United States
Environmental Protection
Agency

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

EPA-453/R-96-001b
May 1996

Air

EPA

Hazardous Air Pollutant Emissions from Process Units in the Thermoplastics Manufacturing Industry--

Basis and Purpose Document for Final Standards, Summary of Public Comments and Responses

NESHAP

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Emission Standards Division

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

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ENVIRONMENTAL PROTECTION AGENCY

Hazardous Air Pollutant Emissions from Process Units in the Thermoplastics Manufacturing Industry -- Basis and Purpose Background Information for Final Standards

1. The standards regulate organic hazardous air pollutant (HAP) emissions from the production of acrylonitrile butadiene styrene (ABS) resin, styrene acrylonitrile (SAN) resin, methyl methacrylate acrylonitrile butadiene styrene (MABS) resin, methyl methacrylate butadiene styrene (MBS) resin, polystyrene resin, poly(ethylene terephthalate) (PET) resin, and nitrile resin. Only those thermoplastic product process units that are part of major sources under section 112(d) of the Clean Air Act (Act) will be regulated.

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3. Paper copies of this document may obtained from:

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ACRONYM AND ABBREVIATION LIST

ACRONYM	TERM
ABS	acrylonitrile butadiene styrene
ACT	Alternative Control Technology
AMSAN/ASA	alphamethyl styrene acrylonitrile/ acrylonitrile styrene acrylate
CAA	Clean Air Act
CAS	Chemical Abstracts Service
CBI	confidential business information
CFR	Code of Federal Regulations
CMA	Chemical Manufacturer's Association
COD	chemical oxygen demand
CRC	Chemical Rubber Company
CTG	control techniques guidelines
DMT	dimethyl terephthalate
EPCRA	Emergency Planning and Community Right-to-Know Act
EPS	expandable polystyrene
FR	FEDERAL REGISTER
HAP	hazardous air pollutant
HON	hazardous organic NESHAP
ICR	information collection request
LDAR	leak detection and repair
MABS	methyl methacrylate acrylonitrile butadiene styrene
MACT	maximum achievable control technology
MBS	methyl methacrylate butadiene styrene
NDE	no detectable emissions

NESHAP	national emission standards for hazardous air pollutants
NSPS	new source performance standards
OEL	open-ended lines
PET	poly(ethylene) terephthalate
PRD	pressure relief devices
pH	hydrogen-ion concentration
POM	polycyclic organic matter
PQL	practical quantitation limit
RACT	reasonably available control technology
RCRA	Resource Conservation and Recovery Act
RCT	reference control technology
RDI	rupture disks
RIA	regulatory impact analysis
SAN	styrene acrylonitrile
SID	supplementary information document
SOCMI	synthetic organic chemical manufacturing industry
SPI	Society of the Plastics Industry, Inc.
SSP	solid state polymerization
TOC	total organic compound
TPA	terephthalic acid
TPPU	thermoplastic product process unit
TRE	total resource effectiveness
TRI	toxic release inventory
TTN	Technology Transfer Network
VOC	volatile organic compound
VOHAP	volatile organic hazardous air pollutant

WTU	wastewater treatment unit

ABBREVIATION	UNIT OF MEASURE
Btu/hr	British thermal units per hour
C	degrees Celsius
cfm	cubic feet per minute
F	degrees Fahrenheit
gpm	gallons per minute
kg/yr	kilograms per year
kPa	kilopascals
mmHg	millimeters of mercury
MW	megawatt
ppm	parts per million
ppmv	parts per million by volume
psia	pounds per square inch, absolute
tpy	tons per year

1.0 SUMMARY

1.1 INTRODUCTION

On March 29, 1995, the U.S. EPA proposed NESHAP for HAP emissions from the production of ABS resin, SAN resin, MABS resin, MBS resin, polystyrene resin, PET resin, and nitrile resin under Section 112(d) of the Act. Public comments were requested on the proposed standard and comment letters were received from industry representatives and governmental entities. A total of 27 comment letters were received. Table 1-1 presents a listing of all persons submitting written comments, their affiliation, and their docket number. A public hearing was not requested.

The written comments that were submitted on the proposed rule have been summarized and responses have been provided, and both are included in the following chapters. This summary of comments and responses serves as the basis for revisions made to the NESHAP between proposal and promulgation.

1.2 SIGNIFICANT COMMENTS AND CHANGES SINCE PROPOSAL

In response to comments received on the proposed standards, changes have been made to the final standards. While several of these changes are clarifications designed to make the EPA's intent clearer, a number of them are significant changes to the requirements of the proposed standards. A summary of the substantive comments and/or changes made since the proposal are described in the following sections. The rationale for these changes and detailed responses to public comments are included in the Basis and Purpose Document for the final standards. Additional information on the final standards is contained in the docket for these standards (see ADDRESSES section of this preamble).

TABLE 1-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Docket number[a]	Commenter and affiliation
IV-D-01	Pamela S. Dolbee Regulatory Compliance Engineer Dart Container Corporation Mason, Michigan 48854
IV-D-02	Dale L. McKinnon Technical Director Manufacturers of Emission Controls Association 1707 L Street, N.W., Suite 570 Washington, D.C. 20036-4201
IV-D-03	James W. Walpole Plant Manager BP Chemicals Inc. Ft. Amanda Road P.O. Box 628 Lima, Ohio 45802-0628
IV-D-04	Linda J. Liszewski Manager, Environmental Issues Eastman Kodak Company Rochester, New York 14652-6263
IV-D-05	Doyle R. Pendleton Acting Deputy Director, Office of Air Quality Texas Natural Resource Conservation Commission P.O. Box 13087 Austin, Texas 78711-3087
IV-D-06	Timothy J. Hebrink Senior Environmental Engineer 3M Environmental Engineering and Pollution Control Building 41-01-05 P.O. Box 33331 St. Paul, Minnesota 55133-3331
IV-D-07	Neal E. Thurber Director, Environmental Planning & Regulations Amoco Oil Company 200 East Randolph Drive Chicago, Illinois 60601-7125

TABLE 1-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (CONTINUED)

Docket number[a]	Commenter and affiliation
IV-D-08	Maureen A. Healey Director, Federal Environment and Transportation Issues The Society of the Plastics, Inc. 1275 K Street, N.W., Suite 400 Washington, D.C. 20005-4006
IV-D-09	Charles W. Keffer, Jr. Director, Regulatory Management Monsanto Company 800 N. Lindbergh Boulevard St. Louis, Missouri 63167
IV-D-10	Matthew O. Tanzer/Bernadine D. Flood Environmental Counsel/Senior Environmental Engineer GE Plastics Legal Operation General Electric Company One Plastics Avenue Pittsfield, Massachusetts 01201
IV-D-11	M.L. Mullins Vice President-Regulatory Affairs 2501 M Street, NW Washington, DC 20037
IV-D-12	Michael J. Wax Deputy Director Institute of Clean Air Companies 1707 L Street, N.W., Suite 570 Washington, DC 20036-4201
IV-D-13	Thomas X. White Associate Vice President Pharmaceutical Research and Manufacturers of America 1100 Fifteenth Street, NW Washington, DC 20005
IV-D-14	Thomas R. Herman, P.E. Corporate Environmental Manager Zeon Chemicals Incorporated P.O. Box 34320 Louisville, Kentucky 40232-4320

TABLE 1-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (CONTINUED)

Docket number[a]	Commenter and affiliation
IV-D-15	M.A. Piersante Senior Environmental Engineer Chevron Chemical Co. Environmental & Health Protection 6001 Bollinger Canyon Road San Ramon, California 94583
IV-D-16	Rand N. Shulman Vice President Health, Safety and Environment Shell Chemical Company One Shell Plaza P.O. Box 2463 Houston, Texas 77252-2463
IV-D-17	Joe L. Ritchie President Hoechst Diafoil Co. Hood Road, P.O. Box 1400 Greer, South Carolina 29652
IV-D-18	David W Gustafson/Toby A. Threet Env. Health & Regulatory Affairs/Legal Department Dow Chemical Company 2030 Dow Center Midland, Michigan 48674
IV-D-19	J.E. Cooper Director Environmental Quality AlliedSignal Inc. P.O. Box 1139 Morristown, New Jersey 07962-1139
IV-D-20	Susan P. Engelman Vice President Environmental, Health & Safety Affairs Hoechst Celanese Corporation Route 202-206 P.O. Box 2500 Somerville, New Jersey 08876-1258
IV-D-21	Richard C. Phelps Environmental Associate Eastman Chemical Company P.O. Box 1993, FANB-4 Kingsport, Tennessee 37662

TABLE 1-1. LIST OF COMMENTERS ON PROPOSED NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (CONTINUED)

Docket number[a]	Commenter and affiliation
IV-D-22	Jim Burt Wellman, Inc. P.O. Drawer 188 Highway 41/51 North Johnsonville, South Carolina 29555-0188
IV-D-23	Richard A. DiMenna Manager, Air and SARA Programs Environmental Regulatory Affairs Department Rohm and Haas Company Independence Mall West Philadelphia, Pennsylvania 19105
IV-D-24	Edward J. Sweeney Plant Manager BASF Corporation P.O. Box 550 Joliet, Illinois 60434-0550
IV-D-25	John A Dege Jr. Manager-Air Programs DuPont SHE Excellence Center 1007 Market Street Wilmington, Delaware 19898
IV-D-26	James Frick Senior Environmental Engineer Firestone Fibers & Textile 105 Winston Churchill Drive Hopewell, Virginia 23860
IV-D-27	Michael J. Wax Deputy Director Institute of Clean Air Companies 1707 L Street, N.W., Suite 570 Washington, DC 20036-4201

[a] The docket number for the Group IV thermoplastics docket is A-92-45.1

1.2.1 Applicability Provisions and Definitions

1.2.1.1 Designation of Affected Source and the Definition of Thermoplastic Product Process Unit

Commenters expressed confusion about the definitions of "affected source" and "TPPU" in the proposed standards. The EPA reviewed both definitions and agreed that they needed clarification. In response, the EPA has revised the language describing "affected source" and "TPPU" for the final standards. The definition of "affected source" included in §63.502 of the proposed standards was revised and the definition now references §63.500(a) **[§63.1310(a)]**, and §63.500(a) **[§63.1310(a)]** describes the affected source. The provisions in §63.500(a), which at proposal defined applicability in terms of the existence of one or more TPPUs, have been revised to define applicability in terms of the affected source. As part of this revision, the provisions in proposed §63.500(b), which described the affected source, were removed. [Note: In the proposed standards, the definition of TPPU attempted to describe all the equipment and operations that would be included in an affected source. In the final standards, the description of what the affected source includes is contained in §63.500(a) **[§63.1310(a)]**.]

The existing affected source is defined as each group of one or more TPPUs that manufacture the same thermoplastic product as their primary product, and (1) are located at a major source plant site, (2) are not exempt, and (3) are not part of a new affected source. This means that each plant site will have only one existing affected source in any given subcategory.

New affected sources are created under various circumstances. If a plant site with an existing affected source producing thermoplastic A as its primary product constructs a new TPPU also producing thermoplastic A as its primary product, the new TPPU is a new affected source if the new TPPU has the potential to emit more than 10 tons per year of a single HAP or 25 tons per year of all HAP. In this situation, the plant site would have an existing affected

source producing thermoplastic A and a new affected source producing thermoplastic A. Each subsequent new TPPU with potential HAP emissions above major source levels (i.e., 10/25 tons per year) would be a separate new affected source. New affected sources are also created when a TPPU is constructed at a major source plant site where the thermoplastic product was not previously produced, with no regard to the potential HAP emissions from the TPPU. This approach to defining new affected source was selected in order to make this subpart more consistent with the HON.

Another instance where a new affected source is created is if a new TPPU is constructed at a new plant site (i.e., green field site) that will be a major source. The final manner in which a new affected source is created is when an existing affected source undergoes reconstruction, thus making the previously existing affected source subject to new source standards.

This standard differs from the HON, however, in that it applies to multiple source categories. Thus, unlike the HON, a newly added TPPU at a facility is covered by this rule even if that TPPU is in a different source category from the existing TPPUs at the facility. It is the EPA's position that the addition of a process unit in a different source category is a new source and must meet the requirements for new sources even though the TPPU has the potential to emit less than 10 tons per year of a single HAP or 25 tons per year of all HAP. Indeed, if a source covered by another MACT standard (i.e., a different source category) were built at a HON facility, that source would be subject to new source requirements under that MACT standard.

Also, each affected source includes the following emission points and equipment that are associated with each group of TPPU: (1) each wastewater stream; (2) each wastewater operation; (3) each heat exchange system; (4) each process contact cooling tower used in the manufacture of PET that is associated with a new affected source; and (5) each process contact cooling tower used in the manufacture of

PET using a continuous terephthalic acid high viscosity multiple end finisher process that is associated with an existing affected source.

For the final standards, the number of existing affected sources present at a plant site will equal the number of thermoplastic products manufactured at that plant site. A plant site manufacturing 3 different thermoplastic products has 3 existing affected sources. [Note: Each different thermoplastic product represents a different subcategory, and each subcategory comprises a separate existing affected source.] The number of existing affected sources at a plant site could range from 1 to 19.

The definition of TPPU was revised and now includes a list of the collection of equipment that comprises a TPPU. This equipment includes process vents from process vessels, storage vessels, and equipment subject to the equipment leaks provisions. Because wastewater streams, wastewater operations, heat exchange systems, and process contact cooling towers are equipment that are often used by more than one TPPU, these items are not included as part of the definition of TPPU. Instead, said items are included in the definition of affected source. Because each wastewater stream can be traced back to the TPPU from which it originated, each wastewater stream can be associated with an affected source. On the other hand, wastewater operations may service wastewater streams associated with more than one affected source, just as heat exchange systems and PET process contact cooling towers could service multiple affected sources. Therefore, for wastewater operations, heat exchange systems, and PET process contact cooling towers, the final rule does not require an owner or operator to designate said emission points and equipment to be associated with a particular affected source. Instead, said emission points and equipment are subject to all applicable requirements associated with each affected source that said emission points and equipment may service. In a simple example, a heat exchange system is associated with two affected sources that are both subject to

the final rule. The owner or operator must comply with the provisions for heat exchange systems contained in the final rule. In a more complex example, a piece of wastewater operations equipment services wastewater streams from two affected sources subject to the final rule and from one source subject to the Hazardous Organic NESHAP (HON). This piece of wastewater operations equipment must comply with both the final rule and the HON.

1.2.1.2 Definition of Organic HAP

Numerous commenters recommended that the EPA restrict the list of organic HAP in the final standards to those that are used or are present in significant quantities at TPPUs or those that are listed in the HON, subpart F, table 2. The EPA agreed with the commenters suggestion that a table providing a listing of the specific organic HAP expected to be regulated for each subcategory covered by the standards should be added to the final standards. Therefore, the definition of organic HAP was revised to specify those organic HAP that are known to be used or present in significant quantities for each subcategory, thereby restricting the organic HAP regulated by the final standards. This list is provided in Table 2 of the final standards.

The revised definition of organic HAP was developed using available process description information received from industry and gathered from available literature. Because there may be additional organic HAP present at an affected source, the final standards require owners or operators to identify the presence of any additional organic HAP based on the following criteria: (1) the organic HAP is knowingly introduced into the manufacturing process other than as an impurity, or has been or will be reported under any Federal or State program, such as EPCRA Section 311, 312, or 313 or Title V; and (2) the organic HAP is listed in Table 2 of subpart F.

1.2.1.3 Determining New Source Status

The EPA received comments regarding the procedure for determining if new or existing source requirements would apply

to a particular TPPU. In response to those comments, the EPA has revised the provisions in the final standards.

Under the final standards, new affected sources are created under each of the following four situations: (1) if a plant site with an existing affected source producing a thermoplastic product as its primary product constructs a new TPPU also producing the same thermoplastic product as its primary product, the new TPPU is a new affected source if the new TPPU has the potential to emit more than 10 tons per year of a single HAP or 25 tons per year of all HAP; (2) when a TPPU is constructed at a major source plant site where the thermoplastic product was not previously produced as the primary product of an existing affected source; (3) if a new TPPU is constructed at a new plant site (i.e., green field site) that will be a major source; and (4) when an existing affected source undergoes reconstruction, thus making the previously existing affected source subject to new source standards.

These revisions reflect the EPA's intent that new source requirements apply if the added TPPU has the potential to emit major quantities, as in the HON, or the added TPPU is a new affected source. The HON applied to only one source category, and it was not possible to add a process unit subject to the HON that was in a new source category. Therefore, the only differentiation to be made was between process units emitting major quantities of organic HAP and those not emitting major quantities of organic HAP. On the other hand, the thermoplastics standards apply to multiple source categories/subcategories, and it is possible to add a TPPU subject to the thermoplastics standards that is in a new source category/subcategory. For this reason, if a TPPU is added to an existing plant site and said TPPU manufactures a thermoplastic product as its primary product not previously produced at the plant site as the primary product of an existing affected source, that TPPU, regardless of emissions, is a new affected source at that plant site.

1.2.1.4 Solid State PET Processes

Commenters contended that all PET solid state polymerization units, including collocated units, should be exempted from regulation. They stated that PET solid state polymerization units are a vastly different technology than dimethyl terephthalate (DMT) and terephthalic acid (TPA) processes and have different emission characteristics. The EPA has concluded that PET solid state processes are distinct from DMT or TPA processes. The EPA did not collect data on PET solid state processes, and it was not possible to conduct the required analyses for regulating PET solid state processes. Therefore, the final standards do not regulate these processes. However, these processes may be regulated in a future standard.

1.2.1.5 Flexible Operation Units

The flexible operation unit provisions included in the proposed standards, which were modeled after the HON, have been retained in the final standards. Under these provisions, an owner or operator of a process unit that is designed and operated as a flexible operation unit will commit to being subject to this rule or not being subject to this rule based on a five-year projection of products to be manufactured and production quantities.

These provisions were modified to provide clarification of the EPA's intent and flexibility in complying with the provisions. Under the final rule, once an owner or operator commits to being subject to this rule, there are two options for complying. Under the first option, an owner or operator shall determine the group status (i.e., Group 1 or Group 2) of each emission point based on the production of the expected primary product (i.e., the thermoplastic product that convinced the owner or operator to commit to being subject to this rule). Once the group status of each emission point is determined, the owner or operator shall comply with the applicable emission standards at all times, regardless of what product is being manufactured. Under the second option, an owner or operator shall determine the group status of each

emission point each time a different product is being manufactured, regardless of whether or not said product is a thermoplastic product. The EPA recognizes that neither option is an ideal situation. Under the first option, an owner or operator may find themselves operating a control device to control a Group 1 emission point that has none to negligible emissions when a different product is being manufactured. Under the second option, an owner or operator may find themselves performing multiple group determinations. Again, the EPA recognizes that neither option is an ideal situation, but believes the tradeoff between these inconveniences and flipping in and out of separate MACT standards is worthwhile.

As part of demonstrating compliance with the rule, an owner or operator required to operate a control device must establish parameter monitoring levels and conduct monitoring. Under either option of the flexible operation units provisions, an owner or operator must establish multiple sets of parameter monitoring levels to reflect the manufacture of different products. These provisions allow an owner or operator to demonstrate that the parameter monitoring levels established for the primary product are appropriate for the manufacture of other products. If this is not the case, the provisions require that unique parameter monitoring levels be established.

1.2.1.6 Coordination with Other Clean Air Act Requirements

At proposal, the EPA had proposed to amend subpart DDD of 40 CFR part 60 by removing all references to polystyrene and PET facilities. This action was being taken because the proposed thermoplastics standards would supersede the requirements in subpart DDD for polystyrene and PET affected sources after the compliance date of the thermoplastics standards. Commenters also suggested that subpart I of 40 CFR part 63 be amended by removing all references to MBS and MABS affected sources after the compliance date of the thermoplastics standards. Other commenters requested that the EPA further clarify that after the compliance date of the

thermoplastics standards, affected sources will no longer be subject to certain NSPS.

The EPA clarified the relationship between the thermoplastics standards and existing applicable standards in §63.501 **[§63.1311]** of the final rule. The final rule was revised to state that affected sources subject to both the thermoplastics standards and another subpart are to comply with the provisions of the thermoplastic standards only after the compliance date for the thermoplastic standards, for those standards listed in §63.501(g) through (l) **[§63.1311(g) through (l)]**. Further, after the compliance date for these standards, these affected sources will no longer be subject to the other subparts. The EPA determined that a clear understanding can be provided in these standards without making modifications to other subparts. Thus, the proposed amendments to subpart DDD were not made as part of the final rulemaking, nor were the suggested amendments made to subpart I.

1.2.2 Continuous Process Vent Provisions

1.2.2.1 Reorganization of the Standards to Distinguish Between Continuous Process Vents Subject to Provisions from the HON and Continuous Process Vents Subject to Provisions Adapted from the Polymer Manufacturing NSPS

To better distinguish between the various requirements for continuous process vents, the proposed standards were reorganized. In the final standards, separate sections apply to the following subcategories: those required to comply with subpart G of the HON and those producing PET or polystyrene using a continuous process. In the final standards, §63.505-1 **[§63.1315]** references subpart G; §63.505-2 **[§63.1316]** through §63.505-6 **[§63.1320]** apply to select continuous process vents at affected sources producing polystyrene and PET using a continuous process. Further, because not all process vents at affected sources producing polystyrene and PET using a continuous process are subject to §63.505-2 **[§63.1316]** through §63.505-6 **[§63.1320]**, the provisions of §63.505-2 **[§63.1316]**

designate which process vents are subject to §63.505-2 **[§63.1316]** through §63.505-6 **[§63.1320]**, which are subject to §63.505-1 **[§63.1315]** (i.e., the HON), and which are subject to §63.506 **[§63.1321]** (i.e., the batch process vent provisions). This reorganization is one way the EPA has clarified the standards between proposal and promulgation to reduce complexity and eliminate potential confusion.

1.2.2.2 Applicability of Emission Limits for Process Sections from §63.505-2 **[§63.1316]** to the Collection of Process Sections at an Affected Source

Commenters stated that the regulatory construction of the proposed standards implied that the process vent emission limits adapted from the Polymer Manufacturing NSPS [proposed §63.505(b) and (c)] apply to each collection of material recovery sections, raw material preparation sections, and polymerization sections, respectively, within an affected source and not to each individual process section (e.g., material recovery section), as under the Polymer Manufacturing NSPS.

At proposal, the EPA had intended for each individual process section to meet the emission limits in proposed §63.505(b) and (c), as applicable. However, since proposal, the EPA has determined that revising the proposed standards to allow each collection of process sections within an affected source to meet the applicable emission limit would simplify compliance while achieving the same emission reductions. Therefore, the final standards apply the emission limits adapted from the Polymer Manufacturing NSPS to each collection of material recovery sections, raw material preparation sections, or polymerization reaction sections, as appropriate, within an affected source.

1.2.2.3 Clarification of Compliance Demonstration Provisions for Final Condenser Temperature Limits

Commenters suggested modifying the provisions adapted from the Polymer Manufacturing NSPS that provide for a demonstration of compliance by limiting the final condenser outlet temperature. Commenters explained that the reporting provisions in the Polymer Manufacturing NSPS state that the temperature limit is only exceeded when the average condenser outlet temperature for a 3-hour period is more than 6 °C above (i.e., warmer) the average operating temperature established during the most recent performance test at which compliance was demonstrated. Commenters requested that the final standards incorporate those monitoring, test method, and recordkeeping and reporting requirements from the Polymer Manufacturing NSPS that provide this flexibility (i.e, the six degree window).

The EPA intended for the proposed standards to be equivalent to the Polymer Manufacturing NSPS in this regard and have revised the final standards to provide the desired flexibility (i.e., the six degree window). In addition, the EPA has disassociated the six degree window from the results of the performance test and has instead associated it with the applicable temperature limit in the standard. The final standards allow all owners or operators complying with the final condenser operating temperature limits to be 6 °C warmer than the applicable temperature limit for the 3-hour averages. The EPA considered that the proposed provisions did not achieve an even-handed implementation of the requirements because some affected sources would be allowed to have 3-hour averages at warmer temperatures than others because their performance test results indicated a temperature closer to the applicable temperature limit.

1.2.3 Batch Process Vent Provisions

1.2.3.1 Exemption of Certain Batch Process Vents

Commenters supported the use of cut-offs for the group status determination for batch process vents as found in proposed §63.506-2(d). Specifically, commenters agreed that

low annual organic HAP emissions and low flow rate cut-offs are suitable. Commenters explained that batch processes are, by nature, suited to low volume production and the manufacture of specialty products, and as such, low flow, low emitting process vents are likely in batch operations.

These provisions were retained in the final rule with one exception. The EPA removed the requirement to determine the volatility class (i.e., low, medium, or high) for batch process vents. As a result, there is a single minimum emission level cut-off in the final provisions of §63.506-2(d) **[§63.1323(d)]**. In addition, the EPA chose to add a minimum emission level of 225 kg/yr to the definition of batch process vent. This modification made the batch process vent provisions more consistent with the continuous process vent provisions which have a minimum organic HAP concentration level as part of the definition of continuous process vent. An emission point with emissions equal to or less than 225 kg/yr is not considered a batch process vent. At proposal, the 225 kg/yr level was part of the batch process vent group determination procedures; Group 2 batch process vents with annual emissions less than 225 kg/yr were subject to reporting requirements related to process changes.

1.2.3.2 Revisions to Group Determination Procedures

Commenters suggested changing the group determination provisions to only utilize emissions data from a TPPU's primary product. In addition, it was requested that batch process vent group determinations be performed on an annual basis instead of for every process change. Commenters stated that the proposed group determination provisions were considerably more complex than the continuous process vent group determination provisions. Commenters felt that, not only did the batch process vent group determination provisions require an owner or operator to obtain emissions data for every product that it manufactured, but even the most minor process changes (i.e., lengthening cycle times, altering process temperatures and pressures, etc.) triggered the need for a new group determination to be performed. Given the

inherent process variability associated with batch operations, commenters contended that it would be very difficult to perform a group determination. Furthermore, because batch units often need to implement sudden process changes in response to customer demands, the proposed provisions could potentially require repeating the group determination exercise several times in a single year. Commenters explained that such a situation would not only serve to complicate a batch unit's compliance status, but could also adversely impact its ability to remain competitive in the marketplace.

Four issues related to the group determination procedures were reviewed by the EPA: (1) a request to perform the group determination on the primary product, (2) a request to perform the group determination on an annual basis, (3) an objection that the group determination procedures require a new group determination to be made whenever minor process changes occur, and (4) an objection to the requirement to perform the group determination when a sudden process change is required.

The EPA has considered the request to perform the group determination on the primary product and agrees that this would provide acceptable results from an environmental perspective while simplifying the compliance requirements for and improving the enforceability of the batch process vent standards. The final rule contains provisions allowing the owner or operator of an affected source to perform the group determination for batch process vents based on annualized production of a single product. To ensure protection to the environment, the final rule specifies that the highest organic HAP emitting product must be used when determining the group status based on a single product.

In addressing the request that the group determination be required on an annual basis instead of for every process change, the EPA believes the proposed rule was clear on this point. The proposed rule required that emissions and average flow rate be determined on an annual basis and describe how to account for the production of different products throughout the year. In this way, the group determination is done on an

annual basis and can account for expected changes in the product being produced. The final rule does not reflect any changes related to this specific issue.

The third issue raised was an objection to the requirement that a new group determination be performed whenever minor process changes occur (e.g., lengthening cycle times, altering process temperatures and pressures, etc.). The proposed rule addressed the issue of minor process changes as they affect Group 2 batch process vents. If a process change affecting a Group 2 batch process vent occurs, a group determination must be made. However, the group determination provisions state that "changes that are within the range on which the original group determination was based" are not considered process changes. This allows an owner or operator to perform the initial group determination considering the potential for minor process changes. The EPA believes that the proposed provisions were clear that minor process changes (e.i., variations in operating conditions) do not require that a new group determination be performed. Addressing this concern as it relates to Group 1 batch process vents, the proposed provisions do not require a redetermination of group status for Group 1 batch process vents under any circumstances. Therefore, if minor process changes were to occur, the owner or operator would not be required to perform another group determination. The final rule does not reflect any changes related to this specific issue.

The fourth issue raised was an objection to the requirement to perform a new group determination when a sudden process change is required. In light of the third issue raised, EPA interpreted "sudden process change" to potentially mean (1) that a new product is being made, (2) that the same product is being made in a fundamentally different way (e.g., with different raw materials), or (3) that the same mix of products is being made but in a different proportion. In the first two cases, the EPA desires and intends that a new group determination be made. In the third case, the owner or operator has the flexibility to consider this situation when

performing the initial group determination. If this situation was not considered, then a new group determination would be required. The EPA feels that these types of process changes warrant a new group determination to ensure that the emission standards are being met. The final rule does not reflect any changes related to this specific issue.

1.2.3.3 Emissions Testing and Performance Testing

Commenters requested that more flexibility should be allowed in designing an emissions testing scheme for batch process vents. Commenters cited an example, provided as part of the proposed definition of batch emission episode, where the charging of a vessel and the heating of the same vessel are considered two distinct batch emission episodes. In this example, the definition of batch emission episode would necessitate that separate emissions measurements be made for the charging and the heating of the vessel. This would require that a large number of samples be taken to characterize processes that have multiple, short duration process steps. Commenters felt that the flexibility to test the emissions from several steps as a single batch emission episode would reduce testing costs without jeopardizing the quality of the emissions data. It was suggested that three or more batch cycles could be tested to obtain a representative average emission rate for the batch cycle.

After consideration of this comment, the EPA chose to leave the provisions related to emissions testing of batch process vents unchanged as they relate to this specific comment. The EPA felt adequate data were not presented to warrant changing these provisions. However, the emissions testing provisions in §63.506-2(b) and §63.506-4(c) **[§63.1323(b) and §63.1325(c)]** have been modified to provide flexibility and reduce the burden of testing, while continuing to ensure that results are satisfactory for applicability determinations and performance tests. The final provisions allow an owner or operator to test just a portion of the batch emission episode selected to be controlled when the owner or operator can demonstrate that emissions during the period to

be tested represent emissions for the entire batch emission episode or are greater than the average emission rate for the batch emission episode.

1.2.3.4 Flow Rate Estimation Procedures

Commenters asserted that the equations and test methods for calculating annual average flow rate in the proposed rule were not warranted. Commenters felt that the volumetric flow rate testing methods and the requirement to measure flow every 15 minutes specified in proposed §63.506-2(e) were overly burdensome and would not always provide representative measurements. It was suggested that average flow rates for a batch emission episode are better defined by calculations of displacement volumes with respect to the durations of the displacement episodes or by other more simplified methods.

The EPA agrees that there are more simplified and potentially more accurate techniques for estimating flow rate for batch process vents. The final rule contains provisions that allow engineering assessment, as well as testing, to be used for estimating flow rate. Also, for certain types of batch emission episodes, equations for estimating flow rate - have been added to the final rule.

1.2.3.5 Emissions Estimation Procedures

Commenters recommended removing the emissions estimation equations in proposed §63.506-2(b) from the rule. Commenters recommended that measurements or engineering estimates be allowed in place of the equations. It was felt the emissions estimation equations would not allow the flexibility necessary to account for differences in process technologies and operating methods.

Commenters also supported the provisions that allowed owners or operators to use direct measurement or engineering assessment to estimate emissions in cases where the emissions estimation equations are inappropriate for a particular type of operation or where, speaking to direct measurement, a more refined estimate of emissions is necessary. However, commenters objected to the requirement to demonstrate that the emissions estimation equations and direct measurement methods

are not appropriate before engineering assessment can be used.

In response to the first issue raised, the emissions estimation equations have been retained in the final rule. The EPA found nothing in the public comments that would warrant removing these procedures.

In response to the second issue, the EPA believes the data required to use the emissions estimation equations should be obtainable with reasonable effort. Further, specific comments regarding the inaccuracy or inappropriateness of the equations were not made. Given this, the EPA favors a more consistent estimation technique which is provided by the use of the emissions estimation equations, and the final rule requires the owner or operator to demonstrate that the emissions estimation equations are inappropriate before the use of engineering assessment is allowed.

However, independent of the comments provided, the EPA has concluded that direct measurement of emissions may prove to be difficult and may or may not provide an increased assurance of accuracy over the use of engineering assessment. Therefore, if an owner or operator can demonstrate that the emissions estimation equations are not appropriate, the final provisions allow the use of either direct measurement or engineering assessment.

1.2.3.6 Other Changes Resulting from EPA Review

In addition to changes made to the proposed rule as a result of public comment, changes were made as a result of EPA independently reviewing the rule between proposal and promulgation. Because the batch process vent provisions included in the rule are among the EPA's first attempts to regulate batch process vents, the EPA felt an ongoing, independent review of these provisions after proposal was warranted. Changes resulting from this review are listed below:

(1) Allow applicability determinations and compliance demonstrations (i.e., performance tests) to be based on total organic compounds (TOC) or organic HAP. Allow the use of Method 25A to compliment the use of TOC as a

potential basis for applicability determinations and compliance demonstrations.

(2) Allow the establishment of parameter monitoring levels to be based on performance tests or a combination of performance tests and engineering assessment (discussed in more depth in Section H, Monitoring). To accommodate this change, modifications to the batch process vent testing provisions were required.

(3) Add provisions specifying how the batch cycle limitation is to be determined.

(4) Change the reporting requirement for batch cycle limitation records from quarterly to annually.

These changes are discussed in the paragraphs below.

In the final rule, the EPA has allowed the use of TOC as the basis for applicability and compliance demonstrations (i.e., performance tests) as an alternative to organic HAP. The EPA has done this to provide flexibility to the regulated community and to reduce the overall burden of the rule. The EPA considered the impacts of allowing TOC to serve as a surrogate for organic HAP in applicability and compliance demonstrations and did not find any negative impacts. Further, allowing the use of Method 25A as a complement to the use of TOC as a surrogate to organic HAP reduces the burden of implementing the final rule with little to no adverse impact on the measurement of pollutants in the regulated batch process vents. To the best of the EPA's knowledge, the batch process vents regulated by this rule are predominantly organic HAP. Also, with one exception (i.e., ethylene glycol), the regulated organic HAP, which are listed in the definition of organic HAP found in the final rule, have response factors to Method 25A adequate to ensure satisfactory measurement of TOC in the batch process vents. For certain emission points where the EPA considered the presence of ethylene glycol and its corresponding poor response factor to call into question the results that would be obtained using Method 25A, the use of Method 25A is not allowed. For all other emission points, the EPA has allowed the use of TOC for applicability and

compliance demonstrations as an alternative to organic HAP in the final rule.

In the final rule, the EPA allows the establishment of parameter monitoring levels to be based on either performance tests, as in the proposed rule, or a combination of performance tests, engineering assessment, and manufacturer's recommendations. This change affects all emission points which are required to establish parameter monitoring levels, including batch process vents. The rationale for this change is discussed in detail in Section H, monitoring, of this document. For batch process vents, this change in the procedures for establishing parameter monitoring levels necessitated changes to the performance test provisions. When an owner or operator chooses to establish parameter monitoring levels based exclusively on performance tests, the final rule directs that the performance test must include the entire batch emission episode selected to be controlled. As discussed earlier, an owner or operator may choose to control just a portion of a batch emission episode; in such a scenario, the performance test must include the entire portion of the batch emission episode selected to be controlled. Alternatively, when an owner or operator chooses to establish parameter monitoring levels based on a combination of performance tests, engineering assessment, and manufacturer's recommendations, the final rule allows an owner or operator to test either the entire batch emission episode, or portion thereof, selected to be controlled or to test only a period of the batch emission episode that is less than the entire batch emission episode, or portion thereof, selected to be controlled. [Note: The flexibility to test a period of the batch emission episode that is less than the entire batch emission episode, or portion thereof, selected to be controlled is discussed earlier in this section.]

The final rule includes provisions specifying how the batch cycle limitation, required for Group 2 batch process vents, is to be established. The EPA felt that the proposed rule was ambiguous concerning the establishment of the batch

cycle limitation and added these provisions to make the rule more complete. The added provisions provide additional description of the purpose of the batch cycle limitation and describe what documentation is required as part of establishing the batch cycle limitation.

In the final rule, the EPA changed the requirement for reporting the number and type of batch cycles accomplished for a Group 2 batch process vent from quarterly to annually. The EPA felt that quarterly reporting was unwarranted given that the compliance requirement (i.e., the batch cycle limitation) was on an annual basis.

1.2.4 Wastewater Provisions

1.2.4.1 Steam Stripping Styrene-Containing Wastewater Streams

Numerous commenters claimed that the selection of steam stripping as the basis of the standards for the treatment of styrene-containing wastewater streams was inappropriate due to polymerization problems. The EPA acknowledges that steam stripping styrene-containing wastewaters may prove to be impractical in some cases due to issues raised by the commenters. However, steam stripping is not required by the standards. Both the proposed and final wastewater provisions provide several options for complying with the standards. If the owner or operator judges steam stripping to be impractical for their process, one of the other wastewater compliance options may be used. The EPA considers one of these compliance options, the use of enclosed sewers to a biological treatment operation unit, a favorable option because styrene is highly biodegradable. Further, because the organic HAP emitted from the subcategories regulated by this rule are highly biodegradable, the EPA has determined that it is not necessary to require affected sources to demonstrate that 95 percent of the mass of organic HAP listed in Table 9 of the HON are removed when using a biological treatment unit, as required by the HON. Therefore, the final thermoplastic rule does not require an owner or operator to make this demonstration.

1.2.4.2 Elimination of Regulations Pertaining to Wastewater from Polystyrene Affected Sources

In addition to considering the comments made concerning the impracticality of steam stripping styrene-containing wastewaters, the EPA evaluated the need to regulate wastewater from polystyrene affected sources. Because the water solubility of styrene is limited to approximately 300 ppm and styrene is the only known organic HAP emitted during the production of polystyrene, it is not possible for a wastewater stream that only contains styrene to meet the Group 1 applicability criteria (i.e., 1,000 ppm minimum concentration). Therefore, because, to the best of EPA's knowledge, there can be no Group 1 wastewater streams at a polystyrene affected source, the final standards do not regulate wastewater from this subcategory.

1.2.5 Process Contact Cooling Tower Provisions

1.2.5.1 Ethylene Glycol Jet Retrofit for PET Existing Affected Sources

Commenters disagreed with the EPA's position that ethylene glycol jets are the vacuum system technology of choice for a retrofit application and with the EPA determination that ethylene glycol jets are cost effective. Commenters contended that the EPA had failed to consider numerous cost factors and design considerations. [Note: While the proposed standards did not require the use of ethylene glycol jets, they were the technology on which the prohibition of process contact cooling towers was based.]

Based on the data available at proposal, the costs and emission reductions achievable through the use of ethylene glycol jets in retrofit situations were acceptable. The EPA knew that the proposed standards for ethylene glycol jets were based on limited data and limited knowledge obtained from one manufacturer of PET. The EPA took special effort to make this clear and to solicit comments on the installation and operation of ethylene glycol jets in the preamble to the proposed standards (see pages 16104 and 16107 of the preamble). Based on the comments provided, the EPA agrees

that ethylene glycol jets are not a suitable retrofit technology for existing affected sources, either technically or economically, for meeting the provisions of the proposed standards that prohibit the use of process contact cooling towers. These comments are presented and discussed in detail in the Basis and Purpose Document for the final standards.

As explained in chapter 6.0 of the Basis and Purpose Document for the final standards, steam jet vacuum systems can be used to create a vacuum on the process vessels, contact condensers can be used to condense steam, and the contact condenser effluent can be recirculated to the process contact cooling tower. In the process contact cooling tower, stripping and drift may occur, resulting in organic HAP emissions to the atmosphere. Volatilization of organic HAP from the vacuum system may also occur. The following paragraphs describe some of the public comments on this issue and the EPA's responses.

Given that the EPA was convinced by the commenters' arguments that ethylene glycol jets are not a suitable retrofit technology for existing affected sources, the EPA considered alternate options for controlling emissions from the vacuum system. Both VOHAP and ethylene glycol are emitted from the vacuum system, and the EPA chose to approach each of these emissions separately.

To address VOHAP emissions from the vacuum system at existing sources, the final standards treat the contact condenser effluent as wastewater and apply the same provisions to it as are applied to process wastewater. Contact condenser effluent is considered process wastewater based on the proposed wastewater provisions, and without any special provisions or specific mention, the wastewater provisions will apply. The EPA judged that treating the contact condenser effluent prior to any significant opportunity for volatilization protects the environment. Further, the HON wastewater provisions, which are the basis for the wastewater provisions in the proposed and final standards, have been judged to be environmentally effective and cost effective

overall. Therefore, if the wastewater provisions deem a wastewater stream to be Group 2 (i.e., not requiring control), that means it is not cost effective to control any VOHAP that may be contained in that wastewater stream.

Addressing emissions from the process contact cooling tower was more complex. [Note: The HON did not specifically address process contact cooling towers because they are not used extensively in the synthetic organic chemical manufacturing industry (SOCMI).] Given that the emissions of VOHAP would be dealt with through the use of the wastewater provisions at existing affected sources, the key issue related to cooling towers became the emissions of ethylene glycol. Between proposal and promulgation, the EPA spent considerable effort gathering information on PET vacuum systems and their emissions. Much of this effort focused on emissions from the cooling towers, specifically emissions of ethylene glycol. In addition to gathering information on emissions, the EPA investigated control options aimed at reducing emissions of ethylene glycol from cooling towers. Possible control options, not considering ethylene glycol jets, included treating a slipstream of the cooling tower water to reduce the concentration of ethylene glycol or installing a large heat exchanger to isolate the cooling tower from the process. None of these control options were shown to be cost effective. All of the factors discussed above have led the EPA to conclude that, with one exception discussed below, specific provisions for controlling emissions from process contact cooling towers are not warranted for existing affected sources. Instead, the EPA is requiring that the wastewater provisions be applied to all vacuum system wastewater.

The one exception where it was found to be cost effective to control emissions from existing process contact cooling towers was for affected sources manufacturing PET using a continuous TPA high viscosity multiple end finisher process. Based on industry reported emissions, total ethylene glycol emissions for all PET subcategories are approximately 340 Mg/yr, and approximately 230 Mg/yr are being emitted from

the single plant site that is part of this subcategory. This subcategory is required to keep the concentration of ethylene glycol in the process contact cooling tower water to 4 percent by weight or less.

As at proposal, the final standards require that owners or operators of new affected sources manufacturing PET not send contact condenser effluent associated with a vacuum system to a process contact cooling tower.

1.2.5.2 Vacuum System Wastewater

Many commenters objected to the proposed provision designating all contact condenser effluent as Group 1 wastewater streams. Commenters stated that the EPA had not provided adequate rationale explaining why the standards for contact condenser effluent were more stringent than the standards for other wastewater streams. Because the automatic designation of contact condenser effluent as Group 1 wastewater was done in an effort to make the use of noncontact condensers within steam-based vacuum systems equivalent to ethylene glycol jets, and that need no longer exists for existing affected sources, there is no longer a need or justification to designate all contact condenser effluent from existing PET affected sources as Group 1 wastewater. As a result, the EPA has changed the final standards to implement the group determination procedure (i.e., Group 1 or Group 2) for contact condenser effluent from existing PET affected sources.

On the other hand, the final standards continue to prohibit the use of process contact cooling towers for new PET affected sources. [Note: This requirement is equivalent to the MACT floor.] However, the provisions designating all contact condenser effluent streams from new PET affected sources as Group 1 wastewater have been dropped from the final standards. Like existing PET affected sources, the final standards implement the group determination procedure for contact condenser effluent from new PET affected sources. As described earlier, the purpose for designating all contact condenser effluent streams as Group 1 wastewater was to ensure

equivalency between the use of ethylene glycol jets and the use of noncontact condensers. At the time of proposal, the EPA considered ethylene glycol jets to be pollution free because there was no wastewater stream produced. The automatic designation of all contact condenser effluent as Group 1 wastewater was meant to address the absence of wastewater when ethylene glycol jet systems are used. Since proposal, the EPA has come to understand that the use of ethylene glycol jets does not eliminate emissions because the additional loading to the glycol recovery unit can create additional emissions from process vents or wastewater streams or both.

Realizing that ethylene glycol jets are not pollution free, the EPA considered the additional emissions at the glycol recovery unit when ethylene glycol jets are used and the emissions from the contact condenser effluent when noncontact condensers are used. [Note: The use of ethylene glycol jets would still achieve more control than using steam jets and subjecting the contact condenser effluent to the wastewater provisions.] In either case, an equivalent quantity of VOHAP is introduced to the vacuum system from the process. Process vents and wastewater streams at the glycol recovery unit are subject to the appropriate provisions of the standards. For example, a wastewater stream at the glycol recovery unit would be subject to a group determination and, based on the results, would be controlled if required. The EPA judged that to require the same action for the contact condenser effluent from noncontact condensers would ensure equivalency between a new affected source using ethylene glycol jets and one using noncontact condensers.

1.2.6 Equipment Leak Provisions

1.2.6.1 Polystyrene

A number of commenters stated that the EPA had overestimated the emissions from equipment leaks at polystyrene affected sources in general and, in particular, from components containing styrene as the organic HAP. The commenters claimed that the use of the average SOCMI emission

factors to estimate emissions was inappropriate because the vapor pressure of styrene at typical operating conditions in polystyrene affected sources equates to a concentration of less than 10,000 ppm and no leaks would be detected (using a leak definition of 10,000 ppm). The commenters also stated that the effect of using the average SOCMI emission factors was to justify the HON equipment leak program (i.e., subpart H) and that, if the EPA used a more realistic estimate of emissions (e.g., the emission factor for components with concentrations less than 10,000 ppm), a re-evaluation of the costs and emission reductions would likely result in a conclusion that the HON is not cost effective. The commenters recommended that if any program was to be implemented for polystyrene affected sources and especially for components in styrene service, it should either be a visual-only program or, at most, a program based on a State RACT program.

In response to these comments, the EPA re-evaluated the analysis that served as the basis for proposing the equipment leak provisions from the HON for polystyrene and other styrene-based resin affected sources. (The results of this re-evaluation are contained in Item IV-B-2, Docket A-92-45.) In re-evaluating that analysis, the EPA determined the MACT floor for each subcategory. Because a MACT floor was determined to exist and the Clean Air Act does not allow the EPA to set a standard less stringent than the MACT floor, the EPA determined that some standard must be set for these subcategories.

The EPA agrees with the commenters that the average SOCMI emission factors are likely to overestimate emissions from components containing or contacting styrene. Therefore, the EPA lowered the emission factors used to estimate the emissions from these components. The EPA also adjusted leak rate factors based on additional data and comments from the industry. Adjustments to the emission factors and leak rates had the effect of reducing both the overall emission estimates and the emission reductions associated with the current

industry programs, the MACT floor programs, and the HON program.

In addition, the EPA re-evaluated the costing program used to estimate the costs for the various equipment leak programs. Errors were discovered in the costing program. The net effect of correcting these errors was to lower the estimated costs for all of the various equipment leak programs. The incremental differences between the various programs decreased as well, but not by as much as the overall costs.

To determine whether or not the subpart H provisions were cost effective, the EPA examined the incremental costs and emission reductions between the HON program and the MACT floor program for each of the subcategories. [Note: In the original analysis, the EPA examined the cost between the HON program and each facility's specific current program.] Based on the incremental differences between the HON and the MACT floor programs, the EPA determined that the HON requirements are cost effective for each of the styrene-based resin subcategories, including the three polystyrene subcategories. Therefore, the EPA has retained the HON requirements in the final rule.

1.2.6.2 <u>PET</u>

Many commenters objected to the imposition of the HON equipment leak requirements on PET affected sources, especially those using the TPA process. These commenters stated that, due to the preponderance of components in heavy liquid service, no program should be imposed or, if a program is required, it should simply be a visual-only program. Some of the commenters referred to the rationale in the development of the Polymer Manufacturing NSPS (40 CFR part 60, subpart DDD), which exempted PET affected sources using a continuous TPA process from equipment leak regulation.

As was done for the styrene-based resin subcategories, the EPA re-evaluated the emission estimates and cost estimates for all of the PET subcategories. The results of this re-evaluation are found in Item IV-B-3, Docket A-92-45. The

following actions were taken as part of the re-evaluation. First, the EPA lowered the emission factors used to estimate emissions from components in heavy liquid service to take into account the properties of ethylene glycol. Second, the EPA limited the re-evaluation of costs and emission reductions to only those facilities that provided specific component profiles (i.e., component counts and types of service). The results of the re-evaluation showed that, except for one PET subcategory, the HON requirements are cost effective. Thus, the final rule retains, for the most part, the HON requirements for the PET subcategories. [Note: Modifications to the HON requirements are discussed below.]

The re-evaluation of the proposed equipment leak provisions showed that the provisions were not cost effective for PET affected sources using a continuous TPA high viscosity multiple end finisher process. Thus, this subcategory, which currently contains only one affected source, is exempt from the equipment leak requirements in the final rule.

With regard to exempting PET affected sources altogether based on the exemption contained in the Polymer Manufacturing NSPS, the EPA does not agree with the commenters. During the development of the Polymer Manufacturing NSPS, information available to the EPA indicated that all components at PET TPA continuous facilities were in heavy liquid service. Information provided by the industry during the development of this rulemaking, however, shows the presence of components in gas/vapor service and in light liquid service at some PET TPA facilities. The decision to require an equipment leak program for this rulemaking is based on this newer information. However, the EPA continues to agree that, if a PET TPPU consists solely of components in heavy liquid service (or in vacuum service), then said TPPU should be exempt from the equipment leak standards. The final rule contains this provision.

Many commenters were concerned about the recordkeeping and reporting requirements, especially for PET TPA affected sources where the vast majority of components are in heavy

liquid service. While the EPA believes the original requirements were the minimum required to ensure compliance with the overall program, the EPA has reduced the burden of the recordkeeping and reporting requirements for these subcategories in light of the preponderance of components in heavy liquid service. The most significant change is the elimination of the requirement to initially list the identification numbers of components in heavy liquid service.

