for compliance.

Response: Although certain aspects of the commenter's suggestion have merit, it must be noted that the numbers mentioned are significantly less stringent than the levels agreed to by the negotiating committee. For example, after the first year, the definition of leak becomes 500 ppmv, not 2,000 ppmv as suggested by the commenter. Additionally, the commenter indicated that quarterly monitoring would be appropriate for units exceeding the 2 percent leakage rate, yet the original agreement was for QIP or monthly monitoring for this situation.

The EPA also notes that the committee did consider several options for random-sampling alternatives, all of which were rejected due to difficulty in determining whether samples were truly random.

Comment: Two commenters (A-90-19: IV-D-32; A-90-20: IV-D-3) requested that the EPA clarify §63.168(e)(1) by specifying how leaks that recur within 90 days of repair should be considered in the calculation of percent leaking valves. The commenters (A-90-19: IV-D-32; A-90-20: IV-D-3) questioned whether the leak should be (1) treated as a new leak; (2) treated as a leak for which the initial attempt at repair failed; or (3) put on the list for repair during the next process unit shutdown. The commenter (A-90-19: IV-D-32; A-90-20: IV-D-3) suggested that either (1) the recurrence be treated as a new leak from a repair standpoint, but not be counted in the percentage of leaks; or (2) the equipment be put on the nonrepairable list and repaired at the next shutdown.

Response: Section 63.168(e)(1) was clarified to specify that the calculation of percent leaking valves is based on the number of valves determined to be monitored during the periodic monitoring. Thus, if the process unit is on a quarterly monitoring schedule the follow-up monitoring at 90 days would be conducted as part of the routine quarterly screening and if the valve is found to be leaking again would be counted as a leak. If the process unit is on a semiannual or annual monitoring schedule, the valve would have to be repaired but not be counted in the calculation of percent leaking valves. If the owner or operator determines that the valve must be removed in order to repair it in the shop, then the valve would be put on the nonrepairables list.

Comment: One commenter (A-90-20: IV-D-19) requested that the EPA clarify the monitoring schedule if a new valve is installed. This commenter (A-90-20: IV-D-19) noted that §63.168(f) specifies procedures for repairing leaking valves, but does not provide for repairs completed by replacing the valve. The commenter (A-90-20: IV-D-19) noted that it would be unmanageable if the valve must be kept on a separate monitoring schedule from the other valves in the process unit.

Response: As discussed earlier in response to a similar comment on the pump standard, subpart H specifies the

monitoring frequency and the phases of the standard on a process unit basis. The standard does not establish monitoring frequency for individual items of equipment. The EPA agrees with the commenter that it would be unmanageable to have individual valves on different monitoring schedules. To minimize possible implementation problems, the EPA will explain in enabling materials and inspection manuals that the phases of the pump and valve standards are determined on a process unit basis and addition of a new valve or pump does not alter the phase the equipment is considered to be in or the monitoring frequency of the equipment.

The EPA would also like to clarify that §63.168(f) provides a partial list of actions that can be taken as a first attempt at repair. These examples were included at the request of some Committee members because of their experiences in implementing the existing equipment leak standards in 40 CFR parts 60 and 61. The intent of including §63.168(f) was to illustrate the extent of actions necessary to comply with the first attempt at repair. Valve replacement was not included because the Committee did not envision this action as being a first attempt at repair measure. In many cases, valve replacement would require a process unit shutdown or bypassing of equipment and draining of process fluids from the lines in the affected area.

Comment: One commenter (A-90-20: IV-D-19) argued that the standard should not require post-repair monitoring of unsafe-to-monitor valves and connectors. The commenter (A-90-20: IV-D-19) noted that it is not feasible to remonitor the equipment within 3 months as required by §63.168(f)(3).

Response: To ensure that there is no possibility of misunderstanding the requirements for unsafe-to-monitor valves, the provisions in §63.168(h) have been edited to exempt these valves from the requirements in paragraphs (b) through (f) of §63.168.

Comment: A number of commenters (A-90-19: IV-D-33; IV-D-60; IV-D-73; IV-D-86) (A-90-20: IV-D-20) recommended that the proposed rule be modified to allow facilities to

begin Phase III on the applicability date of the rule. The commenters (A-90-19: IV-D-60; IV-D-73; IV-D-86) (A-90-20: IV-D-20) submitted that disallowing this would penalize facilities that have established low leak rates or that have implemented the proposed rule before the required applicability date.

The commenters (A-90-19: IV-D-60; IV-D-73; IV-D-77; IV-D-86) (A-90-20: IV-D-20) suggested a variety of criteria for entering Phase III, including allowing the source to decide when it is appropriate and demonstrating that the required percent leaking criteria was achieved during the two most recent monitoring periods. Specifically, one commenter (A-90-19: IV-D-73) suggested that if an owner or operator can demonstrate at any time that the source qualifies for reduced monitoring frequency, the source should be allowed to adopt the reduced monitoring frequency. Another commenter (A-90-19: IV-D-14) recommended that the source be required to demonstrate that the criteria were achieved during the two most recent monitoring periods. Another commenter (A-90-19: IV-D-77) thought that the rule should allow the owner or operator to elect the monitoring frequency most appropriate to the source's current status because the necessary records may not have been retained.

Response: The EPA agrees that the final rule should allow owners or operators the flexibility to initiate Phase III at anytime, and it was intended that this option would be available. Subpart H has been revised to clarify this point. This clarification does not, however, allow an owner or operator to elect to use reduced monitoring frequencies without Method 21 data to document achievement of lower leak rates for the required periods.

Comment: One commenter (A-90-19: IV-D-60) requested that the rule allow the owner or operator the option of calculating percent of leaking valves on a plant-wide basis or a process-unit basis. The commenter (A-90-19: IV-D-60) also requested that the rule allow the owner or operator the option of grouping units that are in similar service. The commenter

(A-90-19: IV-D-60) maintained that this would assist in providing meaningful leak rate data and would still meet the intent of the rule.

Response: The EPA is uncertain just what the commenter meant by meaningful leak rate data. In Phase III of the valve standard, the monitoring frequency is determined by the percent leaking valves. Since the number of valves in a typical SOCMI process unit is quite large (i.e., several hundred to thousands), the variability of the estimate should be small and it should not be necessary to combine data from several units to obtain a reliable estimate of performance. It should also be noted that the provisions in the valve QIP [§63.175(e)(2)] allow pooling of performance data for purposes of identifying measures to improve performance. Therefore, if the commenter's concern was with obtaining better data on performance for certain operating conditions, the standard already allows this.

Comment: One commenter (A-90-20: IV-D-19) recommended that the EPA reconcile two conflicting methods for determining whether excessive leaks trigger additional requirements for process units following annual monitoring. The commenter (A-90-20: IV-D-19) explained that §63.168(d)(1) specifies that "process units with 2 percent or greater leaking valves, calculated as a rolling average of 2 consecutive periods" shall either go to a QIP or implement monthly monitoring. For a process unit in annual monitoring, this conflicts directly with §63.168(e)(2), which states that "the percent leaking valves shall be calculated as...an average of any three out of four consecutive monitoring periods for annual monitoring programs". Even though a process unit has reached an annual monitoring program, it may still obtain two consecutive periods of greater than 2 percent leaking valves. For example, a process unit with an annual monitoring schedule could monitor for four quarters and have the following percent leaking valve numbers: 1 percent, 1 percent, 3 percent and 5 percent. According to paragraph (e)(2), any three out of four of these periods could be used, so the unit would have an

average of 1.67 percent leaking valves [(1% + 1% + 3%)/3 = 1.67%], and would need to drop to quarterly monitoring, as per paragraph (d)(2). But paragraph (d)(1) says that the 2 consecutive monitoring periods greater than 2 percent put the process unit into either monthly monitoring or a QIP. Which is correct? Since paragraph (e)(2) matches the method given in the preamble for determining monitoring frequency, it is assumed that paragraph (d)(1) is in error.

Response: In drafting the provisions of §63.168(d), it was assumed that a source with an annual monitoring program would not have quarterly monitoring data and, thus, the scenario presented by the commenter could not arise. Since this comment suggests that it is possible for the provisions in §63.168(d) to be interpreted in a manner that appears to conflict with the provisions in §63.168(e), the provisions in §63.168(d) have been edited to remove this possibility. Section 63.168(d)(1) now refers to the percent leaking calculated according to §63.168(e).

Comment: One commenter (A-90-19: IV-D-73) recommended that the difficult-to-monitor criteria be revised to not require elevation of monitoring personnel above support surfaces that are accessible only by fixed ladder. The commenter (A-90-19: IV-D-73) noted that it is unsafe to carry stepladders up fixed ladders. Another commenter (A-90-19: IV-D-69) recommended that the criteria for both "difficult-to-monitor valves" and "inaccessible connectors" should be the same - i.e., equipment is no more than 2 meters above a support surface. The commenter (A-90-19: IV-D-69) noted that a valve and a connector next to each other would be handled differently under the proposed provisions.

Response:

A clarification has been added to the equipment leak valve provisions to specify that valves are considered "difficult-to-monitor" if they are more than 2 meters above a support surface or the elevation of personnel on support surfaces can not be conducted safely at anytime.

Comment: One commenter (A-90-19: IV-D-73) recommended that §63.168(i)(2) be deleted. The commenter (A-90-19: IV-D-73) stated that even in new facilities an owner or operator cannot ensure that all valves will be readily accessible because placement is dictated by process requirements.

Response: The EPA contacted the commenter to determine the reasons this requirement had not been an issue under the benzene equipment leaks standard in 40 CFR 61, subparts J and V. The commenter noted that there are major differences between the number of units and the amount of equipment affected by the HON and by the benzene equipment leak NESHAP. Due to the greater magnitude of the HON, it is just not possible for existing sources to reconfigure process equipment to accommodate this standard. This commenter also pointed out that the SOCMI equipment leaks NSPS (40 CFR 60, subpart VV) placed no limit on the number of difficult-to-monitor valves in existing units affected due to modification or reconstruction and allowed new units to have up to 3 percent difficult-to-monitor valves. Thus, §63.168(i)(2) was revised to be consistent with the provisions in the NSPS.

Comment: One commenter (A-90-19: IV-D-89) questioned the benefit of monitoring "leakless" valves with the same frequency as all other valves. The commenter (A-90-19: IV-D-89) suggested that no more than quarterly monitoring should be required for these valves.

