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

Basis and Purpose Document for Proposed Standards

NESHAP

EPA-453/R-95-004a

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

Basis and Purpose Document for Proposed Standards

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 Document for Proposed 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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TABLE OF CONTENTS

Page

1.0 PURPOSE OF DOCUMENT 1-1

2.0 INTRODUCTION 2-1

3.0 DESCRIPTION OF THE AFFECTED INDUSTRY 3-1

3.1 DESCRIPTION OF PROCESSES AND SOURCES OF HAP EMISSIONS 3-5

4.0 RATIONALE FOR THE SELECTION OF SOURCE CATEGORIES, SUBCATEGORIZATION, AND EMISSIONS AVERAGING 4-1

4.1 RATIONALE FOR THE SELECTION OF SOURCE CATEGORIES 4-1
4.2 RATIONALE FOR SUBCATEGORIZATION 4-1
4.3 EMISSIONS AVERAGING 4-9

5.0 BASELINE EMISSIONS 5-1

6.0 MACT FLOORS AND REGULATORY ALTERNATIVES 6-1

6.1 CLEAN AIR ACT REQUIREMENTS 6-1
6.2 DETERMINATION OF MACT FLOORS 6-3
6.3 RESULTS OF MACT FLOOR DETERMINATION 6-15

7.0 SUMMARY OF ENVIRONMENTAL, ENERGY, COST, AND ECONOMIC IMPACT 7-1

7.1 FACILITIES AFFECTED BY THESE NESHAP 7-1
7.2 PRIMARY AIR IMPACTS 7-3
7.3 NON-AIR ENVIRONMENTAL 7-5
7.4 ENERGY IMPACTS 7-5
7.5 COST IMPACTS 7-7
7.6 ECONOMIC IMPACTS 7-9

8.0 SELECTION OF THE STANDARDS 8-1

8.1 SUMMARY OF THE PROPOSED STANDARDS 8-1
8.2 RATIONALE FOR THE SELECTION OF EMISSION POINTS TO BE COVERED BY THE PROPOSED STANDARDS . 8-44
8.3 RATIONALE FOR THE SELECTION OF THE PROPOSED STANDARDS 8-44
8.4 RATIONALE FOR THE SELECTION OF THE FORMAT OF THE PROPOSED STANDARDS 8-103

TABLE OF CONTENTS (Concluded)

Page

8.5 RATIONALE FOR THE SELECTION OF COMPLIANCE AND PERFORMANCE TEST PROVISIONS AND MONITORING REQUIREMENTS 8-107
8.6 RATIONALE FOR THE SELECTION OF PARAMETER MONITORING AND COMPLIANCE CERTIFICATION PROVISIONS 8-116
8.7 RATIONALE FOR THE SELECTION OF RECORDKEEPING AND REPORTING REQUIREMENTS 8-119
8.8 OPERATING PERMIT PROGRAM 8-126

9.0 REFERENCES 9-1

LIST OF TABLES

		Page
TABLE 3-1	THERMOPLASTIC PRODUCTION FACILITIES	3-2
TABLE 3-2	THERMOPLASTIC PRODUCTION PROCESSES BY SUBCATEGORY	3-12
TABLE 5-1	BASELINE ORGANIC HAP EMISSIONS FOR EXISTING SOURCES	5-2
TABLE 5-2	BASELINE ORGANIC HAP EMISSIONS FOR NEW SOURCES	5-4
TABLE 5-3	MAJOR HAZARDOUS AIR POLLUTANTS EMITTED BY SUBCATEGORY	5-6
TABLE 6-1	MACT FLOOR ANALYSIS FOR EXISTING SOURCES	6-17
TABLE 6-2	MACT FLOOR ANALYSIS FOR NEW SOURCES	6-19
TABLE 6-3	SUMMARY OF MACT FLOOR STRINGENCY	6-22
TABLE 7-1	ORGANIC HAP EMISSIONS AND EMISSION REDUCTIONS	7-4
TABLE 7-2	SUMMARY OF COST IMPACTS	7-8
TABLE 8-1	SUMMARY OF PROPOSED STANDARDS FOR EXISTING SOURCES IN RELATIONSHIP TO SUBPARTS G AND H OF 40 CFR PART 63 AND THE POLYMERS NSPS	8-8
TABLE 8-2	SUMMARY OF PROPOSED STANDARDS FOR NEW SOURCES IN RELATIONSHIP TO SUBPARTS G AND H OF 40 CFR PART 63 AND THE POLYMERS NSPS	8-11
TABLE 8-3	PROPOSED STANDARDS FOR EXISTING STORAGE VESSELS	8-15
TABLE 8-4	PROPOSED STANDARDS FOR NEW STORAGE VESSELS	8-16
TABLE 8-5	SUMMARY OF PROPOSED PROCESS VENT APPLICABILITY CRITERIA FOR EXISTING FACILITIES	8-22
TABLE 8-6	SUMMARY OF PROPOSED PROCESS VENT APPLICABILITY CRITERIA FOR NEW FACILITIES	8-23
TABLE 8-7	PROPOSED WASTEWATER APPLICABILITY CRITERIA	8-31
TABLE 8-8	REGULATORY ALTERNATIVE IMPACTS FOR EXISTING POLYSTYRENE CONTINUOUS FACILITIES	8-60
TABLE 8-9	REGULATORY ALTERNATIVE IMPACTS FOR EXISTING TPA CONTINUOUS FACILITIES	8-66
TABLE 8-10	REGULATORY ALTERNATIVE IMPACTS FOR EXISTING TPA BATCH FACILITIES	8-70
TABLE 8-11	REGULATORY ALTERNATIVE IMPACTS FOR EXISTING DMT BATCH FACILITIES	8-73
TABLE 8-12	REGULATORY ALTERNATIVE IMPACTS FOR EXISTING DMT BATCH FACILITIES	8-77

LIST OF FIGURES

Page

FIGURE 3-1 SIMPLIFIED FLOW DIAGRAM FOR THE THERMOPLASTICS MANUFACTURING PROCESS 3-6

FIGURE 4-1 THERMOPLASTICS SUBCATEGORIZATION 4-6

1.0 PURPOSE OF DOCUMENT

The Basis and Purpose Document provides background information on, and rationale for, decisions made by the Environmental Protection Agency (EPA) related to the proposed standards for the reduction of hazardous air pollutants (HAP) emitted through the production of seven source categories of thermoplastics (Group IV Polymers and Resins). These source categories include 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. This document is intended to supplement the preamble for the proposed standards.

This document is separated into 8 chapters providing a combination of background information and rationale for decisions made in the standards development process. Chapters 2, 3, 5, and 7 provide background information; chapter 2 is an introduction, chapter 3 describes the affected industry, chapter 5 presents the baseline organic HAP emissions, and chapter 7 presents the predicted impacts associated with the selected regulatory alternatives.

Chapters 4, 6, and 8 provide rationale for subcategorization, determination of MACT "floors" and development of regulatory alternatives, and rationale for the selection of the proposed standards, respectively.

Supporting information and more detailed descriptions of certain analyses are contained in the memoranda referenced in this document, the Supplementary Information Document (SID), the preamble, and the project docket.

2.0 INTRODUCTION

Section 112 of the Clean Air Act (Act), as amended in 1990, gives the EPA the authority to establish national standards to reduce air emissions from sources that emit one or more HAP. Section 112(b) contains a list of HAP to be regulated by National Emission Standards for Hazardous Air Pollutants (NESHAP), and Section 112(c) directs the EPA to use this pollutant list to develop and publish a list of source categories for which NESHAP will be developed. The EPA must list all known source categories and subcategories of "major sources" that emit one or more of the listed HAP. A major source is defined in section 112(a) as any stationary source or group of stationary sources located within a contiguous area and under common control that emits, or has the potential to emit, in the aggregate, considering controls, 10 tons per year or more of any one HAP or 25 tons per year or more of any combination of HAP. This list of source categories was published in the Federal Register on July 16, 1992 (57 FR 31576), and includes the following six source categories:

- Acrylonitrile butadiene styrene resin,
- Styrene acrylonitrile resin,

- Methyl methacrylate acrylonitrile butadiene styrene resin,
- Methyl methacrylate butadiene styrene resin,
- Polystyrene resin, and
- Poly(ethylene terephthalate) resin.

A seventh source category, nitrile resin is being proposed as an addition to the source category list.

The products manufactured by facilities in these seven source categories are called thermoplastics.[a] A thermoplastic is a resin that softens with heat and rehardens to a rigid material upon cooling, without generally showing any change in the physical properties of the thermoplastic, even through repeated heating and cooling.[1] Thermoplastics are composed of high-molecular-weight polymers which are synthesized from monomers; the thermoplastics covered in these seven source categories, with one exception, use styrene monomer as the basic feedstock.