Finally, several commenters expressed concern with the use of Method 21 to detect leaks from components in ethylene glycol (i.e., heavy liquid) service, stating in part that Method 21 would not detect an ethylene glycol leak based on the properties of ethylene glycol and the operating conditions of the process. The EPA agrees that Method 21 is inappropriate for determining ethylene glycol leaks where the leaking component is in heavy liquid service. However, §63.169 of subpart H does not require the use of Method 21; it is one of two alternatives for determining the presence of leaks from components in heavy liquid service. The other alternative is to use a sensory-based detection method. The final rule has been revised to clarify that leaks are to be determined exclusively through the use of visual, audible, olfactory, and any other detection methods; Method 21 is not to be used to determine leaks from components in heavy liquid service at PET facilities.

1.2.7 Emissions Averaging Provisions

1.2.7.1 Number of Emission Points Allowed in Emissions Averaging

Numerous commenters requested that the number of emission points allowed in an emissions average be increased to 20 points from the 5 points allowed at proposal. If pollution prevention measures are used, commenters requested that an additional 5 emission points be allowed from the 3 emission points allowed at proposal. The commenters stated that this would be consistent with the HON.

In response to comments and to be more consistent with the HON and the Group I Polymers and Resins (Elastomers)

NESHAP, the number of emission points allowed in emissions averaging at a plant site has been increased to 20 points, with an additional 5 points allowed if pollution prevention measures are used. These values (i.e., 20/25) are the maximum allowed for all emissions averages at a plant site, regardless of the number of affected sources present at a plant site or the number of emissions averaging programs implemented.

1.2.7.2 Including Batch Process Vents in Emissions Averaging

Several commenters requested that batch process vents be included in the emissions averaging provisions. The EPA had not allowed emissions averaging of batch process vents at proposal. The proposal preamble stated that the accuracy and consistency of emissions estimates needed for emissions averaging were considered to be greater than those needed for applicability determinations. However, upon review, the EPA has determined that having the same procedures to estimate emissions for applicability determinations and emissions averaging is reasonable. The final standards allow emissions averaging of existing batch process vents as well as aggregate batch vent streams.

1.2.8 Compliance and Performance Test Provisions and Monitoring Requirements

1.2.8.1 Excused Excursions

Many commenters requested that the proposed standards allow excused excursions in the same way that the HON allows excused excursions. In the final standards, the EPA included provisions to excuse a certain number of excursions for each reporting period. These provisions are identical to the HON provisions. The decision to include excused excursion provisions was based on data and information presented in public comments received on the proposed standards and received during industry meetings held after proposal. The commenters contended that by not allowing excused excursions in these standards, the EPA has made these standards more stringent than the HON, which the proposed standards and the costs of the proposed standards were modelled after. The commenters requested that the EPA justify the increased cost

of imposing the more stringent "no excused excursion" provisions. The EPA agreed with the commenters that not allowing excused excursions could impose significant additional capital and operating costs on the affected source for only negligible corresponding reductions in air emissions. As is always the case, a State has the discretion to impose more stringent requirements than the requirements of NESHAP and other federal requirements and could choose not to allow the excused excursion provisions contained in these standards.

The EPA considered the number of excused excursions that would be most appropriate for these standards and determined that the number of excursions allowed in the HON is reasonable. Therefore, the final standards allow a maximum of 6 excused excursions for the first semiannual reporting period, decreasing by 1 excursion each semiannual reporting period. Starting with the sixth semiannual reporting period (i.e., the end of the third year of compliance) and thereafter, affected sources are allowed one excused excursion per semiannual reporting period.

1.2.8.2 Parameter Monitoring Levels

Commenters requested that more flexibility be permitted for establishing compliance levels for parameter monitoring. The commenters asked the EPA to allow the use of the HON range concept, which recognizes that a process or control device operates properly over a range of conditions.

The EPA revised the requirements for establishing parameter monitoring levels to incorporate the concepts included in the HON range concept. [Note: The final standards continue to use the term level.] Under the final rule, the owner or operator can choose between three procedures for establishing parameter monitoring levels. By providing the flexibility to establish parameter monitoring levels based on one of these three procedures, site-specific levels can be chosen which best accommodate variation in emission point characteristics and control device designs. These three procedures for establishing parameter monitoring levels are based on: (1) performance tests; (2) performance

tests, engineering assessments, and/or manufacturer's recommendations; and (3) engineering assessments and/or manufacturer's recommendations. The establishment of a parameter monitoring level based solely on performance tests is preapproved by the Administrator; however, parameter monitoring values determined using the last two procedures, which may or may not use the results of performance tests, must be approved by the Administrator for each individual case.

1.2.8.3 Other Changes Resulting from EPA Review

In addition to changes made to the proposed rule as a result of public comment, changes were made as a result of EPA independently reviewing the rule between proposal and promulgation. In the final rule, the EPA has allowed the use of TOC, minus methane and ethane, as the basis for compliance demonstrations (i.e., performance tests) as an alternative to organic HAP for continuous process vents, batch process vents, storage vessels, and wastewater streams. [Note: The term "TOC," as used in the remainder of this discussion and as defined in the final rule, denotes "TOC, minus methane and ethane."] The final rule also allows the use of TOC as an alternate basis for applicability determinations for batch process vents; TOC is not allowed as an alternate basis for applicability determinations for continuous process vents. In addition, the final rule allows the use of Method 25A to measure TOC in those instances where TOC serves as an alternate basis for compliance demonstrations or applicability determinations.

These changes were made to provide flexibility to the regulated community and to reduce the overall burden of the rule. The EPA considered the impacts of allowing TOC to serve as a surrogate for organic HAP in compliance demonstrations and did not find any adverse impacts. Further, in allowing the use of Method 25A as a complement to the use of TOC as a surrogate to organic HAP, the EPA judged that the burden of implementing the final rule would be reduced with no adverse impacts.

As proposed, the provisions concerning applicability determinations and compliance demonstrations allowed an owner or operator to measure total organic HAP <u>or</u> TOC; however, the proposed rule required Method 18 for measurement of organic compounds in both cases. In light of this, the major difference between the proposed and final rule is the flexibility to use Method 25A in measuring TOC. In deciding to allow the use of Method 25A, the EPA considered the composition of the emission streams and considered provisions that could be implemented to safeguard against inappropriate uses of Method 25A. To the best of the EPA's knowledge, the emission streams regulated by this rule are predominantly organic HAP. Also, with one exception (i.e., ethylene glycol), the regulated organic HAP, which are listed in the definition of organic HAP found in the final rule, have response factors to Method 25A adequate to ensure satisfactory emissions measurements. To safeguard against inadequate emissions measurements that might result from the inappropriate use of Method 25A, the final rule specifies the calibration gas to be used (i.e., the organic HAP representing the largest percent by volume) and what is an acceptable response for the calibration gas (i.e., 20 times the standard deviation of the response from the zero calibration gas).

In considering the use of TOC as an alternate basis for applicability determinations, and the complementary use of Method 25A to measure TOC, the EPA evaluated applicability determinations for continuous process vents and batch process vents. [Note: The applicability determination procedures for storage vessels and wastewater streams do not use airborne organic HAP concentration values. Therefore, the use of Method 25A for these emission points is not applicable.] The applicability determination procedure for continuous process vents (i.e., the total resource effectiveness {TRE} equation) requires an owner or operator to estimate the concentration and emission rate for both organic HAP and TOC. Because both of these values are required and were the basis for the original TRE analysis, the EPA judged that it was

inappropriate to use TOC as an alternate basis to organic HAP for the applicability determinations for continuous process vents. On the other hand, the original analysis for batch process vents (i.e., the Batch Processes ACT) was based on the control of TOC; thus, the EPA considered the use of TOC as an alternate basis for the applicability determinations for batch process vents to be satisfactory.

1.2.9 Recordkeeping and Reporting

Several commenters stated that the recordkeeping and reporting requirements of the proposed standards were extremely burdensome. These commenters requested that the EPA reduce unnecessary recordkeeping and reporting requirements in the final standards. Commenters requested that the frequency with which records must be retained be reduced. The commenters also contended that records should only be required if an excursion has occurred. The commenters contended that records showing compliance with the standards were unnecessary.

The EPA has made every effort to reduce the recordkeeping requirements of the final thermoplastics rule. The EPA recognizes that unnecessary recordkeeping and reporting requirements would burden both the affected source and EPA enforcement agencies.

The EPA reviewed the recordkeeping required by the proposed rule and has made reductions in the amount of information that is required to be recorded. The final rule has been changed to require recording and retention of hourly average values of continuously monitored values. The proposal required that 15-minute averages be calculated and recorded. Under the proposal, if the daily average value was above the minimum or below the maximum established parameter monitoring levels (i.e., excess emissions occurred), the 15-minute values had to be retained; if the daily average value did not exceed the established parameter monitoring level, the 15-minute values could be converted to hourly averages, and the hourly averages could be retained instead of the 15-minute averages. Upon reconsideration, the EPA found that hourly average values

provide a sufficient record to support the calculation of the daily average value. Therefore, to reduce the recordkeeping burden, the rule has been changed to specify that only hourly averages must be calculated and recorded. The rule no longer requires calculating or recording of 15-minute average values.

For emission points where continuous parameter monitoring is required, the value of the parameter must still be measured at least once every 15 minutes, but only the hourly average must be calculated and recorded. Many facilities already have computerized systems and monitor parameters more frequently than once every 15 minutes for process control purposes. The 15-minute monitoring frequency is consistent with the General Provisions and previous NSPS and NESHAP for emission points from similar industries.

In addition, the EPA added provisions [§63.513(h) [§63.1335(h)]] that allow an owner or operator to implement a reduced recordkeeping program provided that certain criteria related to the monitoring system and the performance of the process, as it relates to maintaining compliance with the monitoring provisions, are met. Under these provisions it is possible for an owner or operator to retain only daily average values or, after a period of 6 consecutive months without an excursion, to retain no daily records.

The EPA believes that the recordkeeping requirements of the final rule are necessary to show compliance. The EPA will continue to require owners or operators to keep records, regardless or whether there was an excursion or not. These records are necessary to prove compliance when no excursion has occurred and are used to determine the severity of a violation, and, thus, how much of a penalty should be assessed once an excursion has occurred.

The EPA has made every effort to reduce the reporting requirements of the final rule. The EPA reviewed each report required at proposal, and determined that two of these reports, the Initial Notification and the Implementation Plan, contained many requirements that were duplicative with the existing operating permit program. For this reason, the EPA

has removed the requirements for the Initial Notification and Implementation Plan from the final rule.

The EPA considers the recordkeeping and reporting requirements of the final rule to be the minimum necessary to ensure compliance.

Upon further review, the EPA decided to add a new report, the Precompliance Report, to the final rule to allow the owner or operator of an affected source to request an extension of compliance or to request approval to use alternative monitoring parameters, alternative continuous monitoring or recordkeeping, or alternative controls. At proposal, these items were submitted in the Implementation Plan. Overall, these changes, deleting the Initial Notification and the Implementation Plan and adding the Precompliance Report, result in a reduction of the reporting burden for the affected source.

2.0 APPLICABILITY

2.1 SELECTION OF SOURCE CATEGORY

Comment: One commenter (IV-D-03) supported the addition of a separate source category for nitrile resins production with a promulgation date no later than November 15, 2000.

Response: A nitrile resins source category covering the production of nitrile resins has been added to the source category list under section 112(c) of the Act and to the source category schedule under section 112(e) of the Act. Nitrile resins production has been included as one of the seven source categories regulated under the final rule.

Comment: One commenter (IV-D-25) recommended that the final rule exempt processes which manufacture resin-containing binder systems for paints, coatings, or adhesives. The commenter (IV-D-25) stated that production of some resins subject to the proposed rule, such as SAN, are incidental to a number of paint manufacturing processes. The commenter (IV-D-25) stated that if the definitions and applicability provisions of the proposed rule are read too narrowly, there may be ambiguity as to whether such paint manufacturing facilities are subject to the rule. The commenter (IV-D-25) noted that the paint, coating, and adhesive manufacturing source category will be subject to a NESHAP scheduled for promulgation by November 15, 2000.

Response: Processes which manufacture resin-containing binder systems for paints, coatings, or adhesives are not subject to the final rule. To clarify this, the EPA has added a specific exemption to the applicability provisions of the final rule. The exemption, which is in §63.500(d)(2) **[§63.1310(d)(2)]**, states that processes which manufacture binder systems containing a thermoplastic product for paints, coatings, or adhesives are exempted from the definition of

affected sources; therefore, these processes are not subject to the rule.

Comment: One commenter (IV-D-04) requested that an exemption be added to §63.500(d) of the rule to exempt plastic parts molding processes which manufacture a thermoplastic product. The commenter (IV-D-04) offered an example of a plastic parts molding process as one in which two chemicals are combined in a mold, a chemical reaction (typically polymerization) occurs, and the materials harden in the mold to form the intended plastic part. The commenter (IV-D-04) stated that they do not currently manufacture thermoplastic products by molding operations. However, the commenter (IV-D-04) was concerned that if styrene were used in such a process, there may be the possibility that all the applicability criteria in the proposed rule could be met. Further, although it is unlikely that any emission limitations in the proposed rule would apply to such a process, the commenter (IV-D-04) was concerned that recordkeeping and reporting requirements could apply. The commenter (IV-D-04) stated that these requirements would provide no environmental benefit and would impose a burden on a source for a process that the commenter presumed the EPA had not intended to regulate.

Response: The EPA did not intend to regulate plastic parts molding process operations under the thermoplastics rule. To clarify this, the EPA has added a specific exemption to the applicability provisions of the final rule. The exemption appears in §63.500(d)(2) **[§63.1310(d)(2)]** and states that polymerization processes that occur in a mold are exempted from the affected source.

2.2 SELECTION OF SOURCE

2.2.1 Area source

Comment: One commenter (IV-D-05) requested that the EPA defer permitting of area sources in the final rule. The commenter (IV-D-05) contended that State agencies have a significant burden in the permitting of major sources at this time. Another commenter (IV-D-10) contended that the EPA is

illegally attempting to regulate area sources located at a plant site, one or the other which is a major source. The commenter stated that subjecting small TPPUs located at a plant site that is a major source to this rule is unjustified and contrary to the Congressional intent that only major sources be regulated by NESHAP. The commenter (IV-D-10) contended that the EPA does not have the statutory authority to regulate area source process units in a source category unless it first makes the necessary finding that these area sources present a threat of adverse effects to human health or the environment.

Response: The EPA is not regulating area sources under this rulemaking, and therefore, the rule does not trigger the requirement in §63.1(c)(2) of subpart A to determine whether area sources will require permits.

The final rule only regulates emission points at major sources. [Note: The area source/major source determination is made for the plant site, not for each individual TPPU at the plant site, and the term major source is defined in §63.2 of subpart A.]

The addition of process units to a major source is addressed in the next section of this document (i.e., Section 2.2.2).

2.2.2 Major source

Comment: Three commenters (IV-D-09, IV-D-10, IV-D-18) urged the EPA not to apply new source requirements to a TPPU that is added to a major source when the potential emissions of the added TPPU are below major source levels. The commenters (IV-D-09, IV-D-10, IV-D-18) stated that according to §63.500(g)(1) of the proposed rule, the new source requirements will apply to any TPPU that is added to a major source, regardless of the potential emissions of the TPPU. Two of the three commenters (IV-D-09, IV-D-18) specifically stated that the proposed rule does not specify the potential emissions for the added TPPU. The two commenters (IV-D-09, IV-D-18) stated that the proposed rule is more stringent than the HON, which applies new source requirements only if the

added process unit has emissions above the major source levels. The commenters (IV-D-09, IV-D-10, IV-D-18) urged the EPA to revise the provisions in the thermoplastics rule to match the requirements of the HON.

Response: The EPA reviewed and modified the provisions of the proposed rule for applying new and existing source requirements for changes and/or additions made at existing plant sites. These provisions were in §63.500(g) and (h) of the proposed rule; they are now addressed in §63.500(i) **[§63.1310(i)]** of the final rule.

The EPA agrees with the commenters that a TPPU that is added to an existing plant site should be subject to new source requirements only when the added TPPU has emissions above the major source levels, as applied to the HON. [Note: Major source levels refers to the potential to emit 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAP.] However, as applied to the thermoplastics rule, determining whether to apply existing or new source requirements to a TPPU added to an existing plant site requires an examination of the thermoplastic product being manufactured. The EPA finds that a TPPU that is added to an existing plant site should be subject to new source requirements when said TPPU has emissions above the major source levels and the TPPU manufactures a thermoplastic product currently manufactured at that plant site. If the new TPPU manufactures a thermoplastic product not previously manufactured at that plant site, said TPPU is subject to new source requirements regardless of the emission levels. The second scenario differs from the HON because the HON covers only one source category. The thermoplastics rule covers multiple source categories (7 source categories containing a total of 19 subcategories). Because the affected source, as defined for this rule, is limited to a single subcategory, the addition of a TPPU producing a thermoplastic product not currently manufactured at the plant site equates to adding an affected source to the plant site. All new affected sources are subject to new source requirements, regardless of their

potential to emit. The final provisions for §63.500(i)(1)(i) **[§63.1310(i)(1)(i)]** are as follows:

> (i) If a TPPU is added to a plant site, said addition shall be subject to the requirements for a new affected source in this subpart upon initial start-up or by **[insert publication date]**, whichever is later, if said addition meets the criteria specified in paragraphs (i)(1)(i)(A) through (i)(1)(i)(B) and either (i)(1)(i)(C) or (i)(1)(i)(D) of this section:
>
> (A) Said addition meets the definition of construction in §63.2 of subpart A;
>
> (B) Such construction commenced after March 29, 1995; and
>
> (C) Said addition has the potential to emit 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAP, and said addition manufactures a thermoplastic product currently produced at the plant site; or
>
> (D) Said addition manufactures a thermoplastic product not previously produced at the plant site.

The intention of the other provisions contained in proposed §63.500(g) and (h) were not changed substantively, however, they were substantially revised to state the intended requirements more clearly.

2.2.3 Affected Source

Many commenters were confused about the meaning of "affected source" in the proposed rule. The following comments and responses present their concerns and explain how the EPA has clarified the meaning of "affected source" and related terms for the final rule.

Comment: Three commenters (IV-D-11, IV-D-17, IV-D-20) supported the use of "affected source" in the proposed rule. Three commenters (IV-D-10, IV-D-11, IV-D-18) suggested ways the term "affected source" could be clarified in the final rule. One of these commenters (IV-D-10) asserted that the definition of "affected source" in §63.502 of the proposed rule was unnecessary, unclear, and internally inconsistent. The commenter (IV-D-10) stated that "affected source" was defined in subpart A and was clarified in §63.500(b) of the proposed rule; therefore, given these clear designations in

the applicability section of the rule, the definition of "affected source" in §63.502 of the proposed rule caused confusion and should be deleted.

The commenter (IV-D-10) stated that the definition was also unclear in that it defined "affected source" to be "... all TPPUs at a plant site ...", but also stated that "... if a process unit produces more than one thermoplastic product type in the same equipment, then that process unit shall be a single affected source." The commenter (IV-D-10) stated that it was unclear whether the affected source was the group of all TPPUs at a site or individual TPPUs when different thermoplastic products are produced. The commenter (IV-D-10) stated that this inconsistent language was confusing.

Two commenters (IV-D-11, IV-D-18) expressed confusion about the definitions of "source (affected source)" and "TPPU." The commenters (IV-D-11, IV-D-18) stated that the HON carefully differentiated between "source" and "process unit" (i.e., TPPU), but the proposed rule has confused the two terms.

Response: The meaning of "affected source" was not clear in the proposed rule and it has been clarified in the final rule. The definition of "affected source" included in §63.502 of the proposed rule has been revised to remove all descriptive language and now refers to §63.500(a) **[§63.1310(a)]**. At proposal, the provisions in §63.500(a) tied applicability of the rule to the existence of one or more TPPUs. In the final rule, these provisions define applicability of the rule in terms of the affected source. Also, §63.500(b) **[§63.1310(b)]** of the final rule does not contain the provisions previously found in §63.500(b) of the proposed rule that described the affected source.

In the final rule, under §63.500(a) **[§63.1310(a)]**, "affected source" is defined as the following:

(a) Definition of affected source. The provisions of this subpart apply to each affected source. An affected source is either an existing affected source or a new affected source. Existing affected source is defined in paragraph (a)(6) of this section, and new affected source is defined in paragraph (a)(7) of this section. The affected source also includes the emission points and equipment specified in paragraphs (a)(1) through (a)(5) of this section that are associated with each group of TPPU.

(1) Each wastewater stream;

(2) Each wastewater operation;

(3) Each heat exchange system;

(4) Each process contact cooling tower used in the manufacture of PET that is associated with a new affected source; and

(5) Each process contact cooling tower used in the manufacture of PET using a continuous terephthalic acid high viscosity multiple end finisher process that is associated with an existing affected source.

(6) Except as specified in paragraphs (b) through (d) of this section, an existing affected source is defined as each group of one or more thermoplastic product process units (TPPUs) that is not part of a new affected source as defined in paragraph (a)(7) of this section, that is manufacturing the same primary product, where each TPPU uses as a reactant, or uses as a process solvent, or produces as a by-product or co-product any organic hazardous air pollutant (organic HAP), and that is located at a plant site that is a major source.

(7) Except as specified in paragraphs (b) through (d) of this section, a new affected source is defined as a source meeting the criteria of paragraph (a)(7)(i), (a)(7)(ii), or (a)(7)(iii) of this section.

(i) At a plant site previously without HAP emissions points, each group of one or more TPPUs manufacturing the same primary product that is part of a major source on which construction commenced after March 29, 1995,

(ii) A TPPU meeting the criteria in paragraph (i)(1)(i) of this section, or

(iii) A reconstructed affected source meeting the criteria in paragraph (i)(2)(i) of this section.

The definition of "affected source" states that each affected source will include all TPPUs at the plant site that produce the same thermoplastic product as their primary product that are not included as part of a new affected source. Also, each affected source will include each wastewater stream and operation originating from the TPPUs included in the affected source, each heat exchange system

associated with the TPPUs included in the affected source, and each process contact cooling tower used in the manufacture of PET associated with the TPPUs included in the affected source. If only one TPPU produces a given thermoplastic product, then the affected source will be comprised of the one TPPU and any wastewater streams and operations, heat exchange systems, and process contact cooling towers used in the manufacture of PET associated with that one TPPU, as applicable. If six TPPUs all produce the same thermoplastic product as their primary product, then the affected source will be comprised of the six TPPUs and any wastewater streams and operations, heat exchange systems, and process contact cooling towers used in the manufacture of PET associated with those six TPPUs, as applicable.

For the final rule, the number of affected sources present at an existing plant site that is limited to existing TPPUs will equal the number of thermoplastic products manufactured at that plant site. If a plant site has three affected sources, then three thermoplastic products are manufactured at said plant site. Each thermoplastic product is in a different subcategory; there are 19 subcategories within the 7 source categories covered by the rule. The number of affected sources could be as few as 1 affected source and as many as 19 affected sources. [Note: A plant site with new and existing TPPUs may not follow the above example because a new TPPU (i.e., an added TPPU) may or may not be a new affected source.]

This scenario differs from the HON rule which covers a single source category and defines affected source such that there is one existing affected source per plant site. This significant difference between these two rules is a result of the requirement in the Act that states that the scope of an affected source cannot extend across source categories or subcategories.

The revisions to the definition of affected source and TPPU have addressed commenter concerns that the proposed rule confused the two terms of "affected source" and "TPPU." In

the final rule, a TPPU is defined as a distinct entity and an affected source is made up of one or more TPPU and other associated equipment.

Comment: Six commenters (IV-D-07, IV-D-08, IV-D-10, IV-D-11, IV-D-15, IV-D-18) urged the EPA to clarify the proposed definition of "TPPU." Some of the commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-18) asked that the proposed definition of "TPPU" be clarified and revised to closely match the definition of "chemical manufacturing process unit," as used in the HON. These commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-18) believed this clarification/revision would avoid applicability determination problems.

Four commenters (IV-D-07, IV-D-10, IV-D-11, IV-D-15) stated that the definition of "TPPU" should include process equipment, such as raw material storage tanks and product storage vessels; however, ancillary equipment such as the wastewater treatment facility, cooling towers, and heat exchangers should not be included in the definition of "TPPU." Four commenters (IV-D-07, IV-D-11, IV-D-15, IV-D-18) felt ancillary equipment should be removed from the equipment list in §63.500(b) of the proposed rule because ancillary equipment is not directly used to produce thermoplastics. Specifically addressing wastewater, two commenters (IV-D-07, IV-D-08) requested that the EPA clarify that wastewater and associated treatment residuals are part of the affected source (i.e., subject to the rule), but are not part of the TPPU. The commenters (IV-D-07, IV-D-08) stated that a stream becomes wastewater when it exits the process unit, on its way to treatment or disposal, and that the process unit is supposed to consist of equipment that produces a product.

Four commenters (IV-D-07, IV-D-10, IV-D-11, IV-D-15) contended that the EPA must provide a clearly defined boundary for the TPPU. One commenter (IV-D-10) stated specific concerns with the definition of TPPU as it relates to shared equipment. This commenter (IV-D-10) described a very complex system of process lines that pass product back and forth across process lines and that share reactors, dryers, and

other unit operations. The commenter (IV-D-10) expressed concern with how to determine the boundary of the TPPU. In their described collection of process lines, the commenter (IV-D-10) was not certain which process lines would be "connected" and, therefore, part of a single TPPU.

To illustrate the uncertainty and confusion in the proposed definition of TPPU, the commenter (IV-D-10) provided the following discussion: consider, for example, two or more separate process trains which share one or more manufacturing components (e.g., a shared dryer or reactor). Such a collection of equipment would arguably be a single TPPU. Viewing the separate process trains as individual TPPUs could lead to conflicting compliance requirements, especially for the shared components. Therefore, designating this collection of equipment as a single TPPU would be logical. However, the commenter (IV-D-10) stated that the proposed definitions of TPPU, affected source, and process unit do not clearly indicate that two or more process trains that share some common process equipment would be considered a single TPPU. The commenter (IV-D-10) stated that designating the entire collection of equipment as a single process unit, identified by its primary product, would lead to a consistent and uniform set of compliance requirements that would also be consistent with interpretations provided by the EPA under various NSPS (subpart III and NNN), where affected sources which are connected to common equipment (such as recovery devices) are considered together as a single affected source.

Next, three commenters (IV-D-07, IV-D-11, IV-D-15) explained that the definition of "TPPU" states that "a compounding unit is not part of the TPPU." However, in the proposed rule, §63.505(b)(2) and §63.505(b)(3) require that continuous and batch vents from "other parts of the process" comply with §63.505(a). In addition to compounding units, the commenters (IV-D-07, IV-D-11, IV-D-15) requested that the EPA exclude other post-polymerization units such as spinning units, drawing units, and extruding units from the definition of "TPPU" to avoid inconsistent interpretations of the rule.

Response: The definition of "TPPU" in §63.502 **[§63.1312]** has been clarified for the final rule. The EPA agreed with many of the suggestions for clarification submitted by the commenters, and the EPA has revised the final rule. The revised definition of "TPPU" is included below, along with a discussion of the major changes made to the definition.

> Thermoplastic product process unit (TPPU) means a collection of equipment assembled and connected by pipes or ducts, excluding gas, sanitary sewage, water (i.e., not wastewater), and steam connections, used to process raw materials and to manufacture a thermoplastic product as its primary product. This collection of equipment includes process vents from process vessels; storage vessels, as determined in §63.500(g) **[§63.1310(g)]**; and the equipment (i.e., pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, instrumentation systems, surge control vessels, and bottoms receivers that are associated with the thermoplastic product process unit) that are subject to the equipment leak provisions as specified in §63.509 **[§63.1331]**.

First, the EPA agreed with the commenters that the definition of "TPPU" should include a list of the collection of equipment that comprises a TPPU. Such a change makes the definition of TPPU very similar to the definition of "chemical manufacturing process unit" from the HON.

Second, the EPA agreed with the commenters that emission points such as wastewater streams and operations, heat exchange systems, and process contact cooling towers used in the manufacture of PET are ancillary equipment and should not be defined as part of the TPPU. Therefore, said emissions points were removed from the list of equipment that was included in the revised definition of "TPPU." In the final rule, these emission points are included in the definition of "affected source" in §63.500(a) **[§63.1310(a)]**.

Third, commenters requested clarification on the boundaries of the TPPU, and one commenter was specifically concerned when multiple process units share equipment (i.e., beyond raw material or product storage vessels). As

discussed above, the revised definition of TPPU does not include ancillary equipment; the EPA believes this change significantly improves the description of the TPPU boundary. Speaking to comments regarding shared equipment, the proposed rule was unclear as to at what level (i.e., affected source or TPPU) shared equipment was to be considered. Because the provisions discussing the affected source in the proposed rule included the list of equipment to be regulated, it was possible to interpret that shared equipment was to be considered in relation to the affected source. On the other hand, §63.500)(f) of the proposed rule clearly assigned shared storage vessels to an individual TPPU. In the final rule, the EPA considers it most appropriate to link the concept of shared equipment to the TPPU. By removing the list of equipment from the definition of affected source and putting it in the definition of TPPU and by disassociating ancillary equipment and emission points (e.g., heat exchange systems) from the TPPU list of equipment, the revised final definitions of "affected source" and "TPPU" clarify the boundary of the TPPU and clarify the concept of shared equipment.

One commenter was particularly concerned with a complex scenario of interrelated process lines. The sharing of raw material or product storage vessels by two or more TPPUs does not "connect" the TPPUs. The provisions in §63.500(g) **[§63.1310(g)]** of the final rule assign storage vessels that are shared among two or more TPPUs to a specific TPPU for purposes of regulation. If two TPPUs share a different type of equipment, for example a dryer, and said TPPUs meet the criteria of the definition of TPPU describing "connected", then said TPPUs are considered to be a single TPPU. If two TPPUs share only storage vessels, then each TPPU is considered a separate entity. The storage vessels would be assigned to one of the TPPUs as discussed earlier.

Fourth, the EPA agreed with commenters that, in addition to compounding units, other post-polymerization units should not be included as part of the TPPU. In order to clearly exempt these processes in the final rule, the EPA has listed

them in §63.500(d) **[§63.1310(d)]**, which excludes certain processes from the affected source.

Comment: One commenter (IV-D-10) stated that the paired definitions of "process unit" and "TPPU" in the proposed rule were confusing. The commenter (IV-D-10) suggested consolidating the concept of "process unit" or "TPPU" (i.e., a collection of equipment assembled and connected by pipes or ducts to process raw material and manufacture an intended thermoplastics product) into a single definition which includes all the intended attributes of a TPPU.

Response: The EPA has clarified the difference between the terms "process unit" and "TPPU" in the final rule. A discussion of the changes made to the definition of "TPPU" is presented in the previous comment and response. At proposal, the term "process unit" meant equipment used to manufacture an intended thermoplastic product. This definition overlapped with the definition of "TPPU" and did not account for equipment used to manufacture a product which may or may not be a thermoplastic product. Therefore, the EPA revised the definition of "process unit" for the final rule to mean a collection of equipment assembled and connected by pipes or ducts to process raw materials and to manufacture a product. This definition is broad and includes TPPUs as well as process units used to manufacture nonthermoplastic products.

It is necessary to have a definition for process unit and TPPU because the provisions for determining primary product, which are fundamental to determining applicability of the rule, require the use of both terms. Until the primary product is determined, "a collection of equipment assembled and connected by pipes or ducts to process raw materials and to manufacture a product" is known as a process unit. Only once the primary product is determined to be a thermoplastic product, as defined by the final rule (i.e., 1 of the 19 subcategories), is this same entity known as a TPPU. The EPA considered revising the provisions for determining primary product to exclude the term process unit but found the

regulatory language to be obtuse and less precise than the final provisions.

Comment: Two commenters (IV-D-09, IV-D-18) supported the use of the primary product of a TPPU to determine applicability for the proposed rule.

One commenter (IV-D-25), however, contended that TPPUs which produce only thermoplastic products should be exempt from determining their primary product. The commenter (IV-D-25) explained that many TPPUs which produce PET are capable of using either TPA or DMT as raw materials. The commenter (IV-D-25) stated that such TPPUs would be considered flexible operation units under the proposed rule and would have to fulfill the requirements of §63.500(e)(3) of the proposed rule. Further, the commenter (IV-D-25) stated, because both products are thermoplastic products, such process units are unquestionably subject to the proposed rule and determining which product is the primary product is wasteful and unnecessary.

Response: The use of the primary product of a TPPU to determine applicability has been retained in the final rule. The primary product of a process unit is determined to see if said process unit meets the definition of a TPPU. If a process unit meets the definition of a TPPU and meets the other applicability criteria of §63.500(a) **[§63.1310(a)]** in the final rule, the owner or operator can determine the primary product to know which standards the TPPU must meet. [Note: The standards for process vents and storage vessels are different for some of the subcategories covered by the thermoplastics rule.]

The EPA understands that in the case of TPPUs which produce PET and are capable of using either TPA or DMT as raw materials, determining the primary product may seem bothersome and unnecessary. However, the EPA continues to find it necessary for the owners or operator to determine the primary product of a process unit. The EPA considered modifying the provisions related to demonstrating compliance for flexible operation units to incorporate flexibility for a process unit

producing only thermoplastic products to avoid determining its primary product. However, the EPA judged that the added complexity to the rule was not justified. Therefore, the final rule continues to require the owner or operator to determine the primary product of each process unit.

The final provisions for determining the primary product have been expanded and clarified. Language has been added to the final rule specifying that the affected source is required to comply only with the standards that pertain to the primary product of the TPPU. This provision will prevent owners and operators from having to comply with two sets of standards if two or more thermoplastic products are produced by a single affected source.

In the proposed rule, the EPA stated that for flexible operation units, the primary product should be determined based on the expected operations for the 5 years following the promulgation date for existing sources and for the first 5 years after the initial start-up for new affected sources. The purpose of these provisions is to preclude the owner or operator of the TPPU from having to redetermine their primary product as a result of a small process change. The 5-year time frame was provided to coordinate with the operating permits program. The final rule continues to base the primary product determination for flexible operation units on a 5-year time frame.

These provisions were further modified to provide clarification of the EPA's intent and flexibility in complying with the provisions. Under the final rule, once an owner or operator commits to being subject to this rule, there are two options for complying. Under the first option, an owner or operator shall determine the group status (i.e., Group 1 or Group 2) of each emission point based on the production of the expected primary product (i.e., the thermoplastic product that convinced the owner or operator to commit to being subject to this rule). Once the group status of each emission point is determined, the owner or operator shall comply with the applicable emission standards at all times, regardless of what

product is being manufactured. Under the second option, an owner or operator shall determine the group status of each emission point each time a different product is being manufactured, regardless of whether or not said product is a thermoplastic product. The EPA recognizes that neither option is an ideal situation. Under the first option, an owner or operator may find themselves operating a control device to control a Group 1 emission point that has no or negligible emissions when a different product is being manufactured. Under the second option, an owner or operator may find themselves performing multiple group determinations. Again, the EPA recognizes that neither option is an ideal situation, but believes the tradeoff between these inconveniences and moving in and out of separate MACT standards is worthwhile.

Provisions have been added to the final rule for demonstrating compliance with the rule during those periods when a flexible operation unit is producing a product other than a thermoplastic product or is producing a thermoplastic product that is not the primary product. These provisions require the owner or operator to establish new parameter monitoring levels or to demonstrate that the parameter monitoring levels established for the primary product are appropriate for those periods when products other than the primary product are being produced.

Comment: One commenter (IV-D-18) recommended that §63.500(f)(2)(ii)(B) of the proposed rule be revised to address situations where multiple on-site and off-site process units have input to or output from a storage vessel. The commenter (IV-D-18) explained that the proposed provisions are adequate if there is only one on-site process unit using the storage vessel. However, if there are two or more on-site process units using the storage vessel, the proposed provisions do not provide guidance. The commenter (IV-D-18) stated that there may be many situations where this situation occurs so it is important to provide clarification in the rule.

The commenter (IV-D-18) also recommended that §63.500(f)(2)(ii) of the proposed rule be amended to address situations where a storage vessel serves both a TPPU and a different process unit that is subject to another MACT standard. The commenter (IV-D-18) stated that assigning the storage vessel to both process units is duplicative and will not provide additional corresponding benefit. The commenter (IV-D-18) continued that even if the two rules allow exactly the same control technology, there will still be duplicative recordkeeping and reporting burdens. The commenter (IV-D-18) suggested that the rule be revised to avoid this situation by allowing the owner or operator to choose to follow the first MACT standard to become effective for the storage vessel.

Response: The proposed rule was changed to address the commenter's concerns. In the final rule, situations where off-site and on-site process units use the same storage vessel are addressed by §63.500(g)(3) **[§63.1310(g)(3)]**. Under these provisions, if a storage vessel is shared among process units, then the storage vessel belongs to the process unit located on the same plant site that has the greatest input into or output from the storage vessel.

In the final rule, situations where multiple on-site process units use the same storage vessel and a predominant use cannot be determined are addressed by §63.500(g)(4) and (g)(5) **[§63.1310(g)(4) and (g)(5)]**. Under §63.500(g)(4) **[§63.1310(g)(4)]**, if predominant use cannot be determined for a storage vessel that is shared among process units, and if one of the process units is a TPPU subject to this subpart, the storage vessel shall belong to that TPPU. Under §63.500(g)(5) **[§63.1310(g)(5)]**, if predominant use cannot be determined for a storage vessel that is shared among process units and, if more than one of the process units are TPPUs that have different primary products and that are subject to this subpart, then the owner or operator shall assign the storage vessel to any one of the TPPUs.

Finally, situations where a storage vessel may already be subject to another MACT standard are addressed by

§63.500(g)(1) **[§63.1310(g)(1)]**. If a storage vessel is already subject to another MACT standard, the storage vessel must continue to comply with that standard and would not be subject to the thermoplastics rule.

Comment: One commenter (IV-D-10) stated that some of the plant sites that produce the thermoplastic products covered by the proposed rule also contain equipment used in the production of elastomer products expected to be subject to the elastomers rule (subpart U). For example, the commenter (IV-D-10) explained, ABS production plant sites may also produce polybutadiene latex at the same location. The commenter (IV-D-10) recommended that the EPA definitively establish the limits of the process operations affected by each of these future rules.

Response: The EPA has added language to the final rule in §63.500(e) **[§63.1310(e)]** to clarify when equipment that is used to produce a non-thermoplastic product that is subsequently used to produce a thermoplastic product is subject to this subpart. The provisions state that if a polymer that is not subject to this subpart is produced within the equipment (i.e., collocated) making up a TPPU and that at least 50 percent of the polymer is used in the production of a thermoplastic product, the unit operations involved in the production of the polymer are considered part of the TPPU and are potentially subject to this rule. These provisions do not apply if the unit operations are already subject to another MACT standard regulating the same emission points.

Comment: One commenter (IV-D-09) urged the EPA to remove the references to by-product and co-product from the applicability section in §63.500(a)(2) of the proposed rule. The commenter (IV-D-09) noted that the preamble (60 FR 16093) to the proposed rule states that "applicability will be based on the primary product ... by-products, co-products, and isolated intermediates would not be considered in determining applicability." The commenter (IV-D-09) also noted that according to HON BID Volume 2D, by-product/co-product language is not used in the HON rule.

Response: The commenter is correct that the preamble to the proposed rule stated that the applicability of the proposed rule is based on the primary product for a process unit, and this concept was retained in the final rule. Further, the preamble also stated that by-products, co-products, and isolated intermediates will not be considered in determining applicability, however, this language is misleading. While by-products, co-products, and intermediates are not considered products of a process, they are considered in determining whether the rule applies to a TPPU.

The proposed and final rule applies to TPPUs that emit organic HAP in the manufacture of a primary product. If the primary product does not use as a reactant, or use as a process solvent, or produce as a by-product or co-product any organic HAP, then it is not subject to the final thermoplastics rule. Similar by-product/co-product criteria are used in the HON rule.

Comment: One commenter (IV-D-04) recommended that the concept of "predominant use" for applicability determinations be expanded to include recovery operations. The commenter (IV-D-04) was concerned that recovery operations which are ancillary to the polymer manufacturing process (i.e., recovery operations whose predominant use is to serve a process other than a polymer manufacturing process) may be considered part of the TPPU unless clarification is made in the final rule. For example, the commenter (IV-D-04) explained, methanol and ethylene glycol recovery operations, whose predominant use is to serve a PET manufacturing process, may have multiple "product streams" depending on the height and temperature profile of the distillation column serving the polymer manufacturing process. While the predominant use of these recovery operations is to purify material that is returned directly to the PET TPPU, minor side streams may be sent for further purification to another recovery operation that is distinct from the PET manufacturing process. The primary purpose or predominant use of this other, "non-PET" recovery

operation is the purification of material from nonpolymer manufacturing processes.

The commenter (IV-D-04) encouraged the EPA to establish a process for assigning recovery operations to process units to ensure that recovery operations integral to the polymer manufacturing processes are covered by the rule, and that recovery operations ancillary to the polymer manufacturing process are not subject to the rule. The commenter (IV-D-04) requested that a new paragraph be added to §63.500, and that this paragraph be worded the same as §63.500(f) except that the term "recovery operation" be substituted for "storage vessel" in the new paragraph.

Response: Provisions to assign recovery operations equipment to an individual process unit have been added to the final rule [§63.500(h) **[§63.1310(h)]**]. These added provisions are very similar to the provisions used to assign storage vessels to process units [§63.500(g) **[§63.1310(g)]**] and they borrow principles from the provisions used to designate the primary product of a flexible operation unit [§63.500(f) **[§63.1310(f)]**]. Specifically, determining the predominant use of recovery operations equipment for which operations vary from year to year is based on a 5-year projection. And, once recovery operations equipment have been assigned to a process unit, the owner or operator is never required to redetermine the assignment. If desired, an owner or operator may reassign recovery operations equipment to another process unit at any time. However, such an action would likely require amending the facility's operating permit or permit application because the applicable requirements for the facility would change. [Note: Recovery operations equipment has been defined in the final rule.]

2.2.4 Exemptions

Comment: Four commenters (IV-D-03, IV-D-04, IV-D-10, IV-D-11) supported §63.500(c) of the proposed rule which exempts vessels storing organic liquids that contain organic HAP only as impurities from the proposed rule. In addition, three of these commenters (IV-D-03, IV-D-04, IV-D-10)

suggested the provisions be expanded to also exempt vessels and equipment containing nonliquid material (i.e., activities such as storing, moving, and handling solid material) that contain organic HAP only as impurities. The commenters (IV-D-03, IV-D-04, IV-D-10) also requested that the exclusion apply to vessels that contain no organic HAP. One commenter (IV-D-10) also requested that this same change be made in item (4) of the definition of storage vessel in §63.502 of the proposed rule.

Response: The EPA has addressed the commenter's concerns in §63.500(c)(5) **[§63.1310(c)(5)]** of the final rule and item (4) in the definition of storage vessel in §63.502 **[§63.1312]**. The provisions now read as follows:

> Vessels and equipment storing and/or handling material that contains no organic HAP and/or organic HAP as impurities only.

Comment: Six commenters (IV-D-04, IV-D-06, IV-D-11, IV-D-17, IV-D-20, IV-D-21) discussed the provisions for solid state processes collocated with PET processes in §63.500(d)(4) of the proposed rule. The commenters (IV-D-04, IV-D-06, IV-D-11, IV-D-17, IV-D-20, IV-D-21) agreed with the EPA's conclusion that emissions from independently located solid state processes are insignificant and should be exempted from regulation. In addition, four of the commenters (IV-D-04, IV-D-11, IV-D-17, IV-D-20) contended that all solid state polymerization units, including collocated units, should be exempted from regulation. The commenters (IV-D-04, IV-D-11, IV-D-17, IV-D-20) stated that solid state polymerization units are a vastly different technology than DMT and TPA processes and have different emission characteristics.

One commenter (IV-D-06) believed the EPA intended to regulate solid state PET processes which are directly connected to the manufacturing process. The commenter (IV-D-06) stated that the proposed rule includes all solid state PET processes located at the same plant site. The commenter (IV-D-06) suggested the provisions be reworded to exclude solid state PET processes not directly connected to

the virgin resin manufacturing process. The commenter (IV-D-06) explained that solid state PET units not directly connected to the virgin resin process are distinctly different processes which should not be regulated under this rule.

Three commenters (IV-D-11, IV-D-17, IV-D-20) stated that solid state processes should not be controlled unless the EPA first performs a MACT floor determination and cost analysis. One commenter (IV-D-04) stated that the solid state processes should not be controlled unless the EPA establishes them as a separate source category and conducts emission surveys from all such sources as part of the rulemaking process. Two commenters (IV-D-17, IV-D-20) recommended that the EPA consider solid state processes to be a class or type of source within each subcategory (as allowed by Section 112(d)(1) of the Act) and determine if the requirement to control existing sources beyond the floor is reasonable. The commenters (IV-D-17, IV-D-20) stated that if the EPA determines that control of solid state processes is warranted, then all solid state processes should be controlled, not just those that are collocated with PET production processes. The commenters (IV-D-17, IV-D-20) contended that the EPA has provided no cost justification for controlling collocated solid state processes, and likewise, has provided no cost justification for excluding stand-alone units. Four commenters (IV-D-04, IV-D-11, IV-D-17, IV-D-20) stated that the proposed rule places collocated units at an unwarranted competitive disadvantage.

Response: The information gathering surveys used by the EPA (i.e., Section 114 questionnaires and generic information collection requests) did not distinguish solid state processes from DMT or TPA processes. At the time the surveys were prepared, the EPA did not have the specific knowledge required to adequately and accurately make a distinction between solid state and DMT/TPA processes. Second, to avoid precluding the industry from providing information on a process unknown to the EPA or on a process that varied from the "typical," the EPA chose not to distinguish PET processes in any great level

of detail. Therefore, those industry members who did provide data on solid state processes, did not identify the distinctions between solid state and DMT/TPA processes that have become apparent during the comment period. As a result, the EPA had minimal data concerning solid state processes, and the available data were incomplete because they did not accurately portray the differences between solid state and DMT/TPA processes.

Given this, and based on the comments received since the proposal, the EPA has concluded that solid state processes are distinct from DMT/TPA processes. Furthermore, the EPA has little data concerning solid state processes, and the required analysis for regulating solid state processes in the final rule have not been performed at this time. Therefore, solid state processes will not be regulated as part of the final rule.

Comment: One commenter (IV-D-21) contended that as written, the proposed rule implies that emissions from solid state processes are part of the polymerization reaction section. The commenter (IV-D-21) stated that where solid state processes exist, they are distinctly separate processes from melt-phase (i.e., DMT/TPA) PET production facilities. The commenter (IV-D-21) also stated that the inference that solid state processes are part of the polymerization reaction section causes difficulties in determining compliance. The commenter (IV-D-21) explained that at their facilities, solid state processes are operated and managed separately from the production of low molecular weight PET. The commenter (IV-D-21) requested that solid state processes not be considered part of the polymerization reaction section, and that the definition of "polymerization reaction section" specifically state this.

Response: As explained in response to the previous comment, the final rule does not regulate solid state processes. The EPA did not intend for unit operations involved in the solid state process to be included in the polymerization reaction section. In the final rule, solid

state processes have been excluded from the affected source in §63.500(d)(4) **[§63.1310(d)(4)]**.

Comment: One commenter (IV-D-04) disagreed with the EPA's rationale that, because HAP emissions from independently located solid state processes are not significant, independently located solid state processes are likely to be "nonmajor sources," and thus, they would not be subject to the proposed rule. The commenter (IV-D-04) explained that the determination as to whether a source is "major" or "area" (i.e., nonmajor) is based on the collective HAP emissions potential of all sources located at the contiguous plant site, not solely those emission points associated with a specific process. The commenter (IV-D-04) was concerned that the proposed rule establishes an artificial distinction between collocated and independently located solid state processes that will arbitrarily assign a competitive disadvantage to collocated processes, irrespective of HAP emission potential.

Response: The EPA agrees with the commenter in principle (i.e., a source is major or area based on the collective HAP emissions from all activities at the contiguous plant site). The EPA made the statements concerning independently located solid state processes based on limited information indicating that these processes would be the only activity at these plant sites. As explained in response to an earlier comment, the EPA did not collect or receive data sufficient to analyze solid state processes. As a result, the final rule does not regulate solid state processes.

2.3 SELECTION OF POLLUTANTS

Comment: Numerous commenters (IV-D-07, IV-D-08, IV-D-09, IV-D-10, IV-D-11, IV-D-18, IV-D-21) recommended that the EPA restrict the list of organic HAP in the final rule to those that are used or are present in significant quantities at TPPUs (IV-D-11) or to those that are listed in the HON, subpart F, Table 2. One of these commenters (IV-D-09) requested that once the major organic HAP of concern have been identified, the owner or operator only be required to identify any other organic HAP contained on the subpart F, Table 2 list

which are: (1) specifically used in the TPPU, and (2) present in any material introduced into the TPPU provided the used or introduced material contains organic HAP above significant levels (1 percent for noncarcinogens or 0.1 percent for carcinogens).

Some commenters (IV-D-07, IV-D-08, IV-D-09, IV-D-11) stated that the definition of organic HAP in the proposed rule is confusing and will be difficult for the regulated community to interpret and for the regulators to enforce. Three commenters (IV-D-08, IV-D-09, IV-D-11) noted that the proposed definition of organic HAP would include all 189 HAP "commonly considered to be organic" and "contain(ing) one or more carbon atoms." Two commenters (IV-D-09, IV-D-11) explained that as defined, the owner or operator would be required to determine which HAP listed in the Act are organic and if any are present at the TPPU. Some commenters (IV-D-08, IV-D-09, IV-D-11) stated that the proposed approach will require needless and burdensome analysis for a large number of chemicals not typically present at thermoplastic manufacturing facilities. Also, the commenters (IV-D-07, IV-D-08, IV-D-11) claimed that the definition is so imprecise that it would include certain HAP, such as polycyclic organic matter (POM), that are defined so broadly in the Act that they encompass whole classes of materials, such as polymers (for instance polystyrene and PET).

One commenter (IV-D-08) questioned the applicability of the required monitoring methods to organic HAP which are not listed in Table 2 of the HON. The commenter (IV-D-08) stated that hydrogen cyanide is one such HAP for which monitoring by required methods would be problematic. The commenter (IV-D-08) stated that limiting organic HAP to those in Table 2 of the HON would cover all HAP expected from thermoplastic facilities and eliminate any potential problems with monitoring.