Response: During negotiations, the committee discussed providing special provisions for different types of valves and concluded that this additional complexity was not useful. Specifically, if a process unit had a large number of leakless valves, it probably would not have 2 percent or greater leaking valves and thus not be subject to monthly monitoring or QIP requirement. It is very likely the process unit could qualify for semiannual or annual monitoring frequency. Conversely, if there were only a few leakless valves, the burden of identifying them and treating them differently would undoubtedly exceed the monitoring burden.

Comment: One commenter (A-90-20: IV-D-19) suggested that unsafe-to-monitor and difficult-to-monitor valves should be excluded from the percent leaking valves calculation. The commenter (A-90-20: IV-D-19) noted that because of the infrequent monitoring performed on these valves, unsafe-to-monitor and difficult-to-monitor valves should not be counted in the percent leaking valves calculation given in §63.168(e)(1). If all valves in this group are monitored in one period, the results could be very skewed in one direction or another, giving an unrealistic picture of the remaining valves in the process unit. These valves should be excluded from both the number of leaking valves (V_L) and total valves (V_T) terms. The commenter (A-90-20: IV-D-19) also thought that the verbiage for how to calculate V_L in paragraph (e)(3)(i) is hard to follow; an equation would be more helpful, along with some rewording of paragraphs (e)(3)(i) and (e)(3)(ii), which address nonrepairable valves.

Response: The equation as drafted in the proposed rule calculated the percent leaking in the population of valves monitored during that particular monitoring cycle. The EPA doubts that the commenter's concern is likely to arise in practice since the commenter can schedule monitoring of valves designated as "difficult-to-monitor" or "unsafe-to-monitor" to avoid this problem. There is no requirement to do this monitoring during a periodic monitoring cycle and in fact it is assumed that this monitoring would not be conducted during routine operations. Thus, it seems highly unlikely for a bias to be introduced. Moreover, since these valves are, by definition, unlikely to be moved frequently there is no reason to believe that these would have higher leak frequencies than the accessible valves. The EPA also suspects that there may have been some confusion on the part of the commenter between the terms "nonrepairable" and "difficult-to-monitor" and "unsafe-to-monitor". Thus, the commenter's suggestion to edit §63.168(e)(3) was not adopted; however, guidance material on the standard will include an equation for §63.168(e)(3) to assist with implementation.

5.1.8 §63.169: Pumps, Valves, Connectors, and Agitators in Heavy Liquid Service; Instrumentation Systems; and Pressure Relief Valves in Liquid Service

Comment: One commenter (A-90-19: IV-D-60) requested that the rule be modified to address situations where a potential leak is observed but subsequent monitoring shows repair is not required. The commenter (A-90-19: IV-D-60) expressed concern that the proposed rule did not indicate that remonitoring is not required. The commenter (A-90-19: IV-D-60) suggested that in such cases the equipment should be exempt from remonitoring for 90 days.

Response: The EPA assumes that the remonitoring referred to by the commenter would be the result of the reappearance of drips or other visible signs of seal leakage. Visible leakage from pump seals is generally indicative of seal wear and to prevent major seal failures, the seals should be repaired soon after the leakage is initially detected. If the situation described by the commenter is such that the pump is not repairable, the owner or operator can put the pump on the nonrepairables list and repair it at the next process unit shutdown. In such cases, the pumps would be exempt from remonitoring.

Comment: One commenter (A-90-19: IV-D-69) thought that for all components the rule should provide that if a potential leak is discovered the owner or operator has the option to assume that it is a leak and repair it and not have to monitor to confirm the leak. The commenter thought that it was illogical to provide this provision only for instrumentation systems.

Response: Special provisions were developed for instrumentation systems because of the physical difficulty of monitoring individual components in these systems and the nature of these systems would allow confirmation of successful repair as well as indication of the presence of a leak (such as a change in pressure or flow rate). Other components subject to this rule do not share these characteristics, and there would be no way to confirm that the leak was repaired.

Comment: One commenter (A-90-19: IV-D-60) requested that these provisions not apply to equipment where it can be demonstrated that the equipment would never be considered to be leaking when monitored by Method 21.

Response: The EPA believes that it is appropriate to retain the requirements to repair equipment with indications of leakage and the requirement is not burdensome. In many cases, these indications of potential leaks are indicative of pending major seal failure. Although equipment in heavy liquid service has much lower emission rates than equipment in light liquid or gas service, losses of process fluids to the environment should be minimized because it will ultimately be lost to the atmosphere or could contribute to groundwater contamination.

5.1.9 §63.170: Product Accumulator Vessels

Comment: Several commenters (A-90-19: IV-D-50; IV-D-74; IV-D-77) favored regulating product accumulator vessels under the provisions for process vents in subpart G and indicated that §63.170 should be eliminated.

Response: As discussed extensively in volume 2D of the BID, some of the equipment previously covered by this term is considered to be a process vent. The final standard has eliminated this overlap and the provisions in §63.170 now apply only to surge control vessels and bottoms receivers. These vessels do not meet the definition of a process vent (or a storage vessel) and have intermittent releases only. The EPA, therefore, concluded that retaining this equipment in subpart H would be consistent with the negotiated agreement.

Comment: One commenter (A-90-19: IV-D-108) argued that by incorporating the negotiated equipment leak rule into the HON, pharmaceutical manufacturers have become subject to a new and different standard for the vent emissions from product accumulators. The commenter (A-90-19: IV-D-108) urged the Agency to regulate these product accumulator vent emissions under the vent standards for the pharmaceutical source category and not subject a source to overlapping or contradictory standards.

Other commenters (A-90-19: IV-D-7; IV-D-39) presented similar arguments that the negotiation did not include point sources such as PAV's and that the negotiations did not address what performance would be achievable for pharmaceutical processes. Another commenter (A-90-19: IV-D-27) thought that it was unnecessary and undesirable to regulate PAV's in the equipment leak rule since these are more appropriately addressed under process vents. This commenter (A-90-19: IV-D-27) also argued that removing PAV's from subpart H would address the inequity which exists for batch processes in the proposed rule.

Response: The EPA believes that several clarifications to the final rule have addressed the commenters' concerns. First, as noted above, the overlap between process vents and equipment included in the proposed definition for PAV's has been eliminated. Of the original items included in the definition of PAV's, subpart H now only establishes requirements for surge control vessels and bottoms receivers. Second, the applicability for the non-SOCMI processes has been separated from that for the SOCMI processes. Subpart I now has the applicability for the non-SOCMI processes and subpart F has the applicability for SOCMI processes. Thus, for sources subject to subparts H and I, there are no control requirements for process vents.

5.1.10 §63.171: Delay of Repair

Comment: One commenter (A-90-19: IV-D-87) argued that the option of using delay of repair should include the examples cited in the proposed standard as well as an evaluation of the potential to cause any adverse effects to human health and the environment.

Response: Provisions for delay of repair have been a feature of the equipment leak standards in 40 CFR parts 60 and 61 since the beginning of the EPA's program. The EPA has provided this extension because it would be counterproductive to establish a requirement that would result in release of more emissions to repair the leaking component than would occur if the component was left unrepaired. The commenter's

(A-90-19: IV-D-87) suggestion that the potential for adverse health and environmental impacts also be a criterion for delay of repair is not appropriate for this rule. The residual risk standards to be established under section 112(f) would be more appropriate than this standard. It should also be noted that units that handle the acutely toxic HAP's, such as phosgene, are designed to permit rapid shutdown of the equipment on any indication of a leak and immediate repair.

The EPA believes that the provisions in §63.171 do provide delay of repair for any type of equipment. So, the EPA is not certain what the nature of the commenter's (A-90-19: IV-D-69) concern is.

Comment: One commenter (A-90-20: IV-D-19) recommended expanding the delay of repair provisions to include replacing any seal system with one that is expected to provide better performance. The commenter (A-90-20: IV-D-19) observed that the plant may wish to replace DMS systems or sealless pumps with more efficient systems, and this replacement should also be allowed. The commenter (A-90-20: IV-D-19) also noted that the replacement of single seal systems is generally not required so much as desired. The commenter (A-90-20: IV-D-19) thought that documentation of procedures describing how a replacement was determined to be actually required would be lengthy and burdensome.

Response: The provisions in §63.171(d) were revised to allow delay of repair for systems expected to achieve better performance. This suggestion was considered appropriate and provided delay of repair conditions equivalent to those provided for sources subject to the provisions of §63.176. The EPA would also like to clarify that the necessary documentation for use of this provision is merely that the pump cannot be repaired by normal procedures. While the EPA understands that there may be a number of options available and the owner or operator may elect seal replacement, it would be inappropriate to edit the language as suggested since that could result in feasible repairs not being done.

Comment: One commenter (A-90-19: IV-D-33) recommended revising §63.171(e) to apply to all equipment, not just valves, to recognize that stocks of some of the specialized equipment components may be depleted and not be available on short notice.

Response: The equipment leak provisions have been revised to apply this allowance to connectors. This allowance was not extended to other equipment because the quantity of other types of equipment (i.e., pumps, agitators or compressors) used at a facility is much smaller than the quantity of valves and connectors. Therefore, the possibility of the quantity needed to be stocked being incorrect is remote.

Comment: One commenter (A-90-19: IV-D-33) recommended that delay of repair provisions for pumps [§63.171(d)(2)] not require the repair to be completed within 6 months. The commenter (A-90-19: IV-D-33) argued that the time restriction could cause problems at plants that have infrequent maintenance shutdowns.

Response: The provisions of §63.171 allow delay of repair for three situations: (1) where a process unit shutdown is required; (2) where the equipment is isolated from HAP service; and (3) where a better performing seal system is going to be installed. The 6-month time limitation only applies in the last case. If repair is technically infeasible without a process unit shutdown, the delay is until the next process unit shutdown, which could be a delay of more than 6 months or less than 6 months depending on operations of the unit. Obviously, if the pump is removed from organic HAP service the delay can be as long as the owner or operator wishes to keep the pump out of organic HAP service. Since there are a number of options available in addition to the delay provided by §63.171(d), the EPA does not believe that the time restriction should be removed. If the time limit on this delay were removed, it is conceivable that someone could use this provision to avoid repairing a leaking pump altogether.