The thermoplastics produced by the seven source categories listed above are used in the manufacture of goods such as packaging materials and containers, polyester fibers, electrical insulation, automotive components,

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[a] While the term "thermoplastic" is used throughout this document and other background materials for the proposed NESHAP to describe the products produced by the seven source categories listed above, these products only make up a subset of the wide range of polymers generally referred to as thermoplastics.

furniture, radio and television components, housewares, appliances, wall tiles, and x-ray film.

3.0 DESCRIPTION OF THE AFFECTED INDUSTRY

The seven source categories covered under the proposed rule have been grouped together because of similarities in process operations, emission characteristics, and control device applicability and costs. These seven thermoplastic source categories are collectively referred to as the Group IV polymers and resins or the Group IV thermoplastics.

The EPA identified a total of 66 plant sites producing one or more of the seven thermoplastics. All of the facilities considered in the analysis supporting the proposed rule are believed to either be a major source or to be located at a plant site that is a major source.

Table 3-1 identifies the known producers of the seven thermoplastics, along with their facility locations. The thermoplastics manufacturing facilities covered in the scope of this NESHAP are located in 23 States, including South Carolina, North Carolina, Ohio, Illinois, Alabama, Pennsylvania, Texas, Tennessee, Massachusetts, and California.

TABLE 3-1. THERMOPLASTIC PRODUCTION FACILITIES

Source Category	Company	Location
PET	Wellman	Darlington, SC
PET	YKK	Macon, GA
PET	Tennessee Eastman	Kingsport, TN
PET	3M	Greenville, SC
PET	BASF	Lowland, TN
PET	Hoechst Celanese	Greer, SC
PET	DuPont	Kinston, NC
PET	DuPont	Old Hickory, TN
PET	Hoechst Celanese	Spartanburg, SC
PET	DuPont	Cape Fear, NC
PET	DuPont	Brevard, NC
PET	DuPont	Florence, SC
PET	DuPont	Circleville, SC
PET	Allied Signal	Moncure, NC
PET	DuPont	Cooper River, SC
PET	ICI Films	Hopewell, VA
PET	Hoechst Celanese	Shelby, NC
PET[a]	Carolina Eastman	Columbia, SC
PET[a]	Shell	Apple Grove, WV
PET[a]	Eastman Kodak	Rochester, NY
PET[a]	Hoechst Celanese	Salisbury, NC
PET[a]	ICI Films	Fayetteville, NC
PET, Polystyrene	3M	Decatur, AL
Polystyrene	Scott Polymers	Saginaw-1, TX
Polystyrene	Huntsman Chemical	Chesapeake, VA
Polystyrene	Novacor Chemicals	Decatur-1, AL
Polystyrene	Novacor Chemicals	Decatur-2, AL

TABLE 3-1. THERMOPLASTIC PRODUCTION FACILITIES (Continued)

Source Category	Company	Location
Polystyrene	Novacor Chemicals	Indian Orchard, MA
Polystyrene	Huntsman Chemical	Belpre, OH
Polystyrene	Huntsman Chemical	Peru, IL
Polystyrene	Scott Polymers	Saginaw-2, TX
Polystyrene	Rohm and Haas	Philadelphia, PA
Polystyrene	Kama	Hazelton, PA
Polystyrene	Huntsman Chemical	Rome, GA
Polystyrene	Scott Polymers	Fort Worth, TX
Polystyrene	Arco Chemical	Monaca, PA
Polystyrene	BASF	Holyoke, MA
Polystyrene	BASF	Santa Ana, CA
Polystyrene	BASF	Joliet, IL
Polystyrene	Arco Chemical	Painesville, OH
Polystyrene	Amoco Chemical	Willow Springs, IL
Polystyrene	American Polymers	Oxford, MA
Polystyrene	Amoco Chemical	Joliet, IL
Polystyrene	Amoco Chemical	Torrance, CA
Polystyrene	Fina Oil & Chemical	Carville, LA
Polystyrene	BASF	South Brunswick, NJ
Polystyrene	Dow Chemical	Joliet, IL
Polystyrene	Dow Chemical	Riverside, MO
Polystyrene	Chevron Chemical	Marietta, OH
Polystyrene	Dart Container	Owensboro, KY
Polystyrene	Dart Container	Leola, PA
ASA/AMSAN, Polystyrene	GE Plastics	Selkirk, NY
Polystyrene, ABS	Dow Chemical	Hanging Rock, OH

TABLE 3-1. THERMOPLASTIC PRODUCTION FACILITIES (Continued)

Source Category	Company	Location
Polystyrene, ABS	Dow Chemical	Torrance, CA
Polystyrene, ABS	Dow Chemical	Allyn's Point, CT
Polystyrene, ABS	Dow Chemical	Midland, MI
ABS	BF Goodrich	Akron, OH
ABS	GE Plastics	Ottawa, IL
ABS, MABS	GE Plastics	Washington, WV
ABS, SAN	Monsanto	Muscatine, IA
ABS, SAN, Polystyrene	Monsanto	Addyston, OH
MBS	Rohm and Haas	Louisville, KY
MBS	Elf Atochem	Axis, AL
MBS	Kaneka Texas Corp.	Pasadena, TX
Nitrile	BP Chemicals	Lima, OH
SAN	GE Plastics	Bay St. Louis, MS

[a] These facilities also use a solid state process.

3.1 DESCRIPTION OF PROCESSES AND SOURCES OF ORGANIC HAP EMISSIONS

Polymerization processes are used to manufacture thermoplastics. A simplified process flow diagram of the thermoplastics manufacturing process is provided in Figure 3-1. Subsequent paragraphs describe the polymerization process in general and the typical emission points.

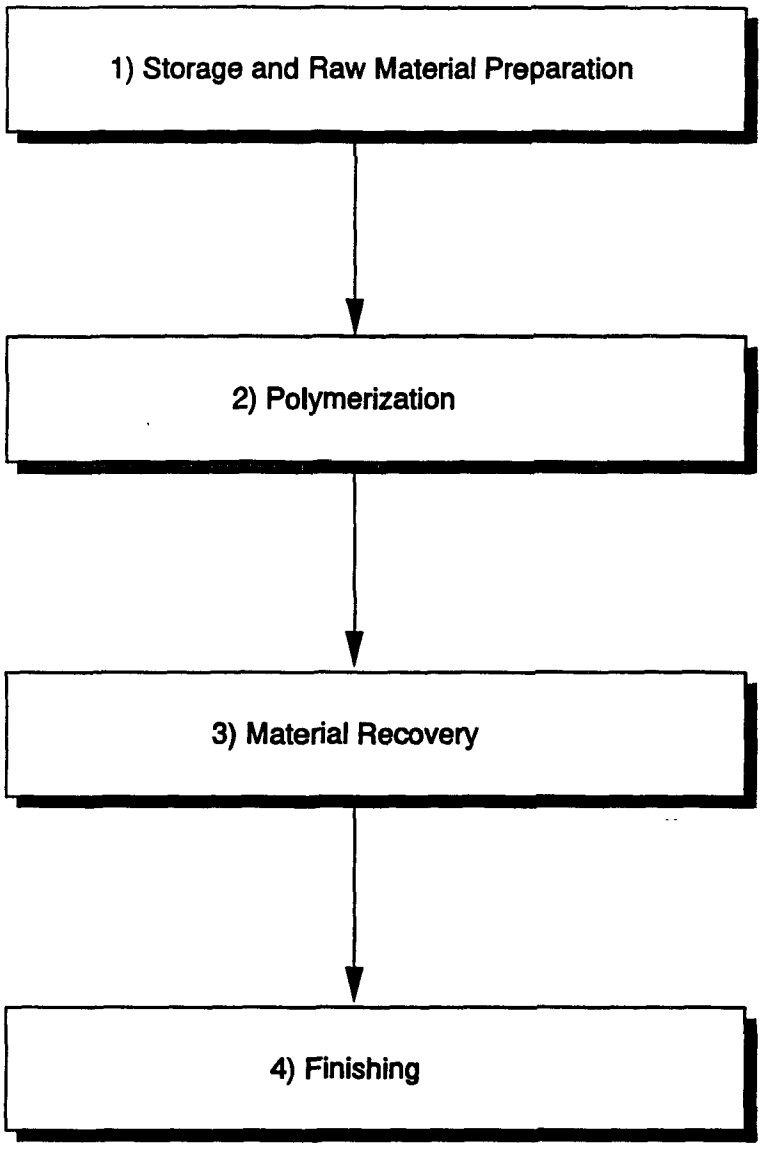

Figure 3-1. Simplified Flow Diagram for the Thermoplastics Manufacturing Process

3.1.1 General Process Description

In polymerization, a large number (hundreds to thousands) of relatively simple molecular units, or monomers, are chemically combined to form a macromolecule, or polymer. Polymer manufacturing can be divided into four areas: (1) raw material storage and preparation, (2) polymer formation in a reactor (3) material recovery, and (4) finishing. The basic raw materials for polymerization are monomers and either solvents or water.