One commenter (IV-D-18) indicated five specific concerns with the definition as proposed; they are as follows:

(1) If Congress or the EPA identifies more HAP, this definition will not acknowledge them; it addresses only the original 189 HAP.

(2) The definition uses two different tests to identify an organic HAP. The two tests might produce different answers. First, the definition says an organic HAP is any HAP "commonly considered" to be organic. Then, the definition says a HAP is considered organic if it contains one or more carbon atoms. It seems quite possible that a HAP might have a carbon atom, but not be commonly considered organic. For example, the cyanide grouping (in substances such as hydrogen cyanide) includes a carbon atom, but is commonly considered inorganic.

(3) The EPA should not base the definition on whether a substance is commonly considered organic. This technique seems to require some sort of a poll or survey. Furthermore, it does not identify the group of people whose opinion matters. In the absence of further clarification, the commenter supposed that the definition must mean "commonly considered by the general public." The commenter doubted that most members of the general public have any opinion of whether specific substances are organic or not. And, in cases where opinions differed, what would they do. For example, the CRC Handbook of Chemistry and Physics lists carbon tetrachloride in its table of physical constants for inorganic compounds. We could interpret this to mean that carbon tetrachloride is "commonly" considered inorganic; however, at least in the regulatory field, we believe that carbon tetrachloride is "more commonly" considered organic. The HON (Table 2 to subpart F) lists carbon tetrachloride as an organic HAP. As you can see, considerable confusion will result if the EPA bases its definition on whether a substance is "commonly considered" organic.

(4) The EPA should not base this definition on whether a substance contains a carbon atom. Inorganic carbon compounds (such as cyanide compounds) exist, and some are currently HAP

or may be listed as such in the future. They are still inorganic, even though they have carbon in them.

(5) The proposed definition would let the applicability of this rule expand in unforeseeable ways. For example, Congress has identified "cadmium compounds," "mercury compounds," and "nickel compounds" as HAP. There must be literally thousands (perhaps tens of thousands, or even more) of individual substances that contain cadmium, mercury, or nickel somewhere in their molecular structure. Some of those compounds probably contain carbon and are commonly considered organic. These substances may exist in nature and, may possibly be trace contaminants in incoming raw materials, or even be present in metallic process equipment.

To avoid these five difficulties, the commenter (IV-D-18) suggested that the EPA borrow, by cross-reference, the definition of "organic hazardous air pollutant" from subpart F. The commenter (IV-D-18) explained that the definition refers to Table 2, where the organic HAP are listed by name and by the CAS registry number. Alternatively, if there is something about Table 2 that is inappropriate for the proposed rule, the commenter (IV-D-18) suggested that the EPA make up a new table that lists each of the organic HAP of concern. Either approach would eliminate all ambiguity, and it would also allow the EPA to incorporate any newly listed organic HAP by adding them to the table.

Response: In response to requests from commenters, the EPA has developed a list of known organic HAP for each subcategory that will be regulated by the thermoplastics rule. The list is presented in Table 6 of the final rule and is referred to by the revised definition of organic HAP found in §63.502 [§63.1312]. This table appears below as part of this response.

The revised definition was developed using available process description information received from industry and gathered from available literature. Because there may be additional organic HAP present at an affected source that were not included in Table 6, the final rule requires owners or

operators to notify the EPA of the presence of any additional organic HAP based on the following criteria: (1) the organic HAP is knowingly introduced into the manufacturing process other than as an impurity, or the organic HAP has been or will be reported under any Federal or State program, such as EPCRA or Title V; and (2) the organic HAP is presented in Table 2 of subpart F.

2.4 SELECTION OF THE STANDARDS (GENERAL)

Comment: One commenter (IV-D-02) supported the use of performance standards in the proposed rule. The commenter (IV-D-02) contended that allowing flexibility in complying with the rule ensures that the most practical and cost-effective options are available.

Response: The thermoplastics rule is written as a performance standard to allow the use of any control device that meets the performance requirements. Nothing in the rule precludes any technology from competing in the marketplace. The EPA even provides provisions for alternative control technologies and promotes innovative control strategies.

Comment: Four commenters (IV-D-11, IV-D-17, IV-D-20, IV-D-23) believed the EPA had not complied with the requirements of section 112(d) of the Act in developing the proposed thermoplastics rule. The commenters (IV-D-11, IV-D-17, IV-D-20, IV-D-23) contended that the EPA had not determined the MACT floor, as required by the Act.

Response: The EPA disagrees with the commenters assertion that the requirements of the Act were not met in developing the thermoplastics rule. A description of the methods used by the EPA to conduct the MACT floor analysis for the rule were included in the Basis and Purpose Document for the proposed thermoplastics rule (EPA-453/R-95-004a; March 1995). Specific comments about the MACT floor analysis and selection of the standards for different emission points and subcategories are included in this document in Chapter 7.0 for wastewater and Chapter 8.0 for equipment leaks.

Table 2.1. Known Organic Hazardous Air Pollutants from Thermoplastic Products

Thermoplastic Product/ Subcategory	Organic HAP/Chemical Name (CAS No.)						
	Acetaldehyde (75-07-0)	Acrylonitrile (107-13-1)	1,3 Butadiene (106-99-0)	1,4-Dioxane (123-91-1)	Ethylene Glycol (107-21-1)	Methanol (67-56-1)	Styrene (100-42-5)
ABS latex		✓	✓				✓
ABS using a batch emulsion process		✓	✓				✓
ABS using a batch suspension process		✓	✓				✓
ABS using a continuous emulsion process		✓	✓				✓
ABS using a continuous mass process		✓	✓				✓
ASA/AMSAN		✓	✓				✓
EPS							✓
MABS		✓	✓				✓
MBS			✓				✓
Nitrile resin		✓					
PET using a batch dimethyl terephthalate process	✓			✓	✓	✓	
PET using a batch terephthalic acid process	✓			✓	✓		
PET using a continuous dimethyl terephthalate process	✓			✓	✓	✓	
PET using a continuous terephthalic acid process	✓			✓	✓		
PET using a continuous terephthalic acid high viscosity multiple end finisher process	✓			✓	✓		

Table 1. Known Organic Hazardous Air Pollutants from Thermoplastic Products (Concluded)

Thermoplastic Product/ Subcategory	Organic HAP/Chemical Name (CAS No.)						
	Acetaldehyde (75-07-0)	Acrylonitrile (107-13-1)	1,3 Butadiene (106-99-0)	1,4-Dioxane (123-91-1)	Ethylene Glycol (107-21-1)	Methanol (67-56-1)	Styrene (100-42-5)
Polystyrene resin using a batch process							✓
Polystyrene resin using a continuous process							✓
SAN using a batch process		✓					✓
SAN using a continuous process		✓					✓

CAS No. = Chemical Abstract Service Number
ABS = Acrylonitrile butadiene styrene resin
ASA/AMSAN = Acrylonitrile styrene resin/alpha methyl styrene acrylonitrile resin
EPS = expandable polystyrene resin
MABS = methyl methacrylate acrylonitrile butadiene styrene resin
PET = poly(ethylene terephthalate) resin
SAN = styrene acrylonitrile resin

Comment: Three commenters (IV-D-08, IV-D-11, IV-D-23) contended that use of the HON, the Polymers Manufacturing NSPS, and the Batch Processes ACT as regulatory alternatives to the MACT floor is reasonable because they control similar emission points and have been extensively analyzed and demonstrated to be reasonable from a cost and impact perspective. However, the commenters (IV-D-08, IV-D-11, IV-D-23) argued that a regulatory impact analysis must be performed for any deviations from these alternatives that result in a significant increase in stringency, cost of compliance, or regulatory complexity. The commenters (IV-D-08, IV-D-11, IV-D-23) stated that, for the proposed rule, the underlying standards have been modified in significant ways, but the necessary impact analyses were not performed. The primary modification cited by the commenters (IV-D-08, IV-D-11, IV-D-23) was the lack of excused excursions. [Note: Comments concerning excused excursions are summarized and addressed in Chapter 11.0, Monitoring.]

Response: A formal regulatory impact analysis (RIA) document was not prepared for this rulemaking. A Regulatory Impact Analysis is only required for rules that are considered to be significant (i.e., a total annual cost of greater than $100 million); the thermoplastics rule is not a significant rule. The Act clearly requires the EPA to justify selecting standards beyond the MACT floor based on impact analyses, and the costs of the regulatory alternatives and of the economic impact were determined prior to proposal. The EPA disagrees with the commenters that any changes to the underlying standards must be subject to an impact analysis. As stated previously, the appropriate point at which impact analyses should begin is the MACT floor.

With the exception of the lack of excused excursions, which is discussed in Chapter 11.0, Monitoring, the EPA examined each instance where the selected standards were more stringent than the MACT floor. For those emission points and subcategories where the selected standards are more stringent than the MACT floor, impacts are presented in the Basis and

Purpose Document [EPA-453/R-95-004a], Chapter 8.0, Section 8.3, Rationale for the Selection of the Proposed Standards. For those emission points and subcategories where the selected standards are equivalent to the MACT floor, the EPA is not required to justify the selection of the standards based on cost or other impacts; these impacts were not presented in the Basis and Purpose Document [EPA-453/R-95-004a]. However, impacts of the proposed rule were determined as part of the economic impact analysis, Docket A-92-45, Item No. II-A-8; these impacts are presented in a memorandum titled "Summary of Cost, Emission Reduction, and Energy Impacts for Group IV Resin Sources," dated March 24, 1995 (Docket A-92-45, Item No. II-B-27).

Comment: Two commenters (IV-D-10 and IV-D-18) asked for clarification on what is considered "batch" and what is considered "continuous" in situations where a TPPU is made of various unit operations, some of which are batch while others are continuous. One commenter (IV-D-18) supported the following interpretation of the proposed rule, and asked for confirmation that their understanding of the provisions was accurate.

(1) It is possible to have a "batch" unit operation within a "continuous" TPPU.

(2) It is possible to have a "continuous" unit operation within a "batch" TPPU.

(3) Within a TPPU, process vents from a batch unit operation are batch process vents. Process vents from continuous unit operations within the same TPPU are continuous process vents.

(4) The determination of whether a TPPU is "batch" or "continuous" does not depend on any single piece of equipment, such as a reactor. Rather, it is based on the overall nature of the process unit.

Response: The EPA agrees with the commenter's interpretation and understanding of the proposed rule, with the exception of item (4) in the above comment summary. The EPA distinguishes a TPPU as using a continuous or batch

process depending on how the polymerization reactors are operated. If the determination followed a less specific criteria (e.g., the overall nature of the process unit), there would be too much room for interpretation and confusion. In the final rule, the definitions of continuous process and batch process have been modified to indicate that a process producing polymers is characterized as continuous or batch based on the operation of the polymerization reactors.

2.5 COORDINATION WITH OTHER CLEAN AIR ACT REQUIREMENTS

2.5.1 Subpart A (General Provisions)

Comment: One commenter (IV-D-18) commended the EPA for providing Table 6 in the proposed rule, which specifies the portions of the General Provisions that apply to affected sources. Another commenter (IV-D-10) suggested that the final rule include language explaining the applicability of the General Provisions to this subpart. Another commenter (IV-D-09) maintained that Table 6 of the proposed rule referenced many marginal or nonapplicable paragraphs from the General Provisions which would lead to confusion. The commenter (IV-D-09) suggested that Table 6 be revised to improve clarity and to correspond to other references in the proposed rule. The commenter (IV-D-09) included nine suggested clarifications.

First, the commenter (IV-D-09) recommended that the references to "reserved" paragraphs in the General Provisions say "No" not "Yes" as they did at proposal. The commenter (IV-D-09) explained that the notation "No" should be shown so that if these paragraphs are added to the General Provisions at a later date, they will not automatically apply until an affirmative decision on applicability is made.

Second, the commenter (IV-D-09) stated that the inclusion of §63.1(a)(3) as applying to subpart V will not overcome the stringency determination required of an owner or operator or enforcement official. The commenter (IV-D-09) stated that even though §63.501(e) and (f) of the proposed rule would appear to provide that they are more stringent than 40 CFR part 60, subpart Kb and subpart DDD, respectively, unless some

reference to stringency is included in them, there may be a possibility that a violation of subpart V might also be considered a violation of a respective part 60 subpart as well. The commenter (IV-D-09) stated that this could lead to two violations in each case, not one if the subpart V provisions, in fact, totally override the part 60 subpart. The commenter (IV-D-09) included suggested language.

Third, the commenter (IV-D-09) recommended that Table 6 of the proposed rule note that §63.1(b)(3) and §63.10(b)(3) should not apply because the Enabling Document for the General Provisions states that the EPA plans to delete §63.1(b)(3) in upcoming amendments to the General Provisions. The commenter (IV-D-09) explained that §63.10(b)(3) is the companion recordkeeping provision for the negative determinations required by §63.1(b)(3).

Fourth, the commenter (IV-D-09) stated that the HON shows §63.1(a)(4) through (a)(11), (b)(1), (b)(3), (c)(1) through (c)(3), (c)(5), (d), and (e) as not applying and therefore, the provisions should not apply to this rule for the same reasons used in the HON.

Fifth, the commenter (IV-D-09) stated that the compliance dates referenced in §63.6(b)(1) and (2) should not apply because the subpart V compliance dates are included in §63.502. The commenter (IV-D-09) requested that the table show "No" for this reason.

Sixth, the commenter (IV-D-09) stated that §63.6(b)(4) through (c)(4) should be shown as "No" for the same reasons as shown in the HON table.

Seventh, the commenter (IV-D-09) stated that not all of §63.6(i) applies because some of the provisions apply to section 112(f) compliance extensions. The commenter (IV-D-09) explained that the HON table does a good job of indicating which subparagraphs apply or do not apply and should be used in Table 6 as well.

Eighth, the commenter (IV-D-09) stated that §63.7(g) should not apply for the same reason it did not in the HON

table. The HON table states that performance test reporting is specified in the rule.

Ninth, two commenters (IV-D-09, IV-D-10) stated that the entry for §63.8 should say "No" since the paragraph is broken down into subparagraphs in the table.

Response: Table 6 of the proposed rule was reviewed and revised between proposal and promulgation to ensure consistency and clarity between the final thermoplastics rule and the General Provisions. The table has been renumbered Table 1 to reflect the order in which the tables are mentioned in the text of the final rule. Language has also been added to §63.501(f) **[§63.1311(f)]** of the final rule directing the reader to Table 1 for guidance on which provisions of subpart A apply to this rule.

As requested by the commenter, the table now indicates that General Provisions paragraphs which are reserved do not apply to the thermoplastics rule. If these reserved paragraphs are replaced with provisions at a later date, the EPA will make a determination as to whether the provisions apply to the thermoplastics rule.

The second comment regarded stringency determinations and the commenter's concern that there may be a possibility that a violation of this subpart could also be counted as a violation of another subpart, thus resulting in two violations for one occurrence. To ensure that "double counting" of violations does not occur, §63.501 **[§63.1311]** of the final rule specifies the subparts that do or do not apply to the thermoplastics rule. By specifically stating in the rule whether another subpart applies or not, situations where two violations may be assigned for one occurrence can be prevented.

The third commenter requested that §63.1(b)(3) and §63.10(b)(3) not apply to the thermoplastics rule. The EPA agrees and this decision is reflected in Table 1 of the final rule. In the final rule, §63.500(b) **[§63.1310(b)]** provides documentation requirements to show that a source is not an affected source, and thus, not subject to the thermoplastics rule or subpart A requirements.

In response to the fourth comment, the EPA reviewed the specific provisions the commenter discussed and the EPA's responses are as follows. Paragraph 63.1(a)(4) of subpart A applies to the final thermoplastics rule; this paragraph states that the relevant standard (i.e., subpart JJJ, Table 1) specifies the provisions of subpart A that apply. Paragraphs 63.1(a)(5), (a)(9), (c)(3), and (d) do not apply, as these paragraphs are reserved. Paragraphs 63.1(a)(6) through (a)(8) apply to this rule; they provide information about obtaining a list of source categories to be regulated under section 112 of the Act and information about 40 CFR part 63, subparts D and E. Paragraph 63.1(a)(10) does not apply; the final thermoplastics rule specifies calendar or operating days. Paragraph 63.1(a)(11), pertaining to postmarks, applies to the final rule. Paragraphs 63.1(b)(1) and (c)(1), applicability determinations, apply to the thermoplastics rule. Paragraphs 63.1(b)(3) and (c)(2) do not apply to the thermoplastics rule. Paragraph 63.1(c)(5), which applies, states that if an area source increases its emissions so that it becomes a major source, then that source is subject to major source requirements and emission standards, and also notification requirements; Table 1 states that affected sources are not subject to the notification requirements overridden by Table 1. Paragraph 63.1(e), applicability of the permit program before a relevant rule has been set under this part, applies to this final rule.

In response to the fifth comment, §63.6(b)(1) and (b)(2) apply to the thermoplastics rule. These paragraphs state that the owner or operator must comply with the applicable rule by the effective date of the rule or by start-up.

In response to the sixth comment, the commenter is referred to Table 1 for guidance as to which of the paragraphs are applicable to the rule.

In response to the seventh comment, all of §63.6(i) applies, with the exception of §63.6(i)(15), which is reserved.

In response to the eighth comment, §63.7(g) does apply, except that the references to the Notification of Compliance Status report in §63.9(h) of subpart A are replaced with the requirements in §63.513(e)(5) **[§63.1335(e)(5)]** of subpart JJJ.

In response to the ninth comment, §63.8 is broken into subparagraphs in Table 1. The general entry in the table at proposal for §63.8 has been removed from the final rule.

Comment: One commenter (IV-D-09) supported the reference to compliance extensions in §63.6(i) referenced in §63.513(b) of the proposed rule if language is added to incorporate several provisions contained in the HON [§63.151(a)(6)], as amended by the upcoming HON technical correction notice scheduled for late 1995. The commenter (IV-D-09) stated that the needed changes are as follows. The information required in the request for the extension under §63.6(i)(6)(i) need only include the elements of §63.6(i)(6)(i)(A), (B), and (D). The element §63.6(i)(6)(i)(C) is only required for extensions of compliance connected with section 112(f), not section 112(d) standards. The submission of the request for the compliance extension should be able to be made at any one of three times -- as part of the operating permit application or as part of the Initial Notification [§63.513(b)(1) of the proposed rule] or as a separate submittal.

Response: §63.513(e)(3) **[§63.1335(e)(3)]** of the final rule contains the requirements for submitting a request for an extension. These provisions, which were contained in §63.513(b)(1) of the proposed rule, were revised to require that a request for an extension of compliance be submitted in the Precompliance Report if it had not already been submitted in an operating permit application. The request for a compliance extension must include the information in §63.6(i)(6)(A), (B), and (D) of subpart A. [Note: The Initial Notification was removed from the final rule.]

2.5.2 Subparts F, G, H, I (HON)

Comment: One commenter (IV-D-03) asked the EPA to reopen the comment period for this rule if the HON wastewater provisions, which were referenced by the proposed rule and

which are currently under litigation, are revised. Another commenter (IV-D-09) recommended that all of the wastewater provisions in the final rule reference the HON (subpart G) wastewater provisions so that all final resolutions of the HON litigation will automatically be included in this rulemaking.

One commenter (IV-D-10) was concerned that the EPA may not have sufficient resources to fully evaluate the impact to this rule of changes that are made to the HON as part of the litigation. Another commenter (IV-D-24) asked how changes that may be made to the HON will be incorporated into this final rule.

Response: As part of the HON litigation proposal, the EPA requested comments specific to the thermoplastics rule. If comments specific to the thermoplastics rule are received, they will be addressed as part of the HON rulemaking actions or in actions specific to the thermoplastics rule, depending on the comments. Therefore, the comment period for the thermoplastics rule will not specifically be reopened.

The EPA agrees that the wastewater provisions and some other HON provisions should be referenced in the thermoplastics rule so that future revisions to the HON will automatically be included in the thermoplastics rule. However, all changes made to the HON will be evaluated by the EPA to determine applicability to this rule. The "automatic" part refers to the fact that text changes will not need to be made to this rule once the EPA finds the HON changes to be applicable. If the EPA determines that any changes to the HON are not applicable to this rule, the thermoplastics rule will be revised as appropriate. If necessary, a proposal to revise the thermoplastics rule would be issued.

Comment: Two commenters (IV-D-11, IV-D-23) supported the EPA's proposal to require MBS and MABS affected sources to comply with the provisions of this rule for equipment leaks after the compliance date, and no longer require these affected sources to comply with subpart I. The commenters (IV-D-11, IV-D-23) requested that the applicability listing of MBS and MABS resins in §63.190(b) of subpart I and the

definitions of the two resins in §63.191 of subpart I be deleted, and that this action be effective on the same date as the compliance date for the equipment leak provisions of this rule.

One commenter (IV-D-10) requested that proposed §63.509(b) of the proposed rule be changed to allow sources previously subject to subpart I to begin complying with the thermoplastics rule prior to the compliance date, but after the promulgation date. The commenter (IV-D-10) included suggested language. In addition, the commenter (IV-D-10) requested that §63.509(b) of the proposed rule be expanded to include language clarifying that an affected source which has already satisfied the initial reporting requirements of subpart I not have to repeat the Initial Notification or Notification of Compliance Status reports specified in §63.182(b) and (c) of subpart H.

Response: In §63.501(d) of the proposed rule, MBS and MABS affected sources were required to comply with the provisions of subpart I until the compliance date(s) for the thermoplastics rule. As specified in §63.501(d)(1) of the proposed rule, after the compliance date(s), these affected sources would no longer be subject to subpart I.

The EPA believes that this language, which has been modified slightly in the final rule [§63.501(g)(1) **[§63.1311(g)(1)]** of the final rule], is sufficient to clarify the relationship between the two rules, without the need to revise subpart I as suggested by the commenters. Therefore, the EPA is not proposing to revise subpart I.

In addition, as the result of this comment and as discussed in the responses below to several other comments, the EPA has modified the language for similar paragraphs in §63.501 **[§63.1311]** of the final rule to clarify that affected sources subject to this subpart that are also subject to a specific other subpart are no longer subject to the other subpart after the compliance dates specified in §63.501 **[§63.1311]** of the final rule. However, affected sources subject to both this subpart and subpart Q of 40 CFR part 63

are subject to both subparts and are required to comply with both subparts.

One commenter requested that affected sources be allowed to begin complying with the thermoplastics rule prior to the compliance date, but after the promulgation date. The EPA considered this possibility but did not change the final rule to allow this. Under subpart I, and subsequently under the thermoplastics rule, affected sources can reduce their monitoring and recordkeeping burden by implementing a quality improvement program. §63.501(g)(2) **[§63.1311(g)(2)]** of the final rule ensures that an affected source previously subject to subpart I is not penalized as compliance switches from subpart I to the thermoplastics rule [§63.501(g)(2) **[§63.1311(g)(2)]**] in terms of the quality improvement programs. The EPA considers this provision to be sufficient to provide any benefit that could be gained in complying with the thermoplastics rule prior to the compliance date.

The same commenter requested that an affected source not be required to repeat submittal of information provided in the Initial Notification or Notification of Compliance Status provided as part of complying with subpart I. The final rule no longer requires an Initial Notification. However, the EPA still considers the Notification of Compliance Status an essential element in enforcing the rule.

Comment: One commenter (IV-D-18) asked the EPA to clarify that the proposed rule is not intended to amend the HON. The commenter (IV-D-18) noted that the proposed rule references provisions contained in the HON and specifies necessary changes and adaptations. The commenter (IV-D-18) was concerned that in instances where the proposed thermoplastics rule states that the proposal and promulgation dates of the proposed thermoplastics rule "replace" the corresponding HON dates, the FEDERAL REGISTER staff could interpret this as an instruction to amend the HON. The commenter (IV-D-18) recommended that the words "shall apply" be used in place of "replaces."

Response: The EPA does not intend for the HON rule to be amended in any way as a result of the wording in the thermoplastics rule. To reduce any chance of confusion, the EPA has used the words "shall apply" in place of the word "replaces" when necessary in the final rule.

2.5.3 NSPS

Comment: Three commenters (IV-D-11, IV-D-17, IV-D-20) recommended that the final rule specifically state that compliance with the fugitive emission leaks NSPS (subpart VV) and the distillation NSPS (subpart NNN) are not required for sources that are subject to the thermoplastics rule. The commenters (IV-D-11, IV-D-17, IV-D-20) referred to §63.501(e) and (f) of the proposed rule which state that storage tanks and process vents that are subject to both an NSPS and the MACT standard would only be required to comply with the MACT standard. The commenters (IV-D-11, IV-D-17, IV-D-20) stated that equipment leaks from new or modified production processes or distillation columns that qualify as part of a SOCMI process could be covered redundantly and create enforcement and compliance difficulties with no corresponding environmental benefit (i.e., methanol recovery sections at PET affected sources could be covered redundantly).

Response: The final rule has been clarified under §63.501 **[§63.1311]** by adding new paragraphs (k) and (l) which state that compliance with the provisions of the fugitive emission leaks NSPS (40 CFR part 60, subpart VV) and the distillation NSPS (40 CFR part 60, subpart NNN) are not required for sources that are also subject to the thermoplastics rule, as of the compliance date; such sources are to comply with the provisions of the thermoplastic rule. As noted in an earlier response, each paragraph also states that affected sources subject to the thermoplastic rule that are also subject to subpart VV or NNN, as appropriate, are no longer subject to the subpart VV or NNN, as appropriate, after the compliance dates specified in §63.501 **[§63.1311]**.

Comment: One commenter (IV-D-18) supported the EPA's decision that the proposed thermoplastics rule override the NSPS for storage vessels [40 CFR part 60, subpart Kb].

Response: The commenter is correct that, after the compliance date of the final thermoplastics rule, a storage vessel at an affected source that is also subject to 40 CFR part 60, subpart Kb, is only required to comply with the provisions of the final thermoplastics rule. This is stated in §63.501(h) **[§63.1311(h)]** of the final rule. Also, as noted previously, the final rule states that, after the compliance dates specified in §63.501(d) **[§63.1311(d)]**, sources subject to the thermoplastics rule that are also subject to subpart Kb are no longer subject to subpart Kb.

2.6 SUPPORT FOR OTHER SUBMITTED COMMENTS

Comment: Five commenters (IV-D-03, I-V-D-09, IV-D-15, IV-D-16, IV-D-23) supported the comments submitted by the Chemical Manufacturer's Association (CMA) (IV-D-11). Three commenters (IV-D-15, IV-D-23, IV-D-24) supported the comments submitted by the Society of the Plastics Industry, Inc., (SPI) (IV-D-08).

Response: In drafting the final rule, the EPA has taken into consideration that the commenters listed above support the comments of CMA and SPI. The specific comments of CMA and SPI have been considered and responded to in this document.

2.7 DEFINITIONS

Comment: One commenter (IV-D-10) requested that all the definitions in the proposed rule be reviewed. The commenter (IV-D-10) stated that the proposed definitions are confusing and need clarification. The commenter (IV-D-10) suggested that the same definition of a term be used throughout part 63, that it appear once within part 63, and that where the term requires redefining, it be redefined in and for the specific section of the subpart which requires the redefinition. Also, the commenter (IV-D-10) requested that definitions be "rebuilt" so that the meaning of phrases or terms are understood from the meaning of the words or terms from which they are composed.

Response: The EPA reviewed the definition section of the proposed rule, §63.502, between proposal and promulgation. As a result of this review, many definitions were revised and clarified for the final rule. The EPA has referred to subpart A, F, G, and H definitions in the final rule when applicable, and has redefined terms that either do not share the same definition as in the other subparts or were not defined in a previous subpart. For easier reference, the organization of terms referenced in subparts A, F, G, and H was changed in the final rule; referenced terms are listed in alphabetical order with the subpart where they are defined specified in parentheses after each term.

The EPA has also reviewed and revised (or "rebuilt" as the commenter suggested) many definitions. Examples of definitions that were revised are included in this section.

Comment: One commenter (IV-D-10) contended that terms should be used consistently, such as the term "storage vessel" which is sometimes called a "storage tank."

Response: To ensure that terms are used consistently in the final preamble and rule, the EPA has checked these documents and uses the term "storage vessel." [Note: Other changes made to the definition of storage vessel are discussed in Section 2.2.4 of this chapter.]

Comment: Three commenters (IV-D-09, IV-D-11, IV-D-18) requested that the definition section of the proposed rule cross reference the definition of "research and development facility" contained in the HON.

One commenter (IV-D-11) requested that the definition section of the proposed rule cross reference the definition of "maintenance wastewater" contained in the HON.

One commenter (IV-D-09) requested that the definition section of the proposed rule cross reference the definition of "impurity" contained in the HON.

One commenter (IV-D-09) requested that the definition section of the proposed rule cross reference the definition of "maximum true vapor pressure" contained in the HON.

One commenter (IV-D-18) requested that the cross reference in the definition section of the proposed rule be revised to borrow subpart H's definition of "in organic hazardous air pollutant service." The commenter (IV-D-18) explained that the proposed rule incorrectly references the term "in organic hazardous air pollutant" and that the word "service" was omitted.

Response: The EPA intended for the following HON terms to apply to the proposed rule and these terms have been incorporated into the final rule: "research and development facility," "maintenance wastewater," "impurity," "maximum true vapor pressure," and "in organic hazardous air pollutant service."

Comment: One commenter (IV-D-10) recommended removing the definitions of "Group 1 and Group 2 wastewater streams" from the definition section of the final rule and, instead, cross reference the term as used in the HON. The commenter (IV-D-10) stated that the referenced definition of "wastewater" from §63.101 of subpart F is too broad and is inconsistent with the Group 1 and Group 2 wastewater definitions in §63.111. The commenter (IV-D-10) included suggested language for clarifying the §63.101 definition of wastewater (see p. 15 of comment letter). The commenter (IV-D-10) also suggested that the definition of waste management unit in §63.111 be modified to clarify that a wastewater management unit does not include equipment or component parts which are used to recover any portion of production, co-product, by-product, or process solvent, catalyst or inhibitor or other material with applied value to the thermoplastic product process unit.

Response: The EPA agrees with the commenter that the definitions of "Group 1 wastewater streams" and "Group 2 wastewater streams" contained in the proposed rule are repetitive with the definitions contained in the HON. These terms have been removed from the definition section, and the final rule cross references the terms as used in the HON. The commenters statements concerning the definitions of wastewater

and waste management unit are being addressed as part of the HON litigation. As stated previously, changes made to the HON as part of the litigation will be evaluated for applicability to the thermoplastics rule.

Comment: One commenter (IV-D-18) requested that the definition of "continuous process" be reworded to state that "continuous processes typically approach steady-state," instead of the proposed language that states that "continuous processes are typically steady-state." The commenter (IV-D-18) explained that a true steady-state condition is not truly the norm.

Response: The EPA agrees with the commenter and the wording in the definition of "continuous process" has been revised for the final rule.

Comment: Two commenters (IV-D-08, IV-D-11) encouraged the EPA to include the HON continuous process vent *de minimis* criterion in the definitions of "continuous process vent" and to include a similar criterion for "batch process vent." The commenters (IV-D-08, IV-D-11) stated that continuous process vents with less than 0.005 weight percent HAP and batch process vents with less than 225 kg/yr HAP emissions are several orders of magnitude below the Group 1 criteria for which emission control would be required. The commenters (IV-D-08, IV-D-11) stated that batch process vents with emissions less than 225 kg/yr should be excluded from the definition of batch process vents. One commenter (IV-D-11) stated that numerous small batch vessels are used by industry for the preparation and feed of process additives or other small batch process operations. The commenter (IV-D-11) said that an emission level of 225 kg/yr, which the EPA has proposed as the threshold for the type of Group 2 batch process vent with the minimum recordkeeping/reporting requirements, would be an appropriate *de minimis* criterion.

One commenter (IV-D-11) contended that creating *de minimis* levels for the two types of process vents would reduce the regulatory burden associated with these insignificant emission points. The commenter (IV-D-11) also explained that

using the *de minimis* criterion in the definition would be consistent with the HON and would simplify the rule.

Response: The EPA agrees with the commenters and has added *de minimis* criteria to the definitions for continuous and batch process vents in the final rule. An emission point otherwise meeting the definition of "continuous process vent" must meet the *de minimis* criteria of having a flow rate greater than or equal to 0.005 standard cubic meter per minute and a total organic HAP concentration greater than or equal to 50 parts per million by volume. An emission point otherwise meeting the definition of "batch process vent" must meet the *de minimis* criterion of having annual organic HAP emissions greater than 225 kilograms per year. Emission points not meeting the *de minimis* criteria are not considered continuous or batch process vents, as appropriate.

Comment: One commenter (IV-D-10) stated that the proposed definition of "batch cycle limitation" should be revised. The commenter (IV-D-10) stated that the last two sentences of the proposed definition were a regulatory requirement for Group 2 batch process vents and do not belong in the definition text. The commenter (IV-D-10) suggested the sentences be removed from the definition and inserted in an appropriate location in §63.506.

Response: The definition of batch cycle limitation was revised to remove regulatory wording that did not belong in the definition. The definition now reads as follows:

> Batch cycle limitation means an enforceable restriction on the number of batch cycles that can be performed in a year for an individual batch process vent.

The wording that was removed from the definition was moved to §63.506-1 **[§63.1322]** of the final rule.

Comment: One commenter (IV-D-18) reasoned that including the phrase "or Administrator's designee, hereafter referred to as Administrator," after mention of the term Administrator, is unnecessary and should be deleted because the EPA already

proposed to borrow subpart A's definition of "Administrator," which already provides for delegation. The commenter (IV-D-18) explained that the wording could be interpreted to mean that a State with delegated authority could in turn have a "designee" who would be considered the Administrator. To avoid this confusion, the commenter (IV-D-18) urged the EPA to delete this wording from the final rule.

Response: The EPA agrees with the commenter and has removed the phrase "or Administrator's designee, hereafter referred to as Administrator," from the final rule. The definition of "Administrator" as defined under subpart A is applicable to this rule.

Comment: One commenter (IV-D-10) contended that the definition of "continuous process vent or continuous vent stream" in the proposed rule is confusing and appears to refer to vents from continuous processes. The commenter (IV-D-10) maintained that "continuous vent stream" also has a common usage as a stream that is venting continuously. The commenter (IV-D-10) stated that continuous vent streams exist at their facilities from batch processes. The commenter (IV-D-10) explained that by defining "process," "vent," "vent stream," "batch process," "unit operation," and "continuous process," the clearly defined terms become "continuous process vent stream" (not a continuous process vent) and "batch process vent stream" (not a batch process vent). Such definitions would eliminate the need for, and usage of, the terms "continuous vent stream" and "batch vent stream."

Another commenter (IV-D-18) stated that the definition of "process vent or vent stream" in the proposed rule is less clear than in the HON. The commenter (IV-D-18) explained that the proposed rule does not distinguish between solid, liquid, and gas streams. The commenter (IV-D-18) stated that they are assuming that the EPA intends to regulate only gas streams as process vents. Additionally, the commenter (IV-D-18) asserted that the proposed definition for "process vent" or "vent stream" is a bit confusing as to whether a process vent

originates before or after any control or recovery devices. The commenter (IV-D-18) included suggested language.

Response: The EPA has revised the definition of "continuous process vent or continuous vent stream". The revised definition combines the concepts of a physical opening (i.e., the vent) and the emission stream. The revised definition of "continuous process vent" is as follows:

> Continuous process vent means a point of emission from a continuous unit operation within an affected source having a gaseous emission containing greater than 0.005 weight percent total organic HAP. Continuous process vents exclude relief valve discharges and leaks from equipment regulated under §63.509 **[§63.1331]**.

This definition allows the use of one term throughout the rule, which aids in clarifying the provisions.

The term "process vent" was also changed in the final rule. The definition is as follows:

> Process vent means a point of emission from a unit operation having a gaseous emission stream. Typical process vents include condenser vents, dryer vents, vacuum pumps, steam ejectors, and atmospheric vents from reactors and other process vessels, but do not include pressure relief valves.

The revised definition distinguishes that the emission stream is a gas stream. Further, each time a gaseous emission stream exits a unit operation, the emission stream is considered a process vent. For example, a process vent exists at each point where the gaseous emission stream exits a unit operation, such as a reactor, condenser, or incinerator.

2.8 BURDEN

Comment: Six commenters (IV-D-07, IV-D-08, IV-D-09, IV-D-10, IV-D-15, IV-D-23) stated that the proposed rule is complex, difficult to understand, and confusing. Commenters (IV-D-08, IV-D-09, IV-D-10, IV-D-15) stated that this situation is partially the result of the inclusion of several subcategories in one rule and partially from the numerous cross references to other existing rules (i.e., the HON, the

Polymer Manufacturing NSPS, and the Batch Processes ACT). The commenters (IV-D-08, IV-D-10, IV-D-15, IV-D-23) stated that the rule is difficult to interpret and could result in compliance violations strictly due to industry's inability to understand the rule.

Two commenters (IV-D-11, IV-D-23) urged the EPA to streamline the proposed rule to conform with EPA and Administration policies and directives, the most recent being the March 16, 1995, Regulatory Reinvention Initiative and the resulting EPA Reinventing Environmental Protection Implementation Strategy.

Three commenters (IV-D-07, IV-D-08, IV-D-11) recommended improving the proposed rule in the following ways: evaluating cross references, especially in the process vent sections, and eliminating unnecessary back and forth reviewing; using titles or subheadings for different subcategories to allow the reader to make rapid applicability determinations; eliminating distinctions without differences such as the one between surge control vessels and storage vessels; considering referencing some equations in an appendix, for example, the batch process vent equations or some of the equations related to analytical methods; make wider use of exclusions such as the one in HON for process vents with less than 0.005 weight percent HAP; standardizing requirements for the various regulated subcategories, making them as similar as possible to each other and to the standards from which they were derived; and eliminating sections of the regulation with little or no applicability to existing facilities in the selected category or subcategory (i.e., unlikely sources affected by this rule have halogenated vent streams). One commenter (IV-D-11) included a table showing all the areas of the proposed rule that could be simplified but did not provide specific suggestions.

<u>Response</u>: The EPA made numerous changes to the final rule to further clarify the requirements and to reduce the complexity of the rule. These changes include general format changes, rearranging text, revising wording, clarifying

tables, providing additional headings, and revising equations. In addition to responding to the specific commenter requests, the EPA reviewed the rule and made additional clarifications where necessary. The EPA agrees with the commenters that covering nineteen subcategories under one rule and cross referencing other existing rules has resulted in a comprehensive rule; however, the EPA considers the final rule to be clear, concise, and understandable. Although the thermoplastics rule cross references the HON quite extensively, it does not, as the commenter claimed, cross reference the Polymer Manufacturing NSPS or the Batch Processes ACT.

As discussed in the next response, the EPA has cross referenced portions of the HON, and changes made to the HON as a result of litigation will, in turn, apply to the thermoplastics rule. If any of the said changes are not appropriate for the thermoplastics rule, the EPA will amend the thermoplastics rule accordingly.

In drafting the proposed and final rule, the EPA has striven to adhere to EPA and Administration policies and directives, including the March 16, 1995, Regulatory Reinvention Initiative and the resulting EPA Reinventing Environmental Protection Implementation Strategy. For instance, one of the themes of the recent policies is focusing on results, not on how industry achieves those results. Where possible in the final rule, the EPA has specified a level of control or a percent reduction that must be achieved and left the decision for how to meet that requirement (e.g., what type of technique or control device to use or what type of process changes to make) to the discretion of the owner or operator of the affected source, so that such decisions can be made based on economic and other industry driven factors.

Another theme of the recent initiative is to reduce the paperwork requirements of standards by 25 percent. The EPA reviewed the paperwork requirements of these standards (i.e., monitoring, recordkeeping, and reporting) and determined that there were ways to reduce the paperwork

requirements without diminishing the compliance and enforcement aspects of the standards. These reductions are discussed in detail in Chapter 2, Recordkeeping and Reporting.

Comment: One commenter (IV-D-10) supported the concept of building new rules from the efforts of preceding rules; however, the commenter believed that the "incorporation by reference" approach used in the proposed rule is too complex and confusing in practice. The commenter (IV-D-10) recommended that the EPA build the text of the proposed thermoplastics rule by transcribing desired text from other subparts, refining the wording to be source category specific, and placing the refined wording in the rule.

Response: The decision to cross reference other rules instead of actually including the text of those rules in the thermoplastics rule was based on two factors. First, EPA budget constraints require that Federal Register notices be kept to a minimum to reduce printing costs. Second, because other rules on which these proposed rules are based, such as the General Provisions and the HON, are currently under litigation, the EPA prefers to cross reference these rules so that any changes made to those rules as a result of litigation will, in turn, apply to the thermoplastics rule. As discussed previously, changes made to the referenced rules will be evaluated for applicability to the thermoplastics rule.

2.9 COMMENT EXTENSION

Comment: Two commenters (IV-D-01, IV-D-22) requested an extension of the public comment period. One commenter (IV-D-22) requested a 45-day extension and the other commenter (IV-D-01) requested a 60-day extension. One commenter (IV-D-22) stated that the additional time was needed to assess the economic impact and potential emission reductions of the proposed rule, as well as review references to the HON and other promulgated regulations that require further reading, comprehending, and evaluating. The other commenter (IV-D-01) stated that the additional time was needed because of the complexity of the proposed rule and the fact that it references the HON, with which the commenter was unfamiliar.

In addition, the commenter (IV-D-01) stated that the proposed rule was not available in the Federal Register, and they found it burdensome and time consuming to obtain readable copies of the proposed rule and associated documents from the EPA's TTN bulletin board.

Response: The EPA was unable to extend the public comment period as the commenters requested. Due to the court imposed signature date for the final rule, the EPA was only able to provide 60 days for public comment on the proposed rule. However, the EPA continued to meet with commenters after the official comment period was over to allow commenters to express their comments in person and to gather additional clarifying information. The EPA considers the 60 days that were provided and the additional meetings sufficient opportunity to comment on the proposed rule. The EPA met with industry commenters in person after proposal on seven occasions to discuss their specific comments on the proposed rule. These seven meetings included visits to several plant sites that will be subject to the final rule. Summaries of these meetings are contained in docket A-92-45, Section IV-C. In addition, a joint meeting between the EPA, the Chemical Manufacturer's Association, and the Society of the Plastics Institute, Inc. was held on September 6, 1995. At this meeting, the EPA discussed preliminary EPA staff level responses developed for the comments received on the proposed rule. The EPA provided preliminary feedback and members of industry provided additional comments. A copy of the discussion topics and handouts for this meeting is in docket A-92-45, Item IV-E-1. The EPA continued to accept comments from external groups up until final preparation of the promulgation package, and the comments have been addressed in the final rule where appropriate.

2.10 COMPLIANCE

Comment: One commenter (IV-D-18) supported the proposed 3-year timeframe for existing affected sources (excluding equipment leaks) to comply with the rule and requested that these provisions be retained in the final rule. The commenter (IV-D-18) explained that a shorter time period would be inadequate because, for example, several provisions of the rule require existing affected sources to install additional controls. Time would be required to perform the following activities: design controls that will be compatible with the physical and chemical environment of the process; construct or fabricate the controls; install controls, as well as design, install and test monitoring devices; and perform tests or engineering evaluations.

Response: The EPA thanks the commenter for their support. The final rule has retained the provisions allowing 3 years for existing affected sources to comply with the rule.

Comment: One commenter (IV-D-18) requested that the EPA clarify the compliance date in §63.500(g)(3)(ii)(B) of the proposed rule for changes that cause Group 2 emission points to become Group 1 emission points. The commenter (IV-D-18) stated that the proposed rule gives the compliance date of initial start-up or by 3 years after the promulgation date. The commenter (IV-D-18) emphasized there is nothing to indicate which date applies for changes that may occur many years in the future. The commenter (IV-D-18) assumed the intent is to require compliance by the later of the two dates. [Note: §63.500(g) of the proposed rule addresses changes made to existing plant sites.]

Response: The commenter is correct that the owner or operator must be in compliance upon initial start-up or by 3 years after the promulgation date, whichever is later. The words "whichever is later" have been added to these provisions, which are in §63.500(i)(3) **[§63.1310(i)(3)]** of the final rule.

3.0 STORAGE VESSELS

Comment: One commenter (IV-D-19) requested that storage vessels at PET continuous TPA affected sources be exempted from the final rule. The commenter (IV-D-19) stated that PET continuous TPA processes do not handle raw materials or products that have a vapor pressure high enough to exceed the threshold levels requiring control, and, therefore, no emission reduction will be achieved by the rule. Instead, the commenter (IV-D-19) stated that the rule would simply create an unnecessary paperwork burden.

Response: The EPA decided not to exempt PET continuous TPA affected sources from the final rule. The EPA recognizes that some affected sources will use materials or products with vapor pressures that do not exceed the levels requiring control. These affected sources will be required to comply with the requirements for Group 2 storage vessels. The EPA disagrees with the commenter that Group 2 requirements are "an unnecessary paperwork burden." Under the final rule, the only requirement for Group 2 storage vessels is to keep a record providing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel. The EPA considers these requirements to be minimal.

In consideration of the commenter's concern, the final rule does exempt certain chemicals from the storage vessel provisions; these chemicals are ethylene glycol for existing and new affected sources and styrene for existing affected sources. Storage vessels containing these chemicals are completely exempt from the provisions of the rule and are not required to meet any recordkeeping or reporting requirements. The EPA judged that storage vessels containing these chemicals

would not meet the applicability criteria requiring controls under typical operating conditions.

In addition, the EPA has added a provision to the final rule that allows the owner or operator of an affected source to identify those storage vessels containing no organic HAP, other than as an impurity, which are part of the affected source. Once an owner or operator has made this identification, no further action is required for those storage vessels. If a process change occurs, the owner or operator must either stipulate that the process change did not result in the establishment of one or more storage vessels containing organic HAP, other than as an impurity, or the owner or operator must comply with this subpart for that storage vessel.

Comment: Two commenters (IV-D-11, IV-D-25) stated that medium storage vessel (i.e., 20,000 to 40,000 gallon capacity) vapor pressure applicability criteria for the HON were based on the MACT floor and not on cost effectiveness as stated in the preamble to the proposed thermoplastics rule. Therefore, the commenters (IV-D-11, IV-D-25) continued, the EPA should have established vapor pressure applicability criteria for medium storage vessels for the thermoplastics rule based on a cost-effectiveness evaluation. The commenters (IV-D-11, IV-D-25) recommended that, based on a cost-effectiveness evaluation using EPA methodology and investment estimates, the correct vapor pressure applicability criteria for medium PET storage vessels should be 13 psia.

Response: While the EPA misstated the basis for the HON storage vessel applicability criteria for medium storage vessels in the preamble to the proposed thermoplastics rule, this misstatement has no effect on the proposed standards for storage vessels. As discussed in the technical memorandum documenting the MACT floor analysis (docket item II-B-28, A-92-45), the MACT floor for each emission point was determined and compared to the HON for each subcategory. In

all cases, the MACT floor for storage vessels was determined to be either equivalent to the HON or more stringent than the HON. In cases where the MACT floor was equivalent to the HON, the HON was used to express the MACT floor in regulatory terms (i.e, level of control and applicability criteria). In cases where the MACT floor was more stringent than the HON (e.g., polystyrene continuous processes), the MACT floor was defined by a unique expression of applicability and level of control (see docket item II-B-23, A-92-45). In either case, a cost-effectiveness evaluation was not done for medium storage vessels because the EPA is not required to cost-justify setting the standard at the MACT floor. Therefore, the final rule has not been changed to specifically address this comment.

Comment: One commenter (IV-D-25) contended that the EPA erred in the cost-effectiveness evaluation for large storage vessels (i.e., greater than 40,000 gallon capacity) under the HON. First, the commenter (IV-D-25) claimed that the EPA had failed to consider the molecular weight of lower vapor pressure chemicals used by HON sources, and second, the EPA had based its floating roof estimates on obsolete technology. The commenter (IV-D-25) stated that simple floating roofs that were once used by petroleum refineries are unsafe for chemical plant storage of HAP because they often fail and are unsafe to walk on to conduct seal gap inspections. Current modern roofs cost about twice as much to install as the old simple floating roofs, but they are today's minimum technology requirements for safety and performance, claimed the commenter (IV-D-25).

The commenter (IV-D-25) included a cost-effectiveness evaluation done for methanol, which is the primary chemical stored at PET facilities using a DMT process that is potentially subject to storage vessel controls. The commenter (IV-D-25) claimed this analysis supported using a vapor pressure applicability criteria of 13 psia for both medium and large storage vessels. The commenter (IV-D-25) used data from

the HON background information document for refrigeration system investment and operating costs.

Response: Through supplemental communication with the commenter, the EPA learned that the commenter desires that each chemical's vapor pressure and molecular weight be considered in determining applicability criteria for individual chemicals through a cost-effectiveness evaluation. In summary, the commenter has raised two issues: (1) applicability criteria should be developed for each individual chemical covered by the rule and (2) the EPA's costs for internal floating roofs are too low.

Under the proposed and final rule, the EPA has developed storage vessel standards using the approach from previous storage vessel standards (e.g., the HON and subpart Kb of 40 CFR part 60). This approach considers the storage of all liquids for a given source category or subcategory as a group, and applicability criteria are developed to be used for all storage vessels within the source category or subcategory. For the EPA to determine storage vessel standards on a chemical specific basis would be a significant departure from the approach used for many other existing rules. The EPA does receive comments, in fact, to consolidate rules for similar equipment so they are more alike, easier to understand, and easier to implement. To depart from past practice based on one public comment without more opportunity to gain input from others on the pros and cons of such an approach did not seem appropriate at this time. Basing applicability criteria on individual chemicals could create administrative and compliance conflicts between existing and new rules. The EPA foresees that there could develop situations were one out of two identical storage vessels containing identical materials, both subject to NESHAP, is required to apply controls and one is not. For these reasons, the EPA did not undertake a chemical specific analysis as requested by the commenter.

Based on analyzing all storage vessels within a subcategory as a group, which considers vessels storing ethylene glycol and methanol, the standards contained in the proposed and final rule represent the MACT floor. As a result, the EPA was not required to conduct cost-effectiveness evaluations as part of setting the standards.