5.1.11 <u>§63.172: Closed-vent Systems and Control Devices</u>

<u>Comment</u>: Several commenters (A-90-19: IV-D-33; IV-D-56; IV-D-73; IV-D-77) (A-90-20: IV-D-19) advised that valves and connectors in closed vent systems should be subject to the same standards as regular valves and connectors, which allow delay of repair until the next process unit shutdown if such repairs cannot be made without a shutdown. One commenter (A-90-19: IV-D-73) declared that the delay of repair provisions in §63.120(f)(2) should be incorporated into §63.172. One commenter (A-90-19: IV-D-77;) also suggested that provisions should be added to allow less frequent monitoring in systems with low percentages of leaking components.

One commenter (A-90-19: IV-D-73) requested that the EPA conduct a comprehensive review of subparts G and H for requirements that could apply to the same equipment if they were part of a common control system. The commenter (A-90-19: IV-D-73) noted that the requirements should be consistent, and contradictions should be eliminated. The commenter (A-90-19: IV-D-73) recommended that the exclusions in subpart G for bleeds, drains, pressure vacuum vents, etc. be incorporated into subpart H. The commenter (A-90-19: IV-D-73) also requested that §63.160(d)(3) include an override of subpart G if delay of repair provisions are applied to closed vent systems. A similar comment was made by another commenter (A-90-19: IV-D-97) who recommended that all the closed vent system provisions be consolidated in subpart H. The commenter (A-90-19: IV-D-97) noted that this change would reduce any confusion over the requirements and would reduce the recordkeeping and reporting costs.

<u>Response</u>: The EPA agrees with the commenters' suggestions that it would be appropriate to have a consistent set of provisions for closed vent systems in the rule. A uniform set of provisions for closed vent systems will benefit both State and Federal enforcement programs and industry by both reducing review time and complexity of record systems. Because subpart G also included requirements for inspections

of equipment other than closed vent systems, the closed vent system provisions in subpart G were not consolidated into subpart H. The final rule now has the same requirements for closed vent systems in subparts G and H. The EPA believes that this approach provides the consistency requested by the commenters.

The EPA also reevaluated the provisions requiring annual Method 21 monitoring of closed vent systems. Closed vent systems in chemical plants and refineries are constructed of piping and connections and are operated at low pressures or under vacuum. An assessment of recent data and experience from implementation of existing standards under 40 CFR part 60 and part 61 showed that only rarely are leaking connectors and other equipment identified through the annual Method 21 inspections of closed-vent systems. As discussed in the preamble to the proposed rule (57 FR 62666 and 57 FR 62676), connectors have very low leak frequencies and once leak tight they remain leak tight. Consequently, the final rule only requires an initial Method 21 demonstration that all connections and other equipment in closed vent systems are operated with instrument readings less than 500 ppm and annual inspections for indications of leaks (visual, olfactory, or audible). The EPA believes that this requirement along with the requirement for flow indicators or car seals on by-pass lines that could divert emissions from the control device to the atmosphere will ensure emissions are controlled as required, while also minimizing unproductive effort.

Comment: One commenter (A-90-19: IV-D-75) indicated that the requirements for controlling certain equipment with a closed vent system and a control device results in the equipment being subject to the process vent provisions in subpart G. The commenter (A-90-19: IV-D-75) recommended that the final rule should provide the owner or operator the option of complying with either the requirements in subpart G or those in subpart H.

Response: The EPA suspects that there may be a misunderstanding of the meaning of the term "process vent".

A process vent means a gas stream that is continuously discharged during the operation of the unit from an air oxidation reactor, other reactor, or distillation unit within a SOCMI chemical manufacturing process unit. Process vents include vents from distillate receivers and product separators. Process vents include gas streams that are discharged directly to the atmosphere and gas streams discharged to the atmosphere after diversion through a product recovery device. Thus, it is not possible for equipment subject to subpart H to be considered subject to the provisions in subpart G merely because it has been connected to a closed vent system. For something to be subject to the process vent provisions it must meet the definition of a process vent.

Comment: One commenter (A-90-19: IV-D-33) argued that the control device performance should not be evaluated on the basis of all organics routed to it, just HAP control performance.

Response: The provisions in §63.172 were edited to allow the owner or operator to demonstrate the performance based on either organic HAP's or VOC .

5.1.12 §63.173: Agitators in Gas/Vapor Service and in Light Liquid Service

Comment: One commenter (A-90-19: IV-D-56) alleged that the proposed rule expanded the list of equipment subject to the rule by adding agitators and instrumentation systems. The commenter (A-90-19: IV-D-56) opposed this extension because it goes beyond the negotiated agreement without providing reasonable justification.

Response: The Committee developed the provisions for instrumentation systems and agitators. The preamble to the proposed rule describes the factors considered by the Committee and the reasons for including this equipment in the standard (see December 31, 1992, Federal Register [57 FR 62080]). The commenter (A-90-19: IV-D-56) may have misinterpreted discussions comparing the negotiated rule to existing equipment leak standards in 40 CFR parts 60 and 61.

Agitators are not subject to the provisions in the earlier standards, and the Committee elected to add this equipment to the scope of the negotiated rule.

Comment: Several commenters (A-90-19: IV-D-73; A-90-20: IV-D-9; IV-D-12)) requested that agitators equipped with double seals be exempt from monitoring, as are pumps. Another commenter (A-90-20: IV-D-19) suggested that exemptions from routine monitoring be provided for better agitator designs and provisions for unsafe to monitor equipment be added.

Response: The final standard for agitators includes provisions for agitators equipped with dual seals and for agitators equipped with a closed vent system. Agitators with no externally actuated shaft are exempt from the monitoring requirements of the standard. Since the commenter (A-90-20: IV-D-19) did not provide examples of situations where monitoring of the agitator would be unsafe, no provisions were added to exempt these situations.

5.1.13 §63.174: Connectors in Gas/Vapor Service and in Light Liquid Service

Comment: One commenter (A-90-19: IV-D-56) requested that the final rule include provisions allowing a facility to make connectors leak-proof by welding them and, therefore, to receive credit in the calculation of percent leaking.

Response: The negotiated rule does provide credit for removing connectors from a process. These provisions are in §63.174(i) of subpart H.

Comment: One commenter (A-90-20: IV-D-19) objected to the proposed requirement in §63.174(b)(4) arguing that the requirement to monitor welds used to reduce the number of connectors in a process unit is unnecessary and requires regulation before applicability. The commenter (A-90-20: IV-D-19) noted that industry practice when welding any type of equipment is to test the weld integrity before placing the equipment back in service. The proposed requirement would not provide for any additional protection to the environment, and would greatly increase the recordkeeping burden of a process

unit. In addition, this section requires both testing and recordkeeping before any valid applicability date.

Response: The provisions in proposed §63.174(b)(4) were intended to apply to the optional credit for removed connectors, and not to create an additional recordkeeping burden on sources that did not elect to use the credit. The provision allowed credit back to the date of proposal because at the time of the negotiation some Committee members advocated providing the maximum opportunity to generate credits. As this comment showed it was possible to read the proposed provisions in §63.174(b)(4) as not being voluntary, the EPA redrafted this provision and moved it after the calculation of percent leaking connectors. It is hoped that these editorial changes will make the provision clearer.

Comment: One commenter (A-90-19: IV-D-60) requested that the rule provide the option of calculating percent leaking on a plant-wide basis or a process unit basis. The commenter (A-90-19: IV-D-60) also requested that the rule allow the owner or operator to group process units that are in similar service for calculating percent leaking. The commenter (A-90-19: IV-D-60) thought this would assist in providing meaningful leak rate data.

Response: This comment is addressed under the valve standard.

Comment: One commenter (A-90-19: IV-D-68) argued that the proposed LDAR requirement for connectors should be eliminated from the final rule because the proposed requirement is above the floor for equipment leaks and will result in negligible emission reductions. The commenter (A-90-19: IV-D-68) also argued that this program would require 4,000 to 5,000 man-hours to implement in a process unit with about 50,000 components. Therefore, the commenter (A-90-19: IV-D-68) concluded that this is not a cost-effective approach to emissions reduction. For similar reasons, another commenter (A-90-19: IV-D-77) recommended that only an annual inspection for leaks based on visual, auditory, or olfactory detection should be required for connectors.

Response: The EPA does not agree with the commenter's (A-90-19: IV-D-68) view that a LDAR program for connectors is inappropriate and is not a cost-effective means of emissions reduction. The commenter (A-90-19: IV-D-68) did not provide the basis for the emission estimates used in concluding that the LDAR program for connectors was not cost-effective. The EPA believes that it is important to include process equipment connectors in the LDAR program because emissions from these connectors can be significant. The revised SOCMI average factors show that the factor for connectors is one-half to one-third of the factors for valves in light liquid and gas service. Because of the large number of connectors in process units, connector emissions could easily exceed emissions from valves and pumps. In fact for the number of components reported by the commenter (A-90-19: IV-D-68), the revised SOCMI average factors indicate that connectors contribute roughly 55 percent of total emissions and valves contribute 40 percent. While the average factors may not be indicative of emission rates for the commenter's (A-90-19: IV-D-68) units, they do indicate that on a national basis it is important to consider control measures for connectors. The EPA considers the negotiated rule, as well as the connector LDAR program, to be a cost-effective means of reducing emissions from equipment leaks. Since the standard allows less frequent monitoring for better performing units, the EPA does not believe that the provisions will impose unproductive costs on units that perform better than the average units.

The suggestion that the connector LDAR program be replaced with an annual inspection program for indications of leaks was rejected for the same reason. The EPA believes that the program can be cost-effective. Additionally, it would not be consistent with the negotiated agreement to remove the connector LDAR program without providing an equivalent reduction from other items of equipment. The second commenter (A-90-19: IV-D-77) did not suggest any substitute control measures or provide reasons for the view that emissions were trivial.

Comment: One commenter (A-90-19: IV-D-77) requested that the final rule allow the owner or operator to adopt a reduced monitoring frequency if it can be demonstrated that the source qualifies for this frequency. Another commenter (A-90-20: IV-D-14) suggested that facilities be allowed to implement the less frequent monitoring provisions of §63.174(b) provided that the percent leaking connectors criteria were achieved during the two most recent monitoring periods. Another commenter (A-90-20: IV-D-19) recommended that the EPA should allow an owner or operator to skip to monitoring connectors every four years if the initial monitoring shows greater than 0.5 percent leaks. This commenter (A-90-20: IV-D-19) recommended that the connector standard use a consistent approach to that in the pump and valve standard.