Four types of polymerization are generally used in the thermoplastics manufacturing industry: emulsion, suspension, mass, and solution. In emulsion polymerization, monomers are dispersed in water using a soap solution or an emulsifier. In suspension polymerization, the monomer is suspended in a water phase. In mass polymerization, monomers are reacted without the use of emulsifiers, suspending agents, salts or waters, although a solvent may be used. In solution polymerization, monomers are dissolved in an organic solvent. The production of PET does not fall under any of these four types of polymerization (see the process description memo for PET in the SID in Category II-B of the docket).

Following polymerization, any unreacted monomer, solvent or other material is recovered/removed by stripping, devolatilizing, or through some other means. Finally, finishing operations may consist of blending, aging,

coagulation (to produce solid polymers), washing, and drying processes, depending on the eventual use of the polymer.

3.1.2 Description of Emission Points

Five types of organic HAP emission points are commonly found at thermoplastic production facilities: storage of pure organic HAP used as raw materials, process-related emissions (process vents and process fugitives), waste and wastewater collection and treatment operations, equipment leaks (pumps, valves, connectors, etc), and heat exchange systems to include process contact cooling towers. Emissions from raw material atmospheric storage vessels typically occur as working and breathing losses. Residual concentrations of organic HAP are usually very low in intermediate and finished thermoplastics products and, as a result, emissions from product storage tanks are negligible.

Process-related organic HAP emission points include vents from raw material preparation, monomer polymerization, material recovery, and finishing operations. In addition, significant fugitive emissions can occur during the finishing and drying of solid polymer products. Emissions from the reactors in the polymerization area may occur during initial charging of the reactants and/or during the polymerization reaction. These emissions may be steady or sporadic, depending on the mode of process operation (i.e., continuous or batch), and generally contain organic HAP monomer(s) and/or solvent. The organic HAP concentration in

reactor vent emissions can be relatively high, due to the high concentrations of unreacted monomer and solvent present in the reactor.

Process vent streams from stripping unit operations can have high organic HAP concentrations, but they are usually routed to a material recovery device that recovers the valuable monomer or solvent for re-use.

Finishing emissions can be associated with coagulation tanks, slurry or blending tanks, and dewatering screens and filters. The organic HAP concentrations in finishing area process vent streams are much less than the concentrations in reactor or stripper vent streams. Dryer vents are often the largest source of process vent emissions from thermoplastics production. These process vents are characterized by low concentrations of organic HAP, but very large volumetric flowrates.

The emissions from many of the finishing and drying operations are not completely captured or vented to traditional vent stacks. This type of emission is referred to as process fugitive emissions. Finishing operations are often located in large warehouse-type buildings, and process fugitive emissions are removed from the work space through roof fans and other general building ventilation.

Equipment leaks occur primarily at connections between different equipment components. The characteristics of these emissions for the thermoplastics industry are similar

to those associated with the synthetic organic chemical manufacturing industry (SOCMI), which are discussed in greater detail in the final preamble to the Hazardous Organic NESHAP (HON) (59 FR 19402; April 22, 1994). Emissions from equipment leaks associated with operations downstream from coagulation equipment will be minimal, due to the low residual organic HAP content in the streams.

Wastewater streams containing organic compounds may be generated during thermoplastic production. Sources of wastewater containing organic HAP include the monomer refining, stripping, material recovery, and finishing processes. While the largest wastewater generation is associated with the finishing process, the concentration of organic HAP in finishing wastewater is usually very low, because residual organic HAP have been removed during the stripping of the raw product. Heat exchange systems, including process contact cooling towers, can be used in the production of thermoplastics. Heat exchange systems are emission points if either (1) a non-contact heat exchange system develops a leak, or (2) a process contact heat exchange system, typically a process contact cooling tower, is used. Both non-contact and process contact heat exchange systems are known to be used by the industry.

3.1.3 Summary of Processes

Table 3-2 shows the types of processes that were identified to be in use at active facilities in each source

category. Although other types of processes that produce these products were described in the literature, no plants were identified that actively used these other processes.

TABLE 3-2. THERMOPLASTIC PRODUCTION PROCESSES BY SUBCATEGORY

	Emulsion	Suspension	Mass	Solution	Other
Acrylonitrile Butadiene Styrene Production	✓	✓	✓		
Styrene Acrylonitrile Production	✓	✓	✓		
Methyl Methacrylate Acrylonitrile Butadiene Styrene Production	✓				
Methyl Methacrylate Butadiene Styrene Production	✓				
Polystyrene Production	✓	✓	✓	✓	
Nitrile Production	✓				
Poly(ethylene terephthalate Production[a]					✓

[a] Poly(ethylene terephthalate) production cannot be classified under one of these four polymerization types. For more information on the Poly(ethylene terephthalate) process, see the memo entitled "Process Description for Poly(ethylene terephthalate) Resins" contained in Docket A-92-45, Category II-B and in the SID.

A description of each manufacturing process, and of organic HAP emission points for each of the seven thermoplastics, with the exception of nitrile resins, is contained in the process description memorandum found in the docket (Docket No. A-92-45, Category II-B) and is included as part of the SID.

4.0 RATIONALE FOR THE SELECTION OF SOURCE CATEGORIES, SUBCATEGORIZATION, AND EMISSIONS AVERAGING

4.1 RATIONALE FOR THE SELECTION OF SOURCE CATEGORIES

Six of the seven source categories selected for the development of the proposed rule are listed in the source category list published on July 16, 1992 (57 FR 3156). Information gathered during the development of the proposed rule indicated that all of the facilities in these six source categories are major sources. The seventh source category, nitrile resins, is included under the proposed rule because information obtained during the information gathering phase of the project demonstrated that it was similar to the other source categories included in this group, especially the styrene-based facilities. In addition, the one facility identified as producing nitrile resins was also determined to be a major source.

4.2 RATIONALE FOR SUBCATEGORIZATION

4.2.1 Subcategorization Results

In developing standards, the EPA has the discretion to distinguish or segregate classes, types, and sizes of sources within a source category and, conversely, to aggregate among similar source categories. Criteria that may be considered in defining categories of similar sources include similarities in process operations (including

differences between batch and continuous operations), emissions characteristics, control device applicability and costs, safety considerations, and pollution prevention opportunities.

How source categories are defined is important because it dictates the basis upon which the "floor" is to be determined for a maximum achievable control technology (MACT) standard. Put another way, the definition of source category describes the "pool" of facilities that can be used to define the MACT floor. (Note: Facility is the term used in the 1990 Amendments definition of the MACT floor.) This means that the MACT floor must be determined on the same basis upon which source category is defined. The definition of source category is also important in that it limits the scope of emissions averaging; collocated emission points cannot emissions average unless they belong to the same source category.

Within four of the seven listed thermoplastic production source categories, significant variations in production methods and/or raw material usage exist. Therefore, for purposes of the proposed rule, the EPA has split these four categories -- ABS, SAN, polystyrene, and PET -- into subcategories.

The major distinction within most source categories is that some facilities use a batch operation, while other facilities use a continuous operation. This difference

often gives rise to very different process emission stream characteristics, which can affect the type of control device most suitable for control. For example, process vents from continuous operations are often characterized by fairly consistent pollutant concentrations, while process vents from batch operations are often characterized by widely varying pollutant concentrations during the emission event. Another distinction was made in the PET industry based on whether dimethyl terephthalate (DMT) or terephthalic acid (TPA) is used as a raw material. When DMT is used, a large amount of methanol is generated as a by-product, mainly during the esterification process step. This methanol is captured and recovered on-site. The TPA process does not generate methanol as a by-product. The generation of methanol, therefore, results in the presence of methanol recovery equipment and greater esterification emissions at DMT facilities.

In determining the definition to select for source category, the EPA considered the similarities and dissimilarities discussed above, and, to a much lesser degree, the amount of collocation of processes (i.e., subcategories) at each facility and the potential for emissions averaging.