However, if the EPA had developed standards for individual chemicals (i.e., methanol) for the commenter's subcategory, which is PET using a DMT process, the standards would have come out to be the same based on the data available to the EPA. In the storage vessel capacity range of 20,000 to 40,000 gallons, data were provided by industry for 3 methanol storage vessels and all are controlled; the HON would also require control of these storage vessels. Therefore, the MACT floor is equivalent to the HON, and, as representative of the MACT floor, the HON would have been selected as the standard. In the storage vessel range of 40,000 gallons and greater, there are 6 methanol storage vessels with no control; the HON would require control of these storage vessels. In this hypothetical example where the MACT floor is no control, selection of the HON as the standard would need to be justified based on cost and other impacts. Based on either the commenter's cost analysis for internal floating roofs provided supplemental to the public comment period (see Docket A-92-45, Section IV-D) or on the EPA's cost analysis for the known methanol storage vessels, control of storage vessels in the capacity range of 40,000 gallons or greater would be judged to be in the same range of cost effectiveness accepted by the EPA as reasonable for the HON and other parts of the thermoplastics rules. Therefore, the HON would have been selected as the standard.

In the second point raised, the commenter challenged the validity of the costs for internal floating roofs used for the HON storage vessel analysis. The commenter stated that the costs used for the HON were low and that current modern roofs

cost about twice as much to install. However, data available to the EPA show that the HON costs for internal floating roofs were higher than costs included in the recent Alternative Control Technology (ACT) document entitled "Alternative Control Technology Document: Volatile Organic Liquid Storage in Floating and Fixed Roof Tanks" (EPA-453/R-94-001; January 1994) prepared by the EPA subsequent to developing the HON costing procedures. In developing the ACT, the EPA obtained vendor quotes for internal floating roofs and made every effort to gather the latest costs for storage vessel controls. For installation of a 40,000 gallon capacity storage vessel, capital costs under the HON were approximately the same as costs under the ACT, and for larger storage vessels, costs based on the HON procedures were higher than costs based on the ACT procedures. This comparison is available in the docket as part of a memorandum entitled "HON/CTG Cost Comparison for Internal and External Floating Roof Tanks" (see docket A-92-45, section IV-B).

During the public comment period, the commenter did provide a cost analysis for control of one 40,000 gallon storage vessel using a refrigerated condenser. Based on this one analysis, the commenter felt that the vapor pressure applicability criteria for large storage vessels should be 13.0 psia. Subsequent to the public comment period, the commenter provided a cost analysis for control of methanol storage vessels using an internal floating roof. Accompanying this cost analysis, the commenter stated that refrigerated condensers, which were the basis for the commenters public comment letter, were more expensive than internal floating roofs. The EPA considers that the public comment letter provided by this commenter presented a worst-case analysis in terms of both the cost of the control technology used (i.e., refrigerated condensers) and the size of the storage vessels costed (i.e., a 40,000 gallon storage vessel to represent the 40,000 gallons and greater criteria range). It

needs to be reiterated that under the HON, the EPA selected the vapor pressure applicability criteria to be representative of the average cost effectiveness for controlling all storage vessels within the greater than 40,000 gallon capacity size range. Finally, and most importantly, regardless of the adequacy of the HON analysis, setting the standard at the MACT floor, which is the case for this rule, does not require the EPA to conduct a cost-effectiveness analysis.

For all the reasons set forth in this response, the EPA has not changed the final rule to specifically address this comment.

Comment: One commenter (IV-D-24) questioned why the combinations of vapor pressure and storage vessel capacity differ for determining Group 1 storage vessels for existing and new continuous polystyrene affected sources.

Response: Two factors contribute to the difference in applicability criteria (i.e., vapor pressure and storage vessel capacity) for polystyrene Group 1 storage vessels at existing and new affected sources. First, these criteria are based on the MACT floor. Second, the Act defines the MACT floor differently for existing and new affected sources, and the population of best existing controls that define the MACT floor for polystyrene existing and new affected sources are different. Paraphrasing the Act, the existing source MACT floor is defined as the average of the level of control achieved by the five best controlled existing sources for subcategories with less than 30 sources, and the new source MACT floor is defined as the level of control achieved by the best controlled existing source. Because the population of "best controlled existing sources" that contributed to the existing source and new source MACT floor are different for polystyrene affected sources, the applicability criteria reflecting the MACT floor are different. It is conceivable that the five best controlled existing sources for a subcategory could be controlled to the same level. In that

case, the MACT floor for existing and new sources would be the same.

Comment: One commenter (IV-D-18) urged the EPA to clarify what is meant in Tables 1a and 2a of the proposed rule when the name of a HAP was used as an applicability criteria instead of a vapor pressure. The commenter (IV-D-18) requested confirmation as to whether this demonstrated an intent to address storage vessels which contain the listed HAP regardless of the vapor pressure of that HAP at any specific temperature. In addition, the commenter (IV-D-18) questioned whether the EPA intended this approach to include only the listed HAP by itself, or mixtures of compounds as well.

Response: The EPA is assuming that this commenter's concern is based on the storage of liquids below ambient temperature. Data were not provided by industry that indicated this situation, and the EPA did not anticipate it when selecting a chemical name as an applicability criteria. In the final rule, where a chemical name had been used as an applicability criteria, a vapor pressure has been associated with that chemical.

For affected sources producing nitrile, there is only one identified affected source, and all storage vessels located at the facility are controlled. For affected sources producing ASA/AMSAN, there is also only one identified affected source, and all storage vessels located at the facility are controlled. For these two subcategories, the associated vapor pressure for both new and existing affected sources is the lowest reported vapor pressure for each chemical. The Act states that standards must be at least as stringent as the MACT floor. Because every storage vessel included in the MACT floor analysis (i.e., every storage vessel at the facility) was controlled and controlled to the same level (e.g., 95 percent), the lowest reported vapor pressure has been used to ensure that the applicability criteria capture each and every storage vessel. If a vapor pressure

applicability criteria was used that did not capture each and every storage vessel, the standards would not be as stringent as the MACT floor.

For new affected sources producing ABS using a continuous mass process, the proposed standards represent a regulatory alternative beyond the MACT floor (see Chapter 8.0 of the proposal Basis and Purpose Document [EPA-453/R-95-004a, March 1995]). The applicability criteria in the proposed rule was a mixture of capacity/vapor pressure and capacity/chemical name. A vapor pressure was also selected to accompany the chemical name as an applicability criteria for styrene storage vessels.

Comment: Three commenters (IV-D-08, IV-D-11, IV-D-15) stated that internal floating roofs were inappropriately selected as the reference control technology for styrene storage vessels. The commenters (IV-D-08, IV-D-11, IV-D-15) stated that because styrene has a high tendency to polymerize on the interior walls of a storage tank movement of the internal floating roof is inhibited, and the roof is rendered ineffective for emissions control. For these reasons, floating roofs are not commonly used in the polystyrene industry. Two commenters (IV-D-08, IV-D-11) stated that with the exception of a closed vent system, the alternative reference control technologies contained in the proposed rule are not appropriate for styrene storage vessels. The commenters (IV-D-08, IV-D-15) suggested that condensers, which are the most commonly used method of control for storage vessel emissions, be evaluated and selected as the reference control technology for styrene storage vessels.

Response: The storage vessel provisions of the proposed rule do not specify the controls that are to be applied (i.e., internal floating roofs are not required) when control is required. The reference control technology for storage vessels is any of the options listed in the storage vessel provisions. Further, the impacts analysis for the proposed

rule was based on the use of a closed vent system and refrigerated condenser which the commenters referred to as the most appropriate control technology. Finally, due to the very low vapor pressure of styrene, typically reported as 0.07 psia, it is very unlikely that styrene storage vessels would be required to apply controls. The lowest vapor pressure applicability criteria are 0.75 psia for existing storage vessels and 0.1 psia for new storage vessels. With a vapor pressure of 0.07 psia, styrene storage vessels do not meet the vapor pressure applicability criteria and would not be required to apply controls.

4.0 CONTINUOUS PROCESS VENTS

Comment: One commenter (IV-D-09) requested credit for treatment of Group 2 batch process vents at levels of control beyond those stipulated in the proposed rule. The commenter (IV-D-09) stated that proposed §63.505(a)(11) requires Group 1 controls on any combined vent stream (i.e., combination of continuous and batch process vents) containing at least one Group 1 continuous process vent. The commenter (IV-D-09) contended that the control requirements for combined vent streams should be dependent on the ratio of Group 1 and Group 2 process vents and the need to maintain as high a level of destruction as practicable. The commenter (IV-D-09) suggested that requiring Group 2 batch process vents to be controlled by 85 percent when in a combined vent stream and requiring the Group 1 continuous process vents to be controlled by 98 percent would be a technically appropriate level of control. The commenter (IV-D-09) stated that calculating a mass weighted destruction efficiency requirement based on the ratio of Group 1 and Group 2 process vents in the mixture would be equitable and technically feasible.

Response: As in the proposed rule, the final rule requires that if a batch process vent is combined with a continuous process vent prior to being routed to a control or recovery device, the combined vent stream will be evaluated under the continuous process vent provisions. More specifically, if a batch process vent is combined with a Group 1 continuous process vent or a Group 1 batch process vent is combined with a continuous process vent prior to being routed to a control device, the combined vent stream shall meet all the requirements, including control requirements, of a Group 1 continuous process vent. If a batch process vent is combined with a Group 2 continuous process vent prior to being

routed to a control device or combined with any continuous process vent prior to being routed to a recovery device, the group status of the combined vent stream shall be determined at maximum representative operating conditions (i.e., when the batch process vent is emitting). Alternatively, the owner or operator may choose to emissions average Group 2 batch process vents if control was applied after November 15, 1990, as opposed to combining them with continuous process vents.

The commenter requested that Group 2 batch process vents be required to be controlled by only 85 percent when combined with Group 1 continuous process vent streams. The standards developed under the MACT standards program are technology-based standards. It is contrary to the concept of a technology-based standard to operate a control device such that it provides a level of control below its capability or to allow the use of technology that is not equivalent to the maximum achievable control technology. The maximum achievable control technology identified by the EPA for continuous process vents provides emission reductions of 98 percent. Therefore, the final rule continues to require that combined vent streams with one or more Group 1 continuous process vents be controlled by 98 percent. Therefore, the final rule has not been changed to address this specific concern.

Comment: One commenter (IV-D-10) stated that requiring combined continuous and batch process vents to be tested during maximum representative operating conditions may not be reasonable because of the nature of batch processing. Specifically, the commenter stated that it may be virtually impossible and impractical to operate all vents at their maximum conditions during testing. The commenter requested that the EPA allow for alternative procedures to document the performance of control equipment for combined vent streams. The commenter (IV-D-10) requested that they be allowed to use engineering methods to extrapolate test data, in cases where maximum representative operating conditions could not be achieved during testing. The commenter recommended the addition of the phrase "...or such other operating conditions

as the Administrator may approve" wherever reference is made to testing at "maximum representative operating conditions."

Response: The EPA agrees with the commenter that it may be impossible or impractical to operate all vents at their maximum conditions during testing. However, the EPA does not consider it necessary to modify the final rule to specifically address this comment. The proposed and final rules state "... maximum representative operating conditions shall be during periods when batch emission episodes are venting to the control device, resulting in the highest concentration of organic HAP in the combined vent stream." The EPA considers that this language provides adequate flexibility to both the Administrator and the owner or operator to ensure testing is done under conditions that best represent the maximum operating conditions. This provision does not state that "all batch emission episodes" must be venting to the control device, nor does it state that the absolute "highest concentration of organic HAP" must be achieved during the test. The final rule has not been changed to specifically address this comment.

Comment: One commenter (IV-D-09) recommended that the final rule allow an owner or operator to use continuous process vent gases as feed air (i.e., combustion air) for either a single boiler or a combination of boilers without being required to conduct boiler performance testing if: (1) the boiler heat input stipulated in the proposed rule is met by the single boiler and the combination of boilers, (2) the thermal destruction for the single boiler and the combination of boilers is equivalent, and (3) the combination of boilers is used as backup to the single boiler. The commenter (IV-D-09) explained that the proposed rule [§63.505(c)(2)(i)(C)(2)] provides for the use of an individual boiler or process heater with a design heat input of 150 million Btu/hr to control emissions without performance testing. On the other hand, the commenter (IV-D-09) stated, the proposed rule requires testing of smaller boilers which may be used to control the same emissions.

At one facility, the commenter (IV-D-09) explained, several smaller oil/gas fired boilers, each with individual heat inputs less than 150 million Btu/hr, are used to backup a larger coal fired boiler, which has a heat input greater than 150 million Btu/hr, when it is down for maintenance. The commenter (IV-D-09) explained that normally a continuous process vent goes to the larger boiler for control. During maintenance of the larger boiler, the continuous process vent is split to the multiple smaller boilers. The total heat input of these smaller boilers is greater than 150 million Btu/hr. Over the last 5 years the smaller boilers have operated an average of 7 percent of the time, operating for a minimum of 4 percent and a maximum of 11 percent of the time for a given year. As proposed, the rule would require testing these smaller boilers to demonstrate compliance during the maintenance outage period for the larger boiler. The impact on emission control using the smaller boilers versus the larger boiler is negligible, if any, stated the commenter (IV-D-09). The commenter (IV-D-09) requested that the final rule allow multiple smaller boilers with a combined total heat input of 150 million Btu/hr to be used as backup control devices without requiring performance testing.

Response: The EPA does not have data indicating whether or not there will be a negligible impact on emissions control when using the smaller boilers. The EPA has documented the basis for the large boiler performance test exemption in several past rules (e.g., Hazardous Air Pollutant Emissions from Process Units in the Synthetic Organic Chemical Manufacturing Industry--Background Information for Final Standards, Volume 2A, EPA-453/R-94-003a). The EPA has determined that boilers with heat input capacities greater than 44 MW would be expected to achieve emission reductions greater than 98 percent, and, based on this, the EPA has not and does not require a performance test to establish emission reduction efficiency. However for boilers with heat input capacities less than 44 MW, the EPA does not have the data to support a similar determination. Therefore, boilers with heat

input capacities less than 44 MW are required to establish emission reduction efficiency through a performance test. The performance test would be a one-time test. Also, when a continuous process vent is introduced with the primary fuel or is used as the primary fuel in a boiler or process heater, a performance test is not required.

Comment: One commenter (IV-D-27) stated that controls have been installed on thermoplastics manufacturing industry process vents which provide 95 percent or better removal efficiencies. The commenter (IV-D-27) stated that removal efficiencies of 99 percent are possible using thermal oxidation. The commenter (IV-D-27) stated that other technologies, including but not limited to catalytic oxidation, can provide comparable removal efficiencies to thermal oxidation.

Response: The EPA thanks the commenter for their information concerning the availability of control technology.

5.0 BATCH PROCESS VENTS

5.1 SELECTION OF STANDARDS

Comment: One commenter (IV-D-05) expressed concern about short-term exposure that results from emissions from batch processes. The commenter (IV-D-05) explained that while the emissions may add little to annual organic HAP emissions, high concentrations of organic HAP in populated areas near affected sources could result from these emissions. Because of the unpredictable nature of emissions from batch processes and the need to reduce acute health risks to the general public, the commenter (IV-D-05) supported controlling these emissions.

Response: The EPA appreciates the commenter's support, and batch process vents continue to be regulated in the final rule.

Comment: Commenters (IV-D-06, IV-D-08, IV-D-11, IV-D-23) objected to the fact that, under the proposed rule, condensers would not be classified as recovery devices but would instead be considered part of the batch unit operation. Further, the commenters (IV-D-06, IV-D-08, IV-D-11, IV-D-23) stated that it was their belief that, based on the proposed rule, only absorbers, which are rarely used in monomer service, would be considered recovery devices.

One commenter (IV-D-06) stated that condensers not considered essential parts of the process should be considered control or recovery devices. The commenter (IV-D-06) stated that after-condensers would be an example of a nonessential part of the process; after-condensers are commonly used in polymer production in order to remove and recover easily condensible constituents which would otherwise be emitted to the atmosphere. Because after-condensers are not essential parts of the process, the commenter (IV-D-06) believed they

should be considered control or recovery devices for the purposes of calculating emission reductions.

One commenter (IV-D-10) believed that other types of recovery devices in addition to the three types of condensers included in §63.506-2(a)(1) of the proposed rule can operate as part of the unit operation without increasing emissions to the atmosphere. The commenter (IV-D-10) stated that, for example, if a batch process vent goes to an absorber, which recovers chemicals for fuel value, use, reuse or sale, then the absorber is clearly part of the unit operation. The commenter (IV-D-10) suggested that the phrase "In addition to other equipment" be inserted at the front of the second sentence of §63.506-2(a)(1) of the proposed rule as clarification.

Response: Contrary to the commenters' statements, all condensers are not considered part of the batch unit operation. In §63.506-2(a)(1) of the proposed rule, the EPA identified three types of condensers that are considered an essential part of the batch unit operation -- reflux condensers, batch stripping condensers, and batch distillation condensers. §63.506-2(a)(1) of the proposed rule is not intended to mean that all condensers are considered part of the batch unit operation.

Commenters did not identify any additional recovery devices that meet the EPA's interpretation of being an essential part of the batch unit operation. Therefore, the final provisions continue to list only the three types of condensers mentioned above as essential parts of the batch unit operation. Other types of condensers or condensers used in other applications are considered control devices.

The significance of distinguishing a recovery device as an essential part of the batch unit operation is that applicability is determined based on the emissions exiting the batch unit operation [§63.506-2(a)(1) **[§63.1323(a)(1)]**]. In other words, applicability is determined based on the emissions prior to any control devices. [Note: As discussed in another section of this chapter, the EPA has defined all

devices that reduce or oxidize organic HAP emissions as control devices for the purposes of the batch process vent provisions.]

Comment: Two commenters (IV-D-07, IV-D-08) supported the use of cutoffs for the group status determination for batch process vents [§63.506-2(d) of the proposed rule]. Specifically, the commenters (IV-D-07, IV-D-08) agreed that low annual organic HAP emissions and low flow rate cutoffs are suitable. The commenters (IV-D-07, IV-D-08) explained that batch processes are, by nature, suited to low volume production and the manufacture of specialty products. As such, the commenters (IV-D-07, IV-D-08) stated that low flow, low emitting process vents are likely in batch operations. The commenters (IV-D-07, IV-D-08) requested that the provisions containing the discussed cutoffs be retained in the final rule.

Response: The EPA has retained these provisions in the final rule with one exception. As discussed in response to another comment (see Section 5.2), the EPA has removed the requirement to designate batch process vents as low, medium, or high volatility. As a result, there is a single minimum emission level cutoff in the final batch process vent provisions as opposed to three cutoffs.

In addition, the EPA chose to add a minimum emission level to the definition of batch process vent. In the final rule, a minimum emission level of 225 kg/yr is part of the definition of batch process vent. An emission point with emissions equal to or less than 225 kg/yr is not considered a batch process vent.

Comment: One commenter (IV-D-13) agreed with the principle of establishing batch cycle limitations for individual batch process vents.

Response: The EPA thanks the commenters for their support. The final rule retains the provisions related to batch cycle limitations.

5.2 APPLICABILITY

Comment: One commenter (IV-D-18) stated that, according to §63.506-1(e)(2) of the proposed rule, batch process vents that are combined with continuous process vents are exempt from the batch process vent provisions if, among other things, there are no emissions to the atmosphere up to the point where the vents are combined. The commenter (IV-D-18) stated that if the phrase "no emissions" is read literally, it would make this exemption meaningless. If the piping or duct that conveys the batch process vent has any flanges or valves, there will be small, but perhaps measurable, emissions (i.e., equipment leaks) from these points. The commenter (IV-D-18) requested that the EPA clarify that these types of emissions do not disqualify a batch process vent from this exemption.

Response: The EPA did not intend that negligible emissions from well maintained piping or ductwork disqualify a batch process vent from this exemption. The final rule has been clarified to represent the EPA's original intention.

Comment: One commenter (IV-D-18) stated that §63.506-2(h)(1)(i) of the proposed rule allows the owner or operator to use process knowledge that no halogens or hydrogen halides are present in the process to determine whether a batch emission episode is halogenated. If taken literally, the commenter (IV-D-18) stated, this would not allow a negative determination to be made if a single molecule of a halogen or hydrogen halide were present in the process; such an interpretation would make the exemption meaningless. The commenter (IV-D-18) requested that the EPA clarify the final rule to avoid this problem.

As an example, the commenter (IV-D-18) described situations for production facilities on the Gulf Coast and in Michigan. On the Gulf Coast, the air contains salt from seawater evaporation. In Michigan, the air contains salt from road de-icing in the winter. In either case, the salt contains chlorine, which is a halogen, and the chlorine sometimes makes its way into process equipment. For example,

air enters the process during maintenance operations or during the "breathing" of storage vessels. This could result in trace quantities of chlorine being present in the process as an impurity.

The commenter (IV-D-18) also requested that §63.506-2(h)(1)(i) of the proposed rule be clarified so that process knowledge that halogens or hydrogen halides cannot become part of a batch process vent can be used to demonstrate that a batch emission episode is not halogenated. The literal wording of §63.506-2(h)(1)(i) of the proposed rule states there cannot be halogens or hydrogen halides anywhere in the entire process. The commenter (IV-D-18) felt that the EPA should not object to the presence of halogens or hydrogen halides in portions of the process that are unrelated to the batch process vent. For example, the commenter (IV-D-18) stated, examine the case where a process vent comes from raw material purification equipment at the "front end" of the process and hydrogen chloride is used to adjust the pH of an intermediate stream near the "back end" of the process. The commenter (IV-D-18) maintained that the owner or operator should be allowed to use process knowledge that the hydrogen chloride will not be able to enter the batch process vent at the "front end" of the process to declare that batch emission episodes associated with this batch process vent are not halogenated. The commenter (IV-D-18) included suggested language.

Response: The commenter requested that the EPA clarify the exemption in §63.506-2(h)(1)(i) of the proposed rule to account for halogens or hydrogen halides present in the process in negligible amounts. In the final rule, §63.506-2(h)(1)(i) **[§63.1323(h)(1)(i)]** has been reworded to read as follows:

> Process knowledge that no halogens or hydrogen halides are present in the process may be used to demonstrate that a batch emission episode is nonhalogenated. Halogens or hydrogen halides that are unintentionally introduced into the process

shall not be considered in making a finding that a batch emission episode is nonhalogenated.

The same commenter requested that an owner or operator be allowed to use process knowledge that halogens or hydrogen halides cannot enter a specific batch process vent, even though they are present in the process, to determine that a batch emission episode is not halogenated. The EPA believes this type of determination falls under §63.506-2(h)(1)(ii) **[§63.1323(h)(1)(ii)]**, engineering assessment, and the final rule has not been changed to address this specific comment.

Comment: One commenter (IV-D-18) urged the EPA to allow dehalogenated batch process vents, as described by §63.506-1(c)(2) of the proposed rule, to comply with any of the three compliance options provided under §63.506-1(a) of the proposed rule, not just two of the options. The commenter (IV-D-18) inquired why the proposed standards stated that if the owner or operator scrubs out the halogens from a batch process vent, they must comply with §63.506-1(a)(1) or (a)(2) of the proposed rule but cannot use the third option [§63.506-1(a)(3) of the proposed rule] which requires achieving an overall emission reduction of 84 percent. The commenter (IV-D-18) requested that these provisions be revised to include the 84 percent overall control option for all dehalogenated batch process vents.

Response: The compliance requirement provided by §63.506-1(a)(3) **[§63.1322(a)(3)]** is only applicable to new affected sources producing SAN using a batch process; it is not a compliance option for any other type of affected source. This compliance option represents the MACT floor for this subcategory and is considered to be a more stringent requirement. These provisions have not been changed in response to this comment.

Comment: One commenter (IV-D-18) suggested that the EPA pick one of the three annual emission threshold levels presented in §63.506-2(d) of the proposed rule. The commenter (IV-D-18) was confused by the three different threshold levels

for low, moderate, and high volatility batch process vents and felt the values of 11,800 kg/yr for low volatility streams; 7,300 kg/yr for moderate volatility streams; and 10,500 kg/yr for high volatility streams did not follow any logical linear pattern. The commenter (IV-D-18) suggested that because the values are within an order of magnitude of each other, the EPA pick a single value for all three volatility classes; they suggested 11,800 kg/yr or an average value of 9,900 kg/yr. The commenter (IV-D-18) included suggested language.

Response: The Batch Processes ACT developed an annual threshold emission level for each of the three volatility classes. The different values reflect the consideration of two different control devices (i.e., condensers and thermal incinerators) for batch process vents of differing volatility in the development of control options. Given this, the EPA initially judged that selection of a single annual threshold emission level would not be appropriate and included all three levels in the proposed rule. However, upon further review, the EPA has found no adverse impact will result from the use of a single annual threshold emission level. Further, removing the need to designate a volatility class for a batch process vent has significantly simplified the final rule. Besides removing the requirement to determine the volatility class, the final rule now contains only one equation for determining the cutoff flow rate [§63.506-2(f) **[§63.1323(f)]**], which is the last step in the group determination process. For all these reasons, the final rule contains a single annual threshold emission level.

5.3 GROUP DETERMINATION

Comment: One commenter (IV-D-09) suggested changing the group determination provisions in §63.506-2 to only utilize emissions data from a TPPU's primary product. In addition, the commenter (IV-D-09) requested that §63.506-2 be revised to require that batch process vent group determinations be performed on an annual basis instead of for every process change.

The commenter (IV-D-09) stated that the proposed batch process vent group determination provisions are considerably more complex than the continuous process vent group determination provisions. Not only do the batch process vent group determination provisions require an owner or operator to obtain emissions data for every product that is manufactured, the commenter (IV-D-09) explained, but even the most minor process changes (i.e., lengthening cycle times, altering process temperatures and pressures, etc.) would trigger the need for a new group determination to be performed. Given the inherent process variability associated with batch operations, the commenter (IV-D-09) continued, it would be difficult to perform a group determination for a batch unit that manufactures only one product, much less multiple products. Furthermore, the commenter (IV-D-09) stated, because batch units often need to implement sudden process changes in response to customer demands, the proposed provisions could potentially require repeating the group determination exercise several times in a single year. The commenter (IV-D-09) explained that such a situation would not only serve to complicate a batch unit's compliance status, but could also adversely impact its ability to remain competitive in the marketplace.

Response: The commenter has raised four issues: (1) performance of the group determination on the primary product, (2) performance of the group determination on an annual basis, (3) objection that the group determination provisions require a new group determination to be made whenever minor process changes occur, and (4) objection to the requirement to perform the group determination when a sudden process change is required.

The EPA has considered the request to perform the group determination on the primary product and agrees that this would provide acceptable results from an environmental perspective while simplifying the compliance requirements for and improving the enforceability of the batch process vent provisions. The final rule contains provisions allowing the

owner or operator of an affected source to perform the group determination for batch process vents based on the annualized production of a single product (i.e., batch unit operation). However, the EPA does not consider it to be equitable from an environmental perspective to allow anything other than the worst-case HAP emitting product to be considered when basing applicability on a single product. Therefore, the final rule specifies that the worst-case HAP emitting product be used when an owner or operator chooses to determine applicability based on the annualized production of a single product. The final rule defines the worst-case HAP emitting product and describes how emissions are to be annualized to represent full-time production; full-time production does not necessarily mean operating at the maximum production rate. As described above, the EPA has modified the final rule to address the commenter's concern.

The commenter requested that the group determination be required on an annual basis instead of for every process change. The EPA believes the proposed rule was clear on this point. The proposed provisions in §63.506-2 require that emissions, average flow rate, and volatility class be determined on an annual basis. [Note: As discussed earlier, the final rule does not require the determination of volatility class.] Procedures contained within §63.506-2 **[§63.1323]** of the final rule describe how to account for the production of different products throughout the year. In this way, the group determination is done on an annual basis and can account for expected changes in the types and quantities of products being produced. The final rule does not reflect any changes related to this comment.

The commenter objected to the requirement that a new group determination is required whenever minor process changes occur (e.g., lengthening cycle times, altering process temperatures and pressures, etc.). The proposed and final rule addresses this concern as it relates to Group 2 batch process vents. The provisions in §63.506-2(i) **[§63.1323(i)]** address process changes to Group 2 batch process vents and the

requirement to perform a new group determination. These provisions provide examples of what things are process changes and what things are not process changes. Also, these provisions state that "changes that are within the range on which the original group determination was based" are not considered process changes. This methodology allows an owner or operator to perform the initial group determination with the minor process changes cited by the commenter in mind. The EPA believes that the proposed rule was clear that truly minor process changes (variations in operating conditions) do not require that a new group determination be performed. Addressing this concern as it relates to Group 1 batch process vents, the proposed and final rule do not require a redetermination of group status for Group 1 batch process vents. Therefore, if minor process changes, as cited by the commenter, were to occur, the owner or operator would not be required to perform another group determination. The final rule does not reflect any changes related to this comment.

Finally, the commenter objected to the requirement to perform a new group determination when a sudden process change is required. The EPA has interpreted "sudden process change" to potentially mean: (1) that a new product is being made, (2) that the same product is being made in a fundamentally different way (e.g., with different raw materials), or (3) that the same mix of products is being made but in a different proportion. In the first two cases, the EPA desires and intends that a new group determination be made. In the third case, the owner or operator has the flexibility to consider this situation when performing the initial group determination. If this situation was not considered, then a new group determination would be required. The EPA feels that these types of process changes warrant a new group determination to ensure that the standards are being met. The final rule does not reflect any changes related to this comment.

<u>Comment</u>: One commenter (IV-D-07) felt the proposed rule excluded certain batch process vents from making a group

determination. The commenter (IV-D-07) objected to the exclusion and recommended that all batch process vents be allowed to make a group determination.

Response: §63.506-2(a) of the proposed rule states, "Except as provided in paragraph (a)(2) of this section and in §63.506-1(a)(3)(B), the owner or operator ... shall determine the group status of each batch process vent ..." The two paragraphs cited in §63.506-2(a) **[§63.1323(a)]** are situations where compliance has already been achieved and requiring a group determination is not necessary. Because regulatory language is typically oriented towards describing the required actions of owners or operators, as opposed to describing optional activities, the proposed provisions did not specifically state that an owner or operator may perform a group determination on any batch process vent if so desired. However, the proposed provisions, by not prohibiting such an activity, allow an owner or operator to perform a group determination for any batch process vent if he or she chooses to do so. The EPA does not believe that any revisions are required to address this comment and none have been made.

Comment: Four commenters (IV-D-07, IV-D-08, IV-D-11, IV-D-23) objected to the requirement to determine group status for batch process vents prior to control or recovery devices. Three of the four commenters (IV-D-08, IV-D-11, IV-D-23) reported that this would be a source of confusion for the regulated community and regulatory authorities. They requested that the HON approach, which requires group determinations for continuous process vents to be made after recovery devices, be used. Two commenters (IV-D-08, IV-D-23) stated that making group determinations after control or recovery devices would provide an incentive for adopting pollution prevention or recovery measures, including those that might be based on innovative recovery methods. One commenter (IV-D-07) contended that the group determination should be based on emissions to the atmosphere, not on uncontrolled emissions. The commenter (IV-D-07) stated that the requirements in the proposed rule represent a significant

difference and serious inconsistency with the requirements for continuous process vents.

Response: The EPA is aware that the group determination procedures for batch and continuous process vents are different. This difference is a direct result of the analyses that developed the control requirements for batch process vents versus continuous process vents. Given the differences between batch and continuous process vents and the fact that control requirements were based on different analyses, the EPA does not find differences in the group determination procedures objectionable. Further, the analysis that developed the control requirements for batch process vents (i.e., the Batch Processes ACT) was based on applying controls prior to recovery or control devices. The EPA does not feel required to revise this analysis based on the comments brought forth, nor did the EPA feel required to revise the analysis based on their own observations prior to proposal. The final rule retains the requirement to make group determinations for batch process vents prior to control devices.

The significance of distinguishing a recovery device as an essential part of the batch unit operation is that applicability is determined based on the emissions exiting the batch unit operation [§63.506-2(a)(1) **[§63.1323(a)(1)]**]. In other words, applicability is determined based on the emissions prior to any control devices. [Note: As discussed in another section of this chapter, the EPA has defined all devices that reduce or oxidize organic HAP emissions as control devices for the purposes of the batch process vent provisions.]

5.4 DEMONSTRATION OF COMPLIANCE

Comment: One commenter (IV-D-13) asserted that the equations and test methods for calculating an annual average flow rate in §63.506-2(e) of the proposed rule are not warranted. The commenter (IV-D-13) explained that the volumetric flow rate testing methods prescribed in §63.506-2(e)(1) of the proposed rule and the minimum 15-minute measurement frequency defined in §63.506-2(e)(2) of the

proposed rule are overly burdensome and will not always provide representative measurements. The commenter (IV-D-13) maintained that average flow rates for a batch emission episode are better defined by calculations of displacement volumes with respect to the durations of the displacement episodes or by other more simplified methods.

Response: The EPA agrees with the commenter that there are more simple and potentially more accurate techniques for estimating flow rate for batch process vents. The final rule contains provisions that allow engineering assessment, as well as testing, to be used for estimating flow rate. The final provisions in §63.506-2(e) **[§63.1323(e)]** allow the owner or operator to select the most appropriate technique for determining flow rate from the two options of testing and engineering assessment.

Comment: One commenter (IV-D-07) recommended removing the emissions estimation equations in §63.506-2(b) of the proposed rule from the rule. The commenter (IV-D-07) recommended that measurements or engineering estimates be allowed instead of using the equations. The commenter (IV-D-07) felt the emissions estimation equations would not allow the flexibility necessary to account for differences in process technologies and operating methods. Reasons the commenter (IV-D-07) provided for removing the emissions estimation equations from the rule were: (1) although based upon the ideal gas law, the format of the equations is needlessly complex; (2) the EPA offers no descriptions of the individual process steps; (3) the equations do not consider different or alternate operations (i.e. reactor blanketing with nitrogen); and (4) it is unclear where some process steps end and where maintenance or shutdown practices begin.

Six commenters (IV-D-07, IV-D-08, IV-D-09, IV-D-13, IV-D-18, IV-D-23) supported the use of the options provided in §63.506-2(b)(5) and §63.506-2(b)(6) of the proposed rule. The provisions contained in these paragraphs allow owners or operators to use direct measurement or engineering assessments to estimate emissions in cases where the emissions estimation

equations are inappropriate for a particular type of operation or where a more refined estimate of emissions is necessary. Four commenters (IV-D-07, IV-D-09, IV-D-10, IV-D-18) objected to the requirement to demonstrate that the emissions estimation equations and direct measurement methods described by §63.506-2(b)(1) through (b)(5) of the proposed rule are not appropriate before engineering assessments [§63.506-2(b)(6) of the proposed rule] can be used. One commenter (IV-D-18) stated that methods may be equally appropriate but engineering assessment data may already be available, whereas the other methods listed often require costly performance testing. Two commenters (IV-D-09, IV-D-18) requested that the EPA allow owners or operators to use the most practical and cost-effective method to estimate emissions. One commenter (IV-D-18) maintained that this request is not without precedent because the HON allows engineering assessments to be used provided their basis is documented.

Response: One commenter requested that the emissions estimation equations in §63.506-2(b) of the proposed rule be dropped from the final rule. The commenter did not provide specific comment that would lead the EPA to take this action, and the emissions estimation equations have been retained in the final rule.

Several commenters requested that the final rule allow the owner or operator to select among the three techniques for estimating emissions provided in the proposed rule (i.e., remove the hierarchial organization for using the techniques included in the proposed rule). The EPA believes the data required to use the emissions estimation equations should be obtainable with reasonable effort. Further, specific comments regarding the accuracy or inappropriateness of the emissions estimation equations were not made. Given this, the EPA favors a more consistent estimation technique which is provided by the use of the emissions estimation equations. The final rule continues to require use of the emissions estimation equations.

However, independent of the comments provided, the EPA has concluded that direct measurement of emissions may prove to be difficult and may or may not provide an increased assurance of accuracy over the use of engineering assessment. Therefore, if an owner or operator can demonstrate that the emissions estimation equations in §63.506-2(b)(1) through (4) **[§63.1323(b)(1) through (4)]** of the final rule are not appropriate, the final rule allows the selection of either direct measurement or engineering assessment. Further, criteria for demonstrating that the emissions estimation equations are not appropriate for a specific batch emissions episode have been added to the final rule. These criteria require either: (1) the availability of test data that demonstrates a greater than 20 percent discrepancy between the test value and the estimated value, or (2) that the owner or operator demonstrate to the Administrator that the emissions estimation equations are not appropriate for a given batch emissions episode.

Comment: One commenter (IV-D-09) stated that more flexibility be allowed in designing a testing scheme for batch process vent emissions. The commenter (IV-D-09) stated that the definition of "batch emission episode" in the proposed rule presents an example where the charging of a vessel and the heating of the same vessel are considered two batch emission episodes. The commenter (IV-D-09) stated that this definition of batch emission episode would require a separate sample to be collected for the charging and the heating of the vessel. This requirement would require a large number of samples to be taken to characterize processes that have multiple, short duration process steps. The flexibility to test the emissions from several steps as a single emission episode would reduce testing cost without jeopardizing the quality of the emissions data. The commenter (IV-D-09) suggested that three batch cycles (or more) could be tested to obtain a representative average emission rate for the batch cycle. The commenter (IV-D-09) included suggested language

but did not provide data to support the claim that emissions data quality would not be compromised.

Response: After consideration of this comment, the EPA has chosen to leave the provisions related to emissions testing of batch process vents unchanged as they relate to this specific comment. The EPA believes that testing even a single batch emission episode would be challenging in the conduct of the test and the review of the test results. The EPA believes that testing a batch cycle comprised of multiple batch emission episodes would not be feasible. Therefore, the final rule has not been modified with regard to this specific concern. However, the emissions testing provisions in §63.506-2(b) have been modified to provide flexibility and to reduce the burden of testing, while continuing to ensure that results are satisfactory for applicability determinations.

In the final rule, an owner or operator may choose to test just a portion of the batch emission episode selected to be controlled. [Note: The final rule also allows an owner or operator to control just a portion of a batch emission episode as part of achieving the requirement of 90 percent emission reduction for the batch cycle.] The final rule allows an owner or operator to choose to test a portion of the batch emission episode only when the owner or operator can demonstrate that emissions during the period to be tested represent emissions for the entire batch emission episode or are greater than the average emission rate for the batch emission episode. Similar provisions appear in the Polymers and Resins Group II MACT final rule, and the EPA felt that similar flexibility was warranted in this rule. Therefore, the final rule allows an owner or operator to test the entire batch emission episode or to test just a portion of the batch emission episode if certain criteria are met.

Comment: One commenter (IV-D-09) recommended that guidance be provided on the applicability and the assumptions involved with using the emissions estimation equations in §63.506-2(b)(1) through (4) of the proposed rule. The commenter (IV-D-09) wished to prevent an owner or operator

from errantly applying the equations to a process activity that is beyond the scope of their applicability and, as a result, generate inaccurate emissions data. The commenter (IV-D-09) suggested that because the equations were obtained from the EPA's Batch Processes ACT document, the EPA should include the appropriate sections of this document that address the derivation of the emissions estimation equations as part of the appendix to the final rule.

Response: The EPA appreciates the commenter's concern and directs the commenter to the EPA's Technology Transfer Network electronic bulletin board to obtain a copy of the Batch Processes ACT. Also, a copy can be obtained from the Library Services Office of the EPA in Research Triangle Park, North Carolina.

Comment: One commenter (IV-D-09) requested that the EPA better define how to calculate the weighted average molecular weight of organic HAP in vapor [Equation 7 in §63.506-2(b)(4)(iii) of the proposed rule] when it is utilized in the vessel heating equation [Equation 4 in §63.506-2(b)(4) of the proposed rule]. The commenter (IV-D-09) explained that the vessel heating equation requires input parameters from both the heating cycle's initial and final conditions. The commenter (IV-D-09) stated that the equation that has been provided to calculate the weighted average molecular weight of organic HAP in vapor (Equation 7) can only calculate values at a single condition (i.e., temperature). The commenter (IV-D-09) stated that the EPA needs to define at which point in the heating cycle this variable should be calculated for use in Equation 4. The commenter (IV-D-09) stated that the molecular weight of a vapor stream exiting a process vessel can vary considerably from the start to the end of a heating cycle.

Response: The final rule has been changed so that Equation 4 calculates an average of the weighted average molecular weight of organic HAP in vapor at the initial and final temperatures for the heating cycle. In other words, an owner or operator is asked to use Equation 7 twice, once to

determine the weighted average molecular weight at the initial temperature and once at the final temperature; these two values are then averaged in Equation 4.

5.5 RECORDKEEPING AND REPORTING

Comment: One commenter (IV-D-18) urged the EPA to clarify what records are required to be maintained by §63.506-5(a) of the proposed rule. The commenter (IV-D-18) stated that the words "shall include" be deleted because they imply that other, unspecified records may also be required.

Response: The EPA agrees with the commenters and the recordkeeping provisions of the final rule have been clarified to specify those records that are required to be maintained.

Comment: One commenter (IV-D-09) requested clarification of the recordkeeping requirements of §63.506-5(f)(2)(iv) of the proposed rule. This requirement, stated the commenter (IV-D-09), implies that operation of batch cycles where monitored parameter levels are outside of established values is the norm, not the exception. The commenter (IV-D-09) explained that §63.506-5(f)(2)(iv) of the proposed rule requires the owner or operator to keep "records of the batch cycle daily average value of each continuously monitored parameter" except when the operating parameter values are at proper levels. The commenter (IV-D-09) stated that the emphasis of this paragraph implies that these extra records are more routinely required than should be the case. The commenter (IV-D-09) included suggested language.

Response: The EPA disagrees with the commenter's interpretation of §63.506-5(f)(2)(iv) of the proposed rule. [Note: These provisions are in §63.506-5(e) **[§63.1326(e)]** of the final standards.] The intent of these provisions are to provide flexibility to the owner or operator for those times when all recorded values for a monitored parameter during an operating day are above the minimum or below the maximum established level. [Note: The final standards no longer use the two step process of determining batch cycle averages and then determining a daily average, as was required at proposal; instead, a batch cycle daily average is calculated from all

parameter values measured during the operating day.] The intent of this paragraph is that an owner or operator may either "record the fact that all values were above the minimum or below the maximum" or "calculate and record the batch cycle daily average." For some owners or operators, the calculation and recording of a batch cycle daily average will be automated, and the EPA did not want to require something additional of these owners or operators. And, for other owners or operators, the flexibility to not calculate a batch cycle daily average would lessen the recordkeeping burden. No changes have been made to these provisions in the final standards.

Comment: One commenter (IV-D-09) recommended that submission of the report required by §63.506-6(b) or (c) of the proposed rule should be within 180 operating days or as part of the next Periodic Report, whichever is later. The commenter (IV-D-09) explained that both §63.506-6(b) and (c) of the proposed rule require that in the event of a process change for a Group 2 batch process vent that meets the requirements of §63.506-2(i) of the proposed rule, the owner or operator must "submit a report within 180 operating days after the process change." The commenter (IV-D-09) stated that only in §63.506-6(c) of the proposed rule, is the option given to submit the report as part of the next Periodic Report. The commenter (IV-D-09) requested that this option be made available in §63.506-6(b) of the proposed rule. The commenter (IV-D-09) also requested that the report be filed by the later of the two dates (i.e., 180 days or the next Periodic Report). The commenter (IV-D-09) included suggested wording.

Response: The EPA agrees with the commenter, and the final standards contain the suggested changes.

5.6 OTHER CHANGES RESULTING FROM EPA REVIEW

In addition to changes made to the proposed rule as a result of public comment, changes were made as a result of the EPA independently reviewing the rule between proposal and promulgation. Because the batch process vent provisions

included in the rule are among the EPA's first attempts to regulate batch process vents, the EPA felt an ongoing, independent review of these provisions after proposal was warranted. Changes resulting from this review are listed below:

(1) allow applicability determinations and compliance demonstrations (i.e., performance tests) to be based on total organic compounds (TOC) or organic HAP and allow the use of Method 25A to compliment the use of TOC as a potential basis for applicability determinations and compliance demonstrations;

(2) allow the establishment of parameter monitoring levels to be based on performance tests or a combination of performance tests and engineering assessment (discussed in more depth in Section H, Monitoring) -- to accommodate this change, modifications to the batch process vent testing provisions were required;

(3) add provisions specifying how the batch cycle limitation is to be determined; and

(4) change the reporting requirement for batch cycle limitation records from quarterly to annually.

These changes are discussed in the paragraphs below.

In the final rule, the EPA has allowed the use of TOC as the basis for applicability and compliance demonstrations (i.e., performance tests) as an alternative to organic HAP. The EPA has allowed this testing to provide flexibility to the regulated community and to reduce the overall burden of the rule. The EPA considered the impacts of allowing TOC to serve as a surrogate for organic HAP in applicability and compliance demonstrations and did not find any negative impacts. Further, allowing the use of Method 25A as a complement to the use of TOC as a surrogate to organic HAP reduces the burden of implementing the final rule with little to no adverse impact on the measurement of pollutants in the regulated batch process vents. To the best of the EPA's knowledge, the batch process vents regulated by this rule are predominantly organic HAP. Also, with one exception (i.e., ethylene glycol), the

regulated organic HAP, which are listed in the definition of organic HAP found in the final rule, have response factors to Method 25A adequate to ensure satisfactory measurement of TOC in the batch process vents. For certain emission points where the EPA considered the presence of ethylene glycol and its corresponding poor response factor to call into question the results that would be obtained using Method 25A, the use of Method 25A is not allowed. For all other emission points, the EPA has allowed the use of TOC for applicability and compliance demonstrations as an alternative to organic HAP in the final rule.

In the final rule, the EPA allows the establishment of parameter monitoring levels to be based on either performance tests, as in the proposed rule, or a combination of performance tests, engineering assessment, and manufacturer's recommendations. This change affects all emission points which are required to establish parameter monitoring levels, including batch process vents. The rationale for this change is discussed in detail in the preamble to the promulgated rule. For batch process vents, this change in the procedures for establishing parameter monitoring levels necessitated changes to the performance test provisions. When an owner or operator chooses to establish parameter monitoring levels based exclusively on performance tests, the final rule directs that the performance test must include the entire batch emission episode selected to be controlled. As discussed earlier, an owner or operator may choose to control just a portion of a batch emission episode; in such a scenario, the performance test must include the entire portion of the batch emission episode selected to be controlled. Alternatively, when an owner or operator chooses to establish parameter monitoring levels based on a combination of performance tests, engineering assessment, and manufacturer's recommendations, the final rule allows an owner or operator to test either the entire batch emission episode, or portion thereof, selected to be controlled or to test only a period of the batch emission episode that is less than the entire batch emission episode,

or portion thereof, selected to be controlled. [Note: The flexibility to test a specific period of the batch emission episode that is less than the entire batch emission episode, or portion thereof, selected to be controlled is discussed earlier in this section.]

The final rule includes provisions specifying how the batch cycle limitation, required for Group 2 batch process vents, is to be established. The EPA felt that the proposed rule was ambiguous concerning the establishment of the batch cycle limitation and added these provisions to make the rule more complete. The added provisions provide additional description of the purpose of the batch cycle limitation and describe what documentation is required as part of establishing the batch cycle limitation.

In the final rule, the EPA changed the requirement for reporting the number and type of batch cycles accomplished for a Group 2 batch process vent from a quarterly to an annual reporting requirement. The EPA felt that quarterly reporting was unwarranted given that the compliance requirement (i.e., the batch cycle limitation) was on an annual basis.

6.0 POLY(ETHYLENE TEREPHTHALATE) (PET) VACUUM SYSTEMS

In the preamble to the proposed rule, the EPA solicited comments and data on the technical feasibility and costs for emission control techniques applicable to the vacuum system and associated process contact cooling towers used in PET production. Control of these emissions went beyond the MACT floor of no control. In response to this request for information, the EPA received data and information used to develop the requirements for the final rule. Because of the large volume of comments received and the detailed and interrelated nature of the comments, this chapter is organized somewhat differently than others in this document. The primary difference is the amount of introductory or background text preceding presentation of specific comments. Also, because so many comments were received that made essentially the same point, these comments are not presented in the same level of detail as for other chapters in this document. Finally, the comment summaries do not identify which commenters made which exact points except for instances where only one or two commenters made the particular comment. The reader is referred to the actual comment letters in the docket for additional detail and to understand the specific comments made by each commenter. The following commenters provided public comments related to vacuum systems at PET facilities: IV-D-04, IV-D-05, IV-D-06, IV-D-11, IV-D-16, IV-D-17, IV-D-19, IV-D-20, IV-D-22, IV-D-24, IV-D-25, IV-D-26.

Issues related to existing and new affected sources are presented separately. Within the discussion of existing affected sources, the use of ethylene glycol jets as a retrofit technology and the use of alternative technologies are discussed separately. Following this discussion, comments on the provision designating all vacuum system wastewater

streams (i.e., contact condenser effluent) as Group 1 are presented. Industry recommended alternatives to the proposed rule and miscellaneous comments complete the presentation of comments on existing affected sources. The discussion of new affected sources is very short in comparison because commenters did not object to the use of ethylene glycol jets for new affected sources.

To provide some background, a brief discussion of emissions from PET vacuum systems completes this introduction. Based on information received from the commenters, the emissions from PET steam jet vacuum systems and the associated process contact cooling towers occur as a result of (1) volatilization from the contact condenser effluent and (2) stripping and drift within the process contact cooling tower. The most typical vacuum system used within the PET industry uses steam jets to create the vacuum, condenses steam from the steam jets using contact condensers, and recirculates the contact condenser effluent to the process contact cooling tower. [Note: Some affected sources use once-through cooling water which then goes directly to wastewater treatment.] Both VOHAPs (e.g., methanol, acetaldehyde, 1,4-dioxane etc.) and ethylene glycol are present in the contact condenser effluent. [Note: Ethylene glycol is a HAP but is not volatile enough to be considered a VOHAP.]