Response: The EPA agrees that the final rule should allow owners or operators the flexibility to adopt lower leak frequency monitoring schedule provided there is documentation that the criteria for the less frequent monitoring have been met. The provisions in §63.174(b) have been revised to clarify this point. This clarification does not, however, allow an owner or operator to elect to use reduced monitoring frequencies without Method 21 data to document achievement of lower leak rates for the required periods. The suggestion by commenter (A-90-20: IV-D-19) that the connector standard allow an owner or operator to elect to meet requirements of a later phase would require restructuring the provisions in the connector standard to specify a lower leak frequency for the quadrennial monitoring frequency.

Comment: One commenter (A-90-19: IV-D-92) suggested that the connector standard incorporate the skipped-period concepts of §60.483-2 of subpart VV. The commenter (A-90-19: IV-D-92) recommended that if the leak rate is less than 2 percent, the facility could skip one monitoring period, for semiannual monitoring. If, after two consecutive monitoring periods, the leak rate is less than 2 percent, the facility could skip three monitoring periods, for annual monitoring.

Response: Although there is merit to consistency with concepts in existing programs, it must be noted that the monitoring frequency and the criteria suggested differ significantly from the levels agreed to by the negotiating committee. For example, the commenter suggested that quarterly monitoring would be appropriate for units exceeding the 2 percent leakage rate. The agreement was for annual monitoring for leak frequencies greater than 0.5 percent and biennial monitoring if less than 0.5 percent. The EPA does not believe that it would be appropriate to add the commenter's suggestion as an optional compliance mechanism.

Comment: A number of commenters (A-90-19: IV-D-33; IV-D-69; IV-D-73; IV-D-77) (A-90-20: IV-D-19) recommended that the definition of "inaccessible connectors" be made the same as the definition of "difficult to monitor" valves. The commenters (A-90-19: IV-D-33; IV-D-69; IV-D-73; IV-D-77) (A-90-20: IV-D-19) expressed concern that the requirement to monitor connectors which can be reached only via a 25-ft portable scaffold presents safety concerns and is not a cost-effective means of reducing emissions. One commenter (A-90-19: IV-D-77) further noted that piping is generally constructed above other equipment and the area is covered with gravel; therefore, rolling scaffolding would not be appropriate. The commenter (A-90-19: IV-D-77) added that, because of flammability concerns, powered vehicles are not allowed in these areas. Therefore, the commenter (A-90-19: IV-D-77) concluded that the only portable scaffolding that could be used is field-erected scaffolding. The commenter (A-90-19: IV-D-77) estimated that the cost-effectiveness of emission reduction achieved if the percent leaking was 0.5 percent would be $2.7 million/ton.

Similar comments were made by one commenter (A-90-20: IV-D-10), who was a member of the committee. This commenter (A-90-20: IV-D-10) indicated that the type of portable scaffolding envisioned was a wheeled scissor lift platform that would sit on the ground below the monitoring or repair location. The commenter (A-90-20: IV-D-10) reported that the

issue of stable ground was discussed and it was understood that the scaffolding would not be used on grassed or unstable stone covered areas below pipelines. The commenter (A-90-20: IV-D-10) also noted that raising an individual vertically is not the only safety issue when trying to reach an inaccessible connector. Other safety issues include: (1) danger of damaging electrical cables and piping; (2) limitations on access due to curbs and process equipment spacing; and (3) dangers of fire and explosions in some process areas. This commenter (A-90-20: IV-D-10) requested clarification of the term portable scaffold and that issues of safe access be addressed.

Response: The EPA agrees with the commenter (A-90-20: IV-D-10) that the committee discussions were clear that implementation of the monitoring provisions was not to endanger maintenance or monitoring personnel's lives. The committee specifically discussed and agreed that use of scissor lifts on gravel or grass was not intended as well as use of gas-powered cherry pickers or non-rated electrical motors in areas with an explosion hazard.

The EPA believes that these concerns expressed by the other commenters (A-90-19: IV-D-33; IV-D-69; IV-D-73; IV-D-77) (A-90-20: IV-D-19) are addressed by the provisions in §63.174(h)(1). This paragraph has been expanded to include additional situations where connectors are considered to be "inaccessible connectors," such as elevating monitoring personnel two or more meters above a support surface, or erecting a scaffold.

The commenters' (A-90-19: IV-D-33; IV-D-69; IV-D-73; IV-D-77) (A-90-20: IV-D-19) suggestion that the definition of "inaccessible" be made the same as "difficult to monitor valves" is not consistent with the committee's desire to have connectors monitored where it can be safely conducted. Revising the definition to be consistent with the "difficult to monitor valve" definition would not be consistent with the intent of the negotiated standard since there are situations

where a wheeled scissor lift, platform, or hydraulic scaffolding could be used on a paved area within a unit.

Comment: One commenter (A-90-20: IV-D-19) thought that the EPA should allow switching between connector monitoring alternatives in §63.174(c)(1)(i) and 63.174(c)(1)(ii) without the penalty of more frequent monitoring.

Response: The two connector monitoring options were provided to address concerns of some committee members constituents about the recordkeeping burden of the follow-up monitoring in §63.174(c)(1)(i). Since the purpose of the follow-up monitoring, at least in part, is to establish the nonrepairable pool, an alternative provision was provided for those companies willing to forego the nonrepairable pool in exchange for less burdensome administrative costs. Section 63.174(c)(1)(ii) allows an owner or operator to treat disturbed connectors like any other connector in the unit for the purposes of monitoring in exchange for setting the nonrepairables pool to zero. The committee also agreed to allow an owner or operator to switch among alternatives provided the new alternative is started with an annual program. This restriction was included to prevent an owner or operator selecting the alternative most favorable to him during that particular monitoring cycle. Commenter's (A-90-20: IV-D-19) suggestion to remove the penalty of more frequent monitoring is not appropriate.

Comment: One commenter (A-90-19: IV-D-89) recommended that a section for difficult-to-monitor connectors should be added to §63.174. The commenter (A-90-19: IV-D-89) asserted that it is not uncommon to have connectors positioned in such a manner that elevation of monitoring personnel more than 2 meters above a support surface would be required.

Response: Difficult-to-monitor valves require monitoring as often as possible and at least annually. The commenter's concerns are addressed by the provisions for inaccessible connectors in §63.174(h) which exempt connectors that are greater than 2 meters above a support surface and that cannot be reached using portable scaffolding.

Comment: One commenter (A-90-20: IV-D-19) suggested that unsafe-to-monitor, unsafe-to-repair and inaccessible connectors should be excluded from the percent leaking connectors calculation. The commenter (A-90-20: IV-D-19) expressed concerns that because of the infrequent monitoring performed on these connectors, unsafe-to-monitor and unsafe-to-repair connectors results could be very skewed in one direction or another, giving an unrealistic picture of the remaining connectors in the process unit. These connectors should be excluded from both the number of leaking connectors (C_L) and total connectors (C_T) terms. Additionally, since inaccessible connectors are exempt from monitoring, they should be explicitly exempt from the percent leaking connector calculation as well.

Response: The EPA does not think that the commenter's (A-90-20: IV-D-19) suggested clarifications are necessary in some cases or appropriate in other cases. First, as the commenter noted, inaccessible connectors are exempted from monitoring. Therefore, it is not possible that there would ever be an instance when they are monitored and could be included in the calculation of percent leaking. The EPA does not understand the need for an explicit statement to that effect. Second, unsafe to monitor connectors are only monitored during periods in which monitoring can be safely conducted and there is no specified frequency for this monitoring. Given the large number of connectors associated with typical SOCMI process units, it is hard to envision a situation where monitoring of the unsafe-to-monitor connectors could significantly affect the calculation of percent leaking connectors. Third, unsafe-to-repair connectors are a subset of the nonrepairable connectors and to delete these from the calculation of percent leaking could allow a unit to exclude more than the allotted number of nonrepairables. It would not be appropriate to exclude them as suggested by the commenter.

5.1.14 §63.175: Quality Improvement Program for Valves

Comment: Several commenters (A-90-19: IV-D-33; IV-D-73) (A-90-20: IV-D-19) suggested that the QIP option should be

available on an as-needed basis or within a fixed time period after the process units percent leaking valves equals or exceeds 2 percent. The commenter (A-90-19: IV-D-73) argued that such an approach is appropriate because the need for this option may not be apparent within the first year of phase III.

Response: The committee restricted the availability of this QIP due to concerns that it could be used to delay improving performance. Some committee members were concerned that the QIP would never result in improved performance because the QIP allows the owner or operator to continue quarterly monitoring and provides 2 years to gather data and identify better performing equipment. It was also thought that the need for the program would be apparent by the first year of phase III and that sources should have improvements in performance as experience is gained with the program. As an owner or operator may elect to use the QIP during the first year of phase III regardless of whether the process unit has 2 percent or more leaking valves, every owner or operator of a source has an opportunity to elect the program. The provisions in §63.175(c) also allow an owner or operator to continue a QIP program after the process unit has fewer than 2 percent leaking valves.

The EPA would like to recommend that owners or operators of sources consider developing their own quality assurance/quality control program that could be used to avoid election of the formal program in §63.175. The EPA believes that a quality control program that is outside the scope of the provisions in subpart H would have lower recordkeeping costs and be more flexible to the needs of the facility.

Comment: One commenter (A-90-20: IV-D-19) thought that the number of valves in the trial evaluation program of a QIP should be clarified to include only those valves needing replacing. Section 63.175(e)(6)(ii) should include only those valves that have higher leak rates and need to be replaced. There would be no need to evaluate or replace valves that work; only those that are inadequate and need replacing.

Response: The EPA would like to make clear that the purpose of the trial evaluation program is to evaluate the feasibility of using in the process unit subject to the QIP those valve designs or technologies that others have identified as having low emission performance. The requirement to evaluate the lesser of 1 percent or 20 valves for single process units (or 1 percent or 50 valves for groups of process units) is not excessive. The trial evaluation program is not directed towards valve replacement, but towards determining the feasibility of application of other technologies in the specific process unit.

Comment: One commenter (A-90-20: IV-D-19) argued that contractors should not be included in the calculation of the total number of employees at a facility. The commenter (A-90-20: IV-D-19) reasoned that contractor personnel are temporary, and their number at any given time is variable. The commenter noted that it is unlikely that a facility would use contract personnel to get below the cutoff for trial evaluation--the benefits of this are too small. The commenter also argued that the determination should refer to the number of employees at the facility site, not the entire corporation.