The EPA concluded that subcategorization was not necessary in three of the thermoplastic source categories (MABS, MBS, and nitrile resin). Only three facilities were

found to produce MBS and the process used did not vary significantly. Only one facility was found to produce MABS and only one to produce nitrile.

In summary, four of the seven thermoplastic source categories were subcategorized creating a total of 18 separate subcategories.[b] These subcategories are:

- PET resin using a continuous TPA process,
- PET resin using a batch TPA process,
- PET resin using a continuous DMT process,
- PET resin using a batch DMT process,
- polystyrene resin using a continuous process,
- polystyrene resin using a batch process,
- expandable polystyrene (EPS) resin,
- ABS resin using a continuous emulsion process,
- ABS resin using a continuous mass process,
- ABS resin using a batch emulsion process,
- ABS resin using a batch suspension process,
- ABS latex resin,
- SAN resin using a continuous process,
- SAN resin using a batch process,

---

[b] For the purposes of this document, the term "subcategory" will be generally used to describe the group of sources that were analyzed together. In fact, these groups of sources can be either sources belonging to a single source category as defined in the EPA's original list, sources belonging to a source category that is proposed to be added to the EPA's list, (i.e., nitrile sources) or sources belonging to a subcategory.

- acrylonitrile styrene acrylate/alpha methyl styrene acrylonitrile (ASA/AMSAN) resin,
- MABS resin,
- MBS resin, and
- nitrile resin.

Figure 4-1 contains a schematic of subcategorization for the thermoplastic source categories.

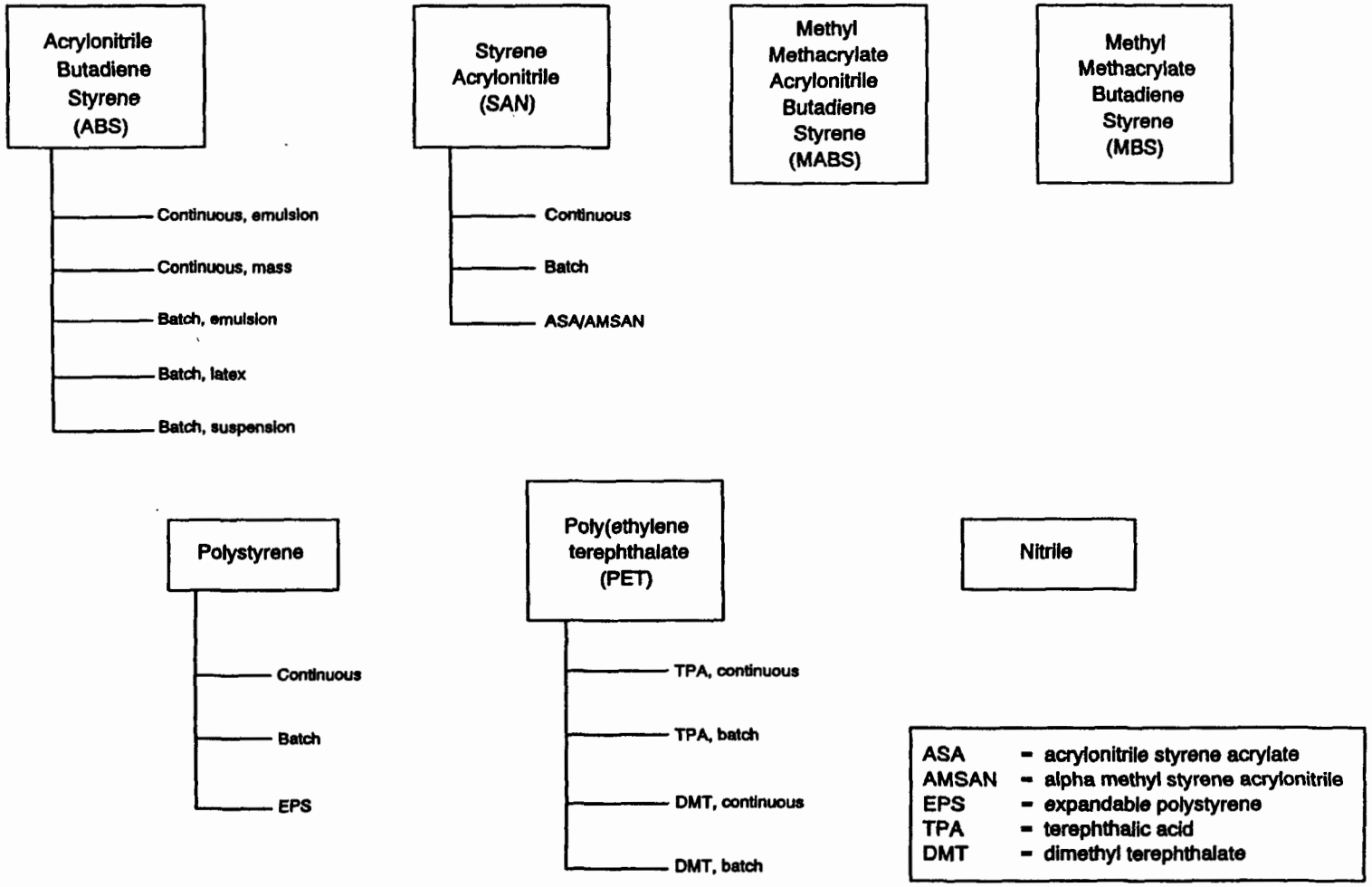

Figure 4-1. Thermoplastics Subcategorization

4.2.2 Options for Source Categories

In determining how to aggregate or distinguish among the seven source categories, the EPA considered four options. The four options considered were: (1) the subcategory (e.g., ABS production using a continuous mass process); (2) the source category (e.g., ABS production regardless of the process); (3) three groupings of source categories (styrene-based resin production, nitrile resin production, and PET production); and (4) a single "super" source category composed of all seven thermoplastic source categories. The EPA selected the subcategory option (Option 1) for the reasons discussed below.

The "super" source category option (Option 4) was rejected for two reasons. First, creating a "super" source category would have grouped too many dissimilar processes together, which would have resulted in MACT floor determinations inappropriate for/not representative of some of the processes. This is especially true when combining the styrene-based resin processes with the PET processes. In addition, only one facility was identified as having both a styrene-based resin process and a PET process. Thus, this option offers minimal potential gain through emissions averaging. Second, the "super" source category option was not reasonable given the available data. Using this option would have discounted a large amount of data that showed distinctions between the subcategories. For these reasons,

the EPA rejected this option for defining the source categories.

Option 3, which creates three groups of source categories (styrene-based resins, nitrile, and PET), was rejected primarily because the grouping of all of the styrene-based resins has the potential, due to technological differences, to result in inappropriate/not representative MACT floors for some styrene-based resin processes. Further, while there is significant collocation between ABS and SAN facilities (both styrene-based resins), the overall amount of collocation within the styrene- based resins is relatively small. Less than 30 percent of styrene-based facilities produce thermoplastics using more than one of the processes as defined by 18 subcategories. For these reasons, the EPA rejected this option for defining source categories.

The source category option (Option 2) would be consistent with the source category listing, would provide some facilities additional opportunity to emissions average, and would avoid some of the problems of Options 3 and 4 by reducing the grouping of dissimilar processes. However, even within source categories, there are different process technologies and raw materials usage that make division of source categories into subcategories more defensible for determining MACT floors. In addition, most facilities would not have benefited from emissions averaging under Option 2.

Therefore, the EPA determined that the subcategory option (Option 1) was the best option for defining the source categories.

4.3 EMISSIONS AVERAGING

The proposed standards include provisions for emissions averaging that are essentially the same as those found in the HON. Under the proposed standards, emissions averaging would be allowed among collocated emission points at existing sources belonging to the same subcategory.

In considering the use of emissions averaging, the EPA agreed that emissions averages should achieve at least a comparable hazard and risk benefit to point-by-point compliance. Affected sources who elect to use emissions averaging must demonstrate, to the satisfaction of the implementing agency, that compliance through averaging would not result in greater hazard or risk than compliance without averaging. Further discussion of this topic may be found on pages 19427 and 19428 of the preamble to the final HON rule (59 FR 19402) promulgated on April 22, 1994.

As in the HON rule, for this proposed rule emissions averaging is not allowed as a compliance option for new sources. The decision to limit emissions averaging to only existing sources was based on the fact that new sources have historically been held to a stricter standard than existing sources. It is most cost effective to integrate state-of-the-art controls into equipment design and to install the

technology during construction of new sources. By allowing emissions averaging, existing sources have the flexibility to achieve compliance at diverse points with varying degrees of control already in place in the most economically and technically reasonable fashion. This concern does not apply to new sources which can be designed and constructed with compliance in mind. Therefore, emissions averaging is only allowed at existing sources. Further discussion of this topic may be found on pages 19426 and 19427 of the preamble to the final HON rule (59 FR 19402) promulgated on April 22, 1994.