The VOHAP are emitted through volatilization from the contact condenser effluent as it leaves the barometric leg and makes its way to the process contact cooling tower. Any VOHAP remaining in the contact condenser effluent is volatilized in the process contact cooling tower. Ethylene glycol is emitted from the process contact cooling tower and occurs as a combination of stripping (i.e. volatilization) and drift. Stripping occurs when air forced through the liquid (i.e., cooling tower water) accelerates the volatilization of compounds within the liquid. Drift occurs when very small water droplets are blown out of the process contact cooling tower. Drift emissions occur when pollutants are soluble in water or are contained in the water (i.e., particulates) and

are carried out as part of the water droplet. Further contact with the commenters revealed that one commenter believed an equal quantity of ethylene glycol emissions resulted from stripping (i.e., volatilization) and drift. The majority of commenters did not mention stripping as an ethylene glycol emission mechanism.

6.1 EXISTING AFFECTED SOURCES

6.1.1 Ethylene Glycol Jets as Retrofit Technology

Comment (Technical Concerns): Many commenters provided comments on the proposed requirements for existing affected sources. The bulk of the comments discussed the inappropriateness of ethylene glycol jets as a retrofit technology. While the proposed rule did not require the use of ethylene glycol jets, they were the technology which was used to develop the cost basis prohibiting process contact cooling towers in the proposed rule. Commenters provided technical reasons why ethylene glycol jets would cost substantially more to retrofit at existing processes than estimated by the EPA at proposal. Commenters also provided comments on additional cost issues that the commenters felt the EPA had not considered. Commenters disagreed with the EPA's determination that ethylene glycol jets are the vacuum system technology of choice for a retrofit application and with the EPA determination that ethylene glycol jets are cost effective. Commenters contended that the EPA had failed to consider numerous cost factors and had not demonstrated that the retrofit of ethylene glycol jets was cost effective.

Commenters presented numerous technical challenges they would face if required to retrofit their existing vacuum systems to use ethylene glycol jets. These technical challenges have costs associated with them which are discussed within this comment summary. Additional cost considerations are discussed in the next section.

Commenters contended that the EPA had not appropriately considered the retrofit of ethylene glycol jets as a process change. Commenters stated that the EPA misjudged the significance of the technical aspects of retrofitting the

vacuum system and this contributed to an underestimation of the costs.

Commenters stated that vacuum systems are an integral part of the manufacturing process, and the EPA had failed to recognize that the cost impacts and design considerations of a process change are substantially different from those associated with the installation of add-on pollution control. Commenters discussed the risk of changing an existing performing system to an untried new system. They felt there could be lingering problems with product quality, a prolonged shakedown period for new equipment, and increased maintenance costs.

Commenters stated that a retrofit to the vacuum system is likely to affect product quality immediately following the retrofit and is likely to affect it for some time afterwards. Commenters stated that producing unacceptable product is a cost that was not considered by the EPA. [Note: The impact of process unit shutdown is discussed later.] Commenters also stated that design requirements and cost estimates for process changes are different from those associated with add-on pollution control equipment. As an example, typical add-on pollution control equipment is placed at the end of the process and does not require a significant amount of additional piping to make it functional. However, the retrofit of ethylene glycol jets would take place in the middle of the process and a significant amount of additional piping would be required. Commenters stated that costing methodologies used by the EPA are geared toward add-on pollution control equipment and will always understate the costs for a process change. In addition, the commenters reminded the EPA that in addition to the retrofit costs of buying and installing the new equipment, additional costs and resources would be required to adapt the equipment to the specific retrofit and to perform the necessary maintenance.

Commenters stated that the EPA analysis did not consider the need to manage the level of solids going to the vacuum system. Not managed, solids carried over from the

polymerization reactors will regularly buildup in the vacuum jets and associated equipment (e.g., condensers) and cause system downtime. The commenters explained that to manage this problem it would be necessary to (1) design and install a scrubber system to remove solids prior to the vacuum jets, or (2) install a spare vacuum jet system. Both approaches are currently used by the industry.

One commenter (IV-D-19) discussed licensing and patent considerations that could either prevent acquisition of ethylene glycol jets and associated equipment (i.e., scrubbers) or make the acquisition more costly. The commenter (IV-D-19) stated that several companies hold PET process technology patents, and the development or acquisition of vacuum system technology is complicated by the competitive relationship between patent holders and other companies. The commenter (IV-D-19) stated that some vendors they contacted were hesitant to discuss the licensing of any vacuum system technologies because the commenter (IV-D-19) was in direct competition with the license holder.

Commenters felt that the EPA had not considered the safety risks associated with the use of ethylene glycol jets. Commenters expressed concern that pressurized ethylene glycol is both flammable and toxic and presents a potential safety threat in the event of a piping or equipment failure. Commenters cited examples of fires that had occurred and examples of overseas PET facilities converting from ethylene glycol jets to steam jets as indications of the serious nature of these safety concerns. Because of this risk, ethylene glycol jet systems require careful equipment design and special operating practices, including strict maintenance procedures. Commenters stated that piping codes and equipment standards for flammable vapor handling would require replacing all piping and equipment currently in steam service. Introducing flammable ethylene glycol into areas presently classified for general electrical service would necessitate upgrading some electrical systems.

Comment (Cost Concerns): Many commenters stated that the EPA had not considered the costs and other financial ramifications associated with process unit shutdowns and production curtailments that would occur as part of retrofitting ethylene glycol jets. [Note: The production of unacceptable product was discussed earlier.] Commenters explained that existing affected sources typically do not experience these problems when installing add-on pollution control equipment. However, the retrofit of ethylene glycol jets is a process change and process unit shutdowns and production curtailment is a certainty. Commenters explained that the loss of production and potential loss of market position would cause great economic injury. Commenters insisted that the EPA should have considered these costs in their analysis.

One commenter (IV-D-21) stated that any benefit from the decreased use of the cooling tower after retrofitting ethylene glycol jets would be site specific. The commenter (IV-D-21) stated that even though a cooling tower would no longer be required to support the vacuum system, it may still be required for other parts of the process or for other processes at the facility.

Commenters stated that additional costs would be incurred if existing structures required modification to accommodate the retrofit of ethylene glycol jets. For example, commenters stated that it was possible that the weight limit of building floors could be exceeded. Another possibility would be that building height limits may be exceeded if a new floor was required or if retrofit equipment protruded from the existing top floor. The most likely problem would be that floor space would be limited and substantial rearranging of existing process equipment would be required.

One commenter (IV-D-19) stated that the EPA had not considered the potential need for additional glycol recovery equipment to handle the recycling of ethylene glycol from an ethylene glycol jet vacuum system. The commenter (IV-D-19) stated that use of an ethylene glycol jet vacuum system will

increase the quantity and change the characteristics of the recovered ethylene glycol streams. These changes would likely require additional recovery equipment.

Commenters universally stated that it was not cost effective to retrofit existing facilities with ethylene glycol jets. Commenters provided independent cost estimates and calculations of cost effectiveness values for the retrofit of ethylene glycol jets. Commenters provided cost-effectiveness values for retrofit of $13,000 to $48,000/ton (IV-D-20); $50,000/ton (IV-D-11); and approximately $8,200/ton to $17,000/ton (including shutdown costs) (IV-D-25).

One commenter (IV-D-19) felt that their facility would experience a disproportionately large impact in comparison to other facilities, largely because of the differences in their process compared to other continuous processes. This commenter (IV-D-19) requested a separate subcategory be established for their process and proposed an alternate MACT. [Note: More comment on the request for a separate subcategory by this commenter is presented in Section 6.1.4.]

Many commenters contended that the EPA had not provided adequate information on the expected compliance costs for PET facilities to meet the cooling tower prohibition to enable the public to evaluate the EPA's analysis. The commenters acknowledged that the EPA had stated that these costs were confidential business information (CBI). However, the commenters argued that they were not able to assess the EPA's analysis and these costs should not be considered CBI.

<u>Response:</u> The EPA agrees that some technical and cost aspects associated with the retrofit of ethylene glycol jets were not considered in the analysis supporting the proposed rule. The analysis at proposal was limited by two factors. First, data concerning the retrofit of ethylene glycol jets were limited to a single facility. In the absence of additional data, the EPA assumed the facility and data were representative of the industry; that turned out not to be the case. Second, because some impacts (i.e., lost production and variations on retrofit costs) are very facility-specific, the

EPA does not attempt to account for them in an overall cost analysis, as was done for the Group IV proposal. Regardless, based on the comments provided, the EPA agrees that ethylene glycol jets are not a suitable retrofit technology, either from a technical or cost-effective perspective, for meeting the provision of the proposed rule that prohibits the use of process contact cooling towers.

The EPA knew that the proposed rule was based on limited data and a limited knowledge obtained by the EPA from one producer of PET concerning installation and operation of ethylene glycol jets. Therefore, the EPA took special effort to make this clear and to solicit comments in the preamble to the proposed rule (see pages 16104 and 16107 of the preamble). Based on the data available at proposal, the costs and emission reductions achievable through the use of ethylene glycol jets in retrofit situations were acceptable. In contrast, several commenters provided detailed cost estimates for the retrofit of ethylene glycol jets, and these data showed that the retrofit of ethylene glycol jets were not at acceptable cost effective levels. The EPA also received comments from the company that provided the original ethylene glycol jet retrofit data. This commenter provided additional information describing the special circumstances that made the retrofit of ethylene glycol jets economical (i.e., from a business perspective) and cost effective (i.e., dollars per ton pollutant removed) for the specific facility. In addition, they pointed out how those same circumstances did not exist at another of their facilities and provided a cost estimate for retrofitting the second plant; this estimate demonstrated that such a retrofit would not be cost effective.

The EPA understands why commenters were concerned by the limited amount of cost analysis that was presented at proposal. However, when data are requested to be treated as CBI, the EPA cannot present the data without receiving permission from the data provider or making a finding that the data is not CBI. The EPA did not feel it was critical to present the ethylene glycol retrofit data in more detail

because the rulemaking action was a proposal, and the EPA fully expected that the public would provide additional data.

Given that the EPA was convinced by the commenters' arguments that ethylene glycol jets are not a suitable retrofit technology, the EPA considered alternate options for controlling emissions from the vacuum system. Both VOHAP and ethylene glycol are emitted from the vacuum system, and the EPA chose to approach each of these emissions separately.

To address VOHAP emissions from the vacuum system, the final rule treats the contact condenser effluent as wastewater and applies the same provisions to it as are applied to process wastewater. Contact condenser effluent is considered process wastewater based on the proposed wastewater provisions, and, without any special provisions or specific mention, the wastewater provisions will apply. The EPA judged that treating the vacuum system wastewater prior to any significant opportunity for volatilization makes environmental sense. Further, the HON wastewater provisions, which are the basis for the wastewater provisions in the proposed and final rule, have been judged to be environmentally effective and cost effective overall. Therefore, if the HON wastewater provisions designate a wastewater stream as Group 1, it is cost effective to control the VOHAP present in the wastewater stream.

Addressing emissions from the process contact cooling tower was more complex. [Note: The HON did not specifically address process contact cooling towers because they are not used extensively in that industry.] Given that the emissions of VOHAP would be dealt with through the use of the wastewater provisions, the key issue related to process contact cooling towers became the emission of ethylene glycol. Between proposal and promulgation, the EPA spent considerable effort gathering information on PET vacuum systems and their emissions. Much of this effort focused on emissions from the process contact cooling towers, specifically emissions of ethylene glycol. Based on industry reported emissions, total ethylene glycol emissions for the industry are approximately

340 Mg/yr, and approximately 230 Mg/yr are being emitted from a single facility. That means the other eleven facilities emit an average of 10 Mg/yr of ethylene glycol. In addition to gathering information on emissions, the EPA investigated control options aimed at reducing emissions of ethylene glycol from process contact cooling towers. Possible control options that were investigated, not considering ethylene glycol jets, include treating a slipstream of the cooling tower water to reduce the concentration of ethylene glycol or installing a large heat exchanger to isolate the process contact cooling tower from the process. None of these control options were shown to be cost effective. All of the factors discussed above have led the EPA to conclude that, with one exception, specific provisions for process contact cooling towers are not warranted.

The one exception where it was found to be cost effective to control emissions from existing process contact cooling towers was for affected sources manufacturing PET using a continuous TPA high viscosity multiple end finisher process. There is a single facility using this process, and the representatives of said facility (IV-D-19) requested that a separate subcategory be established for their process and proposed an alternate MACT. This facility has become subject to the Polymer Manufacturing NSPS during this rulemaking (see docket A-45-92, Section IV-D). Because this facility is already required by the Polymer Manufacturing NSPS to reduce the concentration of ethylene glycol in the cooling tower water to 6 weight percent, it was shown to be cost effective to reduce the concentration further to 4 weight percent. The analysis demonstrating costs and emission reductions was considered CBI by the facility, and is, therefore, not presented. Discussion of establishing a separate subcategory is presented in Section 6.1.4. As part of establishing a separate subcategory and setting a standard for process contact cooling towers, the issue of compliance time had to be considered, and it was the EPA's judgement that 3 years would be required to achieve compliance. The single facility in

this subcategory has just become subject to the Polymer Manufacturing NSPS and requested the full 3 years to achieve compliance with this rule. Representatives of the facility provided information demonstrating that additional equipment may be required and experience operating the system would be needed before the facility could be assured of meeting the standard in the thermoplastics rule.

6.1.2 Alternative Technologies

Comment: Many commenters provided alternatives to the provisions of the proposed rule that prohibit the use of process contact cooling towers. These alternatives included: (1) meeting the requirements of the Polymer Manufacturing NSPS, (2) reducing emissions from process contact cooling towers by 80 percent, (3) establishing an emissions performance level similar to the level established in the NSPS, (4) treating the process contact cooling tower as a process vent, (5) stripping the contact condenser effluent on the hot side of the condenser and then recirculating it to the cooling tower, and (6) treating vacuum system wastewater as any other wastewater stream.

In addition, comments were provided on the technologies the EPA had discussed in the proposed rule as alternatives to ethylene glycol jets. Commenters stated that the alternate technologies were not technically feasible and were not cost effective options. Detailed costs for these alternate technologies were not provided by the commenters. However, approximate costs were provided by commenters to support their claim that the alternate technologies were not cost effective. One commenter (IV-D-19) felt the EPA was required to conduct a thorough analysis of these alternatives and failed to do so.

Commenters stated that the use of noncontact condensers was not feasible for high vacuum needs. Commenters stated that the high vapor flow rates would necessitate the use of very large noncontact condensers. Commenters went on to state that large noncontact condensers would require significant building modifications. Commenters stated that solids from the process would deposit inside the noncontact condenser,

eventually causing plugging and significant downtime. Commenters explained that each reactor would either need spare noncontact condensers to be used when the primary noncontact condenser was being cleaned or would need a scrubber to prevent solids from entering the vacuum system. One commenter (IV-D-19) stated that the capital costs of installing noncontact condensers would equal or exceed the cost of retrofitting ethylene glycol jets. Another commenter (IV-D-21) stated that when annual operating costs are considered, costs for noncontact condensers would be higher than ethylene glycol jets.

Commenters stated that mechanical vacuum pumps were impractical because of the large volume of vapor and the high vacuum requirements of PET polymerization reactors. One commenter (IV-D-21) stated that mechanical vacuum pumps suitable for high vacuum are quite expensive and more complicated than ethylene glycol jets. The commenter (IV-D-21) went on to state that when increased maintenance costs and lost production due to reliability problems were considered, ethylene glycol jets were more economical. One commenter (IV-D-19) stated that the very high vacuum requirements of their process would necessitate a large number of mechanical vacuum pumps for each reactor and more than 100 pumps overall.

Response: While commenters provided adequate data to dissuade the EPA from prohibiting the use of process contact cooling towers, adequate data were not provided to enable the EPA to consider the recommended alternatives.

The EPA was aware at proposal that these alternatives would not be suitable in all cases, and the provided comments confirmed this understanding. While comments provided in writing described the circumstances under which the alternatives would not work, information gathered through industry meetings and plant trips prior to proposal showed that these alternatives had been applied and were favorably considered in certain situations. Based on the data gathered

prior to proposal, the EPA included these technologies as alternatives to ethylene glycol jets in the proposal.

One commenter stated that the EPA was required to conduct a thorough analysis of the alternatives and had failed to do so. The EPA did not have the data at proposal to do such an analysis and did not consider one to be required. The EPA did not portray the alternatives as the basis of the rule, but offered them as "alternatives" and specifically solicited comments on their applicability, effectiveness, and cost.

6.1.3 Vacuum System Wastewater Requirements

Comment: Many commenters objected to the proposed provision designating all vacuum system wastewater streams as Group 1. Commenters stated that the EPA had not provided rationale explaining why the standard for vacuum system wastewater was more stringent than the standard for other wastewater streams.

Commenters contended that in order to require the control of all vacuum system wastewater streams, the EPA would be required to perform a cost and impacts analysis examining the incremental cost of controlling Group 2 wastewater streams. Commenters stated that the EPA had not provided the results of such an analysis. Commenters felt that requiring the control of Group 2 wastewater streams would impose unreasonable costs without providing additional emission reduction.

In addition, commenters explained that designating all vacuum system wastewater streams as Group 1 would create confusion about how the wastewater standards should be applied. For instance, the commenters asked how the standards would be applied when a wastewater stream had a VOHAP concentration that already met the VOHAP concentration limit for some of the treatment options found in the wastewater provisions. Further, commenters explained that by designating all vacuum system wastewater streams as Group 1, material removed from the streams would be considered residuals. Commenters stated this would impact their ability to recover ethylene glycol and might also require costly treatment of

oligomers that are removed from the wastewater stream, without any corresponding environmental benefit.

Response: The purpose for designating all vacuum system wastewater streams as Group 1 was explained in Chapter 6.0 of the Basis and Purpose Document for the proposed rule [EPA-453/R-95-004a; March 1995]. To summarize, at the time of proposal, the EPA considered ethylene glycol jets to be pollution free because there was no vacuum system wastewater stream produced. [Note: Since proposal, the EPA has come to understand that ethylene glycol jets are not a pollution free technique because the additional loading to the glycol recovery unit can create additional emissions from existing process vents or wastewater streams or both.] Therefore, in order to ensure equivalency between the use of ethylene glycol jets and noncontact condensers, the EPA determined that all vacuum system wastewater produced by the noncontact condensers must be controlled.

As discussed above, ethylene glycol jets are not suitable for retrofit, and the alternative technologies, including noncontact condensers, were not pursued as viable alternatives upon which to base the prohibition of process contact cooling towers. Because the automatic designation of vacuum system wastewater streams as Group 1 was done in an effort to make noncontact condensers equivalent to ethylene glycol jets and that need no longer exists, there is no longer a need or justification to designate all vacuum system wastewater streams as Group 1. As a result, the EPA has changed the final rule to implement the group determination procedure for vacuum system wastewater, consistent with the requirements for other process wastewater.

Commenters felt that the EPA was required to conduct an impacts analysis examining the incremental cost of controlling Group 2 wastewater streams. The EPA did not conduct such an analysis at proposal because noncontact condensers, the use of which required an automatic Group 1 designation, were offered as an alternative only, not as the basis of the standard.

Finally, because the EPA is no longer automatically designating any wastewater streams as Group 1 and is instead using the applicability criteria found in the proposed wastewater provisions, the implementation problems described by the commenters are no longer a concern.

6.1.4 Miscellaneous

Comment: One commenter (IV-D-16) stated that the EPA had failed to establish "a credible floor that sets ethylene glycol jets as the technology of choice from steam jet vacuum systems." The commenter (IV-D-16) continued that "while this technology may be appropriate for new sources, we challenge the Agency to make a credible demonstration that this technology represents the floor for existing sources."

Response: The EPA did not intend to imply that the retrofit of ethylene glycol jets, which served as the basis for prohibiting the use of process contact cooling towers, was representative of the MACT floor. In Chapter 8.0 of the Basis and Purpose Document [EPA-453/R-95-004a, March 1995], the EPA states that the MACT floor for process contact cooling towers is no control. Also in Chapter 8.0, the EPA states that "the Polymer Manufacturing NSPS is more stringent than the MACT floor. However, as discussed earlier, ethylene glycol jets were determined to be more cost effective in reducing emissions than the requirements of the Polymer Manufacturing NSPS." The EPA intended this to be a clear statement that the retrofit of ethylene glycol jets was considered to be more stringent than the MACT floor.

Comment: One commenter (IV-D-19) requested that a separate subcategory be established for the continuous TPA high viscosity multiple end finisher process. The commenter (IV-D-19) contended that the subcategorization scheme for PET continuous processes ignored fundamental differences between the continuous TPA high viscosity multiple end finisher process and other high viscosity processes and other continuous processes. The two most significant differences are the higher vacuum required by the multiple end finisher process and the absence of scrubber technology. The commenter

(IV-D-19) stated that the EPA did not evaluate the specific impacts on their process. As a result, the commenter (IV-D-19) was expecting a disproportionately large impact when compared to owners or operators that use other processes.

Response: The EPA has gained an increased understanding of the TPA continuous high viscosity multiple end finisher process since proposal and agrees with the commenter that this process warrants a separate subcategory distinct from other continuous PET processes. In addition to the points raised by the commenter, a significant difference between this process and others is the higher level of ethylene glycol emissions from the process contact cooling tower. This difference in emissions is also a consideration in establishing a separate subcategory for this process.

As discussed earlier in Section 6.1.1, this commenter (IV-D-19) proposed an alternate MACT for controlling emissions of ethylene glycol from the process contact cooling tower. A condition of including the alternate MACT for this unique process and facility was establishing a separate subcategory.

The final rule has established a distinct subcategory for this process, which is used at a single facility within the PET industry, with requirements for controlling emissions from the process contact cooling tower.

Comment: In response to the EPA's request for information on methodologies for estimating emissions from process contact cooling towers, two commenters provided methods they have used. One commenter (IV-D-06) estimated emissions using a material balance methodology. Emissions were calculated by measuring the flow and HAP concentration at specific locations; inputs to the process contact cooling tower were restricted to those streams where HAP concentrations could be measured with confidence. Another commenter (IV-D-05) included a method for measuring process contact cooling tower VOC emissions which was developed as an inspection and maintenance program rather than as an emissions estimation technique.

Response: The EPA appreciates the information submitted by the commenters. The request for an emissions estimation methodology was based on the need to consistently estimate emissions from process contact cooling towers for the purposes of emissions averaging. In the final rule, emissions from process contact cooling towers at existing affected sources are not regulated for the majority of affected sources. [Note: As discussed previously in this chapter, the final rule will control VOHAP emissions from the contact condenser effluent using the wastewater provisions from the proposed rule; this action will control any significant VOHAP emissions from this emission point.] For the single subcategory where process contact cooling tower emissions from existing affected sources are regulated, the EPA has judged that emissions from process contact cooling towers will not be eligible for emissions averaging (see Chapter 9). Therefore, an emissions estimation methodology for process contact cooling towers is not required for the final rule.

Comment: Commenters stated that the EPA's characterization of ethylene glycol jet vacuum systems as "pollution free" is inaccurate. Commenters explained that ethylene glycol jet vacuum systems send recovered ethylene glycol, which contains VOHAP, to the glycol recovery unit in quantities greater than what would be sent if a steam jet vacuum system were being used. At the glycol recovery unit, the VOHAP (e.g., acetaldehyde, 1,4-dioxane, etc.) contained in the recovered ethylene glycol stream is typically stripped and either emitted to the atmosphere or is sent to an air pollution control device. [Note: The proposed and final rules would regulate this emission point as either a continuous or batch process vent.] The water and glycol stream is sent to glycol recovery. Eventually, a wastewater stream is generated as a result of the recovery process; this wastewater stream would be subject to the proposed and final rules. In addition, there is a process vent from the mechanical vacuum pump, generally the last stage of an

ethylene glycol vacuum jet system, that has the potential to emit HAP.

Response: The EPA appreciates the provided comments and relied on them in developing the requirements for the final rule.

Comment: Commenters stated that the EPA had not provided the basis used to determine that ethylene glycol jets are less costly than the Polymer Manufacturing NSPS requirements for controlling ethylene glycol emissions from process contact cooling towers. Commenters did not believe the retrofit of ethylene glycol jets was less costly than applying the requirements of the Polymer Manufacturing NSPS, but did not provide data of their own. Further, commenters stated that the retrofit of ethylene glycol jets could not be less costly for a facility that was already complying with the Polymer Manufacturing NSPS requirements. Commenters questioned why the Polymer Manufacturing NSPS requirements were not chosen over the retrofit of ethylene glycol jets.

Response: At proposal, the EPA stated that the retrofit of ethylene glycol jets was considered to be both less expensive and more effective than the Polymer Manufacturing NSPS requirements. Because of the threshold emission rate applicability criteria in the Polymer Manufacturing NSPS, which requires a facility's emissions to be above a certain level before being required to take action and meet the emission limits of the rule, the EPA had the understanding that very few, if any, facilities had been required to take positive action to meet the requirements of the Polymer Manufacturing NSPS. Data collected during the development of the proposed rule did not indicate that any facilities had in fact become subject to the Polymer Manufacturing NSPS requirement. Further, the EPA did not believe that implementation of the Polymer Manufacturing NSPS requirements would achieve significant emission reductions. For these reasons, the EPA did not consider it necessary at proposal to evaluate the requirements of the Polymer Manufacturing NSPS as a regulatory alternative.

6.2 NEW AFFECTED SOURCES

Comment: Several commenters mentioned the prohibition of process contact cooling towers for new affected sources, however, none presented objections to it. Commenters did object to the provision that designated all vacuum system wastewater streams as Group 1.

Response: The provision of the proposed rule for new affected sources which prohibits the use of process contact cooling towers has been retained in the final rule. Owners or operators have several options to meet this requirement -- ethylene glycol jets, once-through cooling water system, noncontact condensers, or isolation of the contact condenser cooling loop from the cooling tower to name a few. It should be noted that while many commenters objected to these techniques for retrofit applications, very few objectionable comments were made regarding their use in a new facility. In fact, some commenters supported the use of ethylene glycol jets in new facilities. The EPA has determined this requirement to be the MACT floor for new affected sources. However, the provision designating all vacuum system wastewater streams as Group 1 has been dropped from the final rule. The final rule implements the group determination procedure for vacuum system wastewater, consistent with the requirements for other process wastewater.

As described earlier, the purpose for designating all vacuum system wastewater streams as Group 1 was to ensure equivalency between the use of ethylene glycol jets and the use of noncontact condensers. At the time of proposal, the EPA considered ethylene glycol jets to be pollution free because there was no vacuum system wastewater stream produced. The automatic designation of all vacuum system wastewater as Group 1 was meant to address the absence of vacuum system wastewater when ethylene glycol jet systems are used. Since proposal, the EPA has come to understand that ethylene glycol jets are not pollution free because the additional loading to the glycol recovery unit can create additional emissions from process vents or wastewater streams or both.

Realizing that ethylene glycol jets are not pollution free, the EPA considered the additional emissions at the glycol recovery unit when ethylene glycol jets are used and the emissions from the vacuum system wastewater when noncontact condensers are used. In either case, an equivalent quantity of VOHAP is introduced to the vacuum system from the process. Process vents and wastewater streams at the glycol recovery unit are subject to the provisions of the standard. For example, a wastewater stream at the glycol recovery unit would be the subject of a group determination and, based on the results, would be controlled if required. The EPA judged that to require the same action for the vacuum system wastewater from noncontact condensers would ensure equivalency between a new affected source using ethylene glycol jets and one using noncontact condensers.

7.0 WASTEWATER OPERATIONS

7.1 SELECTION OF STANDARDS

Comment: Two commenters (IV-D-10 and IV-D-23) felt several differences between wastewater streams from the thermoplastics industry and the HON industry served to refute the assumption that the HON is a ready-made regulatory alternative. One commenter (IV-D-23) cited the following differences between the wastewater streams from the thermoplastics and HON industries: (1) HAP emissions per thermoplastic source are an order of magnitude lower than for HON sources, (2) the cost per ton of HAP removed for thermoplastic wastewater is an order of magnitude higher than for HON wastewater, and (3) the HON reference control technology (steam stripping) is not a viable option for most thermoplastic wastewaters.

Three commenters (IV-D-08, IV-D-11, IV-D-23) explained that the EPA should not make an industry subject to standards which it knows will not result in any emission reductions. The commenters (IV-D-08, IV-D-11, IV-D-23) stated that even if the installation of controls are not required under the proposed wastewater provisions, there would still be considerable monitoring, recordkeeping, and reporting costs. Also, affected sources would still be at risk of noncompliance with monitoring, recordkeeping, and reporting requirements. The commenters (IV-D-08, IV-D-11, IV-D-23) stated that the wastewater provisions in the proposed rule contradict the Reinventing Environmental Regulation initiative (March 16, 1995).

Four commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-23) objected to the EPA's determination that the wastewater MACT floor, which is no control for most affected sources, is equivalent to the HON level of control. Commenters (IV-D-08,

IV-D-11, IV-D-23) stated that the EPA inappropriately concluded that in cases in which affected sources have not installed controls and no controls are required by the HON wastewater provisions, the level of control installed by the affected source (i.e., none) is equivalent to the HON level of control. Commenters (IV-D-08, IV-D-23) stated that only affirmative actions, not a lack of control actions, should be considered in determining whether or not an affected source is controlled at a level equivalent to that of another regulation. The commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-23) stated that, based on the data, the EPA should have concluded that there is no basis for regulating wastewater emissions. Two commenters (IV-D-08, IV-D-15) specifically objected to the decision to regulate wastewater for the polystyrene subcategories.

Commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-23) went on to say that any controls beyond the MACT floor of no control should be justified on a cost impact basis. Three commenters (IV-D-08, IV-D-11, IV-D-23) cited cost estimates from the SID for the proposed rule of about $5,700 to $27,500 per ton of emission reductions compared to the $430 per ton of emission reduction determined for the HON. [Note: The cost-effectiveness values cited by the commenters include impacts experienced at the MACT floor.] The commenters (IV-D-08, IV-D-11, IV-D-23) concluded that the fact that these costs differ so dramatically reveals that thermoplastic and HON wastewater streams are not similar. The commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-23) contended that any control requirement more stringent than the MACT floor of no control would not be justified based on cost.

Finally, three commenters (IV-D-08, IV-D-11, IV-D-15) stated that the selection of steam stripping as the reference control technology (RCT) for treatment of wastewater from manufacturing processes using styrene is inappropriate due to polymerization problems. The commenters (IV-D-08, IV-D-11, IV-D-15) explained that the styrene will polymerize when heated and will cause plugging, resulting in downtime of the

steam stripper and lost production time. One commenter (IV-D-08) presented an example of this problem. At a SOCMI facility, where styrene concentrations in the wastewater were relatively low (i.e., 136 ppm) when compared to what is expected at a polymer facility, a steam stripper plugged in approximately three months. A gelatinous polymer formed in the lower section of the column and in some of the associated piping. The steam stripper was cleaned and continued use was possible with a two to three day shutdown for maintenance occurring approximately every six months. This commenter (IV-D-08) was not aware of a single polystyrene facility that satisfactorily employs steam stripping to reduce emissions from process wastewaters. Commenters (IV-D-08, IV-D-11, IV-D-15) stated that the EPA should identify a technology capable of achieving the standards, and the EPA must provide data and a cost analysis to support the required technology. Also, the commenters (IV-D-08, IV-D-11, IV-D-15) stated that it is not acceptable for the EPA to transfer the RCT from an entirely different industry (i.e., the HON) to the polystyrene subcategory without considering the specific technical challenges that will be faced.

Response: Commenters stated that wastewater streams from the HON and thermoplastics industries were different enough that the HON wastewater provisions were not a ready-made regulatory alternative. In response, it must be considered that the HON covers a very large source category. The characteristics of SOCMI wastewater streams quoted by the commenters represent the average characteristics from this very large industry. In fact, there are wastewater streams within the SOCMI that are very similar to thermoplastic wastewater streams in that they have concentration values and flow rates close to the limits of the applicability requirements (i.e., 1,000 ppm and 10 liters/minute). Also, there are wastewater streams within the PET subcategories with flow rates significantly above the applicability criteria of 10 liters/minute. For example, during industry meetings and plant trips, the EPA was commonly told that flow rates for the

first contact condenser in a steam jet vacuum system were in the range of 1,135 to 1,325 liters/minute. Finally, the organic HAP regulated by the thermoplastics rule are also regulated by the HON. In summary, based on the limited data made available to the EPA and because wastewater stream characteristics overlap between the two industries, the EPA considers the use of the HON as an applicable regulatory alternative for the thermoplastics industry to be reasonable.

Commenters stated that the EPA should not make an industry subject to standards when no emission reductions are expected. [Note: This comment applied to the polystyrene subcategories.] Commenters went on to state that even if the application of control equipment is not required, affected sources will be subject to monitoring, recordkeeping, and reporting requirements. The EPA has determined that emission reductions are expected for the PET subcategories, but, based on the available data, emission reductions are not expected for the nitrile resin subcategory. Regardless, for those subcategories where emission reductions are not expected, data are not sufficient to be sure that emission reductions would not be achieved upon implementation of the rule. If, in fact, controls are not required for nitrile resin facilities, the recordkeeping and reporting requirements for Group 2 wastewater streams are considered by the EPA to be essential for ensuring compliance with the wastewater provisions. The Group 2 requirements entail identifying Group 2 streams, their flow rate, and their concentration in the Notification of Compliance Status. Further, monitoring is not required unless control equipment has been applied.

Commenters objected to the EPA's determination of the wastewater MACT floor being equivalent to the HON based on the fact that existing affected sources do not control wastewater and the HON does not require control. The EPA considers the MACT floor to be comprised of two things: (1) a control technology, and (2) a description of the emission points to which it is applied. Once a control technology is selected, the EPA has determined that comparing applicability criteria

from existing rules to the controls and emission point characteristics at existing facilities is an appropriate way to approximate a description of the MACT floor. As described in the Basis & Purpose Document for the proposed rule [EPA-453/R-95-004a; March 1995], regulatory alternatives equivalent to or more stringent than the MACT floor were developed by comparing controls at existing facilities to a selected set of rules/regulations (i.e., the HON for wastewater control). When it was determined that the HON was approximately equivalent to the MACT floor, the EPA chose to rely on the applicability criteria of the HON to describe the MACT floor for purposes of the rule. The use of the HON applicability criteria was based on the rationale that for those subcategories where the HON was, in fact, slightly more stringent than the MACT floor, the Administrator had determined that the HON level of control had reasonable impacts and was therefore acceptable. When the EPA found the HON to be clearly more stringent than the MACT floor (i.e., the ASA/AMSAN subcategory), the HON was accepted or rejected based on cost effectiveness and other nonair, environmental, and energy impacts. For the regulation of wastewater from the production of ASA/AMSAN, the HON cost effectiveness was approximately $25,000/Mg; the HON wastewater provisions were rejected in this case.

Commenters cited cost-effectiveness values for the control of wastewater streams from the proposal. The data received by the EPA from the industry in response to the Section 114 and ICR responses were minimal and were not adequate to determine reliable cost-effectiveness values for the range of wastewater streams covered by the rule. Because of the lack of reliable data supplied to the EPA, the EPA analyzed the HON cost-effectiveness values and determined that the HON cost-effectiveness numbers considered a wide range of wastewater streams which appeared to be similar to the types of wastewater streams present at thermoplastic facilities. Therefore, because of the lack of more specific data, the EPA determined that the HON cost-effectiveness values provided the

most representative cost-effectiveness numbers available for the thermoplastics industry lacking more industry specific data for the regulated source categories.

Commenters claimed that the selection of steam stripping as the RCT for treatment of styrene-containing wastewater at proposal was inappropriate due to polymerization problems. The EPA acknowledges that steam stripping styrene-containing wastewaters may prove to be impractical in some instances due to issues raised by the commenters. The proposed and final wastewater provisions provide several options for complying with the wastewater provisions. If the owner or operator judges steam stripping not to be practical for their process, one of the other wastewater compliance options may be used. The EPA considers one of these compliance options, biological treatment, a favorable option because of the biodegradation characteristics of the organic HAP of concern, such as styrene and acrylonitrile. A well-operated and well-maintained biological treatment system can achieve organic HAP emission reductions as high as 99 percent. Because the organic HAP regulated by the thermoplastics rule are very biodegradable, the EPA has chosen to omit from the final rule the HON requirement to demonstrate that 95 percent of the mass of organic HAP are removed. The EPA did not consider it necessary to perform a cost analysis specific to biological treatment because the additional cost to hard pipe affected streams directly to the biological treatment unit or to retrofit affected drains was considered to be less costly than steam stripping.

As for the polystyrene subcategory, the EPA has exempted this subcategory from the wastewater provisions in the final rule. Because of the water solubility characteristics of styrene (300 ppm maximum), wastewater streams containing only styrene cannot meet the applicability criteria of a Group 1 wastewater stream, which requires an organic HAP concentration of 1000 ppm. Based on the available data, styrene is the only organic HAP in wastewater at polystyrene affected sources. The EPA judged that there would never be any Group 1

wastewater streams at polystyrene affected sources and exempted these subcategories from the final wastewater provisions.

Comment: One commenter (IV-D-22) requested that provisions be provided for existing wastewater treatment plants versus requirements for future treatment plants. No specific concerns were indicated by the commenter.

Response: The difference in the requirements for existing and new affected sources lies in the group determination procedure. For existing affected sources, the wastewater provisions regulate a specific list of organic HAP designated as volatile organic HAP (VOHAP). This list is presented in Table 9 of the HON. For new affected sources, the wastewater provisions regulate the same list of VOHAP; however, a subset of the list of organic HAP appearing on Table 9 are listed in Table 8 of the HON. [Note: All the organic HAP regulated by the thermoplastics rule are considered VOHAP per Table 9 of the HON, except for ethylene glycol, and butadiene also appears on Table 8 of the HON.] For the VOHAP listed on Table 8, the applicability criteria are more stringent (i.e., VOHAP concentration and flow rate are lower). Therefore, a wastewater stream may not be designated as Group 1 (i.e., be required to be controlled) at an existing affected source but would be required to be controlled at a new affected source because the applicability criteria are more stringent. Once a wastewater stream is designated as Group 1, the control requirements are largely identical regardless of whether it is located at an existing or new affected source.

Comment: One commenter (IV-D-03) supported the maintenance wastewater requirements of the proposed rule which require compliance with §63.105 of the HON. Two commenters (IV-D-11, IV-D-18) contended that the proposed rule was ambiguous about maintenance wastewater and should reference the HON requirements. Additionally, two commenters (IV-D-03, IV-D-11) requested that the rule be revised to specifically state that reactor and equipment washdown water also be

handled as maintenance wastewater. One commenter (IV-D-11) stated that because the proposed rule does not clearly distinguish between maintenance and process wastewaters, burdensome monitoring, recordkeeping, and control measures could be necessary for intermittent maintenance wastewaters that have negligible potential to release significant amounts of pollutants.

Response: The final rule has been clarified in the following ways. First, the definition of maintenance wastewater has been added to the final rule. Second, the final rule has been clarified to designate reactor and equipment washdown water as maintenance wastewater. One commenter requested that the final rule reference the HON requirements for maintenance wastewater. In fact, the proposed rule referenced §63.105 of subpart F in §63.508(b), and the final rule [§63.1330(b)] retains this reference.

Comment: One commenter (IV-D-22) stated that the requirements for Group 1 wastewater streams in the HON are dictated by the most volatile chemicals listed in Table 9 of the HON, regardless of the chemical characteristics of other Table 9 chemicals. For Group 1 wastewater streams that require control under the HON, treatment unit enclosures and other vapor entrapments are required throughout the wastewater system starting at the process effluent, regardless of the volatility of the individual chemicals in the wastewater. For example, ethylene glycol and 1,4-dioxane are soluble in water, have vaporization temperature points above 100° C, and other chemical characteristics, such that at small concentrations (i.e., 10 ppm of any one component from Table 9) in the wastewater stream, there will be no significant air emissions. The commenter (IV-D-22) stated that great expenditure will be taken to contain these insignificant emissions and felt that resources can be better put to use elsewhere. The commenter (IV-D-22) suggested that the chemical characteristics of the Table 9 listed chemicals be evaluated in regard to the requirement to enclose wastewater treatment units and specifically exempt ethylene glycol and 1,4-dioxane from this

requirement. A one-size-fits-all approach to regulating wastewater without regard to volatility of specific chemicals is not useful or efficient.

Response: In developing the HON wastewater provisions, the EPA considered the need to enclose waste management units (e.g., sewers, tanks) for all organic HAP covered by the wastewater provisions. Based on this consideration, a number of organic HAP preliminarily considered for regulation were dropped from the final HON rule. Organic HAP remaining on Table 9 have, in the EPA's judgement, adequate propensity to volatilize such that they be treated as volatile organic HAP (VOHAP). Specifically, 1,4-dioxane and methanol, two organic HAP likely to be present in wastewater at PET facilities, have Fe (fraction emitted) values of 0.18 and 0.17, respectively; meaning that up to 18 percent of the 1,4-dioxane present in a wastewater stream may be emitted to the atmosphere if the wastewater stream is left exposed to the atmosphere long enough. Acetaldehyde, also present in PET wastewater, has an Fe value of 0.48. Acrylonitrile, the organic HAP likely to be present in wastewater at nitrile resin facilities, has an Fe value of 0.43. The commenter did not provide data disputing the Fe values for pertinent chemicals. Because this issue was considered in developing the HON, the EPA did not consider it necessary to deviate from the HON provisions in the proposed or final rule.

As specified in §63.132(g) of the HON, a process wastewater stream is a Group 1 wastewater stream for organic HAPs listed in Table 9 if: (1) the total VOHAP average concentration of the wastewater stream is greater than or equal to 10,000 parts per million by weight at any flow rate, or (2) the total VOHAP average concentration is greater than or equal to 1,000 ppm by weight and has a flow rate greater than or equal to 10 liters/minute. In the example provided by the commenter for ethylene glycol and 1,4-dioxane, a concentration of 10 ppm stated by the commenter would not result in a wastewater stream being designated as Group 1. Further, ethylene glycol is not included on the list of

Table 9 organic HAPs. [Note: The commenter may have been referring to ethylene glycol ethers, which are on the Table 9 list.]

7.2 MISCELLANEOUS

Comment: One commenter (IV-D-07) requested that the EPA modify appendices A and C of the HON to allow anaerobic wastewater treatment technology as an approved treatment technology. The commenter (IV-D-07) stated that as proposed, the thermoplastics rule would not allow the use of anaerobic wastewater treatment.

The commenter (IV-D-07) indicated that the advantages of anaerobic treatment over conventional aerobic treatment include: (1) the anaerobic process occurs in a closed vessel, minimizing air emissions, (2) the anaerobic process combines stripping and combustion with biodegradation to destroy volatile constituents, and (3) methane and other stripped volatile organics are combusted for their energy value as a substitute for purchased natural gas.

The commenter (IV-D-07) has also commented on this issue in response to the proposed Part 60, Subpart YYY (Wastewater NSPS). The commenter (IV-D-07) provided background information describing the development of their technology which has not been repeated here.

Response: The EPA has met previously with the commenter to discuss their requests for modifying appendices A and C of the HON to allow anaerobic wastewater treatment as an approved treatment technology. These discussions occurred as part of a broader wastewater issue that goes beyond the thermoplastics rule. The EPA and the commenter agreed to continue discussions on this topic.

For the final thermoplastics rule, anaerobic wastewater treatment may be used as a compliance option if it follows the wastewater provisions of §63.508 **[§63.1330]** of the final rule, if the required emission reduction is achieved, and if compliance is demonstrated using the procedures in Appendix C of the HON.

Comment: Two commenters (IV-D-11, IV-D-25) asserted that the EPA substantially overestimated the emissions from wastewater streams. The commenters (IV-D-11, IV-D-25) noted that at a meeting in August of 1993, the EPA estimated that 75 to 85 percent of the VOHAPs (e.g., acetaldehyde, 1,4-dioxane, and methanol) discharged to wastewater treatment volatilized. However, the commenters (IV-D-11, IV-D-25) said that in a modeling study conducted by a CMA member company using EPA approved models (i.e., WATERS and TOXCHEM) to simulate maximum emissions (i.e., high temperature, high ventilation conditions) only 8 to 18 percent of the VOHAPs volatilized. Therefore, the commenters (IV-D-11, IV-D-25) concluded, the EPA has overstated emissions and emission reductions from thermoplastic wastewater streams.

Response: As stated in a memorandum contained in the SID, the estimation of baseline emissions for wastewater relied heavily on industry provided estimates. Industry provided data were not used when EPA estimates, made as part of evaluating the application of controls, did not agree with industry provided data; in these cases, the EPA estimates were used. The EPA estimates were made using the methodology found in the Background Information Document (BID) to the HON [EPA-453/D-92-016b; November 1992]. Wastewater stream emissions were estimated based on flow rate, organic HAP concentration, and Fe values presented in the final HON rule. [Note: Fe values reflect the percent of a compound that will be emitted to the atmosphere if the wastewater stream is left exposed to the atmosphere long enough.]

Commenters stated their concern that at a 1993 meeting the EPA believed 75 to 85 percent of the VOHAPs discharged to wastewater treatment volatilized. The EPA estimates of baseline emissions used Fe values provided in the final HON rule. For the chemicals of concern, the Fe values are as follows: 0.18 for 1,4-dioxane; 0.17 for methanol; 0.48 for acetaldehyde; and 0.43 for acrylonitrile. These values are more in agreement with the commenters cited estimates of 8 to 18 percent overall than were the 75 to 85 percent estimates

from the 1993 meeting. [Note: In the majority of cases, emissions provided by individual facilities were used in developing the total baseline emissions.]

Comment: One commenter (IV-D-09) suggested that proposed §63.508(a)(9) of the wastewater provisions reference the equipment leak inspection provisions of the HON (i.e., §63.148) directly, instead of referencing §63.509 which in turn references these provisions.

Response: The EPA reviewed §63.508(a) in its entirety and determined that proposed paragraph §63.508(a)(9) was not required because it did not identify any differences between the thermoplastics rule and the HON wastewater provisions. Therefore, proposed paragraph §63.508(a)(9) has been deleted from the final rule. Under the final rule, an affected source is still required to comply with the requirements of §63.148, as specified in §63.508(a) **[§63.1330(a)]**.

8.0 EQUIPMENT LEAKS

8.1 SELECTION OF THE STANDARDS/APPLICABILITY

Commenters disagreed with the EPA's decision to require compliance with subpart H for equipment leaks from all thermoplastic manufacturing facilities (IV-D-11, IV-D-25), PET facilities (IV-D-16, IV-D-17, IV-D-19, IV-D-20, IV-D-21, IV-D-22), MBS facilities (IV-D-23), and polystyrene facilities (IV-D-07, IV-D-08, IV-D-15, IV-D-23). Reasons the commenters provided are summarized below. Commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-17, IV-D-20, IV-D-23, IV-D-25) stated that subpart H was improperly selected as the required leak detection and repair requirement. Some commenters recommended that the proposed equipment leak standards in §63.509 be withdrawn for: all PET processes (IV-D-25); PET, TPA continuous processes (IV-D-17, IV-D-20, IV-D-22); MBS processes (IV-D-23); and polystyrene processes (IV-D-07, IV-D-23).

8.1.1 Polystyrene and Methyl Methacrylate Butadiene Styrene

Comment: Commenters (IV-D-08, IV-D-11, IV-D-15, IV-D-23) stated that the EPA has grossly overestimated the emissions and potential emission reductions for equipment in styrene service by using the average SOCMI emission factors. Commenters (IV-D-23, IV-D-15, IV-D-08, IV-D-11) stated that the use of the average SOCMI emission factors resulted in an unrealistically low estimate of the cost per ton of emission reductions and led to the erroneous conclusion by the EPA that imposition of the Subpart H equipment leak standards is cost effective for equipment in styrene service.

One commenter (IV-D-23) referred to the fact that the EPA had determined that the subpart H equipment leak standards are more stringent than the MACT floor. This commenter (IV-D-23)

pointed out that in such instances where the standards are more stringent than the MACT floor, they must be justified on a cost impact basis (i.e., cost per ton of pollutant removed). One commenter (IV-D-11) stated that the overstatement of uncontrolled emissions immediately led the EPA to conclude that a stringent equipment leak program was justified in the proposed standards.

Commenters (IV-D-08, IV-D-11, IV-D-23) stated that by using the average SOCMI emission factors, which are based on data in which a certain fraction of components have leak rates greater than 10,000 ppmv, the EPA failed to take into account that the vapor pressure of styrene is such that a leak at 10,000 ppmv is impossible under normal operating temperatures. One commenter (IV-D-23) continued that the concentration of styrene can not reach 10,000 ppmv until the temperature is approximately 84° F. The commenter (IV-D-23) stated that because styrene polymerizes more readily as temperature increases, styrene storage is frequently refrigerated and styrene is kept as cool as possible prior to polymerization. The commenter (IV-D-23) stated that normal styrene storage and pumping temperature would rarely exceed the maximum monthly average ambient temperature, which is less than 80° F in virtually the entire United States. If it is necessary to use equipment leak emission factors to estimate emissions, it would be more appropriate to use the SOCMI Screening Value Range Emission Factors for components with a screening range <10,000 ppmv, stated the commenter (IV-D-23). The commenter (IV-D-23) stated that use of these factors from Table 2-4 of the June, 1993 EPA protocol document would result in emission estimates from polystyrene facilities that are 96 percent lower for valves and connectors and 91 percent lower for pumps than estimates based on the average SOCMI emission factors. The commenter (IV-D-23) stated that any projected emission reduction would decrease by similar percentages.

Given that these factors would significantly reduce the estimated emissions and corresponding emission reductions, the commenter (IV-D-23) stated that the cost effectiveness of any

emission reductions would be 10 to 25 times higher than determined for the proposed standards. The commenter (IV-D-23) stated that the EPA must recalculate the cost effectiveness of emission reductions using more appropriate emissions estimates and reanalyze the cost impact. Evaluation of more accurate cost effectiveness values, according to the commenter (IV-D-23), will likely result in a conclusion that the subpart H equipment leak standards are not justified. The commenter (IV-D-23) recommended that equipment in styrene service be excluded from any equipment leak standards that are promulgated. Alternately, the commenter (IV-D-23) requested that a leak detection and repair (LDAR) program based on visual evidence of leaks be implemented for equipment in styrene service.