Response: The intent of this provision was to reduce the impact of the requirement on small businesses within this industry. Since use of this provision would be easier on small businesses if it was not necessary to document the number of temporary contract personnel on site, the requirement to consider contract personnel was removed. The commenter's suggestion that the number of employees be specified on a facility site basis is not consistent with the intent to provide some relief for small businesses. This suggested edit was not made.

Comment: One commenter (A-90-20: IV-D-19) argued that the EPA should not require facilities to positively identify superior performing equipment technologies within 24 months of the start of the QIP. This requirement inaccurately assumes that such a technology can be identified in the first trial evaluation. The commenter (A-90-20: IV-D-19) observed that

this requirement is not consistent with the concept that performance trials may need to continue for some time. The commenter (A-90-20: IV-D-19) requested that the EPA remove this inconsistency.

Response: The intent of this requirement is for the owner or operator to begin trial evaluations of the technologies that had been identified and not to wait for the perfect solution. The provisions of §63.175(e)(6)(iv) require that the evaluations begin no later than 18 months after the start of Phase III and be conducted for a minimum of 6 months. It should be noted that the trial evaluation program is only required for sites that failed to identify superior performing technologies during the data analysis phase of the QIP.

5.1.15 §63.176: Quality Improvement Program for Pumps

Comment: One commenter (A-90-20: IV-D-19) thought that the number of pumps in the trial evaluation program of a QIP should be clarified to include only those that need replacing. Section 63.175(e)(6)(ii) should include only those pumps that have higher leak rates and need to be replaced. There would be no need to evaluate or replace pumps that work; only those that are inadequate need replacing.

Response: The EPA would like to make clear that the purpose of the trial evaluation program is to evaluate the feasibility of using in the process unit subject to the QIP those pump seal designs or technologies that others have identified as having low emission performance. The requirement to evaluate the lesser of 1 percent or 2 pumps for single process units (or 1 percent or 5 pumps for groups of process units) is not excessive. The trial evaluation program is not directed towards pump replacement, but towards determining the feasibility of application of other technologies in the specific process unit.

5.1.16 §63.177: Alternative Means of Emission Limitation

Comment: One commenter (A-90-19: IV-D-56) urged the EPA to expand these provisions so that they will apply to all sections of the rule. The commenter (A-90-19: IV-D-56) noted that by providing alternative compliance options for design,

equipment standards, and work practices, operational flexibility will be enhanced.

Response: The EPA believes that the provisions in §63.6(g) of the general provisions and the provisions in this section already provide the flexibility the commenter is requesting. Since the commenter did not provide specific details explaining the unfilled need, it is not possible for the EPA to address the commenter's concern.

Comment: One commenter (A-90-20: IV-D-19) requested that the EPA clarify §63.177 to allow use of an alternative means of emission limitation before the EPA has approved or disapproved the alternative. The commenter (A-90-20: IV-D-19) recommended this change be made to provide consistency with the Benzene Waste NESHAP (40 CFR part 61, subpart FF).

Response: The EPA does not believe that it is necessary to add language to §63.177 that will allow owners or operators at their own risk to install and operate alternative control measures, pending approval by the Administrator. Addition of such language does not provide owners and operators with any rights that they did not otherwise have. As discussed in the January 7, 1993 FEDERAL REGISTER clarifying amendments to the Benzene Waste NESHAP (58 FR 3072), if the owner choices to install or implement an alternative means of emission limitation prior to approval and it is determined that the measure does not achieve the emission limitation, the owner may be cited for noncompliance with the applicable requirement.

5.1.17 §63.178: Alternative Means of Emission Limitation for Batch Processes

Comment: Two commenters (A-90-20: IV-D-20; IV-D-27) recommended modification of these provisions to allow vacuum as well as pressure testing. One commenter (A-90-20: IV-D-20) stated that in some cases vacuum testing will be easier because it can be done as part of the inerting operation prior to beginning the batch operation. The other

commenter (A-90-20: IV-D-27) reported that vacuum testing can be accomplished on some systems without adding equipment.

Response: The EPA would like to clarify that the provisions of subpart H do not apply to equipment in vacuum service. If a process is operated under a vacuum, there is no potential for loss of process fluids to the atmosphere through seal failures in equipment such as valves. The EPA agrees that vacuum testing for pressure rise should be allowed. The provisions in §63.178(b) and §63.180(f) have been revised to include vacuum testing.

Comment: Two commenters (A-90-20: IV-D-6; IV-D-27) stated that a literal interpretation of the proposed §63.178(b)(1) would require pressure testing each time a seal is broken during production of the same intermediate or product and even during a process run. One commenter (A-90-20: IV-D-6) asserted that batch processes in the pharmaceutical industry, in general, do not have dedicated batch product trains. The commenter (A-90-20: IV-D-6) added that most process trains are set up to receive feed through a manifold system which necessitates quick hose connection and disconnection in order to allow receipt of varying feed material as the process dictates. The commenter (A-90-20: IV-D-6) requested confirmation that the intent of the provisions in §63.178(b)(1) is to require pressure testing only when the equipment is reconfigured to produce a different product or intermediate. One of the two commenters (A-90-20: IV-D-27) suggested specific language for clarification of the rule.

Response: The intent with these provisions was to require pressure-testing each time the equipment was reconfigured for production of another product or intermediate. Pressure testing of routine seal breaks, which are not part of reconfiguration to produce a different product, was not envisioned. If the committee had intended pressure-testing of routine seal breaks the language in §63.178(b)(1) would not have required pressure testing "before organic HAP is first fed to the equipment". Additionally, the

last sentence of §63.178(b)(1), which provides that there shall be a minimum of one test per year, would not have been considered necessary if the committee had envisioned routine seal breaks as being subject to pressure testing. Section 63.178(b)(1) has been revised to clarify that pressure testing is not required for routine seal breaks.

Comment: One commenter (A-90-20: IV-D-19) asserted that the repair requirements for batch processes failing a pressure test are not realistic for those process units that contain material during the test. The commenter (A-90-20: IV-D-19) reported that batch equipment can sometimes be reconfigured for different products without disturbing all of the equipment or draining the process lines. The commenter (A-90-20: IV-D-19) suggested that the language in §63.178(b)(4) revised to refer to startup of the process or the second failure.

Response: Because the pressure testing requirement is for new or disturbed equipment the committee language was drafted assuming that the new equipment would not be in HAP service at the time of the first test. The committee thought that if the reconfigured equipment leaked the problem should be addressed before the equipment is put into service. During the committee discussions it was not envisioned that this restriction could be interpreted as applying to other equipment in the portion of the equipment train that was not tested. Since there could be ambiguity regarding the requirement, the provisions in §63.178(b)(4) have been revised to clarify the intent.

Comment: A commenter (A-90-20: IV-D-27) requested clarification that the proposed pressure testing procedure is a minimum requirement, and that equivalent or more rigorous testing should also be acceptable. The commenter (A-90-20: IV-D-27) specifically suggested that testing over a shorter test period but at a higher test pressure should also be permitted.

Response: The provisions have been edited to allow owners or operators the option to conduct the test as

specified at proposal or show that the applicable FDA test has been conducted.

Comment: One commenter (A-90-19: IV-D-86) supported the alternative provisions for batch processes in §63.178. The commenter (A-90-19: IV-D-86) endorsed these provisions because they provide a means of complying without the onerous recordkeeping requirements of §63.181.

Response: While the EPA appreciates the commenters support, the EPA would like to make clear that there are recordkeeping requirements associated with §63.178. These requirements are located in §63.181(e) of the final subpart H. Owners or operators of batch processes that comply using the pressure testing provisions of §63.178(b) are also required to submit the reports specified in §63.182.

Comment: One commenter (A-90-20: IV-D-19) suggested that batch processes that use the pressure testing provisions of §63.178(b) should be exempt from the requirement for annual monitoring of the closed vent system. The commenter (A-90-20: IV-D-19) thought that it should be possible to test these systems during the pressure test of the batch equipment and monitoring of the closed vent system would be of no benefit.

Response: The provisions for closed vent systems were revised in response to comment and in light of data on the leak frequency of equipment in these systems. Since the final provisions of §63.172 do not require an annual monitoring of closed vent systems, it is not necessary to provide an exemption for batch equipment that pressure test the system. See section 5.1.11 of this document for detailed discussion.

Comment: One commenter (A-90-20: IV-D-19) thought that the alternative standard for batch provisions should state that it is permissible for an owner or operator to switch among the alternatives in paragraphs (b) and (c).

Response: As drafted in the proposed standard there is no restriction on the use of alternatives. However, due to the fundamental differences between the two alternatives, switching among the alternatives does not appear to provide significant advantages to the source owner or operator. Since

the committee did not discuss restricting the ability to switch among the alternative, language has been added to §63.178(b) to permit that.

5.1.18 <u>§63.179: Alternative Means of Emission Limitation for Enclosed-Vented Process Units</u>

<u>Comment</u>: Two commenters (A-90-19: IV-D-26) (A-90-20: IV-D-19) argued that if the equipment is enclosed and vented as specified, it should be exempt from all monitoring requirements in the regulation, as well as the requirements for visual inspections and equipment standards.

<u>Response</u>: The language in §63.179 was drafted to exclude these units from the monitoring and visual inspection requirements. Since these process units must be contained in a structure operated under a vacuum and vented to a control device, the EPA agrees that exemption from the equipment standards would be appropriate. The language in §63.179 has been revised to exempt enclosed vented units from the requirements of §§63.173 through 63.178. Owners and operators electing to use this provision are still subject to the recordkeeping and reporting requirements of §63.181 and §63.182.

<u>Comment</u>: One commenter (A-90-19: IV-D-86) recommended that enclosed equipment vented to a control device should be exempted from the monitoring requirements applied to the equipment.

<u>Response</u>: The EPA believes the standard provides this as an option for compliance for equipment where this option is a realistic alternative. Since the commenter did not specify the type of equipment for which this alternative was desired, the EPA has no way of determining if changes are necessary or appropriate.

5.1.19 <u>Repair Procedures</u>

<u>Comment</u>: Two commenters (A-90-19: IV-D-33) (A-90-20: IV-D-4) recommended that the proposed repair intervals (i.e., irst attempt at repair within 5 calendar days and repair within 15 calendar days) be expressed in terms of working days in order to facilitate scheduling and reduce overtime

operating costs. These commenters (A-90-19: IV-D-33) (A-90-20: IV-D-4) noted that at some facilities maintenance staff does not work 24-hour shifts and some facilities only operate on a 5-day work week. The commenters (A-90-19: IV-D-33) (A-90-20: IV-D-4) indicated that their suggestion would reduce the burden of the rule on facilities, particularly small facilities. One commenter (A-90-19: IV-D-33) also expressed the opinion that the definition of "days" in the General Provisions for part 63 would override any definitions of days provided in subpart H. Therefore, the commenter (A-90-19: IV-D-33) requested that the final rule explicitly state each place where the term "working days" can be used.