While the EPA believes that there is limited potential for emissions averaging in this rule, the EPA did not want to exclude emissions averaging based on the available data and welcomes comments on whether or not to include emissions averaging for the Group IV thermoplastics. Commenters supporting emissions averaging are urged to submit specific information on how emissions averaging would benefit their facility. In addition, the EPA requests comment on ways the implementation of emissions averaging can be made more flexible without reducing the emission reductions. The EPA will consider all comments.

As stated previously, the emissions averaging provisions of this rule are essentially identical to the provisions contained in the HON. This rule has incorporated the emissions averaging constraints included in the HON that

are based on concerns expressed during the HON public comment period. The concerns are discussed in a supplementary Federal Register notice published on October 15, 1993; 58 FR 53479. These constraints include consideration of: (1) State discretion on emissions averaging, (2) inclusion of risk in averaging determinations, (3) compliance period for emissions averaging, (4) limit on number of emission points allowed in an average, and (5) effect of missing monitoring data/parameter exceedances on averaging. The EPA requests comment on whether it is appropriate to include these constraints in the proposed rule.

The EPA is including emissions from process contact cooling towers and vacuum system wastewater at existing PET facilities in the emissions averaging procedures being proposed under §63.510. As discussed in Chapter 8, the proposed standards would: 1) prohibit existing PET facilities from using cooling tower water in the contact condensers associated with vacuum systems, and 2) require the control of any wastewater stream containing organic HAP listed on Table 9 of the HON wastewater provisions, generated by the vacuum system containing organic HAP listed on Table 9 of the HON wastewater provisions, to the levels required for a Group 1 process wastewater stream. Control is required regardless of the organic HAP concentration and flowrate of the stream.

The proposed prohibition for cooling tower water would eliminate organic HAP emissions from the process contact cooling towers since the cooling tower water would not come in contact with the organic HAP generated by the process. If an owner or operator elected to comply with the proposed emissions averaging procedures, the owner or operator could elect not to eliminate process contact cooling tower water from the vacuum system. This would create a debit; that is, organic HAP emissions would now occur from the cooling tower, whereas under the proposed rule no organic HAP emissions would occur. Thus, the proposed emissions averaging procedures only include process contact cooling towers in the equation for the calculation of debits. On the other hand, since the proposed rule would eliminate organic HAP emissions from the cooling tower, there is no opportunity for an owner or operator to control cooling tower emissions to a level more stringent than the proposed rule. Thus, the proposed emissions averaging procedures for calculating credits do not include process contact cooling towers.

Under the proposed rule, the organic HAP that would otherwise have been contained in the cooling tower water and released from the cooling tower would now be contained in the vacuum system wastewater stream(s). The wastewater stream(s) would be required to be controlled regardless of the organic HAP concentration or flowrate, provided the

stream contains an organic HAP listed on Table 9 of the HON wastewater provisions. A group determination (Group 1/2) would not be made for these wastewater streams as would be for other process wastewater streams. The level of control being proposed for the vacuum wastewater streams is the same level of control required for Group 1 process wastewater streams.

As for other Group 1 process wastewater streams, the opportunity exists for vacuum system wastewater streams to be controlled either more stringently or less stringently than required. Thus, the opportunity exists for generating either credits or debits. The proposed emissions averaging procedures explicitly incorporate vacuum system wastewater streams into the credit and debit equations. In addition, since the proposed rule requires their control as if a group determination was conducted and they were found to be Group 1 process wastewater streams, vacuum system wastewater streams are classified as Group 1 for purposes of calculating debits and credits.

Emissions from batch process vents have been excluded from emissions averaging because there is no acceptable and satisfactory methodology available to quantify the emission reduction that would be gained or lost in an emissions averaging scheme. While there are methods presented in the proposed rule for determining emissions from batch process vents, the EPA does not find them adequate for the purposes

of emissions averaging. The EPA has judged that the accuracy and consistency needs of emission estimates for emissions averaging are greater than the accuracy and consistency needs for determining applicability of the batch process vent provisions. Further, the EPA has in the past excluded emissions associated with batch process vents from averaging schemes. Equipment leaks have also been excluded from emissions averaging because: (1) the proposed standard for equipment leaks has no fixed performance level; and (2) no method currently exists for determining the magnitude of allowable equipment leak emissions. Without an acceptable method to determine the magnitude of allowable emissions to assign for batch process vents and equipment leaks, an averaging approach that includes these two types of emission points has been considered technically infeasible.

Similar to the HON emissions averaging provisions, the proposed rule limits the number of emission points allowed in an emissions average. The concept for limiting the number of emission points is the same as the HON, but the exact number is different. The reasons for constraining the number of points to be included in emissions averaging are described on pages 19428 - 19429 of the preamble to the final HON rule (59 FR 19402) promulgated on April 22, 1994. 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. In addition, it was

noted that most affected sources will not find a large number of opportunities to generate cost-effective credits; thus, most averages were anticipated to involve a limited number of emission points, and imposing a limit should not affect most sources.

In selecting the number of points to allow in an emissions average for the proposed rule, differences in the definition of source category for the HON and the proposed rule were considered. The difference in the breadth of this definition is important because emissions averaging is on a source category/subcategory basis. The definition of source category in the HON includes the production of any chemical included on the HON list. Typically, facilities covered by the HON produce multiple chemicals in multiple process units at one plant site. The HON allows an affected source to include no more than 20 points in an emissions average; this is increased to 25 points where pollution prevention measures are used to control emission points to be included in an average. The 20- to 25-point limit would apply to the combination of all process units at a given facility. As discussed earlier in this chapter, the definition of source category for the proposed rule is more limited. The proposed rule has 18 subcategories, and the emissions averaging provisions apply to each subcategory separately. Emissions averaging is limited to emission points from a single subcategory within the facility. Some facilities

contain multiple subcategories; the maximum number of such collocated subcategories at any one facility is 6. Thus, if the HON emission point limit were directly applied to this rule, this plant site would be allowed to include 20 to 25 emission points per subcategory; combined, this would potentially equal a total of 120 to 150 emission points across six emissions averaging plans. Under a similar scenario under the HON, the same plant site could include only 20 to 25 emission points in one emissions averaging plan due to the breadth of the definition of source category for the HON. The EPA decided that the number of emission points allowed in the emissions averaging for the proposed rule needed to be made more in parity with the HON.

In deriving the numerical limit to include in the proposed rule, the EPA considered that the maximum number of collocated subcategories at one plant site is 6. In order to make the provisions included in the proposed rule in parity with the HON, the maximum number of emission points included in averaging for each subcategory (without pollution prevention controls) would need to be $20 \div 6 = 3\ 1/3$. This number seemed to be too small to allow sufficient practical consideration of averaging; thus, it was increased to 5. In addition, the proposed rule is similar to the HON in that it allows additional emission points to be included in the average if pollution prevention measures are used to control some emission points included

in the average. The proposed rule allows three additional emission points to be included in the average if pollution prevention measures are used. For example, if two points to be included in an average are controlled by the use of a pollution prevention measure, the facility can include up to 7 emission points in their emissions average for that subcategory.

In the preamble to the proposed rule, the EPA specifically requested comments on the selection of the limit (5, or 8 if pollution prevention measures are used) of emission points to be allowed per subcategory for purposes of emissions averaging in the proposed rule. The EPA inquired as to whether this limit will preclude known opportunities within actual facilities to generate cost-effective credits within a category or subcategory. The EPA requested that any comments on this issue address specifics on the emission and cost quantities computed and include detailed calculations and references to show how these quantities were determined.

5.0 BASELINE EMISSIONS

Baseline organic HAP emissions for the thermoplastic subcategories are presented in Tables 5-1 and 5-2. As shown in the table, the total nationwide estimated organic HAP emissions are over 24,780 megagrams per year (Mg/yr) for existing sources and 14,920 Mg/yr for new sources.