Two commenters (IV-D-15, IV-D-08) stated that the EPA inappropriately used the average SOCMI emission factors to estimate fugitive emissions from polystyrene facilities and ignored actual data provided by industry. Another commenter (IV-D-23) maintained that the most appropriate basis of emission estimates is the data submitted by industry either in response to the Section 114 questionnaires or as comments to the proposed standards. A previous commenter (IV-D-15) maintained that the EPA could not have projected the quantity of emission reductions presented in the proposal material if the EPA had used the actual data provided by industry.

Two commenters (IV-D-08, IV-D-15) requested that the EPA adopt a visual leak detection program or, as an acceptable alternative, an equivalent State LDAR monitoring program. According to the commenters, only one of these two programs can be justified for equipment in styrene service.

Another commenter (IV-D-07) strongly supported deleting the requirements for LDAR programs for polystyrene producers. This commenter explained that two of their polystyrene production facilities have implemented LDAR programs for pumps, valves, and sample connection systems under State RACT rules. The commenter (IV-D-07) stated that their experience shows that these programs

have little or no environmental benefit because there were essentially no emissions to begin with.

Response: The Clean Air Act requires the EPA to set standards that are at least as stringent as the MACT floor. In evaluating equipment leak programs at existing facilities and their impact in the analysis that was the basis for the proposed standards, the EPA did not formally determine a MACT floor. Instead, the EPA determined that the subpart H equipment leak requirements were more stringent or equivalent to the equipment leak programs at existing facilities and evaluated the impact of the subpart H requirements on each existing facility given information on their components and current equipment leak programs.

In re-evaluating the analysis, the EPA determined a MACT floor for each styrene-based subcategory. These MACT floor programs are summarized in Table 8-1. As seen in Table 8-1, the MACT floor for each subcategory, except ASA/AMSAN, is some form of equipment leak program. Therefore, the EPA cannot provide a blanket exemption for styrene-based subcategories because, at minimum, the EPA must set standards that are at least as stringent as the MACT floor.

In addition to defining MACT floors for each subcategory, the EPA re-evaluated the emission estimates, costs, and cost effectiveness of the proposed equipment leak standards for the styrene-based subcategories. (The results of the re-evaluation are contained in Item IV-B-02, Docket A-92-45.) With regards to re-evaluating emission estimates, the EPA agrees with the commenters that the average SOCMI emission factors are likely to overestimate emissions from components containing or contacting styrene. Therefore, the EPA lowered the emission factors used to estimate emissions from these components. The resulting emission factors for these components used by the EPA in this re-evaluation are much closer to, but are not identical to, the SOCMI Screening Value Range Emission Factors for components with

TABLE 8-1. SUMMARY OF MACT FLOOR LDAR PROGRAMS[a]

Sub-category[b]	Valves, gas[c]	Valves, light liquid[c]	Valves, heavy liquid	Pumps, light liquid[c]	Pumps, heavy liquid	PRDs[d]	OELs[e]	Compressors[c]	Sampling Connections	Flanges[c]
ABS, Batch Emulsion	Q at 10,000	Q at 10,000	none	M at 10,000	none	NDE	Caps, etc.	Barrier fluids, etc.	Closed purge vent on 60%	Annual at 10,000
ABS, Continuous Emulsion	None	Q at 10,000	none	M at 10,000	none	NDE/RDI	Caps, etc.	none	none	none
ABS, Continuous Mass	Q at 10,000	Q at 10,000	none	Q at 10,000	none	RDI on 50%	Caps, etc.	Q at 10,000	none	Annual at 10,000
ABS, Latex[f]	M at 10,000	M at 10,000	none	M at 10,000	none	RDI	Caps, etc.	Barrier fluids, etc.	Closed purge vent	none
ABS, Batch Suspension	M at 10,000	M at 10,000	none	M at 10,000	none	NDE	Caps, etc.	Barrier fluids, etc.	Closed purge vent	Annual at 10,000
EPS	Q at 10,000	Q at 10,000	none	Q at 10,000	none	Q at 10,000	none	Q at 10,000	none	none
MABS	None	Q at 10,000	none	M at 10,000	none	RDI	Caps, etc.	none	none	Annual at 500
MBS	Q at 10,000	Q at 10,000	none	M at 100	none	RDIs	Caps, etc.	none	none	Annual at 10,000
PS, Batch	Q at 10,000	Q at 10,000	none	Q at 10,000	none	Q at 10,000	Caps, etc.	Q at 10,000	none	none
PS, Continuous	Q at 10,000	Q at 10,000	none	Q at 10,000	none	RDIs on 80% of PRDs	Caps, etc.	none	none	Annual at 10,000

TABLE 8-1. SUMMARY OF MACT FLOOR LDAR PROGRAMS[a]
(Concluded)

Sub-category[b]	Valves, gas[c]	Valves, light liquid[c]	Valves, heavy liquid	Pumps, light liquid[c]	Pumps, heavy liquid	PRDs[d]	OELs[e]	Compressors[c]	Sampling Connections	Flanges[c]
SAN, Batch	M at 10,000	M at 10,000	none	M at 10,000	none	No detectable emissions	Caps, etc.	Barrier fluids, etc.	Closed purge vent	none
SAN, Continuous	none	Q at 10,000	none	Q at 500	none	75% control	Caps, etc.	none	none	Annual at 10,000

[a] MACT floor for ASA/AMSAN was assumed to be equivalent to no control.

[b] PS = polystyrene; EPS = expandable polystyrene; MBS = methyl butadiene styrene; ABS = acrylonitrile butadiene styrene; MABS = methlymethacrylate acrylonitrile butadiene styrene; SAN = styrene acrylonitrile.

[c] Frequency of leak detection (M = monthly; Q = quarterly) at a specified leak definition (e.g., 10,000 ppmv).

[d] PRDs = pressure relief devices; RDIs = rupture disks; NDE = no detectable emissions.

[e] OELs = open-ended lines.

[f] Program applies only to components in acrylonitrile service.

a screening range <10,000 ppmv. Table 8-2 summarizes the three sets of emissions factors. Except for open-ended lines, the EPA did not use the "<10,000 ppmv" emission factors directly because information provided by the commenters and information previously submitted by the industry shows that some components containing or contacting styrene have leak readings of greater than 10,000 ppmv.

With regards to the costing of the equipment leak programs, the EPA discovered several errors in the costing program. Most of the errors were associated with the cost for pumps in light liquid service. The net effect of correcting these costing errors was to lower the estimated cost of all equipment leak programs, both those currently used by the facilities and subpart H's equipment leak program. In general, the incremental differences decreased as well, but not as much as the overall cost estimates.

As noted above, the EPA determined the MACT floor for each styrene-based subcategory (see Table 8-1). At a minimum, each subcategory would be required to implement these MACT floors (or their equivalent). The HON equipment leak standards are more stringent than each of these MACT floors. To determine whether or not subpart H's equipment leak program was cost effective, the EPA examined the costs and emission reductions of subpart H's equipment leak program above each of these MACT floors. Table 8-3 summarizes the results of this analysis.

The primary ways subpart H is more stringent than the MACT floor programs are:

- a leak definition of 500 ppm instead of 10,000 ppmv for valves in gas/vapor and in light liquid service
- a leak definition for pumps of 5,000 ppmv in phase II and phase III of the program instead of 10,000 ppmv
- a leak definition of 500 ppmv instead of 10,000 ppmv for connectors
- requiring control of sampling connections

TABLE 8-2

COMPARISON OF EMISSION FACTORS (lbs/hr/component)
FOR STYRENE SERVICE COMPONENTS

COMPONENT	EMISSION FACTORS (lbs/hr/component)		
	Average Uncontrolled SOCMI	Revised Uncontrolled	<10,000 ppmv SOCMI
Valve, light liquid	0.00887	0.000558	0.00036
Pumps, light liquid	0.0438	0.005587	0.00412
Open-ended lines, styrene	0.00374	0.0033	0.0033
Sampling connections, styrene	0.033	0.0033[a]	NA
Flanges, light liquid	0.00403	0.00043	0.00018

[a] Assumed to be same as for open-ended lines when taking a sample.

TABLE 8-3

SUMMARY OF THE AVERAGE INCREMENTAL COST EFFECTIVENESS OF THE HON FROM THE MACT FLOORS
($/Mg of Emission Reduction)

Subcategory	No. of Facilities	Average Incremental Cost Effectiveness (Subpart H - MACT Floor)
ABS, Batch Emulsion	3	-4,157
ABS, Continuous Emulsion	1	-1,972
ABS, Continuous Mass	5	-1505
ABS, Latex	1	-421
ABS, Suspension	2	-2,963
ASA/AMSAN	1	511
EPS	6	-78
MABS	1	-936
MBS	3	-1,495
PS, Batch	11	-291
PS, Continuous	20	-1,573
SAN, Batch	2	-3,981
SAN, Continuous	3	-743

Based on the incremental differences between the MACT floor programs and the proposed equipment leak standards, the EPA determined that the subpart H equipment leak standards are cost effective for each styrene-based subcategory. Therefore, the EPA has retained the equipment leak standards as proposed in the final standards.

Comment: One commenter (IV-D-08) provided leak data from three polystyrene plants. The commenter (IV-D-08) stated that these facility monitoring data do not support the EPA's protocol for estimating the control effectiveness of a LDAR program. The

commenter (IV-D-08) stated that the EPA's protocol identifies three important factors in determining control effectiveness: (1) how a "leak is defined, (2) the initial leak frequency before the LDAR program is implemented, and (3) the final leak frequency after the LDAR program is implemented. The commenter (IV-D-08) stated that the provided data clearly demonstrates that changing the leak definition from 10,000 ppmv to 500 to 1,000 ppmv does not result in a significant increase in the number of leaking components. The commenter (IV-D-08) continued that this is contrary to the basic assumptions used by the EPA to estimate control effectiveness of LDAR programs. Because of this faulty premise, the commenter (IV-D-08) stated that the proposed rule will not result in a significant reduction in estimated emissions.

Response: As noted in the previous response, the EPA re-evaluated the emission factors used to estimate emission reductions. The revised emission factors reduce estimated emissions from most polystyrene plants (i.e., batch, continuous, and expandable polystyrene) by an order of magnitude. In developing the revised emission factors, the EPA took into account much lower leak frequencies in estimating the emission factors for the various equipment leak programs used by the industry, for the MACT floors, and for the HON program than were used previously. For example, the initial and final leak frequencies used in the re-evaluation for valves in light liquid service (i.e., styrene service) are, respectively, 0.3 and 0.05 percent for a monthly leak detection and repair program with a leak definition of 10,000 ppmv. Previously, these leak frequencies were 4.34 and 0.54, respectively. The effect of these changes in leak frequencies is to lower the emission factors used to estimate each equipment leak program, which in turn lowers the magnitude of the estimated emission reductions between these programs.

The estimated leak frequencies used in the re-evaluation were based on and are consistent with the data presented by the

commenter and on information provided previously by the industry. For example, the data presented by the commenter shows that there is an increase in the number of leaking components when the leak definition is changed from 10,000 ppmv to 500 to 1,000 ppmv. For Plant No. 1, the number of components identified as leaking in 1993 increased from 2 (at a leak definition of 10,000 ppmv) to 4 (at a leak definition of 500 to 1,000 ppmv), which corresponds to a leak rate increase from a 0.35 to 0.5 percent, and from 1 to 40 (an increase in the leak rate from 0.12 to 0.5 percent) in 1994. For Plant No. 2, the number of components identified as leaking increased 2 to 16 (an increase in the leak rate from 0.3 to 2.7 percent) in 1993 and from zero to three (an increase in the leak rate from 0 to 0.5 percent) in 1994.

In summary, the EPA took into account data presented specific to three polystyrene subcategories on indicated leak rates and used that information in estimating the emission factors and the resulting effectiveness of the various equipment leak programs. The results were then incorporated into the cost and cost-effectiveness analysis, which still showed the proposed program to be cost effective.

Comment: One commenter (IV-D-09) supported proposed §63.509(a)(1) which clearly defined when a loss of liquid from a process was not a "leak." One commenter (IV-D-08) contended that the exemption [proposed §63.509(a)(1)] available to continuous polystyrene manufacturers who use bleed ports on agitator and pump seals should also be made available to batch and expandable polystyrene plants that use this type of equipment. The commenter (IV-D-08) stated that there are no seals that can handle this service without a self-lubricating bleed port. The commenter (IV-D-08) stated that the lack of alternative pumps and seals is exactly why continuous process bleed ports were exempt from the requirement of counting dripping liquids from bleed ports as a leak.

Response: The EPA agrees with the commenter and has extended this exemption to all polystyrene subcategories.

8.1.2 Poly(ethylene terephthalate)

Overall Objection to LDAR for PET

Comment: Commenters had several objections concerning the proposed provisions as applied to PET affected sources. Commenters felt that emissions and emission reductions were overestimated; that little environmental benefit could be expected as a result of implementing a LDAR program; that the proposed provisions were not cost effective (largely due to the overestimation of emissions and emission reductions); and that the recordkeeping and reporting requirements were excessive.

Commenters (IV-D-16, IV-D-17) stated that emissions and emission reductions from PET affected sources had been overestimated. Commenters (IV-D-16, IV-D-17, IV-D-25) also stated that this overestimation biased the EPA's cost analysis and made the implementation of an equipment leak program appear to be cost effective. One commenter (IV-D-17) stated that the EPA's estimate of annual costs of $744,000 for PET terephthalic acid (TPA) facilities using a continuous process are excessive considering that the equipment leak standards will result in essentially no emission reductions.

One commenter (IV-D-16) stated that the EPA had grossly exaggerated the emissions from PET affected sources using a TPA process to justify the cost effectiveness of an equipment leak program for this subcategory. The commenter (IV-D-16) felt that there may be some value in equipment leak programs for PET DMT affected sources due to the presence of methanol and its relatively high vapor pressure. However, the commenter (IV-D-16) felt it did not make any sense to impose similar requirements on processes where the only HAP present at a concentration greater than five percent is ethylene glycol, which has a relatively low vapor pressure. The commenter (IV-D-16) felt that an equipment leak program designed to control HAP would not control a significant amount of emissions for processes with ethylene glycol. [Note: In reference to the previous sentence, the EPA assumes the commenter is implying HAP that are more volatile than

ethylene glycol.] The commenter (IV-D-16) challenged the EPA to re-examine the HAP emissions and emission reductions from PET TPA affected sources and base its assumptions on credible data.

Another commenter (IV-D-17) specifically claimed that the technical analysis is flawed because it does not accurately reflect the emissions and emission reductions associated with processes that operate in heavy liquid service and, as a result, the EPA's emission and emission reductions estimates are overstated, and the resulting cost per ton of control estimates are substantially underestimated.

In reaching the conclusion that emissions and emission reductions were overstated, the commenter (IV-D-17) noted that essentially all of the components potentially subject to the equipment leak standards are in ethylene glycol service at ambient temperature (i.e., heavy liquid service). Further, stated the commenter (IV-D-17), those components not in heavy liquid service (i.e., in light liquid or vapor service) are in vacuum service, and the proposed equipment leak standards specifically exempt components in vacuum service. The commenter (IV-D-17) also referred to the methodology used to estimate emissions from connectors. The commenter (IV-D-17) pointed out that the emission factor used to estimate emissions for connectors is for a component profile that includes some connectors in each type of service (i.e., gas/vapor, light liquid, and heavy liquid) and claimed that a more realistic factor should be used for connectors in heavy liquid service. The commenter (IV-D-17) suggested that a factor of 0.00023 lbs/hr/component be used rather than the 0.00403 lbs/hr/component for all services. (This lower factor was derived by the commenter from the factors for uncontrolled valves and connectors in light liquid service. For connectors in light liquid service, the connector leak rate is 45 percent of that for valves in light liquid service. The commenter (IV-D-17) applied the same ratio to the leak rate for valves in heavy liquid service to derive a factor for connectors in heavy liquid

service.) The commenter (IV-D-17) then noted that the resulting emission factor of 0.00023 lbs/hr/component is less than the emission factor of 0.000286 lbs/hr/component for connectors under a subpart H-level equipment leak program.

The commenter (IV-D-17) also referred to the 2,030 Mg/yr of emission reductions (23 percent of the baseline emissions) estimated for the PET TPA subcategory. The commenter (IV-D-17) stated that this estimate of emission reduction is inconsistent with the approximately 90 percent reduction that would be derived from comparing the emission factor for connectors under a subpart H-level equipment leak program with the uncontrolled factor for connectors they had derived. This inconsistency suggests, according to the commenter (IV-D-17), that the analysis is flawed and/or poorly conceived. The commenter (IV-D-17) continued that, regardless, the argument presented herein clearly limits potential emission reductions associated with the application of an equipment leak program for components in heavy liquid service to inconsequential amounts.

Finally, the commenter (IV-D-17) noted that, in the Supplemental Information Document, the EPA recognizes that equipment leak programs are ineffective in reducing emissions from valves and pumps in heavy liquid service. The commenter (IV-D-17) based their observation on the fact that the emission factors for these components reflecting an equipment leak program are not lower than the uncontrolled emission factors. Therefore, according to the commenter (IV-D-17), no substantive emission reductions will result from the proposed equipment leak standards.

Another commenter (IV-D-25) felt that implementation of an equipment leak program on PET affected sources would not result in any significant environmental benefit. In support of this assertion, the commenter (IV-D-25) stated that, for two of their PET DMT continuous affected sources, approximately 220 components are in light liquid (i.e., methanol) service at one affected source and approximately 570 are in light liquid (i.e., methanol)

service at the other affected source. The commenter (IV-D-23) stated that the total expected emissions at these affected sources from these light liquid service components are 0.3 lbs/hr (1.2 Mg/yr) and 1 lb/hr (4 Mg/yr), respectively. The commenter (IV-D-25) felt that little environmental benefit could be realized by controlling these emissions.

One commenter (IV-D-17) stated that subpart H, §63.169, requires nothing more than what is currently being practiced by the PET TPA continuous industry and, therefore, the MACT floor determination is flawed for this source category.

One commenter (IV-D-17) stated that the "repair upon detection" requirement in §63.169 of subpart H is currently being practiced to a great extent by all PET TPA affected sources. The commenter (IV-D-17) stated that subpart H recordkeeping and reporting requirements (§§63.181 and 63.182) are excessive because §63.169 requires nothing more than what is currently being practiced by the PET TPA continuous industry. Another commenter (IV-D-25) stated that the proposed equipment leak standards impose a recordkeeping and reporting burden on PET sources that is unjustified.

One commenter (IV-D-17) concluded by stating that the cost effectiveness of the proposed equipment leak standards is unacceptable because (1) emissions from PET TPA affected sources have been greatly overestimated, (2) nothing more than current industry practice is required by the heavy liquid standards that cover essentially all of this subcategory, (3) no substantive reduction in HAP emissions can be expected from implementation of the proposed equipment leak standards, and (4) there are substantial costs associated with the proposed recordkeeping and reporting requirements.

Two commenters (IV-D-17, IV-D-25) stated that the final standards should exempt all PET processes from the equipment leak provisions because the regulatory analysis is technically flawed. One commenter (IV-D-17) further stated that such an exemption would be consistent with the decision made in the development of

the Polymer Manufacturing NSPS. Another commenter (IV-D-25) stated that by exempting PET affected sources from the equipment leak standards, the EPA would be in keeping with current "reinventing government" initiatives to reduce unnecessary recordkeeping and reporting burdens.

Another commenter (IV-D-22) suggested that the equipment leak standards be amended to exempt PET TPA affected sources. According to the commenter (IV-D-22), such an exemption would avert the use of resources on recordkeeping for sources that have no measurable emissions and allow those resources to be used on process improvement to manage the known emissions from the process. The commenter (IV-D-22) specifically referred to equipment in ethylene glycol service at PET TPA affected sources, noting that such equipment is in heavy liquid service and will have extremely low emissions. The commenter (IV-D-22) stated that past tests for ethylene glycol emissions have found no detectable emissions. Thus, according to the commenter (IV-D-22), complying with the proposed equipment leak standards would be an audit and paper management effort.

Response: As described below, the EPA re-evaluated the emission estimates, costs, and cost effectiveness of the proposed equipment leak standards for each PET subcategory. The results of the re-evaluation are found in Item IV-B-03, Docket A-92-45.

Emission Estimates. Commenters felt that the EPA had overstated the emissions and emission reductions for equipment leaks from PET affected sources by using the average SOCMI emission factors. Commenters felt that this was especially true for PET TPA facilities, where many of the components are in heavy liquid service. One commenter highlighted the inappropriateness of the emission factor for connectors in heavy liquid service.

The EPA acknowledges that it is possible that emissions and emission reductions can be overstated whenever generic emission factors (in this case, average SOCMI emission factors) are used. The EPA used the average SOCMI emission factors because emissions estimates provided by the industry were not universally available

for the population of affected sources, some estimates that were provided were not supported with a description of the estimation methodology, and the EPA believes the average SOCMI emission factors, while not ideal, are applicable to this industry. Further, while industry has criticized the accuracy of the average SOCMI emission factors as part of recent rulemakings, data have not been provided to enable the EPA to develop a new set of industry-specific emission factors.

The EPA, nevertheless, revised the estimation of emissions and emission reductions by using different emission factors for several components. Table 8-4 compares the emission factors used to estimate uncontrolled emissions in the original analysis (see the column titled "Average Uncontrolled SOCMI") and in the re-evaluation (see the column titled "Revised Uncontrolled"). As can be seen in Table 8-4, significantly lower emission factors were used for most of the components in heavy liquid service. For example, the emission factor used for flanges in heavy liquid service decreased from 0.00403 lbs/hr/component to 0.00018 lbs/hr/component. This latter emission factor is lower than the one suggested by one commenter (IV-D-17). The use of lower emission factors for components in heavy liquid service should address the commenters' concerns about estimation of emissions from these components at PET facilities. As seen in Table 8-5, using the revised emission factors, estimated emissions from PET facilities decreased from 5,460 Mg/yr to 1,930 Mg/yr. In addition, the use of revised emission factors also decreased the estimated emission reduction for PET facilities, from 1,790 Mg/yr to 1,136 Mg/yr (see Table 8-5).

TABLE 8-4

COMPARISON OF EMISSION FACTORS (lbs/hr/component)
FOR COMPONENTS AT PET FACILITIES

Component	Emission Factors (lbs/hr/component)	
	Average Uncontrolled SOCMI	Revised Uncontrolled
Valve, gas/vapor	0.0131	0.0131
Valve, light liquid	0.00887	0.00887
Valve, heavy liquid	0.000506	0.000506
Pump, light liquid	0.0438	0.0438
Pump, heavy liquid	0.0190	0.00463
Pressure relief device, gas vapor	0.2288	0.2288
Pressure relief device, light liquid	0.2288	0.09852
Pressure relief device, heavy liquid	0.2288	0.09852
Open-ended line, gas/vapor and light liquid	0.00374	0.00374
Open-ended line, heavy liquid	0.00374	0.0033
Compressors	0.5016	0.5016
Sampling connection, gas/vapor and light liquid	0.033	0.033
Sampling connection, heavy liquid	0.033	0.015
Flange, gas/vapor and light liquid	0.00403	0.00403
Flanges, heavy liquid	0.00403	0.00018

TABLE 8-5

COMPARISON OF EMISSIONS AND EMISSION REDUCTIONS

Subcategory	Emissions (Mg/yr)		Emission Reductions (Mg/yr)	
	Previous	Revised	Previous	Revised
TPA, Continuous	2,030[a]	345[b]	473[a]	113[b]
TPA, Batch	90	22	5.6	2.7
DMT, Continuous	2,150	1,034	903	704
DMT, Batch	1,190	530	408	316
TOTALS	5,460	1,931	1,790	1,136

[a] Includes the Allied Signal facility.

[b] Does not include the Allied Signal facility.

It should be pointed out that, except for sampling connections, no emission reduction credit is taken for components in heavy liquid service. Therefore, in contrast to the commenters' concern, the predominance of components in heavy liquid service does not contribute to an overstatement of emission reductions.

One commenter (IV-D-17) claimed that the previous analysis was flawed, in part, because the estimated emission reduction for the PET TPA subcategory from baseline was 23 percent, while comparing uncontrolled and subpart H-level emission factors for connectors shows a 90 percent reduction. The commenter is incorrect in comparing these two percent reductions. The PET TPA subcategory emission reduction is based on percent reductions for all components, not just connectors. Many of the other components have lower expected emission reductions. In particular, many of the components in the PET TPA subcategory are in heavy liquid service. Except for sampling connections, no emission reduction credits were taken for these components. Thus, a large percentage of the components in the PET TPA subcategory have a 0 percent reduction associated with them. The resulting overall emission reduction percentage is, therefore,

significantly lower than the emission reduction percentage for connectors alone. In summary, the example used by the commenter does not indicate a flaw in the analysis.

Commenter IV-D-17 also noted that, because the emission factors for components in heavy liquid service did not change between the uncontrolled scenario and the controlled scenario, no substantive emission reductions will result from the proposed equipment leak standards. The EPA disagrees with the commenter's conclusion for two reasons. First, based on the information provided by the industry, there are components in gas/vapor service and in light liquid service at PET TPA facilities as well as at other types of PET facilities. There are sufficient numbers of components in these other types of service to provide the potential for substantial emission reductions. Second, the use of the same emission factor does not reflect the belief by the EPA that the equipment leak requirements for components in heavy liquid service achieve no emission reduction, but rather reflects the inability to quantify the emission reduction achieved by the work practice standard for these components. The EPA maintains that leaks from components in heavy liquid service emit pollutants to the air and that their repair achieves emission reductions. Therefore, for these reasons, the EPA disagrees with the commenter that equipment leak standards applied to PET TPA facilities will not achieve substantive emission reductions.

Another commenter (IV-D-25) felt that an equipment leak program would not achieve in any significant environmental benefit and provided emission estimates from equipment leaks at two of their facilities. The EPA agrees that the impact of an equipment leak program may be relatively small for certain individual facilities, because the size of the impact will vary depending on the number of components at the facility and the type of service they are in. Nevertheless, based on all of the information provided by industry, the EPA continues to believe that the equipment leak standards will have a substantive

cumulative impact on reducing emissions from equipment leaks at PET facilities.

Costs and Cost Effectiveness. In response to comments, the EPA re-evaluated the costs and cost effectiveness of the proposed equipment leak standards. In the original analysis, the EPA evaluated the costs and cost effectiveness of the proposed equipment leak standards for all PET facilities, both those that provided component profiles (counts and types of service) and those that did not. For the latter, estimates of components counts and service type were extrapolated from the information on those facilities that provided specific component profiles. In the re-evaluation of costs and cost-effectiveness, the EPA limited the evaluation of costs and cost-effectiveness of the proposed equipment leak standards to only those facilities that provided components profiles for determining whether or not to implement the proposed equipment leak standards. The results of this re-evaluation are presented in Table 8-6.

TABLE 8-6

COST EFFECTIVENESS RESULTS OF RE-EVALUATION FOR PET FACILITIES

Sub-category	Number of Facilities[a]	Emission Reductions, Mg/yr	Annual Costs, $	Cost Effectiveness, $/Mg
TPA, Continuous[b]	5	49.8	75,913	1,524
DMT, Continuous	3	300	98,050	327
DMT, Batch	4	198	121,000	611

[a] These numbers reflect the number of facilities that provided facility-specific information on the number of components and their type of service. It does not reflect the total number of facilities in the subcategory.

[b] Does not include the Allied Signal facility.

Based on the re-evaluation, the EPA found that the cost effectiveness of the proposed equipment leak standards varied

between affected sources. However, the EPA looks at the cost effectiveness values across all of the facilities for which cost effectiveness values were estimated to determine overall reasonableness and not just the impact on any one facility. Using industry provided data, the re-evaluation continues to show that, taken on an overall basis, the cost effectiveness of the proposed equipment leak standards are reasonable for the PET subcategories (see response under "Allied Signal" for the one exception).

Table 8-7 compares the previous and revised cost estimates for all of the facilities in each of the four PET subcategories. For those facilities that did not provide component profiles, the EPA estimated component counts and types of service based on information from those facilities that did provide component profiles. These estimated counts were then used to estimate emissions, emission reductions, and costs of control.

MACT Floor Determination. Commenter IV-D-17 stated that the MACT floor determination, which was considered to be "uncontrolled," was flawed because the proposed equipment leak standards only require what PET TPA facilities are currently doing for components in heavy liquid service. Based on the information provided by the industry prior to the receipt of the comment letters on the proposed rule, there was insufficient information for the EPA to determine that PET TPA facilities were conducting these types of inspections. Therefore, based on the information available at the time, the EPA considered the MACT floor to be "uncontrolled." In light of this commenter's comment and several other individual commenters, it appears that the MACT floor for these types of facilities should have included a visual-based inspection program. This fact, however, does not change the conclusion that components in heavy liquid service should still be subject to this type of program. As discussed in the following paragraphs, some form of recordkeeping and

TABLE 8-7

COMPARISON OF COSTS AND COST EFFECTIVENESS

Subcategory	Previous Analysis	Re-Analysis		
	Annual Costs, $	Annual Costs, $	Emission Reduction, Mg/yr	Cost Effectiveness, $/Mg
TPA, Continuous	744,000[a]	184,600[b]	113[b]	1,620[b]
TPA, Batch	17,700	2,140	2.7	792
DMT, Continuous	988,000	251,300	704	357
DMT, Batch	569,000	216,900	316	686

[a] Includes the Allied Signal facility.

[b] Does not include the Allied Signal facility.

reporting is still required for equipment leak programs that are part of a MACT floor.

Recordkeeping and Reporting. Several commenters stated that the recordkeeping and reporting burden for components in heavy liquid service were unjustified and costly. Commenter IV-D-17 was concerned that the proposed equipment leak standards would not have any emission reduction impact for PET TPA facilities and yet would cost $744,000 per year for what amounts to, according to the commenter, only a recordkeeping and reporting exercise to document what the facilities are already doing.

The EPA believes that, for some of the commenters, their concerns over the recordkeeping and reporting requirements of the proposed rule are the result of misunderstandings of how the rule works. The EPA, based on further contact with commenters, has been led to believe that industry believes that "tagging" and Method 21 monitoring is required for components in heavy liquid service. ("Tagging" involves placing a physical tag on the component to identify it and its type of service (e.g., heavy liquid).) In fact, tagging and Method 21 monitoring were not required by the proposed equipment leak standards for components

in heavy liquid service and are not required under the final equipment leak standards for these components. In lieu of tagging, an owner or operator can identify components in heavy liquid service on a process schematic or similar drawing. Furthermore, Method 21 monitoring is not required under §63.169, but is an option. Alternatively under §63.169, an owner or operator can rely solely on visual, auditory, or olfactory evidence to determine the presence of a leak and then repair the leak without ever using Method 21. The latter alternative greatly reduces the recordkeeping and reporting requirements required when Method 21 is used.

Commenter IV-D-17 was specifically concerned about the costs of the proposed equipment leak standards as it affects PET TPA facilities. The EPA disagrees with the commenter's conclusion. First, the estimated costs for the PET TPA facilities of complying with equipment leak program is now estimated to be $185,000 rather than $744,000. This reduction in estimated cost is due in part to the correction of errors in the original costing program. This averages to an annual cost of approximately $17,000 per TPA PET facility. Second, the EPA disagrees that there is no emission reduction associated with this cost. As noted earlier, the degree of emission reduction will vary from facility to facility. Many PET TPA facilities have reported the presence of components in gas/vapor service and in light liquid service. Thus, emission reductions can be substantive for these facilities. Third, the majority of these costs are associated with those portions of the equipment leak standards that affect components in gas/vapor service and those in light liquid service. Fourth, the average annual cost is $17,000, but for facilities with few components in gas/vapor service or in light liquid service, the actual costs of complying with the equipment leak program will be much less.

In general, the EPA believes the recordkeeping and reporting requirements found in subpart H of 40 CFR part 63 for components in heavy liquid service are reasonable. However, due to the preponderance of components in heavy liquid service at PET

facilities, the requirement to provide a list of identification numbers for each individual heavy liquid component may be unduly burdensome. Therefore, the final standards do not require an owner or operator to provide a list of identification numbers of those components subject to §63.169 (i.e., pumps, valves, connectors, and agitators in heavy liquid service; pressure relief devices in liquid service, and instrumentation systems). Given this change, these components would be subject to the following recordkeeping requirements, which are currently contained in subpart H:

1. Subject equipment may be identified on a plant site plan, in log entries, or by other appropriate methods; physical tagging of equipment to indicate that it is in organic HAP service is not required.
2. When a leak is detected, the following information is required to be kept:
   - the equipment identification number and the operator name, initials, or identification number;
   - the date the leak was detected and the date of first attempt to repair the leak;
   - the date of successful repair of the leak;
   - "repair delayed" and the reason for the delay if the leak is not repaired within 15 calendar days of its discovery.
3. Information, data, and analysis used to determine that a piece of equipment or process unit is in heavy liquid service. Such a determination includes an analysis or demonstration that the process fluids do not meet the criteria of "in light liquid or gas service." Examples of information that could document this include, but are not limited to, records of chemicals purchased for the process, analyses of process stream composition, engineering calculations, or process knowledge.
4. If applicable, identification, either by list or location (area or group), of equipment in organic HAP

service less than 300 hours per year within a subject process unit.

Especially with the elimination of the requirement to provide a list of identification numbers for each individual component in heavy liquid service, the EPA does not find these requirements burdensome. A PET facility that is subject to the equipment leak standards will need to identify the type of service for each component in order to determine which portion of the standards are applicable; the EPA does not consider this requirement to be onerous. Affected sources using the PET TPA process should be able to identify easily components in heavy liquid service through process knowledge and the use of chemical purchase records. Further, the provisions do not require owners or operators to tag each component, but allow identification by process area or similar, more general means.

The primary recordkeeping requirements for components in heavy liquid service occur when evidence of a leak occurs. The information required is what the EPA considers to be the minimum necessary to document leaks at an affected source.

With regards to reporting requirements for components in heavy liquid service, there are none other than those associated with the Notification of Compliance Status, which requires the reporting of the number of each equipment type (including those in heavy liquid service) and the method of compliance. No information is required to be reported on equipment in heavy liquid service in subsequent periodic (semiannual) reports. The EPA again does not consider such reporting to be burdensome. The EPA considers the reporting of this information necessary to the enforcement personnel to understand the entire compliance program intended to be implemented at a facility.

Recommendations. Commenters requested that the EPA exempt affected sources within some or all of the PET subcategories from the proposed equipment leak standards. One commenter stated that this decision would be consistent with decisions made in developing the Polymer Manufacturing NSPS. Another commenter stated that exempting all PET affected sources would keep with

the reinventing government initiatives to reduce unnecessary recordkeeping and reporting burdens.

The EPA cannot exempt the PET subcategories because, as alluded to by the commenters, there is a baseline equipment leak program implemented by the majority of the industry, which would serve as the MACT floor. Further, exempting all PET subcategories would not be consistent with the Polymer Manufacturing NSPS, which only exempted facilities using a continuous TPA process. The continuous TPA process was exempted because data, at that time, showed that all components were in heavy liquid service. Facilities using a continuous DMT process were already covered by the SOCMI Equipment Leaks NSPS. Batch processes were not evaluated as part of the Polymer Manufacturing NSPS. Finally, as discussed earlier, the cost effectiveness of implementing the equipment leak standards was found to be reasonable. For these reasons and the others presented earlier, the final rule does not exempt PET affected sources from the equipment leak standards, except as discussed in the following paragraph and in the last comment and response in this chapter.

On the basis of the comments received, the EPA has determined that, if an owner or operator can demonstrate that all of the components in a PET TPPU are either in vacuum service or in heavy liquid service, it is not reasonable to require compliance with the equipment leak standards for that TPPU. The rationale for this exclusion is equivalent to the rationale used in developing the Polymer Manufacturing NSPS. However, since some PET TPA affected sources have components in gas/vapor or light liquid service, the EPA has determined that it is necessary for owners and operators of PET TPPUs exempted under these criteria (i.e., vacuum service or heavy liquid service components only) to keep a record that these criteria are met. As contained in the final standards, the determination follows the guidance provided in §63.181(i) of subpart H. The EPA recognizes that this imposes some burden on some affected sources without being able to show any emission reduction. However, the EPA does not believe that the burden is significant because: (1) it is a

one-time determination and (2) most of the information to make the determination will be readily available. The EPA further believes such a requirement is justified to ensure that those affected sources without components in gas/vapor or light liquid service are substantiated and identified to the EPA.

Finally, changes may occur at an exempted PET TPPU such that all of the components are no longer in either vacuum or heavy liquid service, but now contains components in gas/vapor service or in light liquid service. Should such changes occur, the final standards requires such PET TPPUs to comply with the equipment leaks standards for all of the components in the PET TPPU.

Comment: One commenter (IV-D-17) referred to that portion of the preamble for the Polymer Manufacturing NSPS which states that the control of equipment leak emissions at PET TPA plants had not been found to be cost effective and that the cost effectiveness of controlling fugitive emissions from pumps and valves in heavy liquid service is greater than $10,000 per ton. According to the commenter (IV-D-17), the EPA had not presented any new information in the record for the proposed rule about the methodologies for estimating equipment leak emissions, control effectiveness, or control costs that would refute the prior conclusions and allow the EPA to conclude that control of these plants is now reasonable.

Response: Based on the information provided by owners and operators of PET TPA affected sources, the EPA has learned that many PET TPA affected sources have components in gas/vapor service and in light liquid service. This is in marked contrast to the information available to the EPA 10 years ago when it was developing the Polymer Manufacturing NSPS. At that time, the information available to the EPA indicated that all components at PET TPA affected sources were in heavy liquid service, and the EPA determined that equipment leak standards that affect only components in heavy liquid service are not cost effective. Therefore, for the Polymer Manufacturing NSPS, the EPA decided not to implement equipment leak standards for PET TPA continuous facilities. Data provided by the industry under this rulemaking,

however, shows that PET TPA affected sources have components in gas/vapor service and/or in light liquid service. The EPA, therefore, believes that it is reasonable to evaluate the costs and cost effectiveness of equipment leak standards as they apply to components in gas/vapor service and in light liquid service at facilities in this subcategory.

Comment: Commenters (IV-D-16, IV-D-21) stated that the proposed equipment leak standards require the use of Method 21 for emissions monitoring and that Method 21 is inappropriate for monitoring components in ethylene glycol service. One commenter (IV-D-21) noted that Method 21 does not provide a response to ethylene glycol, which is not a vapor at ambient conditions. The commenter (IV-D-21) suggested that the EPA allow a LDAR approach that would utilize visual detection. The commenter (IV-D-21) then provided a draft description of such a program they have prepared for use at one of their facilities. The commenter (IV-D-21) noted that their visual detection program would not apply to components with high concentrations of methanol or acetaldehyde; the intent was to implement the program for components and lines containing primarily ethylene glycol liquid or vapor.

Response: The EPA agrees with the commenters that Method 21 is inappropriate for detecting leaks from components in ethylene glycol service if it is also in heavy liquid service. (The EPA maintains that Method 21 is appropriate where a component that contains or contacts ethylene glycol is in gas/vapor service.) Therefore, the final equipment leak standards eliminate the use of Method 21 for determining if a leak exists for components in heavy liquid service at PET affected sources. Under the final standards, an owner or operator is required to determine if a leak exists by using visual, olfactory, audible, or any other detection method (other than Method 21) to determine the presence of indications of potential leaks. Repair of leaks determined in this manner is required using procedures equivalent to those contained in §63.169(c) and (d).

With regards to the proposed equipment leak program that Commenter IV-D-21 submitted, the EPA contacted the commenter (see Docket A-92-45, Item IV-E-7) and determined that, by clarifying in the final standards that Method 21 was not required, the commenter felt that complying with the §63.169 would be acceptable. Therefore, the EPA determined that further analysis of the commenter's program was unnecessary.

Comment: One commenter (IV-D-16) challenged the EPA to cost justify extending the subpart H equipment leak standards to unrelated sources that have a significantly different fugitive HAP profile.

Response: Thirteen PET facilities provided specific component profiles (counts and service type). The EPA compared these component profiles with those for the three model SOCMI facilities used to analyze the impacts of the HON standards. As contended by the commenters, the EPA found that PET facilities have a significantly higher proportion of components in heavy liquid service than the three SOCMI model plants. The EPA also found that PET facilities have a number of components in gas/vapor and in light liquid service. As noted earlier, the EPA used the specific component profiles from these 13 facilities to re-evaluate whether or not the implementation of the proposed equipment leak standards was cost effective. The re-evaluation found that the equipment leak program was cost effective. Therefore, regardless of the different profiles between PET and SOCMI facilities, the EPA still finds that equipment leak standards based on subpart H of 40 CFR part 63 is cost effective for PET facilities even though their component profiles are different from the component profiles associated with the three SOCMI model plants.

Comment: One commenter (IV-D-19) stated that affected sources in the PET continuous TPA high viscosity multiple end finisher process subcategory should be exempted from the proposed equipment leak standards. The commenter (IV-D-19) cited the predominance of components in heavy liquid service, the low vapor pressure of ethylene glycol, the low potential for equipment leak

emissions from equipment in the raw material process section, and the vacuum conditions that prevent emissions from equipment in the polymerization reaction process section. Furthermore, the commenter (IV-D-19) stated that the cost of recordkeeping and implementing a formal equipment leak program would far outweigh the benefits of decreasing an already low amount of fugitive emissions.

The commenter (IV-D-19) pointed out that the nature of the process and material are such that essentially all of the components potentially covered by the proposed equipment leak standards are in either vacuum service or heavy liquid service. The commenter (IV-D-19) noted that, under the proposed equipment leak standards, components in vacuum service are exempt and components in heavy liquid service are required to be monitored within 5 calendar days of detecting a potential leak by the method specified in §63.180(b).

Addressing the requirement to monitor for emissions using Method 21, the commenter (IV-D-19) noted that equipment leaks from components in ethylene glycol service would be detected as dripping liquid, not as vapor leaks to the atmosphere, and that overhead pipes are routinely inspected to detect leaks. The commenter (IV-D-19) also noted that at their facility a leak check program is already in place for components in gas/vapor service, which are located in the esterification section, for safety and process quality control reasons. The commenter (IV-D-19) described their leak check program, which they have used for 24 years as part of equipment startup: Following an outage where changes have been made to the esterification equipment, a routine 2 to 3 hour leak check is conducted by introducing hot ethylene glycol vapors into the system. Leaks are repaired by tightening flanges bolts before introducing new materials into the process.

The commenter (IV-D-19) provided equipment counts and an emissions estimate (using average SOCMI emission factors, which the commenter (IV-D-19) felt overestimate actual emissions) of 2.1 Mg/yr for their components in gas/vapor and light liquid

service. The commenter (IV-D-19) stated that these emissions are very small compared to point source emissions.

Response: The EPA re-evaluated the emission reductions, costs, and cost-effectiveness of this subcategory, which contains only one facility, based on the specific component counts provided by that facility (see Item IV-B-03, Docket A-92-45). (Previously, the EPA had to estimate component counts for this facility.) Based on the component counts provided, the EPA has determined that the proposed equipment leak standards are not cost-effective, and the final standards exempt this subcategory from the equipment leak standards.

9.0 EMISSIONS AVERAGING

Comment: One commenter (IV-D-22) expressed confusion concerning which emission points could be included together in an emissions average. The commenter (IV-D-22) stated that the definition of affected source contained in proposed §63.500(b) groups all similar emission point types and not the individual production lines. The commenter (IV-D-22) felt that other text in the proposed rule grouped individual production lines. The commenter (IV-D-22) stated that these two different approaches represent different accounting of the same emission points. The commenter (IV-D-22) stated that the emissions averaging provisions should allow all similar emission points on a contiguous site, except those points excluded as presently defined, to be included in an emissions average. The commenter (IV-D-22) explained that this would allow industry to meet site emission limits on a whole through flexibility and proficient economics as aspired in the preamble of the Act.

One commenter (IV-D-09) stated that proposed §63.510(a)(2) unnecessarily restricts emissions averaging within individual subcategories. Another commenter (IV-D-10) stated that one plant may contain numerous different NESHAP requirements and recommended that the emissions averaging provisions be modified to provide greater flexibility by allowing an affected source a one-time (initial) option to either average emissions from the same subcategory or average the cumulative emissions within its thermoplastic processes.

Response: The EPA agrees that the definition of affected source contained in §63.500(b) of the proposed rule was unclear. The EPA has revised the provisions defining the affected source in the final rule. A discussion of these revisions is included in Chapter 2.0 of this document. The

final rule defines an affected source as each group (i.e., one or more) of TPPUs at the same plant site manufacturing the same thermoplastic product (i.e., one of the 19 subcategories) as their primary product. Also included in the affected source are each wastewater stream and operation and each heat exchange system that is associated with each group of TPPU.

Emissions averaging is permitted among emission points within the same source category or subcategory which are located at the same plant site. The final rule has 19 subcategories based on 7 source categories; a nineteenth subcategory was created between proposal and promulgation for a specific PET process.

As described above, the TPPU within each subcategory make up a separate affected source at a given plant site. Therefore, while there may be more than one subcategory (i.e., affected source) present at a plant site, emissions averaging is permitted only among emission points within the same subcategory or affected source. This differs from the HON. The HON regulates a single source category, and there is only one affected source at a plant site that is regulated by the HON. Therefore, emissions averaging is permitted among all emission points eligible for emissions averaging at the same plant site that are covered by the HON.

Finally, emissions can not be averaged across subcategories regardless of the potential for increased flexibility. Therefore, the final rule retains this restriction and averaging across all subcategories at a single plant site is not allowed in this rule.

Comment: One commenter (IV-D-05) contended that compliance techniques such as emissions averaging can improve the overall effectiveness of this rule by reducing the cost of compliance and allowing affected sources flexibility as needed.

One commenter (IV-D-09) maintained that the emissions averaging provisions in the proposed rule, although modeled after the HON, are more restrictive than the HON. The commenter (IV-D-09) stated that in order to be useful to

industry, the provisions need to be more flexible than the HON. [NOTE: The commenter (IV-D-09) did not indicate specific areas where the proposed provisions are more restrictive.]

One commenter (IV-D-18) supported the emissions averaging concept contained in the proposed rule but was concerned about some aspects of the proposal. The commenter (IV-D-18) stated that the emissions averaging provisions are long, complicated, and difficult to understand, and the commenter (IV-D-18) was unsure whether the approach could actually be used due to the stringency of the limitations, such as the number of emission points that may be averaged.

One commenter (IV-D-10) was concerned that wording in the proposal Basis and Purpose document [EPA-453/R-95-004a; March 1995] stating that thermoplastic affected sources will not find a large number of opportunities to generate cost-effective credits may actually discourage industry from investigating and identifying new methods of reducing emissions. The commenter (IV-D-10) requested that EPA provide as much operational flexibility as possible in the emissions averaging provisions.

Response: The EPA thanks the commenters for their support of the emissions averaging provisions. The EPA allows affected sources to use emissions averaging if they can achieve a comparable level of emissions reduction and hazard and risk benefit to point-by-point compliance. The final rule retains emissions averaging provisions.

As stated in the Basis and Purpose Document [EPA-453/R-95-004a; March 1995] for this proposed rule, the emissions averaging provisions contained in the thermoplastics rule are almost identical to the provisions contained in the HON. The proposed rule incorporated the emissions averaging constraints included in the HON that were based on concerns expressed during the HON public comment period. Those concerns were discussed in a supplementary Federal Register notice published on October 15, 1993; 58 FR 53479. While the EPA understands how commenters may have perceived the proposed

provisions concerning the number of emission points allowed in an emissions average to be more restrictive than the HON, that was not the EPA's intent, and the final provisions have been modified to clarify this point. In the final rule, the number of emission points allowed in an emissions average has been increased to 20 points for the entire plant site, with an additional 5 points allowed if pollution prevention measures are used. This issue is discussed in detail later in this chapter.

As the EPA stated at proposal, although the EPA sees limited potential for emissions averaging in this industry, the EPA did not want to exclude emissions averaging from the rule. The EPA's goal in providing emissions averaging provisions in this and other rules has been to make emissions averaging available to sources faced with some emissions points that are particularly difficult or costly to control. This decision is in keeping with the EPA's general policy of encouraging the use of flexible compliance approaches where they can be properly monitored and enforced.

Comment: One commenter (IV-D-25) requested that the averaging period for a source be extended from three months to one year to provide adequate flexibility. The commenter (IV-D-25) stated that a source may require periodic shutdowns of some equipment, and that because of these shutdowns, additional time may be needed to average out debits.

Response: The compliance period for averaging that was proposed, an annual period with quarterly checks, has been retained in the final rule. Allowing averaging over a year's time instead of just one quarter provides flexibility for affected sources whose production rates vary over time. The additional requirement that debits cannot exceed credits by more than 30 percent in any one quarter should assure that wide-ranging fluctuations in HAP emissions will not occur. The EPA concurs with commenters that an averaging period shorter than one year would preclude the use of some emission points in averages. An annual period allows inclusion of points that: (1) do not have the same emission rates during

some periods of the year; and (2) must undergo temporary maintenance shutdowns at different times during the year. Hence, an annual period provides affected sources the flexibility to construct the most cost-effective emissions averages.

Comment: One commenter (IV-D-10) believed that the requirement in proposed §63.510(k) to show relative risk is a strong disincentive to affected sources to take part in emissions averaging. The commenter (IV-D-10) also considered this provision to be outside the scope of the MACT Standards program. The commenter (IV-D-10) believed the requirement for risk evaluation could hinder the achievement of or dissuade implementation of reductions of HAP emissions by emissions averaging that could be greater than reductions achieved by strict application of the standards.

Response: The EPA disagrees with the commenter on both issues. First, the EPA disagrees that the consideration of relative risk in emissions averaging is outside the scope of the MACT standards program. As noted in the response to similar comments on the emissions averaging provisions in the HON, the EPA believes that it has the authority under the Act to establish provisions as part of the alternative averaging system that will ensure that there is no increase in risk or hazard as the result of a source's election to comply through emissions averaging. The fact that section 112(f) of the Act contemplates that residual risk will be evaluated at a later time and that other provisions specifically call for the consideration of risk does not mean that the EPA is precluded from considering risk or hazard in other contexts. Consequently, the EPA maintains that it has the authority to address risk and hazard in the emissions averaging provisions through a procedure such as the one adopted in the final rule -- the requirement that affected sources that elect to use emissions averaging must demonstrate, to the satisfaction of the implementing agency, that compliance through emissions averaging would not result in greater risk or hazard than compliance without emissions averaging.