Response: The two commenters are in effect requesting a longer repair interval. The length of the repair interval affects the emission reduction potential of the LDAR program. As discussed in the preamble to the proposed standard, the first attempt at repair is required as soon as practicable and no later than 5 days. Based on experience with the existing equipment leak standards, the EPA believes that 5 days should be sufficient time to schedule simple field repairs that do not require isolation of the equipment from the process. The standard also provides a 15 day interval for repair of equipment such as valves that do require isolation from the process. Since the committee did discuss the question of repair interval and retained the 5 calendar day/15 calendar day approach of the existing standards, it would not be appropriate to revise this as suggested.

The EPA would like to make clear the relationship between the General Provisions to part 63 (subpart A) and subpart H. Section 63.1(a)(1) of subpart A provides that individual subparts may include specific definitions in addition to those in subpart A as well as override definitions in subpart A. Thus, subpart H could define day to mean working day if that were appropriate for the provisions in subpart H. As discussed above, however, the EPA does not agree that it is appropriate to use working day in subpart H.

Comment: One commenter (A-90-19: IV-D-92) stated that there would be a serious problem if repair of leaks within 5 days was required. The commenter (A-90-19: IV-D-92) recommended that 15 days be allowed for repair.

Response: Subpart H specifies that a first attempt at repair must be made within 5 days and repair must be completed within 15 days. These requirements are consistent with those in the existing standards for equipment leaks - e.g., SOCMI equipment leaks NSPS in subpart VV of 40 CFR part 60 and Benzene equipment leaks NESHAP in subpart J of 40 CFR part 61.

Comment: One commenter (A-90-20: IV-D-4) noted that minor differences among similar standards results in confusion about the requirements and increases training and other implementation costs. The commenter (A-90-20: IV-D-4) suggested that the EPA establish consistent inspection procedures among the rules.

Response: The EPA believes that consistent procedures are used among the standards. These procedures are provided in Method 21 of appendix A to part 60.

5.2 IMPACTS ANALYSIS

Comments regarding national impacts are in chapter 7.0 of BID volume 2D.

5.3 APPLICABILITY

5.3.1 Definition of SOCMI

Comment: Several commenters (A-90-19: IV-D-32; IV-D-33; IV-D-34) noted that the list of SOCMI processes in subpart H differs from the list in subpart F. These commenters (A-90-19: IV-D-32; IV-D-33; IV-D-34) requested that the EPA make the two lists consistent. One commenter (A-90-19: IV-D-33) noted that the differences between the lists are principally due to glycol ethers (which are not listed in subpart H) and the listing of several non-SOCMI products. The commenter (A-90-19: IV-D-33) estimated that there are about 29 SOCMI chemicals that are on one of the two lists (14 additional chemicals on the SOCMI list in subpart F and 15 chemicals on the list in subpart H). This commenter (A-90-19: IV-D-33) also stated that there are 7 non-SOCMI chemical

products on the list in subpart F and 13 on the list in subpart H. This commenter (A-90-19: IV-D-33) recommended that in order to ease implementation, there should only be one SOCMI product list, and that list should be provided in subpart F so that subpart F would specify the applicability of both subparts G and H for SOCMI processes.

Response: The EPA agrees with the commenters and the final rule has the corrected combined list in section 63.106 of subpart F. The final SOCMI chemical list consists of 386 products. See memorandum *"Changes to the List of SOCMI Chemicals in the HON,"* from Julie Anne Probert, Radian Corporation, to Janet S. Meyer, EPA/SDB, February 4, 1994 for a discussion of the specific revisions to the chemical list.

Comment: One commenter (A-90-19: IV-D-33) submitted corrections to the CAS numbers for five compounds listed in §63.184 and noted there are duplications of some compounds through use of synonyms for several compounds.

Response: As a result of this comment, the CAS numbers were corrected and duplicate listings were removed. These corrections are discussed in the memorandum *"Changes to the List of SOCMI Chemicals in the HON,"* from Julie Anne Probert, Radian Corporation, to Janet S. Meyer, EPA/SDB, February 4, 1994.

Comment: Several commenters (A-90-19: IV-D-34; IV-D-77; IV-D-97) suggested that various aspects of the applicability determinations in subparts F and H be made identical. Several commenters (A-90-19: IV-D-34; IV-D-77) (A-90-20: IV-D-19) recommended that subpart H be modified to define applicability on the primary product basis used in subpart F. These commenters (A-90-19: IV-D-34; IV-D-77) (A-90-20: IV-D-19) thought the language in subpart F is much more definitive than the language in subpart H. Another commenter (A-90-19: IV-D-97) recommended that subpart H refer to subpart F applicability and the specific applicability section in subpart H be deleted.

Response: As discussed in BID volume 2D, the applicability for SOCMI is now defined in subpart F. All

specification of applicability has been removed from subpart H.

5.3.2 Definition of Non-SOCMI Processes

Comment: Several commenters (A-90-19: IV-D-33; IV-D-71; IV-D-77; IV-D-86; IV-D-97) argued the seven non-SOCMI processes should be regulated separately from the SOCMI processes. The commenters (A-90-19: IV-D-33; IV-D-71; IV-D-77; IV-D-86; IV-D-97) argued that covering the non-SOCMI categories in more than one section 112(d) standard would result in potentially overlapping regulations, which would increase the burden to the regulated industry and create confusion for regulatory agencies. One commenter (A-90-19: IV-D-77) suggested that, at the very least, the EPA should move the non-SOCMI applicability requirements to the subpart reserved for these source categories.

Another commenter (A-90-19: IV-D-34) argued that regulation of the non-SOCMI categories should be deferred until rules for the other emission points in these categories are issued. The commenter (A-90-19: IV-D-34) thought that this would avoid piecemeal regulation of the non-SOCMI categories.

Response: The EPA agrees with the commenters' suggestions for reorganization of the regulatory provisions into separate subparts. The applicability provisions for the non-SOCMI processes have been placed in subpart I. Subpart I refers to subpart H for the substantive requirements. Subpart I also contains revised definitions for some of the non-SOCMI processes. The definitions were revised to specifically identify the intended processes and to directly correspond to the categories listed in the source category list (57 FR 31576). The EPA expects that these changes will minimize the possibility for confusion and development of overlapping regulations. The EPA does not agree with the suggestion to defer the applicability of the equipment leak standard to the non-SOCMI processes until requirements for the other emission points are issued. This change suggested by

the commenters is not consistent with the spirit of the negotiated agreement.

Comment: One commenter (A-90-19: IV-D-77) recommended that the final rule should include appropriate criteria for determining applicability for the non-SOCMI categories. The commenter (A-90-19: IV-D-77) asserted that the criteria used for SOCMI processes are not well suited to specialty, intermediate, or pharmaceutical processes where the intended product can be a relatively minor portion of the total mass output. In other cases, the commenter (A-90-19: IV-D-77) agreed that the SOCMI criteria were appropriate.

Response: The EPA agrees with the commenter that in the case of several of the non-SOCMI categories the criteria for the SOCMI processes are not appropriate. The applicability for the non-SOCMI processes is now specified in subpart I. Thus, there should no longer be any implication that the criteria used for SOCMI apply to these processes.

Comment: One commenter (A-90-19: IV-D-92) requested clarification of the definitions of "miscellaneous butadiene use" and "chlorinated hydrocarbon use." The commenter (A-90-19: IV-D-92) stressed that the definitions implied production.

Response: The EPA agrees with the commenter. Because the processes grouped under these terms used these chemicals to produce other chemicals, the definitions have been revised to more specifically identify these processes.

Comment: One commenter (A-90-19: IV-D-26) argued that the proposed definition of "pesticide production" defines a source category that is broader than any category in the agricultural chemical production industry grouping identified in the List of Source Categories (57 FR 31576), or in the Schedule for Promulgation of Emission Standards (57 FR 44147). The commenter (A-90-19: IV-D-26) noted that only five of the source categories listed in 57 FR 31576 or 57 FR 44147 were identified as being specifically regulated by the HON equipment leak standard. The commenter (A-90-19: IV-D-26) reasoned that the proposed definition would include processes

that are not producing one of the listed agricultural chemical products identified as a source category under §112(c) of the Act. The commenter (A-90-19: IV-D-26) noted that if the EPA wants to update the source category list, then the EPA must comply with statutory requirements to include only categories of major sources and area sources where a finding of adverse health effects has been made. The commenter (A-90-19: IV-D-26) recommended that the definition of pesticide production in subpart H be modified to regulate equipment leaks only from the production of Captafol, Captan, Chlorothalonil, Dacthal™, and Tordon™. Another comment (A-90-19: IV-D-111) questioned whether formulation of pesticide products was subject to the negotiated rule.

Response: The definition for pesticide production in proposed subpart H was developed in the regulatory negotiation before creation of the source category list. The source category list and schedule (57 FR 31576 and 57 FR 44147) identifies the pesticide production processes that the EPA had information on at the time of the negotiations on the equipment leak standard. Therefore, subpart H is being applied only to the five production processes identified in the source category list (production of Captafol, Captan, Chlorothalonil, Dacthal™, and Tordon™). As the EPA obtains information on other pesticide processes, these processes will be added to the source category list in the future and standards will be developed for these categories. During these separate rulemakings the EPA will consider what the appropriate control requirements should be for the new source categories. It should not be assumed that the provisions of subpart H will be automatically applied to these categories.

The EPA would like to emphasize that the pesticide processes subject to the negotiated rule are producers of the active pesticide ingredient, and not formulators.

Comment: One commenter (A-90-19: IV-D-111) requested that a definition of "processing aid" be added to subpart H.

Response: The term "processing aid" is not used in the final subparts F, H, or I. Therefore a definition was not necessary.

Comment: One commenter (A-90-19: IV-D-71) suggested that if it is the EPA's intent that subpart H regulate fugitive emissions from all organic operations, then the list of processes must be expanded and the EPA must provide an additional opportunity for public comment.

Response: It is not the EPA's intent that subpart H regulate all organic operations. Subpart H is intended only to regulate listed items. The inclusion of the seven non-SOCMI processes was a product of the regulatory negotiation process.