TABLE 5-1. BASELINE ORGANIC HAP EMISSIONS FOR EXISTING SOURCES

Baseline Organic HAP Emissions for Existing Sources (Mg/yr)						
Summary	Process Vents	Storage Vessels	Equipment Leaks (a)	Wastewater (b)	Cooling Towers	Total
ABS, Be	430	6	50	20	0	500
ABS, Bl	1	0	2	0	0	3
ABS, Bs	4	1	9	1	0	15
ABS, Ce	630	15	80	390	0	1,110
ABS, Cm	20	6	220	0	0	240
MABS	80	2	3	3	0	90
Nitrile	20	0	10	0	0	30
SAN, B	8	3	10	10	0	40
SAN, C	7	4	70	30	0	110
ASA/ AMSAN	0	0	90	5	0	100
MBS	50	3	130	10	0	190
EPS	15	3	430	0	0	450
PS, B	70	10	110	0	0	190
PS, C	260	60	1,120	5	0	1,440
PET TPA, C	1,090	3	2,030	1,310	1,660	6,090
PET TPA, B	570	1	90	35	620	1,320
PET DMT, C	535	80	2,150	580	1,140	4,480
PET DMT, B	1,290	100	1,190	110	5,690	8,390
TOTALS	5,060	310	7,790	2,510	9,110	24,790

[a] These values were determined by estimating equipment counts and applying SOCMI factors[2] adjusted according to LDAR programs.

Be = batch emulsion
Bl = batch latex
Bs = batch suspension
Ce = continuous emulsion
Cm = continuous mass
B = batch
C = continuous
PS = polystyrene

TABLE 5-2. BASELINE ORGANIC HAP EMISSIONS FOR NEW SOURCES

BASELINE ORGANIC HAP EMISSIONS FOR NEW SOURCES (Mg/yr)						
Subcategory[a]	Process Vents	Storage Vessels	Equipment Leaks[b]	Wastewater	Cooling Towers	TOTAL
ABS, B	10	0	20	1	0	30
ABS, Bl	0	0	0	0	0	0
ABS, Bs	5	1	6	1	0	10
ABS, Ce	120	1	40	240	0	400
ABS, Cm	0	2	90	0	0	90
MABS	0	0	0	0	0	0
Nitrile	0	0	0	0	0	0
SAN, B	5	3	10	3	0	20
SAN, C	0	1	40	0	0	40
ASA/AMSAN	0	0	0	0	0	0
MBS	15	0	4	1	0	20
EPS	0	0	0	0	0	0
PS, B	0	0	0	0	0	0
PS, C	30	15	280	0	0	330
PET TPA, C	1,090	3	2,030	1,310	1,660	6,090
PET TPA, B	570	1	90	35	620	1,315
PET DMT, C	300	80	1,690	270	850	3,190
PET DMT, B	360	40	690	20	2,270	3,380
TOTALS	2,510	150	5,000	1,880	5,400	14,930

[a] See abbreviations from Table 5-1.
[b] These values were determined by estimating equipment counts and applying SOCMI factors[2] adjusted according to LDAR programs.

The organic HAP emitted include styrene, butadiene, acrylonitrile, acetaldehyde, dioxane, methanol, and ethylene glycol. The quantity of emissions for each individual organic HAP was not determined, but acrylonitrile and styrene are estimated to comprise the largest quantity of emissions. The organic HAP emitted by each subcategory are identified in Table 5-3.

TABLE 5-3. MAJOR HAZARDOUS AIR POLLUTANTS EMITTED BY SUBCATEGORY

Subcategory	Major HAP Emitted
ABS	acrylonitrile, butadiene, styrene
SAN	acrylonitrile, styrene
MABS	acrylonitrile, butadiene, styrene
MBS	butadiene, styrene
Polystyrene	styrene
PET	ethylene glycol, methanol, acetaldehyde, dioxane
Nitrile	acrylonitrile

As described in Chapter 3, organic HAP are emitted from storage vessels, process vents and process fugitives, wastewater operations, equipment leaks, and heat exchange systems to include process contact cooling towers. Process vents and equipment leaks are the emission points that comprise the largest portion of these emissions.

Emission estimates were made for each facility in active operation. Emissions for storage, process vents, wastewater operations, and process contact cooling towers were taken directly from information submitted by each facility. Baseline emissions from equipment leaks were calculated by using component counts provided by facilities and emission factors from the EPA's Equipment Leak Protocol document.[2] The level of equipment leak control assumed for each facility was based either on information submitted concerning leak detection and repair (LDAR) programs or on applicable State regulations. More detailed information on the calculation of baseline emissions for the proposed NESHAP is contained in the memorandum "Baseline Emissions Estimates for the Thermoplastics Industry," contained in Docket No. A-92-45, Category II-D and in the SID. More detailed information on the calculation of equipment leak emissions is contained in the memorandum "Determination of MACT Floors for Equipment Leaks," also contained in Docket No. A-92-45, Category II-B and in the SID.

6.0 MACT FLOORS AND REGULATORY ALTERNATIVES

This chapter presents the approach used to determine MACT floors and regulatory alternatives for the Group IV thermoplastic subcategories. The Clean Air Act requirements for the determination of MACT floors are discussed, as well as the general approach used to determine the MACT floors and regulatory alternatives. Then, the results of the analyses are presented.

6.1 CLEAN AIR ACT REQUIREMENTS

The amended Clean Air Act contains requirements for the development of regulatory alternatives for sources of HAP emissions. The statute requires the standards to reflect the maximum degree of reduction in emissions of HAP that is achievable for new or existing sources. This control level is referred to as MACT. The amended Clean Air Act also provides guidance on determining the least stringent level allowed for a MACT standard; this level is termed the "MACT floor." Consideration of control levels more stringent than the MACT floor must reflect consideration of the cost of achieving the emission reduction, any non-air quality, health, and environmental impacts, and energy requirements.

For new sources, the standards for a source category or subcategory "shall not be less stringent than the emission

control that is achieved in practice by the best controlled similar source, as determined by the Administrator" [section 112(d)(3)]. Existing source standards shall be no less stringent than the average emission limitation achieved by the best performing 12 percent of the existing sources for source categories and subcategories with 30 or more sources or the average emission limitation achieved by the best performing 5 sources for source categories or subcategories with fewer than 30 sources [section 112(d)(3) of the Act]. These two minimum levels of control define the MACT floor for new and existing sources.

Two interpretations have been evaluated by the EPA for representing the MACT floor for existing sources. One interpretation is that the MACT floor is represented by the worst performing facility of the best 12 percent performing sources. The second interpretation is that the MACT floor is represented by the "average emission limitation achieved" by the best performing sources, where the "average" is based on a measure of central tendency, such as the arithmetic mean, median, or mode. This latter interpretation is referred to as the "higher floor interpretation." In a June 6, 1994 Federal Register notice (59 FR 29196), the EPA presented its interpretation of the statutory language concerning the MACT floor for existing sources. Based on a review of the statute, legislative history, and public comments, the EPA believes that the "higher floor

interpretation" is a better reading of the statutory language. The determination of the MACT floor for existing sources under the proposed rule followed the "higher floor interpretation."

6.2 DETERMINATION OF MACT FLOORS

This section describes the approach taken for determining the MACT floor for existing and new sources (Section 6.2.1 and 6.2.2). The final section (Section 6.2.3) discusses the special consideration taken into account for the requirements of the Polymers NSPS.

For determining both existing and new source MACT floors, each type of emission point (e.g., storage vessel, process vent, etc.) within a subcategory was evaluated separately. The MACT floor for the subcategory is the composite of these individual types of emission point specific determinations.

6.2.1 Existing Source MACT Floor

For existing sources, the amended Clean Air Act requires the standards to be no less stringent then the average emission limitation achieved by the best performing 5 sources for source categories or subcategories with fewer than 30 sources. All of the 18 subcategories covered by the proposed rule have less than 30 sources.

The EPA developed a general approach for evaluating the MACT floor and determining regulatory alternatives that were equivalent to or more stringent that the MACT floor for

existing sources. This approach was applied to each type of emission point within each subcategory.

The first step in the general approach for evaluating the MACT floor and determining regulatory alternatives for existing sources was to identify the potential types of emission points for each subcategory and determine which types of emission points were being controlled at each facility within the subcategory.

The next step in the general approach was to determine which facilities were the best performing facilities. For those subcategories with five or fewer facilities, all of the facilities represented the "best performing" facilities. However, for those subcategories with more than five facilities, the five best performing facilities had to be identified. This was done by examining the types of control and the level of emission reductions being achieved (e.g., emission factors, percent reductions). For storage vessels, the EPA examined the level of control, vapor pressure, and tank capacity to determine which facilities were best controlled. For process vents, the EPA used percent emission reduction as the primary indicator of the best controlled facilities. The EPA evaluated the option of using emission factors for process vents as the primary indicator of the best controlled facilities. However, after considering the variability in the quality of emissions data and the difficulty of working with confidential business

information production rate information, the EPA decided not to use emission factors as the primary indicator. For equipment leaks, the EPA used percent reduction based on the facilities actual LDAR program to identify the best controlled facilities. For wastewater, the level of control being applied at each facility was examined. None of the process contact cooling towers were controlled.