Second, the EPA does not believe that the consideration of risk will dissuade affected sources from using emissions averaging. Further, the EPA does not believe that the result hypothesized by the commenter (i.e., more emissions will occur because fewer affected sources will emissions average) can be reasonably expected to occur. In contrast to this commenter's concerns, the EPA received comments on the emissions averaging provisions of the HON that indicated an owner or operator's decision to emissions average will be based largely on technical and economic criteria. That there is no incentive to propose emissions averages that could increase risk or hazard because owners or operators have strong incentives to control the most hazardous emissions, such as protecting community and worker safety, increasing product safety, controlling pollution in other media, addressing State air toxic laws, reducing residual risks, and upcoming rulemakings under section 112(g). Therefore, the EPA does not believe that the requirement to show relative risk will be a strong disincentive to affected sources to take part in emissions averaging.

Comment: One commenter (IV-D-10) urged the EPA not to allow States to have the option of disallowing emissions averaging. The commenter (IV-D-10) stated that if the States have open-ended authority in choosing whether or not to allow the use of emissions averaging, as stated in proposed §63.503(b)(2), affected sources would lose an important mechanism for operational flexibility. In addition, the commenter (IV-D-10) explained, given the inherent delay before the States actually receive delegation of this rule, the owner or operator of an affected source could potentially invest a year developing a compliance plan based on emissions averaging, after which time the State could decide that emissions averaging is not an option. Such a situation would be unduly burdensome and unfair to an affected source. The commenter (IV-D-10) felt that emissions averaging should not be left to State discretion.

Response: The final rule states that State or local agencies have discretion to disallow emissions averaging. Under Section 116 of the Act States have the authority to impose more stringent requirements than the EPA if they choose. Thus, if a State believes that disallowing emissions averaging is more stringent they have the authority to disallow it. The EPA maintains that States should have discretion on whether to allow emissions averaging for a number of reasons. First, the EPA acknowledges that emissions averaging can be more complex to administer than the provisions allowing point-by-point compliance. Allowing emissions averaging could increase the administrative burden to the State or local agency; this may be an important concern for implementing agencies with limited personnel and resources. However, the determination of what constitutes too much administrative burden will differ from State to State. Some States may consider emissions averaging an acceptable strategy for compliance and will retain the program.

Second, the EPA recognizes that emissions averaging in this rule could be inconsistent with ongoing air pollution control programs for some States. The EPA supports the use of emissions averaging where it may be appropriate, and maintains that the program has been designed to be enforceable and protective of health and welfare. However, the EPA also acknowledges that its use must be balanced by the individual needs of State and local agencies that bear the responsibility for administering and enforcing the rule.

Comment: Five commenters (IV-D-06, IV-D-09, IV-D-11, IV-D-19, IV-D-25) requested that the number of emission points allowed in an emissions average be increased to 20 points from the 5 points allowed at proposal. If pollution prevention measures are used, commenters (IV-D-06, IV-D-19) requested that an additional 5 emission points be allowed from the 3 emission points allowed at proposal. The commenters (IV-D-06, IV-D-11, IV-D-19, IV-D-25) stated that this would be consistent with the HON and with their understanding of the draft Group I Polymers and Resins NESHAP.

Two commenters (IV-D-11, IV-D-22) requested that there be no limit on the number of emission points allowed in an emissions average provided they are all within the contiguous site. As a result of this, the commenter (IV-D-22) recommended that proposed §63.510(e)(3)(i) and §63.510(f)(1) be deleted from the rule.

One commenter (IV-D-22) contended that by limiting the number of emission points allowed in an emissions average to 5, the EPA is in fact segregating the individual production lines. The commenter (IV-D-22) stated that the EPA provides no rationale for quantifying the number of 5 or the additional 3 as the number of emission points that can be averaged.

Another commenter (IV-D-10) stated that only allowing emissions averaging between 5 emission points has no scientific basis or technical merit.

Response: At proposal, the EPA concluded that the maximum number of collocated affected sources (i.e., subcategories) at any one plant site would be 6. The EPA then determined that, if the HON emission point limit of 20 to 25 emission points per affected source (i.e., subcategory) were directly applied to this rule, a total of 120 to 150 emission points across 6 emissions averaging plans could potentially be involved in emissions averaging at this worst-case plant site. Therefore, the EPA determined that the maximum number of emissions points included in an average for each affected source (i.e., subcategory) without the use of pollution prevention would need to be 20 divided by 6, which equals 3 1/3. Because this number seemed too small to allow practical consideration of emissions averaging, the number was increased to 5 emission points.

However, in response to commenter requests and to be more consistent with the HON and the Group I Polymers and Resins NESHAP, the number of emission points allowed in emissions averages for the entire plant site has been increased to 20 emission points, with an additional 5 emission points allowed if pollution prevention measures are used. The EPA

determined that limiting the number of emissions points as done at proposal was too restrictive and did not provide the degree of flexibility necessary for emissions averaging. This change provides more flexibility for owners or operators, maintains consistency with the HON and Group I Polymers and Resins NESHAP, and restricts the administrative burden of implementing and enforcing emissions averaging. [Note: The restriction of emissions averaging to emission points within the same subcategory is discussed in a previous response.]

Two commenters requested that there be no limit on the number of emission points allowed in an emissions average. The EPA disagrees with this request because, in summary, there is a concern about the burden and cost to implementing agencies of overseeing and enforcing large numbers of emission points in averages. For a more detailed discussion of the reasons for constraining the number of emission points to be included in emissions averaging, see pages 19428-19429 of the preamble to the final HON rule (59 FR 19402) promulgated on April 22, 1994.

Comment: Five commenters (IV-D-06, IV-D-09, IV-D-10, IV-D-13, IV-D-18) requested that batch process vents be allowed to emissions average. The commenters (IV-D-06, IV-D-09, IV-D-10, IV-D-13, IV-D-18) explained that the EPA had stated that there was no acceptable and satisfactory methodology available to quantify the emission reductions for batch process vents because the accuracy and consistency needed for emissions averaging are greater than that needed for applicability determinations. One of the commenters (IV-D-18) argued that, if the EPA truly believes that batch process vent emissions cannot be quantified with sufficient accuracy to demonstrate the 90 percent reduction in emissions, then there should be no emission standards for batch process vents, only work practice or other operational standards. Two commenters (IV-D-10, IV-D-13) maintained that emission calculations should be acceptable for emissions averaging. One commenter (IV-D-06) stated that they had conducted extensive testing of batch process vents at two of their

facilities and that methodology was available to accurately quantify emissions from batch process vents.

One commenter (IV-D-09) contended that for the EPA to exclude all batch process vents from emissions averaging because this has been done in the past and because the EPA does not think adequate data are available is arbitrary and overly restrictive. The commenter (IV-D-09) stated that batch process vents represent a significant number of the process vents in this industry and, thus, need to be included for an emissions averaging scheme to be useful.

One commenter (IV-D-10) stated that the equations 28 and 53 in proposed §63.510(g)(1) and (h)(1) should be changed, respectively, to include actual and allowable terms for batch vents.

Another commenter (IV-D-05) believed the omission of batch process vents from emissions averaging will facilitate an easier implementation of the emissions averaging concept.

Response: With the changes made to the provisions for estimating emissions from batch process vents, the EPA finds that, indeed, the emissions estimation techniques provided in the final rule are sufficient for purposes of emissions averaging. Therefore, the final rule allows emissions averaging of existing batch process vents, and the equations in §§63.510(g)(1) and 63.510(h)(1) **[§§63.1332(g)(1) and 63.1332(h)(1)]** have been revised to include both batch process vents and aggregate batch vent streams. [Note: Changes to the emissions estimation procedures for batch process vents are discussed in Chapter 5.0 of this document.]

Comment: One commenter (IV-D-06) asserted that process contact cooling towers should be able to be used to generate emissions averaging credits. The commenter (IV-D-06) explained that, if the rule is revised to allow cooling tower water in contact condensers associated with vacuum systems, the opportunity would exist for a facility to control cooling tower emissions to a level more stringent than the applicable standard.

One commenter (IV-D-05) was uncertain of the ability to reliably quantify the generation of debits from process contact cooling towers through the proposed use of industry generated estimates. The commenter (IV-D-05) recommended that if process contact cooling towers are to be included in emissions averaging, the EPA provide a reliable and accurate method for determining emissions, perhaps based on the method provided by the commenter.

Response: Except as noted in the following paragraph, the final rule has been revised such that emissions from process contact cooling towers at existing facilities are not regulated and process contact cooling towers are no longer part of the affected source definition for existing facilities. Therefore, process contact cooling towers can not be included in emissions averaging.

For PET affected sources using a continuous TPA high viscosity multiple end finisher process, the final rule does regulate emissions from process contact cooling towers. However, the EPA has determined that these emissions should not be included in emissions averaging. This decision was based upon consideration of the inconsistencies inherent in estimating emissions from process contact cooling towers. The EPA does not believe a methodology exists that would consistently and accurately estimate emissions from this emission point. Having an accurate method is especially important for this particular emission point within this subcategory because the emissions are estimated to be so large that any error, in either direction, may overwhelm an emissions average that included this emission point. Also, if process contact cooling towers were allowed in emissions averaging, the EPA cannot say with certainty that emissions would not be greater than those that would occur under point-by-point compliance. For these reasons, the final rule does not allow the emissions averaging of process contact cooling towers located at existing PET affected sources using a continuous TPA high viscosity multiple end finisher process.

Comment: One commenter (IV-D-09) requested that emission points with controls installed prior to November 15, 1990, be allowed in emissions averaging. [Note: Proposed §63.510 provides the Act date of November 15, 1990 as the date after which controls must have been applied to utilize the achieved emission reductions in an emissions average. This is the same date used in the thermoplastic and HON emissions averaging provisions.]

Response: Emissions averaging credits are not allowed in the final rule for previous actions (i.e., actions taken prior to November 15, 1990, the date of passage of the 1990 Amendments to the Act). Emission reductions from previous actions occurred for reasons unrelated to the Amendments or this rule (such as State requirements) and are included in the baseline. As stated in the proposal preamble for the HON (57 FR 62608; December 31, 1992), if the EPA allowed emission reductions from previous actions to qualify as credits, then the source would be able to use these previously acquired credits to offset debits generated after November 15, 1990. This situation would result in more total emissions occurring than would occur under point-by-point compliance.

For this reason, not allowing credit for previous actions should not be considered unfair or a penalty. Rather, the provision is necessary to maintain emissions averaging as an alternative means of compliance, achieving equal or greater emissions reductions than achieved through point-by-point compliance. Likewise, it cannot be considered a "reward" to allow credit for previous actions, which then enables a source to emit more pollution than would otherwise be allowed. Also, if a previous action was required by another State or Federal rule, the control can be used to meet the final rule's requirements for Group 1 points as long as the control meets the level that the rule specifies. However, the control cannot be used to generate emissions averaging credit.

Comment: Two commenters (IV-D-09, IV-D-10) requested that process units that have been shutdown be eligible for emissions averaging. The commenter (IV-D-09) stated that

proposed §63.510(d)(3) prevents the use of shutdown process units and that some of the most effective pollution prevention accomplishments occur when a new process unit, built with improved technology, replaces an older process unit. The commenter (IV-D-09) stated that one of their facilities reduced HAP emissions by 1,700 tons per year by precisely this type of process change and that by disallowing such changes the EPA is discouraging pollution prevention and encouraging add-on controls.

One commenter (IV-D-10) felt that disallowing credits resulting from process unit shutdowns has no technical or regulatory validity. The commenter (IV-D-10) stated that, when an owner or operator makes a choice to shutdown a process unit in order to use the emission credits (assuming that a federally enforceable commitment is made to not restart the unit), an actual emissions reduction has occurred for which credit should be made available and that the environmental impact of reduced emissions is achieved.

Response: It is not appropriate to allow emissions averaging credits for process units that have been shutdown. Regardless of the motivation for a shutdown, the emission reduction from the production curtailment are not made permanent if emissions averaging credit is allowed. If credit were granted for the emission reduction, the source could then emit an equal amount of emissions from its debit generators. This is in contrast to point-by-point compliance, where if a point is shut down, the emissions reduction is permanent. To allow credit in emissions averaging for permanent shutdowns results in less stringent compliance and more total emissions than point-by-point compliance, in which case emissions averaging does not represent an equivalent compliance alternative.

Furthermore, allowing emissions averaging credits for the addition of new process units which are replacing older process units that have been shutdown is not appropriate. Although the EPA encourages affected sources to replace older process units to account for improved technologies, where cost

effective, emissions averaging credits will not be allowed in these circumstances because new sources are not allowed to emissions average under the provisions of the rule. The rationale for not allowing emissions averaging for new sources is included in Volume 2C of the HON BID (EPA-453/R-94-003c; March 1994).

Comment: One commenter (IV-D-09) stated that proposed §63.510(d)(4) restricts the use of biologically treated wastewater streams from emissions averaging. The commenter stated that biologically treated Group 2 streams should be allowed in emissions averaging.

Response: The final rule continues to prohibit the use of biologically treated wastewater streams in emissions averaging. The EPA has based this decision on two reasons. The first reason addresses the comment that biologically treated streams should be included in general. The second reason addresses the comment that an owner or operator should receive credit for controlling Group 2 wastewater streams through biological treatment. First, under the emissions averaging provisions, an owner or operator must apply controls above and beyond what is required by other regulations or what is already being done in practice. The EPA judged that the vast majority of affected sources would be required to send all wastewater to a biological treatment unit by existing water regulations or would already be sending all wastewater to a biological treatment unit as a matter of standard practice. Based on this judgment, these wastewater streams would not be eligible for emissions averaging. Second, the proposed and final rules provide several compliance options based on treating the combined wastewater stream from the affected source. Under these compliance options, Group 2 wastewater streams are controlled and the emission reduction achieved for these streams is applied toward the combined stream control requirement. Therefore, the proposed and final rules already provide a benefit to the owner or operator for the control of Group 2 wastewater streams through biological treatment.

Comment: One commenter (IV-D-09) requested that pollution prevention credits be allowed for "out-of-process recycling." The commenter (IV-D-09) explained that out-of-process recycling may be the most cost effective way to achieve pollution prevention, and it should be allowed in the calculations [proposed §63.510(j)(1)(i)] provided that all emissions from the recycling process are included in the calculations. For example, the commenter (IV-D-09) stated that solvent recovery on an out-of-process batch basis might be more economical than installation of in-process columns, tanks, etc.

Response: Out-of-process recycling falls outside of the definition of affected source for this rule. Therefore, emission reductions from out-of-process recycling cannot be included in emissions averaging.

Comment: The commenter (IV-D-19) stated that the methods for generating credits and debits in §63.510(g) and (h) of the proposed rule include only methods for addressing those sources that are determined to be Group 1 and Group 2 process vents and have their control standards established by following HON procedures. The commenter stated that the PET continuous TPA process vent standards in proposed §63.505(b)(3) are not developed by following the HON and are not determined to be Group 1 or Group 2 sources using the HON. The commenter (IV-D-19) explained that the PET continuous TPA process vents have a separate process based emission standard based on production rate. Therefore, proposed §63.510(g) and (h) appear to have inadvertently omitted the procedure for calculating credits and debits for PET continuous TPA process vents.

Response: As found in proposed §63.510(c)(5), continuous TPA process vents (and certain other PET continuous process vents) subject to proposed §63.505(b) were allowed in emissions averaging. In addition, proposed §63.510(c)(5) stated that such streams are to be considered Group 1 emission points for the purposes of emissions averaging. These

provisions are retained in the final rule in §63.510(c)(5) **[§63.1332(c)(5)]**.

Comment: One commenter (IV-D-10) requested that the EPA provide better guidance on acceptable procedures that an affected source must follow to identify and take credit for pollution prevention efforts. Specifically, the commenter (IV-D-10) stated that the language in proposed §63.510(a)(3) "An additional emission point may be added for each emission point controlled through pollution prevention" is vague.

Response: The EPA has revised the language referred to by the commenter in the final rule to read as follows: "This number may be increased by up to five additional emission points if pollution prevention measures are used to control five or more of the emission points included in the emissions average." The EPA believes that this language clarifies the commenter's concern.

Comment: One commenter (IV-D-10) felt that the language in proposed §63.510(c) that reads "... if sufficient information is available to determine the appropriate value of credits ..." is very vague. The commenter recommended the following language be used: "... if reasonable information is available to calculate the actual value of credits...".

The commenter (IV-D-10) also suggested that the word "control" in 63.510(c) be defined or clarified so that the term is not limited only to added or modified equipment, but also includes change in operation, pollution prevention or maintenance and/or repair procedures.

Response: The EPA disagrees that the words "sufficient" and "determine" need to be revised per the commenter's suggestion. The EPA also does not believe that it is necessary to further define or clarify the word "control" as requested by the commenter. Within §63.510 **[§63.1332]**, all types of control that can be used to achieve emission averaging credits are identified. These types of control include both add-on controls, such as combustion devices, and pollution prevention measures. Pollution prevention measures are, as stated in §63.510 **[§63.1332]**, "... any practice that

results in a lesser quantity of organic HAP per unit of product released to the atmosphere prior to out-of-process recycling, treatment, or control of emissions ... " and may include such measures as alterations to the production process, equipment modifications, housekeeping measures, and in-process recycling. Therefore, the EPA does not find it necessary to revise the wording in §63.510(c) **[§63.1332(c)]** per the commenter's suggestions.

Comment: One commenter (IV-D-05) recommended that the EPA develop an emissions averaging guidance package, similar to that being developed for the HON. The commenter (IV-D-05) recommended that such guidance thoroughly address the interpollutant trading issue and contain a toxicity measurement method similar, if not identical, to that of section 112(g) in order to promote consistency.

Response: At this time, the EPA does not intend to develop guidance material for emissions averaging specific to this final rule. However, two emissions averaging guidance resources developed for the HON are available and may be accessed via the Technology Transfer Network (TTN), the EPA's electronic bulletin board. The EPA has developed an annotated bibliography of resources to assist affected sources in performing a risk hazard assessment titled "Technical Support Document on Risk Hazard Assessment for Emissions Averaging under the Hazardous Organic NESHAP" (EPA-452/R-95-007). Also, a computer program was developed to assist affected sources in complying with the emissions averaging provisions of the HON. The software, called "HON Averaging Assistant," leads the user through input of needed site specific data and performs calculations to assist in determining credits and debits for emissions averaging. However, the reader should remember that the emissions averaging provisions of the thermoplastics rule do vary slightly from the HON in several areas. Areas where the final thermoplastics rule differs from the HON include: (1) the number of emission points that an affected source may include in the emissions average; (2) designation of a separate Emissions Averaging Plan, where the HON includes

emissions averaging information in the Implementation Plan; (3) the requirement that under this rule some continuous process vents are subject to an emission limit expressed as kg of organic HAP per Mg of product; and (4) batch process vents are included in the emissions averaging provisions of the thermoplastics rule.

Comment: One commenter (IV-D-19) stated that §63.510(a) of the proposed rule contains typographical errors, which affect the scope of the emissions averaging provisions. The commenter (IV-D-19) stated that §63.510(a) states "this section applies to owners or operators of existing sources who seek to comply with the emission standards in §63.503(a) of this subpart by using emissions averaging according to §63.503(f) of this subpart...". The commenter (IV-D-19) explained that the referenced §63.503(a) does not refer back to the §63.505 continuous process vent provisions. The commenter maintained this is an error because process vents from continuous operations are a group of emission points that the EPA intends to include in emissions averaging. Second, the commenter stated that proposed §63.510(a) refers to §63.503(f), and this paragraph does not exist.

Response: The commenter is correct that continuous process vents are eligible for emissions averaging and this was stated in the proposed rule. The commenter may have been referring to a draft of the proposed rule when they made their comments. The final rule states that:

"This section applies to owners and operators of existing affected sources who seek to comply with §63.503(b) **[§63.1313(b)]** by using emissions averaging rather than following the provisions of §§63.504, 63.505, 63.506, and 63.508 **[§§63.1314, 63.1315, 63.1316 through 63.1321, and 63.1330]**."

10.0 PERFORMANCE TESTING

Comment: One commenter (IV-D-18) recommended that owners or operators be allowed to use alternative test methods which have been approved by the Administrator. The commenter (IV-D-18) stated that in at least six specific locations, the proposed rule requires owners or operators to use specified test methods. In the past, the commenter (IV-D-18) stated, if there were circumstances where it was desirable and appropriate to use a different test method, or a modification of the method specified in the rule, they have brought these circumstances to the attention of the Administrator and reached agreement on an acceptable protocol. The commenter (IV-D-18) noted that this has been a simple, quick, and effective process, and it should be allowed to continue. However, the commenter (IV-D-18) explained that for the six locations in the proposed rule that they identified, the proposed rule either does not allow for alternative test methods at all or validation of the alternative method following EPA's Method 301 is required. The commenter (IV-D-18) stated that Method 301 is too complex and burdensome. The commenter (IV-D-18) stated that both approaches, specifying a particular test method or requiring the use of Method 301, eliminate opportunities to make the rule work better with less burden. The commenter (IV-D-18) requested that the phrase "or other test methods approved by the Administrator" be added to the provisions identified in their comments.

Response: The EPA disagrees with commenter and has not made the requested change in the final rule. The EPA considers that adequate flexibility has been added to the final rule with the addition of provisions allowing the use of Method 25A and allowing demonstrations of compliance based on

TOC. The EPA cannot justify foregoing the use of Method 301 to validate alternative test methods when no specific comments concerning its use were provided. If commenters wish to pursue changes to the procedures for obtaining permission to use alternative test methods, and specifically the use of Method 301, they should address concerns to the General Provisions. [Note: Use of different EPA approved test methods is discussed in the next response.]

In response to the commenter's concern that some provisions of the proposed rule specified a specific test method and did not provide flexibility to pursue an alternative test method, the final rule has been changed to specifically cite that other methods validated according to Method 301 are allowed. However, even when not specifically stated, owners or operators are always allowed to apply for use of an alternative test method under §63.7(f) of subpart A, and the Administrator may either waive the use of or specify a less rigorous validation procedure under paragraph 1.1.1 of Method 301.

Comment: Two commenters (IV-D-07, IV-D-18) requested that a performance test not be required if a control device has been tested in a similar manner using test methods approved by the EPA. The commenters (IV-D-07, IV-D-18) explained that the provisions in §63.506-4(b)(3) of the proposed rule allow the results of another performance test to apply if the test was conducted using the same procedures specified in the rule. One commenter (IV-D-18) stated that it is unlikely that the performance test would have been conducted using exactly the same procedures. One commenter (IV-D-18) contended that any performance test performed for an NSPS, NESHAP, or RCRA rule, a New Source Review permit, or other programs administered or supervised by the EPA should be considered sufficient. Another commenter (IV-D-07) requested that RACT testing satisfy the requirements for testing in MACT standards. The commenter (IV-D-18) explained that performance tests represent a large investment of time, money, and resources, and that it is necessary for affected sources to

minimize duplication of these tests. For example, the commenter (IV-D-18) explained, one of the commenter's facilities conducts at least 40 to 50 performance tests a year, and this number is expected to increase dramatically. Currently, the commenter (IV-D-18) explained, seven full-time stack testing personnel are employed to support this level of testing. The commenter (IV-D-18) stated that the total cost of each test can range from $15,000 to $50,000, with an average of six items monitored per test.

Response: In response to this comment, the EPA considered the open-endedness of the commenters' request and considered it unreasonable to allow a test done using any EPA method to suffice for the performance test required by this rule. However, the EPA found it reasonable to allow tests done for compliance with an NSPS or NESHAP, where either total organic HAP or TOC or VOC was measured, to serve as a substitute for the performance test required under this rule.

Comment: One commenter (IV-D-18) requested that a performance test not be required for RCRA incinerators that comply with 40 CFR part 264 when they are used as control devices for complying with the thermoplastics rule. The commenter (IV-D-18) explained that RCRA sets performance standards for incinerators. These standards require trial burns to demonstrate compliance with the standards and to determine destruction and removal efficiency. The commenter (IV-D-18) felt it would be redundant to require another performance test.

Response: The EPA agrees with the commenter that a performance test done for RCRA should be acceptable for compliance with testing requirements under this rule; the final rule allows this. The proposed rule already exempted boilers or process heaters burning hazardous waste that are in compliance with 40 CFR part 266. In the final rule, combustion devices that are in compliance with either 40 CFR part 264 or 40 CFR part 266 are exempt from performance testing requirements.

11.0 MONITORING

11.1 OPERATING PARAMETER MONITORING

Comment: Two commenters (IV-D-09 and IV-D-10) requested that more flexibility be permitted for establishing compliance levels for parameter monitoring. The commenters (IV-D-09 and IV-D-10) asked the EPA to provide for the use of the HON range concept instead of the level concept used in the proposed rule. The commenters (IV-D-09 and IV-D-10) explained that the HON uses ranges in place of specific levels in recognition of the fact that a process or control device operates properly over a range of conditions. One commenter (IV-D-09) cited proposed §63.512(b)(1) which states that levels are to be established as an average of minimum or maximum values from test runs. The commenter (IV-D-09) contended that using an average value leads to conditions where a portion of the time the process or control device may be operating outside of the acceptable performance range since an average may involve values above and below the good performance range.

One commenter (IV-D-09) noted that the language of proposed §63.513(b)(5)(ii)(B) is missing language from the HON §63.152(b)(2)(ii)(A) and (B) which discusses performance testing for determining ranges and the use of engineering assessments. The commenter (IV-D-09) requested that this important language be added to the final rule.

Response: The approach for establishing parameter monitoring criteria in the final rule incorporates the methodology included in the HON rule, as well as keeping the proposed methodology. The methodology from the HON requires a performance test, and then allows the owner or operator to use the results of the performance test in concert with engineering judgement to determine parameter monitoring criteria that reflects proper operation of the control or

recovery device. Language from the HON [§63.152(b)(2)] was added to the thermoplastics rule as part of incorporating this methodology. The methodology from the proposed rule specifies that the parameter monitoring level is to be based on the maximum or minimum recorded values, as appropriate, from the performance test. For example, when determining the maximum operating temperature for a condenser used to control a continuous process vent, the owner or operator would conduct three 1-hour test runs. For each test run, four 15-minute average values of the condenser temperature would be recorded. The parameter monitoring level would be the average of the maximum recorded temperature (15-minute average value) for each of the three test runs. [Note: The final rule refers to the criteria determined under either methodology as the parameter monitoring level.]

By allowing the affected source to choose between methodologies, the final rule ensures that site-specific variation in emission point characteristics and control device designs are considered in establishing appropriate parameter monitoring levels.

Comment: One commenter (IV-D-18) contended that the calculated average is not the correct measuring point for determining when a monitoring violation has occurred. The commenter (IV-D-18) explained that whenever parameter ranges are determined by a performance test, they constitute an average of multiple different values. Because the approved ranges represent averages, the commenter (IV-D-18) explained that it necessarily follows that some individual data points were higher than the highest point of the approved range, and some were lower than the lowest point of the approved range. Yet, on the whole, the values indicated compliance with applicable regulations. This means that the correct point to begin looking for possible violations is not the endpoint of an approved range; instead, it is the highest data point (above the tip of the range) or the lowest data point (below the bottom of the range) that contributed to the approved average. Unless parameters stray beyond those points, there

is no reason to believe a violation may occur. [Note: This comment uses the term "range," but the comment has been interpreted by the EPA to be applicable to the parameter monitoring "level" concept in the proposed rule.]

Response: The EPA believes the procedures contained in the proposed and final rule for determining when a parameter monitoring violation has occurred are valid. The EPA believes the basis used to develop the parameter monitoring level and the basis used to calculate average values for the monitored parameter are equitable in that the averaging times are equivalent. The data used to develop the parameter monitoring level are typically based on average values from a performance test. The typical performance test for a continuous process vent entails 3 1-hour test runs, and the parameter monitoring level is calculated using a single 15-minute value from each test run. Likewise, average values for monitored parameters are based on 15-minute values; the 24-hour average value is calculated using all valid 15-minute values, and the 24-hour average is compared to the parameter monitoring level. Further, as stated in the proposal Basis & Purpose Document [EPA-453/R-95-004a, March 1995], the EPA has concluded that operating parameter monitoring is an acceptable way to determine whether control devices are being maintained and operated properly. The commenter is referred to Chapter 8.0, Section 8.6 of the Basis and Purpose document for the rationale on this point that was presented at proposal.

Comment: One commenter (IV-D-13) agreed with the concept of parameter monitoring in conjunction with an initial performance test of Group 1 emission points as a means to demonstrate compliance. [Note: This commenter specifically addressed batch process vents.]

Response: The parameter monitoring provisions are retained in the final rule.

Comment: One commenter (IV-D-11) contended that the proposed batch process vent monitoring requirements are not cost effective and that the EPA did not consider more practical monitoring. The commenter (IV-D-11) requested that

alternate monitoring be allowed, such as the monitoring the commenter has worked out with the State of New Jersey.

The commenter (IV-D-11) explained that a typical batch building has approximately 20 condensers, scrubbers, and jets. In most cases, control device instrumentation is located in the field, and its readout is not transmitted back to a central control room. An additional full-time employee would be needed in each batch building to do hourly recordkeeping.

The commenter (IV-D-11) stated that companies affiliated with CMA have numerous permits for batch reactors with condensers and/or scrubbers. The commenter (IV-D-11) explained that under these permits owners or operators are required to install and monitor contaminant side outlet temperature on condensers and water flow and pressure drop for scrubbers. For recirculating scrubbers, pH is also required to be monitored. The commenter (IV-D-11) noted that only a couple of their batch processes are required to keep records on the control device instrumentation and that for the processes where these records are required, continuous recording has not been required; therefore, records are taken manually.

The commenter (IV-D-11) explained that the State of New Jersey initially required readings and records to be taken and made every shift. For refrigerated condensers, the records meant nothing. The condensers were on, but the temperature readings varied substantially. During a batch reactor charge step, VOC emissions are displaced to the condenser, and uncondensed inerts and vapors are vented. The temperature thermowell, inserted at the juncture of the condenser outlet and the stack, reads the proper dew-point temperature of the condensed and exiting gases. As the reaction mass is agitated and reacted, vapor emissions cease. Over time the thermowell in the condenser outlet conducts ambient heat from the stack and shows a higher temperature that falsely indicates noncompliance. The commenter (IV-D-11) felt that the recordkeeping requirements need to account for when the

control device is being used to control emissions, not just when it is operating.

Subsequent to the observation that condenser temperature readings varied substantially, the permit authority agreed to only require the recording of the control device operating parameters during the worst-case emission step of each batch, stated the commenter (IV-D-11). This ensures the control device will be in use and verifies its operation during the process' worst-case emission step.

In summary, the commenter (IV-D-11) requested that a reading and record only be required when the emission source is venting emissions to the control device. The commenter (IV-D-11) maintained that once per hour is excessive, and that once per batch, once per transfer for storage tanks and transfer racks, or once per shift for other continuous operations during the process' worst-case emission step is more appropriate.

Response: The EPA believes the proposed rule was misinterpreted by the commenters but acknowledges that is was potentially unclear. Based on the comments made, the EPA believes the commenters were under the impression that operating parameters for batch process vents had to be monitored 24-hours per day; this was not the intent. In the final rule, the EPA has clarified that operating parameters for batch process vents must be continuously monitored (i.e., measurements made at least every 15 minutes) during those batch emission episodes, or portions thereof, that the owner or operator has selected to control as part of meeting the requirement to reduce emissions by 90 percent for the batch cycle.

Several changes or clarification were made to the final rule that affect this area. First, in §63.506-3(a)(1) **[§63.1324(a)(1)]** of the final rule, changes were made to clarify that "monitoring equipment shall be in operation at all times when batch emission episodes, or portions thereof, that the owner or operator has selected to control are vented to the control device." Second, it was necessary to clarify

§63.506-1(a)(2) **[§63.1322(a)(2)]** to ensure consistency with and understanding of the change described above. In the proposed rule, the requirement to achieve 90 percent for the batch cycle was not expressed clearly. In the final rule, §63.506-1(a)(2) **[§63.1322(a)(2)]** states that emissions for the batch cycle must be reduced by 90 percent and that "Owners or operators may achieve compliance with this paragraph through the control of selected batch emission episodes or the control of portions of selected batch emission episodes." The EPA believes that, taken together, the two changes described above make it clear that parameter monitoring is only required when emissions selected for control by the owner or operator are vented to the control device.

A third point to be made does not involve parameter monitoring for purposes of demonstrating continuous compliance, but instead involves parameter monitoring during performance tests. In the final rule, an owner or operator must either (1) test and monitor the entire batch emission episode, or portion thereof, selected for control or (2) test and monitor a selected period of the batch emission episode, or portion thereof, selected for control. A selected period may be tested when the emission rate for the entire episode can be determined (i.e., when emissions are representative of the average emission rate) or when the emissions are greater than the average emission rate (i.e., at the peak of the episode). The pertinent point related to monitoring is that an owner or operator is required to gathering parameter monitoring data over the entire performance test.

11.2 SELECTION OF MONITORED PARAMETERS

Comment: Two commenters (IV-D-08, IV-D-23) commended the EPA for allowing alternative monitoring parameters for batch process vents in proposed §63.506-3(c). The commenters (IV-D-08, IV-D-23) stated that for many recovery and control devices, there may be more appropriate monitoring parameters than those specified in proposed section §63.506-3(a) and §63.506-3(b).

Response: The final rule [§63.506-3(d) **[§63.1324(d)]**] retains the mentioned provisions. In addition owners or operators of continuous process vents can request alternative monitoring parameters through similar provisions in the HON, as referred to in §63.505-1 **[§63.1315]** of the final rule.

Comment: One commenter (IV-D-09) suggested allowing more flexibility for designating monitoring parameters for "other recovery devices" than was provided in Table 4 of the proposed rule. The commenter (IV-D-09) explained that in the proposed rule the only parameter listed for "other recovery devices" was the HAP concentration level at the outlet of the recovery device. The commenter (IV-D-09) stated that it may not be technically or economically feasible to install continuous monitoring at the outlet of a control device. The commenter (IV-D-09) requested that owners or operators be allowed to base the alternate parameter on engineering judgement and manufacturer's recommendations. The commenter (IV-D-09) included suggested language for revising Table 4.

Response: As discussed in the previous response, owners or operators may request to monitor alternative parameters through provisions in §63.506-3 **[§63.1324]** for batch process vents and through provisions in the HON for continuous process vents.

Comment: One commenter (IV-D-09) maintained that monitoring a valve position on a bypass line using a computer system should be an acceptable alternative to using a flow indicator, car-seal, or lock-and-key device. The commenter (IV-D-09) explained that their facilities have a number of valve positions monitored by the process computer system. The commenter (IV-D-09) found this to be a reliable means to determine when a bypass is occurring.

Response: The EPA agrees with the commenter, and the final rule allows the use of computer monitoring of bypass lines.

Comment: Table 5 of the proposed rule requires that scrubber effluent pH, scrubber liquid flow rate, and scrubber gas flow rate be monitored for scrubbers used for halogenated

process vents. One commenter (IV-D-13) maintained that monitoring scrubber gas flow rate should not be required for batch process vents because this parameter will not provide meaningful compliance data due to intermittent gas flow. The commenter (IV-D-13) stated that monitoring of scrubber liquid flow rate when combined with scrubber liquid pH monitoring should be an acceptable monitoring method for batch process vents.

Response: The EPA agrees with the commenter that monitoring scrubber gas flow rate would not be a meaningful indicator of compliance for batch process vents. In the final rule, owners and operators of batch process vents are required to monitor scrubber liquid flow rate and scrubber effluent pH only.

Comment: One commenter (IV-D-13) stated that EPA should only require monitoring of absorber liquid specific gravity on total recirculating absorber systems where the VOHAP is soluble in the scrubber liquid. The commenter (IV-D-13) felt that absorber systems that operate either as once-through systems or with a continual blowdown stream to organic HAP recovery, disposal or treatment should not be required to monitor absorber liquid specific gravity.

Response: The EPA agrees that in some situations it may not be necessary to monitor the specific gravity of the absorber liquid. However, the decision to forego monitoring the specific gravity of the absorber liquid in lieu of another parameter is best determined on a case-by-case in concert with the performance test. If the commenter wishes to monitor another parameter, he or she could pursue such an option through the provisions for obtaining alternative monitoring parameters which are discussed in an earlier response.

Comment: One commenter (IV-D-13) suggested that in lieu of monitoring the total regeneration stream mass flow with an integrating mass flow monitor, which is not cost effective, steam supply pressure should be allowed as an alternate monitoring parameter for steam regenerated activated carbon systems. On the other hand, the commenter (IV-D-13) stated

that on carbon systems that regenerate using hot air or nitrogen, the regeneration stream mass flow should be monitored.

Response: The EPA does not agree with the commenter that steam pressure would be a suitable alternative monitoring parameter to steam mass flow rate, and the final rule continues to require that the total regeneration stream mass flow be monitored. The commenter did not provide data supporting their claim. If the commenter wished to pursue this further, he or she could do so through the provisions for obtaining alternative monitoring parameters.

Comment: One commenter (IV-D-06) stated that for batch process vents the exit temperature of the chilled water or the exit flow rate of the chilled water, both of which will ensure the condenser is operating properly, are suitable substitutes to the exit temperature of the condenser. The commenter (IV-D-06) requested that Table 5 of the proposed rule be revised to allow monitoring of these parameters. The commenter (IV-D-06) stated that monitoring the exit temperature of the condenser may lead to erroneous readings and/or permit exceedances for batch process vents. The commenter (IV-D-06) explained that for a batch process vent, the condensible gaseous vapors generated are intermittent. During certain times, there is no venting and a temperature monitoring device will be measuring temperatures near ambient. Because there is no liquid condensate during these non-venting periods, the gaseous vapors at the exit of the condenser are influenced by the outside environment resulting in potential erroneous readings and/or permit exceedances.

Another commenter (IV-D-13) maintained that it is critical that the EPA permit periodic monitoring of condenser exit temperature as opposed to continuous monitoring. The commenter (IV-D-13) explained that batch process vents typically have intermittent flow. During periods of no stack gas flow, the temperature monitor will gradually warm up due to heat transfer from the vent. The resulting temperature may improperly show an excursion. Therefore, the commenter

(IV-D-13) suggested continuous recorders not be required because the data they generate is misleading.

Response: Because of the changes made to the final rule related to parameter monitoring for batch process vents, discussed in an earlier response, the EPA is not persuaded to change the specified operating parameter for condensers. The changes made to the final rule have addressed the issue of monitoring a control device when no emissions are being vented to the control device. However, an owner or operator is free to apply for alternative parameter monitoring under §63.506-3(d) **[§63.1324(d)]**.

11.3 EXCURSIONS

Comment: Seven commenters (IV-D-03, IV-D-08, IV-D-09, IV-D-10, IV-D-11, IV-D-15, IV-D-21) requested that the proposed rule duplicate the HON provisions in §63.152(c)(2) for excused excursions. One commenter (IV-D-25) recommended that the EPA allow one excursion per month. The commenter (IV-D-25) stated that the HON system of phasing down excursions to one per semiannual period is laudable but inadequate.

One commenter (IV-D-21) stated that this phased reduction in the HON is premised upon the learning curve associated with new equipment and recognizes that a period of time will be required to experience the upsets or deviations from normal operation which can be expected with new equipment. Another commenter (IV-D-09) stated that control device operating parameters will fluctuate for a variety of reasons that may not be included in the start-up, shutdown, and malfunction plan. The commenter (IV-D-09) stated that allowing excused excursions would give sources more opportunity to understand what kinds of fluctuations in the parameters can occur during different situations. Several commenters (IV-D-03, IV-D-08, IV-D-11, IV-D-21) stated that it would be statistically impossible for a facility to never observe monitoring results greater than the emission limitation.

The commenters (IV-D-03, IV-D-08, IV-D-11, IV-D-13, IV-D-21) went on to state that allowing for no excursions

would be both unrealistic and would impose significant additional capital and operating costs with negligible corresponding reductions in air emissions. The commenters (IV-D-08, IV-D-15, IV-D-21) contended that by not allowing any excused excursions in the proposed rule, the EPA has made the thermoplastics rule more stringent than the HON. One commenter (IV-D-21) stated that if the EPA does not follow the HON excused excursion scenario, the EPA must justify the increased cost of imposing the more stringent no excused excursion provision. One commenter (IV-D-15) requested that the EPA justify their position using actual facility data. Another commenter (IV-D-13) stated that the EPA's Section 114 survey did not collect sufficient data to demonstrate that sources comprising the floor meet a set control efficiency 100 percent of the time. Two commenters (IV-D-13, IV-D-15) insisted that the data would have to show that a facility operating at the MACT floor level of control would never deviate from this control level.

Response: In the final rule, the EPA decided to excuse a certain number of excursions for each reporting period. This decision was based on data and information presented during public comment on the HON and reiterated in public comments received on this rule and during industry meetings held subsequent to proposal. The EPA also concluded that not allowing excused excursions would impose significant additional capital and operating costs on the affected source for only negligible corresponding reductions in air emissions. As is always the case, a State has the discretion to impose more stringent requirements than the requirements of NESHAP and other federal requirements and could choose not to allow the excused excursion provisions of this rule.

The EPA considered the number of excused excursions that would be most appropriate for this rule and determined that the number of excursions allowed in the HON would be reasonable. Therefore, the final provisions allow a maximum of 6 excused excursions for the first semiannual reporting period, decreasing by 1 excursion each semiannual reporting

period. Starting with the sixth semiannual reporting period (i.e., the end of the third year of compliance) and thereafter, affected sources are allowed one excused excursion per semiannual reporting period. The EPA determined that allowing one excused excursion per month on an indefinite basis, as one commenter requested, was not warranted and could possibly adversely affect the emission reductions achieved by the rule; this request was not granted.

Comment: One commenter (IV-D-18) supported the provisions that state that when multiple parameters are being monitored for the same control or recovery device, an excursion involving more than one of these parameters counts as a single excursion for the control or recovery device.

Response: The EPA thanks the commenter for the support, and this provision is retained in the final rule.

Comment: One commenter (IV-D-18) supported the provisions that an exceedance is based on the batch cycle daily average for a parameter, as opposed to hourly or 15-minute averages. The commenter (IV-D-18) stated that this was important because parameters can change for brief periods of time for no discernable reason and return to previous levels without causing a real problem. The commenter (IV-D-18) stated that by focusing on the daily value, the owner or operator has the opportunity to fix minor problems quickly and continue operation.

Response: The EPA thanks the commenter for the support, and this provision is retained in the final rule.

Comment: One commenter (IV-D-18) supported the provisions that "insufficient data" does not mean a single missing data point. The commenter (IV-D-18) explained that any monitoring system is subject to possible brief failures or outages, most of which can be corrected quickly. However, if every missing data point were a violation, it would be literally impossible to comply with the rule.

Response: The EPA thanks the commenter for the support, and this provision is retained in the final rule.

Comment: One commenter (IV-D-18) supported (1) the use of a daily average value to determine excursions and (2) the provisions that it is not considered an excursion if these situations occur during startup, shutdown, or malfunction of a process and the startup, shutdown, or malfunction plan has been followed.

Response: The EPA thanks the commenter for the support, and these provisions are retained in the final rule.

Comment: One commenter (IV-D-18) requested that the EPA not consider a violation to have occurred every time a parameter strays momentarily beyond a pre-approved range.

Response: The proposed and final rule require a comparison of a 24-hour average value against the parameter monitoring level to determine operating parameter violations. Momentary exceedances of the level do not constitute a violation.

11.4 DEMONSTRATION OF COMPLIANCE

Comment: One commenter (IV-D-11) stated that the proposed rule (i.e., §63.114 of subpart G, §63.505, and §63.506-3) do not seem to recognize that absorbers may be used as control devices (i.e., no HAP recovery) on nonhalogenated process vents. Further, the commenter (IV-D-11) stated that the provisions do not seem to establish monitoring parameters for absorbers used as control devices.

Response: The EPA believes the monitoring parameters specified for absorber systems are sufficient, regardless of the intended use of the system (i.e., as a control or recovery device). The commenter did not provide suggested alternate monitoring parameters for the EPA to consider. Nor did the commenter indicate how the proposed rule failed to recognize the use of absorbers as control devices. The monitoring provisions for absorbers have not been changed in the final rule to specifically address this comment.

12.0 RECORDKEEPING AND REPORTING

12.1 GENERAL BURDEN

Comment: Three commenters (IV-D-07, IV-D-08, IV-D-11) requested that the recordkeeping and reporting burden of the proposed rule be reduced. One commenter (IV-D-25) stated that the EPA should include all the provisions of the HON that reduce burden. One commenter (IV-D-18) contended that the cost of complying with "paperwork" requirements (monitoring, recordkeeping, and reporting) will exceed the cost of actually installing and operating air pollution control equipment.

Response: The EPA believes that the recordkeeping and reporting requirements in the final thermoplastics rule are the minimum necessary to determine compliance on a continuous basis. Because monitoring, recordkeeping, and reporting data are used directly to determine compliance, the EPA considers these requirements to be an integral part of this and all regulations developed under the Act. Consistent with the Paperwork Reduction Act, the EPA has attempted to reduce the burden of recordkeeping and reporting requirements to the maximum extent, while still maintaining the enforceability of the rule.

The monitoring, recordkeeping, and reporting provisions of the proposed rule were based on the concepts from the HON (i.e., batch process vents) or directly referenced the provisions of the HON (e.g., continuous process vents). Therefore, the EPA believes the benefits of the HON mentioned by the commenter were included in the proposed rule.

The EPA reviewed the monitoring, recordkeeping, and reporting provisions of the proposed rule and decided further reductions in the amount of information required to be monitored, recorded, or reported were possible. Two reports required at proposal, the Initial Notification and the

Implementation Plan, are not required in the final rule. As part of deleting these reports, the EPA added a new report, the Precompliance Report, to allow the owner or operator of an affected source to request an extension of compliance or to request approval to use alternative monitoring parameters, alternative continuous monitoring or recordkeeping, or alternative controls. At proposal, these items were submitted in the Implementation Plan. Overall, these changes, deleting the Initial Notification and the Implementation Plan and adding the Precompliance Report, result in a reduction of the reporting burden for the affected source.

The final rule has been changed to require, with one exception, that only hourly average values of continuously monitored values be recorded; the proposed rule required the monitoring and initial recording of all 15-minute values. The exception to this is that batch process vents must record each measured data value but are no longer required to calculate and record batch cycle averages. The reasons for this difference are discussed in more detail in Chapter 11.0 of this document.

The final rule also reduces the recordkeeping and reporting frequency of batch cycle records for those batch process vents required to comply with the batch cycle limitation. The final rule requires a record of the number and type of batch cycles every three months, as opposed to the requirement for daily records in the proposed rule. The final rule requires that every second Periodic Report include the batch cycle records for the previous 12-month period, as opposed to the requirement for quarterly reporting in the proposed rule. The EPA considers that the changes and clarifications made to the batch process vent monitoring, discussed in Chapter 11.0, also serve to reduce the overall burden. In addition to specific changes to the requirements, the final rule includes provisions for implementing a reduced recordkeeping program [§63.513(h) **[§63.1335(h)]**].

In summary, the EPA considers the final provisions related to monitoring, recordkeeping, and reporting to be the minimum required to demonstrate compliance with the rule.

12.2 RECORDKEEPING

Comment: Two commenters (IV-D-18, IV-D-25) supported the provisions which state that if each is recorded value is in compliance with the parameter monitoring level for an operating day, the affected source may simply record that fact and is not required to calculate a daily average value or batch cycle daily average value.

Response: These provisions have been retained in the final rule. Compliance with the parameter monitoring required by the rule is based on the daily average value of continuously monitored parameters. If all recorded values for a monitored parameter during an operating day are in compliance with the parameter monitoring level established in the Notification of Compliance Status or operating permit, the owner or operator may record this fact and forego calculating a daily average (or batch cycle daily average) value.

Comment: One commenter (IV-D-25) requested that manual recordkeeping be allowed in the final rule as it was in §63.151(g)(3) of the HON; however, the commenter (IV-D-25) wanted readings of the operating parameters to be allowed at 4-hour intervals for situations where the control device normally operates in steady-state.

Response: The proposed [§63.513(e)(3)] and final [§63.513(g)(2) **[§63.1335(g)(2)]**] rule allow non-automated monitoring and recording systems. These provisions state that manual reading and recording of operating parameters must be performed no less frequently than once per hour. These provisions are based on those found in §63.151(g)(3) of the HON. The decision to retain the hourly timeframe and to not switch to 4-hour intervals, as requested by the commenter, was made to ensure consistency with the continuous monitoring requirements requiring retention of hourly values for use in calculating the daily average values.

Comment: One commenter (IV-D-25) urged the EPA to reduce the recordkeeping requirements of the thermoplastics rule related to monitoring control devices in the same way as the HON requirements were reduced. Another commenter (IV-D-18) urged the EPA to eliminate "universal" recordkeeping requirements from the proposed rule. The commenter (IV-D-18) contended that these records demonstrate routine compliance and cannot be of assistance to the EPA in its enforcement role in cases where there have been no violations. The commenter (IV-D-18) stated that the records also have no value to the owner or operator after initial review has verified the absence of atypical conditions. The commenter (IV-D-18) stated that a missing data point demonstrating routine compliance could result in a fine of up to $25,000 per day for an affected source. The commenter (IV-D-18) provided 7 specific examples of ways the recordkeeping requirements of the rule could be reduced:

(1) Proposed §63.506-5(c) requires retention of records of all results of parameter monitoring for batch process vents. The commenter (IV-D-18) recommended that they only be required to keep the results that show an excursion.

(2) Proposed §63.506-5(f)(1) of the batch process vent provisions requires retention of all hourly records for flares. The commenter (IV-D-18) recommended that they only be required to keep the records that relate to pilot flame outages.

(3) Proposed §63.506-5(f)(3) of the batch process vent provisions requires retention of all hourly records of "whether" a flow indicator was operating and "whether" flow was detected. The commenter (IV-D-18) recommended that they only be required to keep records that show a diversion of flow.

(4) Proposed §63.513(f)(1) through (f)(3) requires retention of records of all monitored data values, or records of block average values for 15-minute or shorter periods. Then, if the daily average value shows compliance, the block average values or individual batch cycle average values must

be retained. The commenter (IV-D-18) claimed no records should have to be retained if there was not an excursion.