5.3.3 Equipment Subject to Subpart H

Comment: One commenter (A-90-19: IV-D-92) argued that subpart H should only apply to equipment in greater than 10 percent VHAP service. The commenter (A-90-19: IV-D-92) indicated that such a change would limit the program to volatile organic materials, thereby eliminating inorganic and low-volatility substances such as polynuclear aromatic compounds.

Response: The commenter provided no supporting arguments regarding why the applicability level should be increased from 5 percent to 10 percent. The applicability level of 5 percent total VHAP was selected as part of the negotiation process. Because the list of chemicals being regulated in the rule does not include inorganic compounds, the rule does not apply to them.

Comment: One commenter (A-90-20: IV-D-27) supported the EPA's distinction between process and utility lines (57 FR 62660) and recommended that subpart H include language that explicitly exempts utilities and non-process lines. The commenter supported this distinction because heat transfer lines may include ethylene glycol and other VHAP's but typically will be impossible to monitor because of insulation.

Response: The EPA believes that explicit exemption of nonprocess lines and utilities should not be necessary.

First, applicability of the standard is clearly centered around process operations. Second, even if there were confusion regarding the first point, there would be no effect because insulated equipment is exempt from the monitoring requirement.

5.3.4 Miscellaneous

Comment: One commenter (A-90-19: IV-D-26) recommended that the language in §63.100(b)(2) be amended to clarify that the rule only applies to major sources. The commenter (A-90-19: IV-D-26) noted that the EPA had not made a finding of adverse health effects for any of the categories identified in the December 31, 1992 proposal. Thus, without the clarification that this rule applies only to major sources, the proposed rule far exceeds the statutory authority provided to the EPA under the Act.

Response: The standard applies to major sources only which is clearly stated in the final rule §63.100(b)(3) of subpart F. As indicated in the preamble to the proposed rule, the EPA did not have information on area sources in SOCMI and lacked the basis for making a finding of adverse health effects.

Comment: One commenter (A-90-19: IV-D-77) requested that the final rule provide some consideration of operating schedule for flexible operation units. The commenter (A-90-19: IV-D-77) noted that in some cases, the specified monitoring frequency is greater than the frequency of product changes within the chemical manufacturing process.

Response: The EPA believes that the commenter's concern has been addressed through two sets of changes made in the final rule. One of the two changes is to the applicability provisions for flexible operation units. The other change is a clarification of the monitoring requirements in subpart H.

First, in developing the final rule, the EPA reevaluated the proposed approach that a flexible operation unit would be subject only during those times the unit was producing a chemical listed in subpart F. Based on public comments and possible interaction with provisions of 112(g), the EPA

decided that the proposed approach would complicate compliance demonstrations for sources and enforcement agencies. The final rule requires flexible operations be assigned to a specific chemical manufacturing process based on anticipated use of the unit. For existing sources, the assignment is to be based on the expected use over the first five years following promulgation of the standard. For new sources, the assignment is to be based on the expected use in the first five years after initial startup.

Second, §63.180 of subpart H now specifies that monitoring can be performed under several different conditions. These conditions are when the equipment is: (1) in organic HAP service; (2) in use with an acceptable surrogate VOC which is not an organic HAP; or (3) in use with any other detectable gas or vapor.

Comment: One commenter (A-90-19: IV-K-80), who operates a pharmaceutical process that would be subject to subpart H, requested that the EPA allow compliance extensions for process changes to eliminate use of HAP's. The commenter (A-90-19: IV-K-80) plans to startup the new process about 3 months after they would have to comply with the monitoring requirements in subpart H.

Response: During the negotiations, there was no discussion of possibility of process changes to eliminate use of HAP's and how that should be considered in terms of compliance schedule. The regulations provide up to 3 years to install controls for other types of emission points, e.g. process vents. Three years were not given to equipment leak sources because there is no large capital expenditure; implementation of the rule consists primarily of labor costs. However, an analogous situation to installation of controls with regard to equipment leaks would be a process change that would eliminate the HAP's of concern that would cause a source to be subject to the HON. Such changes can typically involve significant reworking of equipment, e.g., reconfiguration, replacement, addition, or removal of equipment. Process changes take more time than a few months to effect, especially

considering planning, approval of permits, and in some cases approval by the Food and Drug Administration or other government entities.

In at least one situation, the Agency is aware of a pharmaceutical source making such a process change that would be subject to the HON for only a few months, until the change has been completed. The cost associated with monitoring and recordkeeping for the short amount of time the HON would apply has been estimated by the company to be about $100,000. This estimate is probably not unreasonable, but even if it were less, the Agency believes requiring a company to meet a standard for about 3 months (the length of time the company estimated that it would be subject to the HON prior to eliminating the HAP of concern), and incur the associated costs, is not warranted. It would not be fair to penalize a company that will be eliminating HAP emissions subject to the HON, if allowing a little more time to make the change is necessary.

In order to provide comparable time for a source to complete a process change, the Agency will allow that source up to 18 months after promulgation. This is a reasonable amount of time, as opposed to 3 years, given that sources that would have been subject to the equipment leak rules had an earlier opportunity to view the draft rules (56 FR 9315; March 6, 1991). Eighteen months is also the same schedule that the last group of process units become subject to the rules, in effect moving those units undergoing a process change to the last group.

This extension would be conditional upon the source successfully making the process change prior to (18 months after promulgation). This would be necessary so that a source could not claim it was making a change, and then not do so, only to gain an advantage over competitors by delaying the cost associated with the rule. A source would have no more than 18 months after promulgation of the HON to complete the process change. If, after 18 months, the source is still subject to the HON, it would be retroactively subject to

penalties for the time during the extension that it did not comply with the HON.

The source would still have to file an initial report with the EPA, describing the process change, the HAP's eliminated, and the expected date of cessation of operation of the current process.

5.4 COMPLIANCE DEMONSTRATIONS

5.4.1 Monitoring

Comment: Several commenters (A-90-19: IV-D-14; IV-D-15; IV-D-17; IV-D-18; IV-D-19; IV-D-20; IV-D-23; IV-D-24; IV-D-25; IV-D-27; IV-D-28; IV-D-40; IV-D-42) suggested that §63.180(b)(4) be modified to allow the use of the calibration gas best suited to the detector technology in use. These commenters (A-90-19: IV-D-14; IV-D-15; IV-D-17; IV-D-18; IV-D-19; IV-D-20; IV-D-23; IV-D-24; IV-D-25; IV-D-27; IV-D-28) contended that the requirement to use methane as the calibration gas precluded the use of photoionization detectors for measuring total volatile organics. Furthermore, the commenters (A-90-19: IV-D-14; IV-D-15; IV-D-17; IV-D-18; IV-D-19; IV-D-20; IV-D-23; IV-D-24; IV-D-25; IV-D-27; IV-D-28) indicated that the specification of methane was contradictory because the rule requires adjustment for response factors greater than 3.

Response: Method 21 has not been revised. Methane is specified as the calibration gas to identify methane as the sole reference gas for determining the response factors. If the leak detection instrument to be used has a poor response or no response to methane, then section 3.1.2 of Method 21 can still be cited as a valid justification for choosing a different calibration gas. If a calibration gas other than methane is used, then instrument readings must be converted to a methane basis, as specified in section 3.2 of Method 21. This conversion factor would be the ratio of the molecular weight of the calibration gas to the molecular weight of methane.

Comment: One commenter (A-90-20: IV-D-19) argued that the requirement in §63.180(b)(4)(i) for 0.2 ppm zero air will

increase the cost of compliance without any benefit. The commenter (A-90-20: IV-D-19) recommended that the specifications of Method 21 for zero air be used instead.

Response: The final standard uses the same definition of zero air as Method 21, 10 ppm. This requirement is better suited to the intent of the requirement for leak detection. The proposed requirement of 0.2 ppm reflected an earlier committee concern with obtaining better data for bagging studies.

Comment: Two commenters (A-90-19: IV-D-77) (A-90-20: IV-D-19) requested that the final rule allow background subtraction for leak determinations, where leaks are defined as 500 ppm by Method 21. Failure to allow subtraction of background makes the standard more stringent than existing standards.

Response: The final standard has been revised to allow subtraction of background readings. This adjustment was overlooked at the time the negotiated rule was drafted and does not represent an attempt to make the standard more stringent.

Comment: Several commenters (A-90-19: IV-D-73; IV-D-92) (A-90-20: IV-D-19) recommended deleting the requirement to calculate and use response factors to determine whether components are leaking. The commenters (A-90-19: IV-D-73; IV-D-92) (A-90-20: IV-D-19) stated that most response factors are less than 3, incremental benefit is small, and the program complication is immense. Several commenters (A-90-19: IV-D-69; IV-D-73) added that the equation in the Federal Register notice was incorrect and differed from the version agreed to by the committee. One of these commenters (A-90-19: IV-D-69) noted that the committee equation is only applicable to gas mixtures. For mixtures of liquids, the equation must be adjusted by the vapor pressure of each component.

Response: The EPA reevaluated this proposed requirement in light of these comments and the experience gained by chemical plants that have implemented the negotiated rule. Experience with the correction for response factors has shown

the proposed provisions to be significantly more burdensome than originally anticipated. Specifically, several facilities have reported that instead of quantifying 4 to 5 compounds in some streams they are quantifying 50 to 100 compounds. In some cases, owners or operators have elected to correct all instrument readings by the highest response factor for any compound in the process rather than undertake the effort associated with the stream specific corrections.

The EPA also reviewed the reasons the Committee originally considered requiring adjustment of screening values by response factors. The response factor adjustment originated in Committee discussions on studies to improve the emission estimates. (Response factors are used to correct instrument readings to indicate actual concentrations for developing emission estimates.) The appropriateness of adjusting screening values in the leak detection and repair provisions was not considered. These adjustments will not change the emission reductions achieved from implementing the standard. Therefore, the EPA believes that eliminating this provision does not change the effect of the standard and preserves the Committee's intent of minimizing unproductive effort.

The final standard requires the owner or operator to use a monitoring instrument that meets the specifications of Method 21 of appendix A of 40 CFR part 60. The proposed provisions in section 63.180(b)(6) have been removed from the standard, although response factor adjustments are still allowed in cases where no acceptable instrument is available. It has been clarified that the leak definitions are expressed in terms of total VOC, and not speciated concentration readings.