The next step was to determine regulatory alternatives equivalent to or more stringent than the MACT floor as reflected in the existing level of control for the "best performing" facilities. Potential regulatory alternatives were developed based on the HON, Polymers NSPS (40 CFR part 60, subpart DDD), and the Batch Processes ACT. The HON was selected because (1) the characteristics of the emissions from storage vessels, continuous process vents, equipment leaks, and wastewater at Group IV thermoplastic facilities are similar or identical to those addressed by the HON and (2) the levels of control required under the HON were already determined through extensive analyses to be reasonable from a cost and impact perspective.

The Polymers NSPS, which covers certain process emissions at polystyrene and PET facilities using a continuous process and cooling tower emissions at PET facilities, was selected for the same basic reasons as the HON. Although the Polymers NSPS was developed under section 111 of the Clean Air Act and was targeted to control

volatile organic compounds (VOC) emissions, the requirements for setting standards under section 111 are very similar to the requirements under section 112 of the 1990 Amendments and all of the HAP identified from polystyrene and PET facilities are also VOC.

Finally, the Batch Processes ACT was selected to identify regulatory alternatives for batch process vents, which are not addressed by either the HON or Polymers NSPS. As with the Polymers NSPS, the Batch Processes ACT covers VOC emissions. Again, all of the HAP emissions identified for the Group IV thermoplastics facilities are also VOC. Unlike the HON and Polymers NSPS, the Batch Processes ACT is not a regulation and, therefore, does not specify a level of control that must be met. Instead, the Batch Processes ACT provides information on potential levels of control, their costs, etc. Based on the review of the Batch Processes ACT, the EPA selected a level of control equivalent to 90 percent reduction for batch process vents. This level of control was selected for regulatory analysis purposes because it represents, for the purposes of the proposed rule, a reasonable level of control considering costs and other impacts.

For the reasons stated above, where the HON, Polymers NSPS, and the Batch Processes ACT are more stringent than the MACT floor, they represent "ready made" regulatory alternatives. Furthermore, for the HON and Polymers NSPS,

determinations were already made during the development of those standards that going beyond their control levels was not reasonable. With regard to batch process vents, the EPA determined, as noted above, that control above the 90 percent level was not reasonable considering the amount of additional emission reduction and the cost of achieving that emission reduction. Thus, the existing regulations and the Batch Processes ACT have "built in" stopping points as well. In other words, it was unnecessary to develop and analyze more stringent regulatory alternatives.

The EPA then determined whether the HON, Polymers NSPS, or the Batch Processes ACT were more or less stringent than or equivalent to the MACT floor for each subcategory. This was done by comparing the MACT floor (reflected in the existing control level for the best performing 5 facilities) to the appropriate HON or Polymers NSPS requirements or the 90 percent control level for batch process vents for that type of emission point for a given subcategory.

To determine the relationship of the MACT floor to the HON/Batch Processes ACT/Polymers NSPS, several techniques were used. In most cases, the EPA examined the control/no control decisions (Groups 1 and 2) for a type of emission point that resulted from applying the HON/Batch Processes ACT/Polymers NSPS, and compared the control/no control results with the existing control level for each of the best five performing facilities in the subcategory.

If the HON/Batch Processes ACT/Polymers NSPS could not be demonstrated to be at least as stringent as the MACT floor using this technique, emissions allowed under existing control levels and emissions allowed under the HON/Batch Processes ACT/Polymers NSPS were compared and/or the percentage of uncontrolled emissions meeting the HON/Batch Processes ACT/Polymers NSPS requirements were determined. These more quantitative comparisons clarified the stringency of the MACT floor in relation to the HON/Batch Processes ACT/Polymers NSPS requirements. (For the details of these determinations, refer to the MACT floor memoranda in Docket No. A-92-45, Category II-B and in the SID).

If the applicable HON or Polymers NSPS requirements or the 90 percent control level for batch process vents were found to be equivalent to or more stringent than the MACT floor, then they became part of the first regulatory alternative for that type of emission point for that subcategory. (The first regulatory alternative is the least stringent level of control considered that is more stringent than, or at least as stringent as, the MACT floor across all types of emission points.) As noted above, the EPA did not typically consider additional regulatory alternatives beyond the HON, Polymers NSPS, or the 90 percent control level for batch process vents. An exception to this involves process contact cooling towers at PET facilities, and the rationale

for this decision is discussed in Section 6.2.3 and Chapter 8.0.

If the MACT floor was found to be more stringent than the HON/Batch Processes ACT/Polymers NSPS, it was defined and became part of the first regulatory alternative for that subcategory. For these cases, the EPA did not develop a second regulatory alternative since the MACT floor was already more stringent than regulatory alternatives already considered to be reasonable (i.e., above the HON/Batch Processes ACT/Polymers NSPS control levels).

6.2.2 New Source MACT Floor

For new sources, the 1990 Amendments require that standards be set that are no less stringent than the level represented by the best controlled similar source. As for existing sources, the EPA determined regulatory alternatives that were equivalent to, or more stringent than the MACT floor by comparing the MACT floor for each type of emission point with the appropriate requirements from the HON, Batch Processes ACT, and Polymers NSPS (as appropriate). If the HON, Batch Processes ACT, or Polymers NSPS were found to be equivalent to or more stringent than the MACT floor for a given type of emission point, then the HON, Batch Processes ACT, or Polymers NSPS became part of the first regulatory alternative (Regulatory Alternative 1). However, if the MACT floor for a given type of emission point was found to be more stringent than the HON, Batch Processes ACT, and

Polymers NSPS, the EPA defined the MACT floor for new sources for that type of emission point and it became part of the first regulatory alternative.

The EPA constructed the first regulatory alternative for all subcategories by including in it the best level of control identified for each type of emission point within the subcategory using the procedure described above. In a single case, a more stringent regulatory alternative was identified for one subcategory--storage tanks at facilities producing ABS using a continuous mass process. The rationale for developing and accepting this regulatory alternative is presented in Chapter 8.0.

6.2.3 Special Considerations

6.2.3.1 Polymers NSPS

The Polymers NSPS affects some process emissions from new polystyrene facilities using a continuous process and some process emissions from new PET facilities using a continuous process. (It also affects emissions from process contact cooling towers at new PET facilities using a continuous process; this is discussed in more detail later.) These process emission provisions have the potential to be more stringent than the HON and were considered in developing regulatory alternatives for both existing and new polystyrene and PET facilities using a continuous process. The applicability criteria for modified and reconstructed

sources, which includes a threshold emission rate, was considered for the analysis of existing facilities.

Threshold emission rates were developed under the Polymers NSPS to set a point at which it was not cost effective to require an existing source (i.e., modified or reconstructed) to meet the emission limits. However, analysis showed that with one exception, sources subject to the proposed rule were meeting the Polymers NSPS emission limits. For those situations where affected sources are meeting the Polymers NSPS emission limits, the emission limits became part of the MACT floor for existing sources, and threshold emission rates are not required as part of implementing the emission limits from the Polymers NSPS. For those situations where affected sources are not meeting the Polymers NSPS emission limits (i.e., process vents associated with material recovery at PET facilities using a continuous DMT process), the threshold emission rate developed under Polymers NSPS is used in implementing these emission limits. The analysis of new facilities entailed comparing the appropriate process vent emissions against the emission limits. In all cases, the best performing affected source was already meeting the polymers NSPS emission limits.

6.2.3.2 Process Contact Cooling Towers

The Polymers NSPS limits the ethylene glycol concentration in the cooling tower water as the means for

controlling emissions from process contact cooling towers at new PET facilities using a continuous process. These provisions are not included as a regulatory alternative, because other techniques (which are described below) were identified for controlling emissions from process contact cooling towers and were determined to be both more effective and less costly. The EPA used one of these alternatives, the use of ethylene glycol jets in place of steam jets in the vacuum system, to estimate costs for a regulatory alternative that eliminates the use of cooling tower water in vacuum system contact condensers for all PET facilities.

With few exceptions, large volumes of organic HAP-contaminated wastewater (i.e., condensate) are generated at PET facilities through the use of contact barometric intercondensers in the steam jet vacuum system. At most facilities, this wastewater stream is recycled through a process contact cooling tower, potentially making the cooling tower a major emission source. The EPA believes there are several technically feasible methods for eliminating/minimizing emissions from vacuum system generated wastewater. These methods are briefly discussed in the following paragraphs.