(5) Proposed §63.513(f)(4) states that if the daily average value shows noncompliance (i.e., an excursion occurred), all the data recorded on that operating day must be retained. The commenter (IV-D-18) regarded this as an excessive burden and requested that they only be required to retain the daily average value because this is all that would be needed to demonstrate a violation had occurred. The commenter (IV-D-18) contended that the short-term data points which make up the daily average value are unnecessary.

(6) Proposed §63.513(f)(5) requires retention of daily average values for 5 years, even if no violation occurred. The commenter (IV-D-18) disagreed with these provisions because if an excursion occurred, there are separate provisions requiring retention of the daily average value. If there was no excursion, the commenter contended that retention of the daily average values was unnecessary. The commenter (IV-D-18) recommended deleting these provisions in their entirety.

(7) Proposed §63.513(f)(6) states that if all measured values were within established limits, then the owner or operator could record that fact and retain the statement for 5 years. The commenter believed this was an excessive burden and that if all the measured values were within the established limits, records should not have to be kept.

Response: Under section 114(a) of the Act, owners or operators have the burden of demonstrating that each emission unit remains in compliance at all times. There must be a means of verifying compliance on a continuous basis. Regulations must, therefore, establish monitoring requirements that are capable of determining continuous compliance with the applicable standards. The EPA believes that the recordkeeping and requirements of the final thermoplastics rule are necessary to show compliance with the rule. The EPA will continue to require owners or operators to keep records, regardless or whether there was an excursion or not. These

records are necessary to prove compliance when no excursion has occurred. These records are also used to determine the severity of a violation and the extent of the penalty to be assessed once an excursion has occurred. If an excursion occurred and no records had been kept regarding the severity of the excursion, a maximum fine of up to $25,000 per day per control device could be assessed.

The EPA has made every effort to reduce the recordkeeping requirements of the final thermoplastics rule. The EPA reviewed the recordkeeping required by the proposed rule and has made even further reductions in the amount of information that is required to be recorded. For instance, as mentioned earlier, the final rule has been changed to require recording and retention of hourly average values of continuously monitored parameters. The proposed rule required recording 15-minute averages. Under the proposed rule, if the daily average value was above the minimum or below the maximum established levels (i.e., excess emissions occurred), the 15-minute values had to be retained; if the daily average value was within the established level, the 15-minute values could be converted to hourly averages and the hourly averages could be retained instead of the 15-minute averages. Upon reconsideration, the EPA found the proposed two-step process, of first computing and recording 15-minute averages, and then being allowed to convert them to hourly averages for record retention, to be burdensome and unnecessary. Hourly average values provide a sufficient record to support the calculation of the daily average value of a monitored parameter. Therefore, to reduce the recordkeeping burden, the final rule has been changed to specify that the value of the parameter must be measured at least once every 15 minutes, but only the hourly average must be recorded and retained. Further, only hourly averages must be retained, regardless of whether or not excess emissions occurred. The final rule does not require recording or retention of 15-minute average values. The 15-minute monitoring frequency is consistent with the General Provisions and previous NSPS and NESHAP for emission points

from similar industries. The monitoring and recordkeeping of control devices for batch process vents does not follow the above and is discussed in more detail in Chapter 11.0. Briefly, for batch process vents all measured data values are required to be retained in the same way that hourly block averages are retained for the monitoring of continuous process vents.

The final thermoplastics rule and the General Provisions to Part 63 require records to be kept for five years, which is consistent with the recordkeeping requirements of the operating permit program and other NESHAP. Storage of records for more than 5 years would be burdensome, and any compliance issues should be identified within 5 years. Furthermore, the statute of limitations for enforcement is 5 years so there is no reason to keep records for a longer period of time. For these reasons, the final rule continues to require the retention of records for 5 years.

The following paragraphs respond to the commenter's (IV-D-18) 7 examples of where the recordkeeping requirements of the proposed rule could be reduced.

In response to example 1, in the proposed [§63.506-5(c)] and final rule [§63.1326(c)], requires that documentation of information used to establish the parameter monitoring levels. This includes parameter monitoring data collected during performance tests. These provisions do not require that all results of parameter monitoring be kept for batch process vents as the commenter stated.

In response to example 2, proposed §63.506-5(f)(1) refers to table 8 of the proposed rule which requires monitoring for the presence of a flame at the pilot light. The provisions, which are in §63.506-5(e)(1) **[§63.1326(e)(1)]** of the final rule, require hourly records of whether the pilot flame was present.

In response to example 3, proposed §63.506-5(f)(3) [§63.1326(e)(3) of the final rule] requires hourly records of whether the flow indicator was operating and whether flow was detected during that period.

In response to example 4, proposed §63.513(f)(1) through (f)(3) [§63.513(d)(1) through (d)(3) **[§63.1335(d)(1) through (d)(3)]** of the final rule], the EPA has decided to remove the requirement to record 15-minute average values as required at proposal. As discussed earlier in this response, the EPA no longer finds it necessary to have a two-step process for calculating daily averages and 15-minute averages are no longer required. The EPA made this change to reduce the recordkeeping burden for continuously monitored parameters. The EPA is unable to require that records only be kept when an excursion occurs, as the commenter suggested.

In response to example 5, proposed §63.513(f)(4) [§63.513(d)(4) **[§63.1335(d)(4)]** of the final rule], the owner or operator is required to keep each measured data value or block average values if the daily average value is below the minimum level or above the maximum established level. As stated in the response to example 4, the EPA has already reduced the recordkeeping burden. However, for days when operating parameters are not in compliance, the EPA considers retaining each measured data value or the block average values to be essential and is unable to only require retention of the daily average value.

In response to example 6, proposed §63.513(f)(5) [§63.513(a) **[§63.1335(a)]** of the final rule], all records and reports required by the final rule are required to be kept for 5 years.

In response to example 7, §63.513(f)(6) of the proposed rule [§63.513(c)(6) **[§63.1335(c)(6)]** of the final rule], the EPA is unable to allow only a statement that a source is in compliance. Hourly values are required to be kept to demonstrate continuous compliance.

<u>Comment</u>: One commenter (IV-D-18) questioned whether the records of the individual measured data values monitored during a batch cycle would need to be retained if they are all within the approved range. The commenter (IV-D-18) maintained that the EPA should have no need for the measured data values if they are all within the compliance range and keeping them

would be a burden with no corresponding environmental value. The commenter (IV-D-18) requested that proposed §63.506-5(f)(2)(iv) be revised to state that the individual measured data values do not need to be kept. The commenter (IV-D-18) included suggested language.

Response: The provisions in §63.506-5(e)(2)(iii) **[§63.1326(e)(2)(iii)]** of the final rule state that an owner or operator may record that all recorded values for a monitored parameter during an operating day are above the minimum level or below the maximum level, instead of having to calculate and record a batch cycle daily average. The owner or operator must still keep the recorded values to allow the EPA to verify compliance. As discussed a previous response, the EPA must require records to verify compliance.

12.3 REPORTING

Comment: One commenter (IV-D-09) recommended clarifying changes to the Initial Notification provisions contained in §63.513(b)(1) of the proposed rule. The commenter (IV-D-09) stated that the references in the §63.513(b)(1) lead-in paragraph are in error [there is no §63.9(b)(6) of subpart A] or are not consistent with the Table 6 exclusion of §63.9(b) of subpart A. The commenter (IV-D-09) explained that a review of the provisions of proposed §63.513(b)(1) compared to §63.9(b) of subpart A quickly leads one to the conclusion that the exclusion in Table 6 is correct because proposed §63.513(b)(1) contains all the needed information. The commenter (IV-D-09) contended that the references in proposed §63.513(b)(1)(ii)(B) and (C) to "§63.5(d) of subpart A" are redundant to the provisions in §63.513(b)(2) and should be replaced by a reference to "paragraph (b)(2) of this section." The commenter (IV-D-09) included suggested language.

Response: The final rule has been changed to delete the requirement for an Initial Notification. This decision was made to eliminate duplicative requirements and reduce the recordkeeping and reporting burden of the final rule.

It was determined that the Initial Notification is not necessary for thermoplastic manufacturers because it would

duplicate information that will be available through the operating permit program. Major sources are required to obtain Title V operating permits, and the deadline for permit applications will be prior to the 3-year compliance deadline for the thermopolastics rule. The permit applications will identify that the thermoplastic plants are subject to this rule. Therefore, a separate Initial Notification would be duplicative and has been eliminated from the final rule.

Comment: One commenter (IV-D-09) supported allowing 150 operating days after the compliance date to submit the Notification of Compliance Status.

Response: The final rule has retained the provisions included at proposal allowing 150 days after the compliance date for submittal of the Notification of Compliance Status.

Comment: One commenter (IV-D-23) stated that the preamble to the proposed rule erroneously states that quarterly reporting of the number of batch cycles accomplished for Group 2 batch process vents would be required. The commenter (IV-D-23) explained that the proposed rule requires this information to be reported in every other semi-annual Periodic Report, which is an appropriate reporting frequency.

Response: In fact, the proposed rule did require quarterly reporting of the number of batch cycles accomplished for those Group 2 batch process vents with a batch cycle limitation. However, in an effort to reduce the reporting burden, the final rule requires submittal of the type and number of batch cycles accomplished and a statement that the Group 2 batch process vent is either in or out of compliance with the batch cycle limitation on an annual basis only.

Comment: One commenter (IV-D-25) contended that all routine (i.e., periodic) reports should be removed from the rule because they are redundant with the annual operating permit certification requirement. The commenter (IV-D-25) stated that these reports are merely a continuation of the reporting required prior to operating permits and their required annual certifications. The commenter (IV-D-25) recommended including in the rule that the annual

certification is required by the operating permit regulation. The commenter (IV-D-25) reminded the EPA that President Clinton has mandated a 25 percent reduction in paperwork.

Response: The periodic reporting system of semiannual reporting is in conformance with §70.5(c) of the operating permits program, which states that facilities are required to submit reports no less frequently than once every six months. The operating permits program contains monitoring, recordkeeping, and reporting requirements minimally sufficient for a facility to verify compliance and requires submittal of compliance certifications. The requirements in the operating permit program serve as a baseline minimum for all facilities subject to Title V. However, for facilities subject to other federal standards (e.g. NESHAP), more frequent or substantial monitoring, recordkeeping, and reporting may be necessary to certify compliance. Consequently, regulations developed under Title III, including the thermoplastics rule, will incorporate additional requirements that go beyond the minimal requirements contained in the operating permits program. Facilities must comply with only the most stringent requirements. Therefore, duplicate records or reports are not required.

Comment: One commenter (IV-D-09) recommended that the EPA clarify proposed §63.513(b)(6)(ii)(C) [lack of monitoring data] and correct the wording of §63.513(b)(5)(i)(A) [performance tests]. The commenter (IV-D-09) included suggested language.

Response: The EPA agreed with the suggestions and has made these changes to the final rule:

> §63.513(e)(6)(iii)(C) **[§63.1335(e)(6)(iii)(C)]**, Periodic Reports, now reads:
>
> (C) The periods when monitoring data were not collected shall be specified; and
>
> §63.513(e)(5)(i)(A) **[§63.1335(e)(5)(i)(A)]**, Notification of Compliance Status, now reads:

(A) ... For additional tests performed for the same kind of emission point using the same method, the results and any other required information shall be submitted, but a complete test report is not required.

Comment: Two commenters (IV-D-18, IV-D-25) suggested that §63.513(b)(7)(i) of the proposed rule be revised to state that the start-up, shutdown, and malfunction plan is not required to be routinely submitted to the Administrator. One commenter (IV-D-18) explained that these plans are massive and that it would be better to allow these plans to remain at the facility and be available for EPA inspection. The commenter (IV-D-18) requested that this requirement be moved from the reporting section to the recordkeeping section of the rule.

The other commenter (IV-D-25) stated that the requirement to document and report any deviation from the start-up, shutdown, and malfunction plan required in subpart A should be modified to only be required when the deviation results in the underlying control/recovery/emission limit not being met.

Response: The commenters are correct that the start-up, shutdown, and malfunction plan required by §63.10(d)(5) of subpart A is not required to be submitted to the Administrator. The provisions of the final rule have been changed to clarify that the start-up, shutdown, and malfunction plan should be kept onsite. If, at any time, the start-up, shutdown, and malfunction plan is not followed, this should be described and reported in the Periodic Report as specified in §63.513(e)(6)(iii)(E) **[§63.1335(e)(6)(iii)(E)]**.

With respect to the commenter's request to only document and report deviations from the start-up, shutdown, and malfunction plan when they result in a violation, the requirements in the final rule have not been changed. The EPA considers the documentation and reporting of all deviations to be necessary for the EPA to evaluate the adequacy of the start-up, shutdown, and malfunction plan. Because the owner or operator is allowed to add to the start-up, shutdown, and malfunction plan as needed, deviations that occur frequently can be added to the plan to avoid a repetitive recordkeeping

and reporting burden. Further, while a specific deviation may not result in a violation, it could be indicative of a problem that would eventually lead to a violation.

Comment: One commenter (IV-D-09) suggested that the Implementation Plan and the Emissions Averaging Plan submittal timing should not be tied to the affected sources operating permit application timing. The commenter (IV-D-09) noted that proposed §63.513(b)(3) and §63.513(b)(4) both reference the "operating permit application" in their lead-in paragraphs. The commenter (IV-D-09) explained that this concept was lifted from the HON rule. However, the commenter (IV-D-09) explained that this HON paragraph will most likely be revised by the HON technical correction notice to be published later in 1995 to exclude any reference to the operating permit application. The commenter (IV-D-09) stated that the original intent was to tie the submittal of the Implementation Plan or Emissions Averaging Plan to a certain time period measured from the compliance date, not an earlier date which might be imposed by an operating permit application submittal. The commenter (IV-D-09) explained that the owner or operator needs time to determine, plan, and design the means to achieve compliance with the rule, hence the practical timing deadlines in the amended HON make sense.

The commenter (IV-D-09) went on to explain that there may be times when the due date for submittal of an Implementation Plan is approximately the same as for submittal of an operating permit application. The commenter (IV-D-09) stated that under these circumstances, the owner or operator, in agreement with the permit authority, may submit the Implementation Plan information as part of the operating permit application. The commenter (IV-D-09) explained that in this case, the provisions of proposed §63.513 can and should be used to guide the applicant on the information to submit. The commenter (IV-D-09) clarified that removing the reference to the operating permit application from proposed §63.513(b)(3), Implementation Plan, would not forgo this combined submittal opportunity.

Response: In an attempt to reduce the reporting contained in the proposed rule, the EPA has removed the Implementation Plan requirements from the final thermoplastics rule. The EPA anticipates that the affected sources at a plant site subject to this rule would already have submitted an operating permit containing the same information.

The provisions for the Emissions Averaging Plan exclude any reference to timing of submittal of the operating permit application. Instead, the final rule requires submittal of the plan no later than 18 months before the compliance date. As the commenter stated, this prevents the Emissions Averaging Plan from having to be submitted by an earlier date imposed by the operating permit application.

13.0 POLYMER MANUFACTURING NSPS ADOPTED PROVISIONS FOR CONTINUOUS PROCESS VENTS AT PET AND POLYSTYRENE AFFECTED SOURCES USING CONTINUOUS PROCESSES

13.1 SELECTION OF STANDARDS

Comment: Four commenters (IV-D-08, IV-D-15, IV-D-18, IV-D-24) supported the proposal to modify the requirements specified in the Polymer Manufacturing NSPS (Part 60, Subpart DDD) to eliminate references to polystyrene and PET.

Response: The EPA agrees that affected sources should not be subject to the thermoplastics rule and another rule, and at proposal the EPA proposed to remove all reference to polystyrene and PET from the Polymer Manufacturing NSPS. However, upon review, the EPA has realized that the Polymer Manufacturing NSPS applies to both area and major sources. The EPA did not intend to forego the regulation of new or modified/reconstructed area sources producing polystyrene and PET. As a result, the EPA has withdrawn the proposed revisions to the Polymer Manufacturing NSPS. In the final rule, §63.501(i) **[§63.1311(i)]** specifies that affected sources (i.e., sources subject to the thermoplastics rule) producing PET or polystyrene that are also subject to the Polymer Manufacturing NSPS are required to comply only with the thermoplastics rule and are no longer subject to the Polymer Manufacturing NSPS.

Comment: Two commenters (IV-D-08, IV-D-24) requested that polystyrene affected sources using a continuous process be given the maximum amount of flexibility by allowing them the option to comply with either proposed §63.505(a), which is based on the HON, or proposed §63.505(c), which is based on the Polymer Manufacturing NSPS. The commenters (IV-D-08, IV-D-24) stated that both are equivalent to the MACT floor, as

determined by the EPA, and, therefore, both are appropriate compliance options.

Response: The final rule continues to require continuous process vents in the material recovery section at continuous polystyrene affected sources to meet the provisions based on the Polymer Manufacturing NSPS (i.e., §63.505-2 **[§63.1316]**). The EPA disagrees with the commenter's statement that the requirements for continuous process vents from the HON and the Polymer Manufacturing NSPS are equivalent. In fact, the EPA found the Polymer Manufacturing NSPS requirements to have the potential to be more stringent than the HON (see Chapter 6.0 of Basis and Purpose Document [EPA-453/R-95-004a, March 1995]). Further, because the Polymer Manufacturing NSPS was found to be equivalent to the MACT floor for these affected sources (also discussed in Chapter 6.0), the EPA must require compliance with the Polymer Manufacturing NSPS requirements in order to set a standard at least as stringent as the MACT floor.

Comment: Three commenters (IV-D-08, IV-D-18, IV-D-24) objected to the proposed requirement to control continuous process vents from material recovery sections at continuous polystyrene affected sources regardless of their emission rate. One commenter (IV-D-29) stated there were no applicability criteria for these continuous process vents in the proposed rule. Another commenter (IV-D-18) encouraged the EPA to implement a group determination procedure for continuous process vents in the material recovery section of continuous polystyrene affected sources.

One commenter (IV-D-18) provided an example illustrating their objection. The commenter (IV-D-18) stated that a process condenser is used to collect liquids in the material recovery section of a continuous polystyrene process. The commenter (IV-D-18) explained that the system normally operates at a negative pressure, which is achieved by a small vacuum pump. In order to prevent air from being pulled into the system by the vacuum, a continuous stream of nitrogen is used to blanket the tank below the process condenser. As a

result of the nitrogen blanket, the exhaust of the vacuum pump contains a high concentration of nitrogen along with a small amount of HAP. If the dilute exhaust vent on the vacuum pump required emission controls, the equipment would be very large and very costly. The cost of controlling the dilute stream would be significantly out of proportion with respect to the minimal amount of emission reduction that would be achieved.

Response: The proposed and final rules, which are modeled after the provisions in the Polymer Manufacturing NSPS, do not require each continuous process vent in the material recovery section to be controlled. The requirements of the proposed [§63.506(c)] and final rule [§63.1316(c)] provide for a compliance option of maintaining emissions from continuous process vents within the material recovery section at or below an emission rate of 0.0036 kg organic HAP/Mg of product. This may allow some continuous process vents to go uncontrolled as long as the overall emission rate of the material recovery section is at or below 0.0036 kg organic HAP/Mg of product. However, other compliance options that allow an owner or operator to potentially take advantage of existing control devices do require the control of each individual continuous process vent. Paragraphs §63.505-2(c)(1)(iii)(B) and (C) **[§63.1316(c)(1)(iii)(B) and (C)]** of the final rule allow an owner or operator to comply by using a boiler/process heater or a flare. An owner or operator choosing to comply with either of these paragraphs would be required to control each and every continuous process vent within the material recovery section.

The proposed and final rules do not contain applicability criteria for continuous process vents from continuous polystyrene affected facilities because the MACT floor was found to be equivalent to the emission limits in the Polymer Manufacturing NSPS (see Chapter 6.0 of the Basis and Purpose Document [EPA-453/R-95-004a, March 1995]). Because the emission limits from the Polymer Manufacturing NSPS are part of the MACT floor, all affected sources are required to meet the emission limits, regardless of the cost effectiveness of

controlling any one continuous process vent. On the other hand, the proposed and final provisions for continuous process vents within material recovery sections from existing continuous PET affected sources using a dimethyl terephthalate process do contain applicability criteria. For these continuous process vents, the MACT floor was found to be less stringent than the requirements in the Polymer Manufacturing NSPS. Because the Polymer Manufacturing NSPS requirements are more stringent than the MACT floor for this subcategory, they have been implemented with the use of applicability criteria to ensure that only those material recovery sections that are cost effective to control are required to be controlled.

Comment: Two commenters (IV-D-08, IV-D-11) suggested a change to the provisions that allow compliance by limiting the final condenser outlet temperature. The commenters (IV-D-08, IV-D-11) explained that one of the compliance options, which is based on the Polymer Manufacturing NSPS, is to maintain a final condenser outlet temperature of -25 °C. One commenter (IV-D-11) explained that the reporting provisions from the Polymer Manufacturing NSPS state that this parameter boundary (i.e., -25 °C limit) is only exceeded when the average condenser operating temperature for a 3-hour period is more than 6 °C above (i.e., warmer) the average operating temperature established during the most recent performance test at which compliance was demonstrated.

Three commenters (IV-D-08, IV-D-15, IV-D-24) requested that the final thermoplastics rule incorporate those monitoring, test method, and recordkeeping and reporting requirements from the Polymer Manufacturing NSPS that provide this flexibility (i.e, the six degree window). Additionally, one commenter (IV-D-24) provided their interpretation and understanding of the monitoring, test method, and recordkeeping and reporting provisions of the Polymer Manufacturing NSPS. This commenter (IV-D-24) requested that their understanding be included in the promulgation preamble.

One commenter (IV-D-11) explained that affected sources using the final condenser outlet temperature compliance option

have experienced severe plugging and icing problems with their condensers during continuous operation below -25 °C. However, they are able to maintain effective operations when operating within a 6 °C window of approximately -25 to -19 °C. The commenter (IV-D-11) explained that because this six degree window provision is not included in the proposed rule, the proposed rule is more stringent the Polymer Manufacturing NSPS. The commenter (IV-D-11) requested that the proposed thermoplastics rule [§63.505(c)(2)(i)] be changed to state that the final condenser outlet temperature should never exceed a limit of -19 °C.

Response: The EPA intended for the requirements of the proposed rule to be equivalent to the Polymer Manufacturing NSPS. The EPA has revised the final rule to provide the flexibility found in the Polymer Manufacturing NSPS (i.e., the six degree window) for determining compliance with the final condenser outlet temperature limit.

In addition, the EPA has disassociated the six degree window from the results of the performance test and has instead associated it with the temperature limit of -25 °C. The final rule allows all owners or operators complying with the final condenser operating temperature limit to use -19 °C as the limit for their 3-hour averages. The EPA considered that as proposed, the provisions did not achieve an even-handed implementation because some affected sources would be allowed to have 3-hour averages at -19 °C while others would be limited to some colder value (e.g., -21 °C) because their performance test results indicated a temperature colder than -25 °C (e.g., -27 °C). The EPA also added other items from the Polymer Manufacturing NSPS monitoring, test method, and recordkeeping and reporting provisions as appropriate. These items appear in §§63.505-3 through 63.505-6 **[§§63.1317 through 63.1320]** of the final rule. The EPA chose to add provisions to the thermoplastics rule as opposed to incorporating the monitoring, test method, and recordkeeping and reporting provisions from the Polymer Manufacturing NSPS or referring to them; the EPA did not want affected sources

subject to both §63.505-1 and §63.505-2 **[§63.1315 and §63.1316]** to be required to comply with two sets of similar, but not identical, monitoring, test method, recordkeeping, and reporting provisions.

Comment: Two commenters (IV-D-17, IV-D-20) supported including the Polymer Manufacturing NSPS adopted provisions in the proposed rule provided that only organic HAP are regulated and not total organic compounds. The commenters (IV-D-17, IV-D-20) contended that requiring the regulation of only organic HAP provides greater control flexibility at lower costs, while achieving equivalent emission reductions. The commenters (IV-D-17, IV-D-20) stated that industry is already familiar with their suggested approach and initial and ongoing compliance and monitoring costs will be less with this approach.

Another commenter (IV-D-18) asked the EPA to remove the requirements to express total organic compound emissions from polystyrene TPPUs as the sum of the actual compounds and allow the use of carbon equivalents instead. The commenter (IV-D-18) maintained it can be very difficult to analyze and speciate all the components in a gas stream. The commenter (IV-D-18) explained that Method 18, which is required by the proposed rule, is the method normally used when speciating compounds. However, the commenter (IV-D-18) stated that this method is very difficult to use if the stream has numerous components. Additionally, the commenter (IV-D-18) contended, the burden of speciating each compound, just to add them all together again, is substantial and is not supported by a corresponding environmental benefit. The commenter (IV-D-18) explained that Method 25A is an equivalent method that could be used to determine non-speciated total organic compound emissions. The commenter (IV-D-18) noted that Method 25A is accepted by EPA in numerous NSPS regulations and can provide the same assurance of compliance, even though it does not quantify each individual compound. Based on further contact with the commenter, the EPA understands the primary concern of

the commenter to be the potential requirement to conduct speciated testing for an unending number of compounds.

Response: The EPA has restricted the provisions from the Polymer Manufacturing NSPS, as adopted for the thermoplastics rule [§63.505-2 **[§63.1316]**], to regulate only organic HAP in order to stay within the mandate of the MACT standards program, which is to regulate organic HAP.

Because, with one exception, the best controlled existing sources were meeting the requirements of the Polymer Manufacturing NSPS, these requirements represent the MACT floor for these continuous process vents. Because the MACT floor analysis only considered the control of organic HAP and the best controlled existing sources were meeting the emission limits in the Polymer Manufacturing NSPS, these emission limits have been retained without modification, even though they are being used to regulate organic HAP and not TOC. For the one exception, which is the set of continuous process vents within the material recovery section at existing affected sources producing PET using a continuous DMT process, the threshold emission rate, which serves as an applicability cutoff, was required for implementing the Polymer Manufacturing NSPS emission limits in the thermoplastics rule. Because the available emissions data show that the regulated organic HAP are the only emissions from these continuous process vents, the threshold emission rate value was not changed and is expressed as kg organic HAP/Mg product.

Addressing the testing concerns raised by one commenter, the definition of organic HAP in the final rule specifies the organic HAP that are regulated for each subcategory. These and other organic HAP identified by the owner or operator of an affected source are the only organic HAP regulated by the rule for the subcategory. The previous definition of organic HAP included all compounds from the CAA list of 189 that were commonly considered to be organic. It is this previous definition that led the commenter to consider the potential testing burden to be unreasonable.

One commenter suggested allowing the use of Method 25A as a way to alleviate the testing burden. As discussed previously in Chapter 1.0, Section 1.2, the EPA has judged it reasonable to allow compliance demonstrations and some applicability determinations to be based on emissions of total organic compounds (TOC). As part of adding this flexibility, the EPA also has allowed the use of Method 25A, which measures TOC. The final rule allows owners or operators to make applicability determinations and demonstrate compliance with the Polymer Manufacturing NSPS adopted provisions [§63.505-2 **[§63.1316]]** based on TOC, and the use of Method 25A is allowed.

Comment: One commenter (IV-D-10) requested clarification on the intent of the term "limit" when used in proposed §63.505(c)(2)(i) and (c)(2)(ii). The commenter (IV-D-10) was uncertain whether the requirement is zero emissions or emission reduction, as specified in the HON.

Response: The EPA intended for the term "limit" to be associated with the emission standards presented in the same paragraph or the emission standards referred to by the same paragraph. In both proposed §63.505(c)(2)(i) and (c)(2)(ii), the text goes on to identify an emission standard. For example, §63.505(c)(2)(i)(A) of the proposed rule specifies that emissions shall not exceed 0.0036 kg TOC/Mg of product. Alternatively, §63.505(c)(2)(ii) of the proposed rule refers to another paragraph within the section which itself refers to emission standards outside of the proposed subpart (e.g., the HON provisions for continuous process vents in subpart G). In either case, the EPA means for the term "limit" to mean "limit emissions per the emission standards identified by the paragraph."

Comment: One commenter (IV-D-10) requested clarification on the intent of the term "limit" when used in proposed §63.505(c)(2)(ii). The commenter (IV-D-10) was uncertain whether the requirement to limit emissions from batch and other continuous process vents, and any batch process vent from the material recovery section, suggests that all of these

process vents would have to be physically separated and controlled to demonstrate compliance.

Response: The paragraph cited by the commenter, now §63.505-2(c)(2) and (c)(3) **[§63.1316]** in the final rule, requires the owner or operator to control continuous process vents not subject to proposed §63.505(c)(2)(i) [§63.505-2(c)(1) **[§63.1316]** of the final rule] by complying with the HON provisions. Proposed §63.505(c)(2)(ii) also requires the owner or operator to control batch process vents by complying with proposed §63.506. The EPA does not see a basis for the commenter's concern that the cited paragraph requires all of the process vents in the TPPU to be physically separated and controlled. Neither proposed §63.506, the batch process vent provisions, nor the HON provisions specify that individual process vents must be "physically separated and controlled." These provisions do require that owners or operators demonstrate compliance for individual process vents, but they do not require that unique control devices be used to achieve control.

13.2 APPLICABILITY

Comment: Two commenters (IV-D-17, IV-D-20) stated that, according to their interpretation of the definition of "affected source" as applied to the PET process, the affected source would be the collection of all process units at a site that produce PET from TPA or DMT using either a batch or continuous process. Further, the commenters (IV-D-11, IV-D-17, IV-D-20) stated that the continuous process vent provisions of proposed §63.505(b) specify that the emission limits apply to owners or operators of an affected source. The commenters (IV-D-11, IV-D-17, IV-D-20) stated that this regulatory construction implies that the continuous process vent emission limits apply to the collection of all material recovery sections, raw material preparation sections, and polymerization sections, respectively, within an affected source and not to each individual line as under the Polymer Manufacturing NSPS. The commenters (IV-D-11, IV-D-17,

IV-D-20) supported this approach and believed it should be clarified in the final rule.

The commenters (IV-D-11, IV-D-17, IV-D-20) stated that applying the emission limits more broadly will simplify the compliance demonstration, monitoring, recordkeeping, and reporting requirements of the rule. Further, this will simplify the administrative burden and lower compliance costs while achieving the same level of emission reductions. Additionally, the commenters (IV-D-11, IV-D-17, IV-D-20) stated, this approach will avoid the burden of allocating emissions from shared vessels to individual lines; often, vessels in the material recovery and/or raw material preparation sections of PET plants serve more than one continuous polymerization line. Also, explained the commenters (IV-D-11, IV-D-17, IV-D-20), because the control requirements in this rule are the same for new and existing affected sources, this broader definition will result in the same level of emission reduction as line-by-line compliance.

Response: The EPA disagrees with the commenters interpretation of the proposed provisions, but the EPA agrees that a broader implementation of the Polymer Manufacturing NSPS adopted provisions will simplify compliance while achieving the same emission reductions. Therefore, the final rule applies the emission limits adopted from the Polymer Manufacturing NSPS [§63.505-2 **[§63.1316]**] to the collection of all material recovery sections, raw material preparation sections, or polymerization reaction sections, as appropriate, within an affected source. For example, a plant site has five polystyrene TPPUs using a continuous process, all with independent material recovery sections. Because all five TPPUs are part of the same affected source, the emission limit applies to the collection of continuous process vents within the five material recovery sections. [Note: Chapter 2.0 discusses the concept of affected source in detail.] In another example, a plant site has three continuous PET TPPUs. One TPPU uses a DMT process and has independent process sections (i.e., material recovery and polymerization

reaction). The other two TPPUs use a TPA process and share a raw material preparation section and have independent polymerization reaction sections. At this plant site, there are four process sections subject to the provisions. Because the PET TPA TPPU and the PET DMT TPPU are separate affected sources, the owner or operator cannot combine the polymerization reaction sections from all three TPPUs. Therefore, there are two process section within the PET DMT TPPU (i.e., material recovery section and polymerization reaction section), and there are two process sections within the two PET TPA TPPUs (i.e., raw material preparation section and polymerization reaction section).

The misinterpretations of the definition of affected source and the applicability of the Polymer Manufacturing NSPS adopted provisions represented in the provided comments are addressed below.

The EPA acknowledges that the definition of affected source in the proposed rule was unclear. As discussed in Chapter 2.0 of this document, the definition of affected source and the applicability provisions of the rule have been revised. Paraphrasing the final rule, the affected source has been defined as the group (i.e., one or more) of TPPUs manufacturing the same thermoplastic product as their primary product; the definition of TPPU states that the primary product of a TPPU is a thermoplastic product; and thermoplastic product is defined as one of the 19 subcategories covered by this rule. In other words, an affected source contains one or more TPPUs producing the same thermoplastic product (i.e., one of the 19 subcategories) as their primary product. With this understanding of the affected source, the commenters' statement that the affected source would be "the collection of all process units at a site that produce PET from TPA or DMT using either a batch or continuous process" would no longer be a valid interpretation; the commenter is mixing subcategories within an affected source. Using the commenters' words, the affected source would be, for example, (1) the collection of all process units

at a site that produce PET from DMT using a continuous process or (2) the collection of all process units at a site that produce PET from TPA using a continuous process. Under the final rule, the affected source would not be the combination of (1) and (2).

The commenters stated that the emission limits adopted from the Polymer Manufacturing NSPS apply to the affected source. The EPA acknowledges that this portion of the rule was unclear. In the Polymer Manufacturing NSPS, the provisions apply to each affected facility, which is defined as each process section (e.g., material recovery section). The intent of the proposed rule was to be similar to the Polymer Manufacturing NSPS and require each process section to meet the emission limits. However, as stated above, the final rule will apply the emission limits to the affected source (i.e., the collection of process sections within an affected source).

Finally, by stating that "because the control requirements are the same for new and existing sources... will result in the same level of emission reduction as line-by-line compliance," the commenters inferred that existing and new TPPUs will be part of the same affected source. The EPA has determined that existing and new TPPUs will not be part of the same affected source; the provisions of proposed §63.500(g) were not clear on this point. The final [§63.1310(i)] rule states that if a TPPU with the same primary product as TPPUs already present at a plant site is added to the plant site and the added TPPU emits greater than 25 tpy of organic HAP or greater than 10 tpy of any individual organic HAP, the added TPPU is a separate affected source.

Comment: Two commenters (IV-D-17, IV-D-20) requested clarification on which provisions apply to paste feed tanks and additive mixing tanks. The commenters (IV-D-17, IV-D-20) explained that these tanks are involved in preparing raw materials and catalysts for polymerization. One commenter (IV-D-11) stated that paste feed tanks and additive mixing tanks at thermoplastic manufacturing facilities could be

regulated as process vents under proposed §63.505(b) (i.e., the Polymer Manufacturing NSPS adopted provisions) or as surge control vessels under proposed §63.509 (i.e., the equipment leak provisions).

Another commenter (IV-D-07) requested modification of the definition of raw materials preparation section. The commenter (IV-D-07) stated that the definition excludes certain operations that are traditionally considered part of feed preparation. For example, the commenter (IV-D-07) explained that mixing and dissolving should be added to the list of activities specified in the definition. Alternatively, the commenter (IV-D-07) suggested making it clear that the unit operations list includes, but is not limited to, the activities cited.

Response: Two issues related to the definition of raw material preparation section were raised by the commenters. First, commenters expressed concern that paste feed tanks and additive mixing tanks may be regulated as process vents under the Polymer Manufacturing NSPS adopted provisions or as surge control vessels under the equipment leak provisions of this rule (i.e., §63.509 **[§63.1331]**). For two reasons, these tanks will not be regulated under the Polymer Manufacturing NSPS adopted provisions. First, these tanks do not meet the definition of continuous process vent, which are the only emission points regulated by said provisions. Second, careful reading of the emissions standard for the raw material preparation section [§63.505-2(b)(2)(i) **[§63.1316(b)(2)(i)]**] reveals that only emissions from the continuous process vents associated with the esterification vessels are subject to the emission limit. On the other hand, it is possible that these tanks could be regulated as surge control vessels, but the commenter did not provide enough information to make a definitive assessment.

Second, one commenter requested that the definition of raw material preparation section be expanded to include activities such as mixing and dissolving. Because the only emissions regulated are those from the continuous process

vents associated with the esterification vessels, the EPA does not find it necessary to specifically include the activities of mixing and dissolving in the definition. However, the EPA does not consider the definition to be written to exclude any activities and considers the phrase "otherwise treated" to be adequate to include these activities.

Comment: One commenter (IV-D-10) stated that the definitions of raw materials preparation section, polymerization reaction section, and material recovery section do not adequately define the limits of the process to be regulated.

For example, one commenter (IV-D-10) stated that the definition of "storage vessel" would suggest that raw material storage tanks might be considered part of the affected source. However, the proposed definition for "raw materials preparation section" specifically excludes "...the storage of raw materials." The commenter (IV-D-10) believed the EPA does intend that raw material storage vessels be part of the affected source and suggested that one way of including these storage vessels is to modify the definition of "thermoplastic product process unit" as follows: ..."connected by pipes and ducts to store, deliver and process raw material...".

Response: The purpose of the "section" definitions is to define those equipment subject to the Polymer Manufacturing NSPS adopted provisions. The purpose of these definitions is not to define the entire process or affected source. In fact, the Polymer Manufacturing NSPS requirements do not cover large portions of the process. For example, the raw materials preparation section is not regulated at PET affected sources using a DMT process. The final rule has not been modified to address this specific comment.

Comment: One commenter (IV-D-04) stated that it appears the EPA has not considered which emission limitation applies to continuous process vents associated with recovery equipment that is clearly part of the material recovery section but which is also used to recover ethylene glycol from the polymerization reaction section. The commenter (IV-D-04)

stated that it appears the EPA has envisioned two distinct recovery operations; one servicing the polymerization reaction section and one servicing the material recovery section. When, in fact, the recovery operations in the materials recovery section may also be used to purify material (e.g., ethylene glycol) from the polymerization reaction section. For example, the commenter (IV-D-04) explained, there may be instances where solvent recovered from the polymerization reaction section is sent directly to the material recovery section, mixed with other material (e.g., methanol) in a single vessel, and then sent to a series of stills designed to separate the methanol and ethylene glycol from the recovered process streams. The commenter (IV-D-04) recommended that the EPA either establish a process for determining which emission limitation applies when material from the polymerization reaction section is recovered in the material recovery section or make continuous process vents from these "shared" operations subject to proposed §63.505(a) (i.e., the HON provisions). The commenter (IV-D-04) stated that if the EPA decided to establish a process for determining which emission limitation applies, such a process be submitted for public comment prior to promulgation of the final rule. [Note: The Polymer Manufacturing NSPS did not identify this particular situation when being developed.]

Response: The EPA agrees with the commenter that, as defined in the proposed rule, it was unclear in which process section these continuous process vents should be placed.

The EPA considered two options for dealing with this specific situation and others like it. First, allow the affected source and permitting authority to work out a case-by-case answer. Second, considering the definitions of the process sections involved and the relative stringency of the emission limits for each process section, the EPA could designate the described continuous process vents as being part of a particular process section. The EPA considered the first option and decided not to select it because it would be

difficult to ensure an even-handed implementation of the provisions, and it would increase the burden on the affected source and the permitting authority. The EPA considered the second option and judged that designating a particular process section was reasonable. The EPA considered the relative stringency of the two emission limits as the primary factor in making a selection because it would provide the most protection to the environment. The EPA considered the emission limit for the polymerization reaction section (0.020 kg organic HAP/Mg of product) to be more stringent than the emission limit for the material recovery section (0.018 kg organic HAP/Mg of product) because there is no threshold emission rate, which serves as an applicability cutoff, associated with the polymerization reaction section. Therefore, the EPA decided that equipment that would be included in both the material recovery section and the polymerization reaction section based on the definitions would be subject to the provisions for the polymerization reaction section. The definition of material recovery section has been modified to provide for this determination. The commenters requested that if a process for determining the applicability of recovery equipment was developed, that the EPA submit it for public comment. Because the EPA has made a set decision as opposed to developing a decision-making process, the EPA does not consider it necessary to submit it for public comment.

Comment: Three commenters (IV-D-17, IV-D-20, IV-D-22) requested clarification of the phrase "...other parts of the process..." in proposed §63.505(b)(2)(iii) and (b)(3)(iii) of the continuous process vent provisions. One commenter (IV-D-22) stated that this phrase offers opportunity for misinterpretation. The commenter (IV-D-22) suggested the phrase "auxiliary equipment" as an alternative and requested further clarification in §63.502, definitions. Two commenters (IV-D-17, IV-D-20) stated that post-polymerization steps (e.g., spinning or extrusion) should be excluded from the rule

to specifically eliminate inconsistent interpretation of the phrase "other parts of the process."

Response: The EPA considers the proposed [§63.505(b) and (c)] and final rules [§63.505-2 **[§63.1316]**] to be clear on what process vents are covered by the Polymer Manufacturing NSPS adopted provisions. The definitions of raw materials preparation section, polymerization reaction section, and material recovery section, which were discussed previously, describe the purpose of and/or process for the equipment included in each process section; only continuous process vents that are part of one of these three process sections are covered by the Polymer Manufacturing NSPS adopted provisions. By default, those process vents not covered by the Polymer Manufacturing NSPS adopted provisions are subject to §63.505-1 or §63.506 **[§63.1315 or §63.1321]**, as appropriate. For example, process vents in the raw materials preparation section of a continuous PET affected source using a DMT process are not covered by the Polymer Manufacturing NSPS adopted provisions and would be covered by either §63.505-1 or §63.506 **[§63.1315 or §63.1321]**.

To improve the clarity of these provisions, the EPA has restructured §63.505 of the proposed rule, which implements the HON provisions and the Polymer Manufacturing NSPS adopted provisions. The provisions contained in §63.505 of the proposed rule are found in §§63.505-1 through 63.505-6 **[§§63.1315 through 63.1320]** of the final rule. While this restructuring serves many purposes, one of them is that the restructured provisions provide an opportunity to clarify what is meant by "process vents from other parts of the process." For example, in the final rule if paragraph x imposes a Polymer Manufacturing NSPS adopted emission limit, subparagraph y will say "continuous process vents not subject to paragraph x are subject to §63.505-1 **[§63.1315]**" (i.e., the HON requirements), and subparagraph z will say "batch process vents are subject to §63.506 **[§63.1321]**."

The final rule implements the HON requirements in §63.505-1 **[§63.1315]**, the Polymers Manufacturing NSPS adopted

emission limits in §63.505-2 **[§63.1316]**, and monitoring, testing, recordkeeping, and reporting requirements specific to the Polymer Manufacturing NSPS adopted provisions in §63.505-3 through 63.505-6 **[§63.1317 through 63.1320]**.

Commenters requested that post-polymerization steps, such as spinning and extrusion, be specifically excluded from the rule. These steps were never intended to be covered by the rule and to ensure clarity, these processes were exempted from the affected source in §63.500(d) **[§63.1310(d)]**.

Comment: One commenter (IV-D-07) considered the definition of material recovery section to be confusing. The commenter (IV-D-07) noted that as part of their polystyrene materials recovery they have several tanks that store recovered styrene condensate. They expressed concern that the definition of "materials recovery section" could be interpreted to classify these storage tanks as process vents. The commenter (IV-D-07) suggested clarifying the definition by: (1) deleting the reference to process section and process line unless these terms are defined, (2) ensuring that storage tanks and surge control vessels are not captured by the material recovery section definition, (3) clarifying the boundaries between the raw material preparation, polymerization reaction, and material recovery sections, and (4) removing any disincentives to pollution prevention and internal recycling in the definition.

Response: The EPA has revised the definitions related to the Polymer Manufacturing NSPS adopted provisions to address this commenter's concerns, as well as other issues found during internal EPA review. The EPA considers that these modifications address three of the commenter's concerns. First, process section has been defined in the final rule, and the term process line is no longer used in the definitions of raw material preparation section, material recovery section, and polymerization reaction section. Second, an exemption has been added to the definition of material recovery section to exclude "equipment used to store recovered materials." Third, in response to a previous comment, the EPA modified the

definition of material recovery section to clarify the boundary between the material recovery section and the polymerization reaction section, specifically related to equipment used to recover ethylene glycol and other (i.e., methanol) materials. In addressing the fourth comment, the EPA does not find any disincentives to pollution prevention or internal recycling to exist in the definitions.

The EPA considers these modifications sufficient to address the commenter's general concerns, as well as their specific concern with tanks storing recovered condensate.

13.3 DEMONSTRATION OF COMPLIANCE

Comment: One commenter (IV-D-21) recommended that the final rule allow the use of engineering assessments to demonstrate compliance with the Polymer Manufacturing NSPS adopted provisions, as allowed in §63.115(d)(1) of the HON. [Note: §63.115(d)(1) of the HON allows an owner or operator to use engineering assessments to demonstrate that the TRE value (i.e., the applicability criteria) for a continuous process vent is greater than 4.0.] The commenter (IV-D-21) noted that the proposed rule requires testing to determine applicability of the standard. The commenter (V-D-21) explained this would mean testing would be required even if credible engineering assessments show that emissions are well below the threshold emission rate. The commenter (IV-D-21) asserted that this extensive testing is unnecessary and imposes unjustified expense and delay on polymer and resin production facilities. [Note: Proposed §63.505(b)(2)(i) contains a threshold emission rate. If emissions from the material recovery section at an existing PET affected source using a DMT continuous process are at or below this value, control of continuous process vent emissions is not required. Process §63.511(d), which refers to proposed §63.505(b)(2)(i), requires a performance test based on Method 18 to determine whether emissions for an affected source are above or below the threshold emission rate.]

Response: The EPA agrees with the commenter that, in certain circumstances, engineering assessments should be

allowed for determining applicability. Therefore, the EPA has modified the final rule to allow the use of engineering assessments to demonstrate that emissions from the material recovery section at existing PET affected sources using a DMT continuous process are less than or equal to the threshold emission rate of 0.12 kg organic HAP/Mg of product in certain circumstances. Like the HON, which only allows the use of engineering assessment to demonstrate that a continuous process vent is not subject to the provisions within a certain range (i.e., a TRE value greater than 4.0), the final rule only allows the use of engineering assessments to demonstrate that emissions are less than or equal to 0.07 kg organic HAP/Mg of product. If engineering assessment shows that emissions are greater than 0.07 kg organic HAP/Mg of product, and the owner or operator wishes to demonstrate that emissions are below the threshold emission rate of 0.12 kg organic HAP/Mg of product, testing is required as specified in §63.505-4(b) **[§63.1318(b)]**. The value of 0.07 kg organic HAP/Mg of product is the approximate midpoint between the emission limit (i.e., 0.018 kg organic HAP/Mg of product) and the threshold emission rate. The EPA felt this value provided an appropriate measure of flexibility to owners and operators while ensuring compliance with the standard.

Comment: One commenter (IV-D-09) objected to the requirement in proposed §63.511(d)(2) that production rate be determined by direct measurement of polymer pulled. The commenter (IV-D-09) explained that this would require the polymer produced during the testing to be weighed. The commenter (IV-D-09) went on to say this would result in an unnecessary and additional cost because production rates are not normally obtained through direct product measurement. The commenter (IV-D-09) explained that production rate is normally determined by raw material charges into the process reactor or is based on extruder throughput. The production rate can be easily and accurately calculated based on raw material charge weights and extruder yield histories. The commenter (IV-D-09) recommended that the normal method for determining production

rate should be allowed without prior approval of the Administrator.

Response: The EPA agrees with the commenter, and the final rule allows the rate of polymer produced to be determined by alternate means without prior approval of the Administrator. To support this change, the final rule requires that the owner or operator selecting an alternate means of determining polymer produced submit the methodology to be used, including all data, assumptions, and procedures required by the methodology, as part of the Notification of Compliance Status.

13.4 MISCELLANEOUS

Comment: Two commenters (IV-D-17, IV-D-20) stated that proposed §63.505(b)(1) is redundant to proposed §63.505(b) and, therefore, a more descriptive introduction is needed in proposed §63.505(b)(1) to reduce confusion.

Response: As discussed in a previous response, §63.505 of the proposed rule has been restructured to improve the clarity of these provisions. This restructuring has addressed the commenter's concern.

14.0 OTHER

Comments that did not fit into the other chapters have been summarized and responded to here.

Comment: One commenter (IV-D-18) supported the differentiation between Group 1 and Group 2 emission points for storage vessels, process vents, and wastewater streams. The commenter (IV-D-18) stated that it made the rule more cost effective by not requiring controls for Group 2 emission points.

Response: The Group 1/Group 2 concept has been retained in the final rule.

Comment: One commenter (IV-D-12) maintained that equipment suitable for cost effective control of organic HAP emissions from TPPUs is widely available. The commenter (IV-D-12) emphasized that the equipment is capable of meeting the removal efficiencies specified in the proposed rule for process vents, wastewater, and storage vessels in both new and retrofit applications.

One commenter (IV-D-02) explained that catalytic oxidation is an available, cost effective control option which can be designed to achieve in excess of 98 percent VOC reductions. The commenter (IV-D-02) stated that this technology can be used to comply with the VOC aspects of the rule.

Response: The thermoplastics rule is written as a performance standard so that any control device may be used if it can meet the performance requirements. Nothing in the proposed or final rule precludes any technology as long as it can achieve the level of emission control required by the rule. The EPA even provides provisions for alternative control technologies and promotes innovative control strategies.

Comment: One commenter (IV-D-25) recommended that all control device efficiency requirements have associated with them the same 20 ppm concentration alternative that is associated with the continuous process vent provisions in the proposed rule. The commenter (IV-D-25) stated that the HON and the proposed Petroleum Refinery NESHAP both contain this alternate concentration limit for process vent control devices. The commenter (IV-D-25) believed that 20 ppm may represent the lower bound of the theoretical kinetic limit; as the inlet concentration drops, the control efficiency drops and the outlet concentration levels off.

Response: The EPA agrees with the commenter and, therefore, the final rule provides the 20 ppm concentration alternative for all control device efficiency requirements associated with continuous process vents, wastewater operations, and storage vessels. The EPA did not allow the 20 ppm concentration alternative for batch process vents because the emission standard for batch process vents is not an instant-in-time limit, but rather a set emission reduction for a given event (i.e., 90 percent reduction for the batch cycle).