Comment: One commenter (A-90-20: IV-D-19) observed that Method 21 requires fresh daily calibration gas unless a longer shelf life can be demonstrated. The commenter (A-90-20: IV-D-19), thus, thought that this requirement makes use of many process streams as calibration gases impractical as the stream would have to be resampled and analyzed daily.

Response: The requirement for response factor adjustment has been removed from the final standard. As noted above, the instrument must still meet the specifications of Method 21.

5.4.2 Test Methods

Comment: One commenter (A-90-20: IV-D-27) suggested modifying §63.180(b)(4)(iii) to allow calibration at more than one point. The commenter noted the proposed requirement fails to take advantage of the flexibility of many monitoring instruments. The commenter, thus, thought the proposed requirement would result in delays and additional labor for monitoring equipment such as agitators.

Response: The provisions do not prohibit calibrating at more than one point. The provisions require that one of the calibration points be at the leak definition.

Comment: One commenter (A-90-20: IV-D-19) observed that Method 21 requires determination of no detectable emissions using 2.5 percent of the specified leak definition. The commenter noted that for a 500 ppm leak definition, no detectable emissions equates to 25 ppm, which is beyond the accuracy of most monitoring instruments.

Response: The EPA is uncertain as to the nature of the commenter's concern since subpart H does not use the concept of no detectable emissions. Thus, while the commenter may be correct that 25 ppm may not be accurately measured by some or many instruments, the concern is not relevant to the requirements of subpart H.

5.5 RECORDKEEPING AND REPORTING

5.5.1 General

Comment: One commenter (A-90-20: IV-D-4) expressed concern that differences among reporting and recordkeeping requirements makes implementation of rules more difficult. This commenter (A-90-20: IV-D-4) also expressed concern that some States require entirely different reporting procedures; thus, two-records are required and implementation is more difficult.

Response: The EPA does not believe that there should be a problem with differences among rules reporting requirements.

First, subpart H provides that equipment subject to existing NSPS or NESHAP and subpart H need only comply with the provisions of subpart H. Thus, there is only one reporting and recordkeeping system required. Second, subpart H provides that if the state requirements provides the same information, those reports can be submitted for the reports required by subpart H. Because subpart H does not specify a required format for records or reports, the EPA thinks that two sets of records will not be necessary.

Comment: Several commenters (A-90-19: IV-D-33; IV-D-69) (A-90-20: IV-D-20) thought the proposed recordkeeping requirements were extremely burdensome. One commenter (A-90-20: IV-D-20) recommended that the recordkeeping section be modified to eliminate all the detailed cross-referencing that LDAR requires, unless a QIP becomes required at the facility. Another commenter (A-90-19: IV-D-69) recommended that the initial report should only contain a statement that the facility is subject to subpart H. This commenter (A-90-19: IV-D-69) suggested that all other information be made available upon request in a reasonable time. The benefits of this approach were that the permit authority would receive complete information at the time they need it for compliance determination and the facility would not have to prepare a report at a time when they are starting to implement subpart H. This commenter (A-90-19: IV-D-69) also suggested that facilities in compliance with subpart H should only submit a statement that the monitoring has occurred and they are in compliance.

Response: The EPA agrees that, to the extent possible, reporting requirements for subpart H should be simplified and the required records clarified. However, the EPA does not think that some of the commenter's suggestions can be adopted because the records are essential to verify compliance or required by the operating permit rule. For example, there needs to be some record of units and equipment subject to the standard. Therefore, to streamline reporting requirements and minimize potential confusion, the following changes have been

made to the proposed requirements: (1) submit the compliance notification report no later than 90 days after the applicability date for the group of chemical processes and the periodic reports every 6 months thereafter; (2) allow the source to adjust the reporting schedule to combine the periodic reports for subpart H with those for subpart G once the source comes into compliance with the provisions in subpart G; and (3) consolidation of several special reports into the periodic report.

The final standard does not allow annual reporting as requested by several commenters. Although many components may be monitored on an annual basis, the monitoring frequency for pumps and agitators is monthly and annual reporting would not be consistent with the reporting system in subpart G. The operating permit provisions of the Act, section 504(a), also requires reporting to be at least semiannual. Additionally, unless all units at a source are on the same monitoring schedule, the source would have to submit multiple annual reports. The EPA believes that consolidating the reporting into semiannual reports for subparts G and H is more efficient for both industry and enforcement agencies.

In light of these comments, the EPA reevaluated the proposed requirements to ensure that only those records and reports essential for enforcement of the standard are required. This review showed that some of the commenters' concerns arose from a lack of clarity in the proposed standard regarding actual records required for some of the provisions and other concerns arose from overlapping or duplicative requirements. It was also determined that some provisions should be redrafted to be compatible with computerized data management systems and the revised provisions would still provide the information necessary to demonstrate compliance. Examples of such changes include: allowing a source to maintain on file a written procedure outlining the conditions for delay of repair and requiring certain records only for nonautomated systems. The EPA also reviewed the proposed

standard to identify implied recordkeeping requirements and to specify all the required records in §63.181.

Comment: One commenter (A-90-19: IV-D-104) urged the EPA to include provisions for reduced recordkeeping and monitoring requirements after a facility demonstrates sustained compliance over a reasonable period of time. The commenter (A-90-19: IV-D-104) was very concerned with the cumulative impact of all the Clean Air Act requirements.

Response: In regards to monitoring, the proposed and final equipment leak provisions provide for a reduced monitoring frequency for good performance. With a reduced monitoring frequency, less records are required. The EPA has taken reasonable steps to minimize and remove unnecessary or redundant records in the final rule. The monitoring and recordkeeping requirements that are in the final rule are what the EPA considers necessary for ensuring compliance with the rule.

Comment: One commenter (A-90-20: IV-D-27) urged that subpart H explicitly authorize use of computer readable records. The commenter noted that subpart G includes computer readable records in the definition of continuous records.

Response: In the proposed subpart F it specified that records could be computer records. In the final subparts F and I, this provision remains with additional clarifying language stating:

> Records may be maintained in hard copy or computer-readable form including, but not limited to, on paper, microfilm, computer, floppy disk, magnetic tape, or microfiche.

5.5.2 Batch Processes

Comment: One commenter (A-90-19: IV-D-77) recommended that batch processes which operate infrequently should be subject to the requirement for the initial report but should be subject to only annual reporting thereafter. The commenter (A-90-19: IV-D-77) asserted that the proposed semiannual reporting frequency would impose an undue burden.

Response: The title V provisions for operating permits requires semi-annual reports, therefore it would not reduce

the burden to the industry for the equipment leaks provisions to require annual reports. The EPA has minimized the records as much as possible so that the information contained in the semi-annual reports is less burdensome.

Comment: One commenter (A-90-19: IV-D-77) recommended that the final rule should explicitly state that the requirements in §63.181(f)(5) for records of any visual, auditory, or olfactory evidence of fluid loss are to be made during the pressure test.

Response: This has been clarified in the final rule.

Comment: One commenter (A-90-20: IV-D-27) urged the EPA to reconsider the recordkeeping requirements for batch processes to reduce the burden. A specific concern noted by the commenter was the difficulties of assigning equipment to a particular process unit because of frequent reconfigurations. The commenter thought that these changes would make it difficult to manage the database.

Response: The requirements for batch processes have been revised in the final rule. The requirements now direct that records be maintained for product or product code and information on whether testing has been conducted when process has been reconfigured for producing a different product. Owners or operators no longer have to have records of the individual items of equipment.

5.6 WORDING OF PROVISIONS

Comment: One commenter (A-90-19: IV-D-74) requested that the definition of "equipment leak" in subpart F should be deleted and that in each instance where the term is used, the rule should be rephrased to clarify the intended meaning. The commenter (A-90-19: IV-D-74) suggested this edit because the definition in subpart F refers to the equipment subject to subpart H and does not recognize that the equipment is only leaking if monitored above a specified concentration.

Response: Subpart F has been clarified in the final rule to specify the equipment that is affected and not refer to "equipment leaks."

Comment: One commenter (A-90-19: IV-D-92) recommended that "equipment in heavy liquid service" should be defined as "equipment not in VHAP gas/vapor service or VHAP light liquid service."

Response: The definition of "in heavy liquid service" in the final rule is as follows:

> In heavy liquid service means that a piece of equipment in organic hazardous air pollutant service is not in gas/vapor service or in light liquid service.

This was the same definition as at proposal, except that at proposal the term "in VHAP service" was used instead of "in HAP service."

Comment: One commenter (A-90-19: IV-D-86) indicated that the EPA should clarify §63.160(c) to clearly state that only the parenthetically listed HAP's are subject to the requirements.

Response: The EPA feels that the applicability of the subpart H requirements is already clear. Thus, no changes have been made to §63.160(c).

Comment: One commenter (A-90-19: IV-D-95) contended that the tables in §63.178, §63.183, and §63.184 should be identified by a number and a title.

Response: All tables in the final rule are treated consistently and according to the requirements set forth by the Office of the Federal Register.

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-453/R-94-003a	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry--Background Information for Final Standards Volume 2A: Comments on Process Vents, Storage Vessels, Transfer Operations, and Equipment Leaks		5. REPORT DATE March 1994
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S)		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS Office of Air Quality Planning and Standards U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711		10. PROGRAM ELEMENT NO.
		11. CONTRACT/GRANT NO. 68D10117
12. SPONSORING AGENCY NAME AND ADDRESS Director, Office of Air Quality Planning and Standards Office of Air and Radiation U.S. Environmental Protection Agency Research Triangle Park, North Carolina 27711		13. TYPE OF REPORT AND PERIOD COVERED
		14. SPONSORING AGENCY CODE EPA/200/04
15. SUPPLEMENTARY NOTES		

16. ABSTRACT

A final rule for the regulation of emissions of organic hazardous air pollutants (HAP's) from chemical processes of the synthetic organic chemical manufacturing industry (SOCMI) is being promulgated under the authority of sections 112, 114, 116, and 301 of the Clean Air Act, as amended in 1990. The emission standards were proposed in the Federal Register on December 31, 1992 (57 FR 62608). Public hearings were held. A supplemental notice was published in the Federal Register on October 15, 1993 (58 FR 53478). This volume of the background information document summarizes all comments and presents the agency's responses on process vents, storage vessels, transfer operations, and equipment leaks.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air pollution Pollution control SOCMI Hazardous air pollutant National impacts	Air pollution control	

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report)	21. NO. OF PAGES 225
	20. SECURITY CLASS (This page) UNCLASSIFIED	22. PRICE

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