First, there is the technique of using ethylene glycol jets in place of steam jets in the vacuum system. Ethylene glycol jets are considered a pollution prevention technique in that they prevent the creation of the vacuum system

wastewater stream. Instead of using steam in the vacuum jet as the motivating gas, ethylene glycol vapor is used. Contaminated ethylene glycol is sent to the ethylene glycol recovery system.

Second, mechanical vacuum pumps can be used. Like the first technique, mechanical vacuum pumps are a pollution prevention technique since it prevents the creation of the vacuum system wastewater stream.

Third, non-contact condensers can be used in place of the typical contact barometric intercondensers with steam jet vacuum systems. This technique does not prevent the creation of the vacuum system wastewater stream, but it serves to minimize emissions since only the steam condensate is HAP-contaminated and the condensed stream is not sent to the cooling tower. To achieve emission reductions approximately equivalent to the previous two techniques, the vacuum system wastewater stream, if it contains any organic HAP specified in Table 9 of the HON wastewater provisions, would be required to meet the control level required for a Group 1 wastewater stream, regardless of the organic HAP concentration or flowrate.

As discussed later, the EPA has based its decision to prohibit the use of cooling tower water in contact condensers on the level of emission reductions and costs associated with the use of the ethylene glycol jet system. The EPA believes the other techniques identified above can

achieve equivalent control at less expense and, in some cases, may be more technically feasible for retrofitting existing facilities than the ethylene glycol jet system. It is also possible that other techniques exist (or could be developed) that could substantially eliminate the emissions of organic HAP from the vacuum system. If such a system could be demonstrated to be equivalent to the techniques described above, it would not be necessary to prohibit the use of cooling tower water in the vacuum system contact condensers.

In the preamble to the proposed rule, the EPA solicited comments on the emission reduction potential, costs, and technical feasibility of all control options for process contact cooling towers at PET facilities. The EPA requested that any comments on alternate control options address the emissions from the cooling tower, the emissions from any wastewater discharged from the equipment required by the control option, and any "reactor process" or "distillation column" vent emissions associated with the control option.

As a means of complying with the proposed prohibition of cooling tower water in contact condensers at PET facilities, the EPA has identified three alternative vacuum systems (as discussed above) that will allow a facility to meet its vacuum requirements without the need for a process contact cooling tower. One of the options -- use of non-contact condensers in place of the contact barometric

intercondensers -- will not eliminate the vacuum system generated wastewater stream, but will minimize the volume of the wastewater created to that of the steam condensate alone. Further, this option prohibits exposing the wastewater stream to the atmosphere since it can no longer be recycled through the cooling tower. (The HON prohibits exposing Group 1 wastewater stream to the atmosphere prior to control.

Applying the HON wastewater provisions applicability criteria to this vacuum system generated wastewater stream might result in some wastewater streams being uncontrolled. For these instances, it is possible that emissions at these facilities will be greater than the emissions that would be emitted at facilities using ethylene glycol jets. Thus, the use of non-contact condensers by themselves would not result in equivalent emission reductions. Therefore, the proposed rule requires that all vacuum system generated wastewater streams that contain any organic HAP specified in Table 9 of the HON wastewater provisions be considered Group 1 wastewater streams, regardless of the organic HAP concentration and flowrate; these streams would be required to meet the wastewater control level required for Group 1 wastewater streams.

6.3 RESULTS OF MACT FLOOR DETERMINATION

Tables 6-1 and 6-2 present the results of the MACT floor analysis and identify the selected regulatory

alternatives for storage vessels, process vents, and wastewater. The "MACT Floor Stringency" column on Tables 6-1 and 6-2 reflect the comparison of the MACT floor to the selected set of rules/guidances (i.e., HON Batch Processes ACT/Polymers NSPS). If this column indicates "<", this means that the MACT floor, as reflected in the existing level of control, is less stringent than the selected set of rules/guidances. If this column indicates "≃", this means that the MACT floor is equivalent to the selected set of rules/guidances, and a ">" means the MACT floor is more stringent than the selected set of rules/guidances.

TABLE 6-1. MACT FLOOR ANALYSIS FOR EXISTING SOURCES[a]

	Storage Vessels		Process Vents		Wastewater Streams	
Subcategory	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative
ABS, Ce	≃	HON	≃	HON/Batch ACT	≃	HON
ABS, Cm	≃	HON	≃	HON/Batch ACT	≃	HON
ABS, Be	≃	HON	≃	HON/Batch ACT	≃	HON
ABS, Bs	≃	HON	≃	HON/Batch ACT	≃	HON
ABS, Bl	≃	HON	≃	HON/Batch ACT	≃	HON
MABS	≃	HON	≃	HON/Batch ACT	≃	HON
MBS	≃	HON	>	MACT Floor	≃	HON
SAN, C	≃	HON	≃	HON/Batch ACT	≃	HON
SAN, B	≃	HON	≃	HON/Batch ACT	≃	HON
ASA/AMSAN	>	MACT Floor	>	MACT Floor	<	No control[c]
PS, C	>	MACT Floor	≃	HON/NSPS/ Batch ACT	≃	HON

TABLE 6-1. MACT FLOOR ANALYSIS FOR EXISTING SOURCES[a] (Concluded)

	Storage Vessels		Process Vents		Wastewater Streams	
Subcategory	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative
PS, B	≃	HON	<	HON/Batch ACT	≃	HON
EPS	≃	HON	≃	HON/Batch ACT	≃	HON
PET, TPA, C	≃	HON	≃	HON/NSPS/ Batch ACT	≃	HON
PET, TPA, B	≃	HON	≃	HON/Batch ACT	≃	HON
PET, DMT, C	≃	HON	≃	HON/NSPS/ Batch ACT	≃	HON
PET, DMT, B	≃	HON	≃	HON/Batch ACT	≃	HON
Nitrile	>	MACT Floor	<	HON/Batch ACT	≃	HON

[a] In all cases, the MACT floor for equipment leaks was less stringent than the HON.

[b] As compared to the selected set of rules/guidances.

[c] It is a policy decision to not accept the control level from the selected set of rules/guidances. The reasons for this decision are discussed in Chapter 8.0.

TABLE 6-2. MACT FLOOR ANALYSIS FOR NEW SOURCES[a]

	Storage Vessels		Process Vents		Wastewater Streams	
Subcategory	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative
ABS, Ce	≃	HON	≃	HON/Batch ACT	≃	HON
ABS, Cm	>	Regulatory Alternative 2[c]	≃	HON/Batch ACT	≃	HON
ABS, Be	≃	HON	≃	HON/Batch ACT	≃	HON
ABS, Bs	≃	HON	≃	HON/Batch ACT	≃	HON
ABS, Bl	≃	HON	≃	HON/Batch ACT	≃	HON
MABS	≃	HON	≃	HON/Batch ACT	≃	HON
MBS	≃	HON	≃	MACT Floor	≃	HON
SAN, C	>	MACT Floor	≃	HON/Batch Act	≃	HON
SAN, B	≃	HON	>	MACT Floor	≃	HON
ASA/AMSAN	>	MACT Floor	>	MACT Floor	<	No control[c]

TABLE 6-2. MACT FLOOR ANALYSIS FOR NEW SOURCES[a] (Concluded)

	Storage Vessels		Process Vents		Wastewater Streams	
Subcategory	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative	MACT Floor Stringency[b]	Regulatory Alternative
PS, C	>	MACT Floor	≃	HON/NSPS/ Batch ACT	≃	HON
PS, B	≃	HON	<	HON/Batch ACT	≃	HON
EPS	≃	HON	≃	HON/Batch ACT	≃	HON
PET, TPA, C	≃	HON	≃	HON/NSPS/ Batch ACT	≃	HON
PET, TPA, B	≃	HON	≃	HON/Batch ACT	≃	HON
PET, DMT, C	≃	HON	≃	HON/NSPS/ Batch ACT	≃	HON
PET, DMT, B	≃	HON	≃	HON/Batch ACT	≃	HON
Nitrile	>	MACT Floor	<	HON/Batch ACT	≃	HON

[a] In all cases, the MACT floor for equipment leaks was less stringent than the HON.

[b] As compared to the selected set of rules/guidances.

[b] It is a policy decision to not accept the control level from the selected set of rules/guidances or to go beyond the MACT floor. The reasons for this decision are discussed in Chapter 8.0.

For existing storage vessels, the analysis found that for 15 out of the 18 subcategories, the MACT floor was less stringent than or equivalent to the selected set of rules/guidances. For the remaining three cases, the MACT floor was determined to be more stringent than the selected set of rules/guidances. This information, along with the same information for process vents and wastewater, is presented in Table 6-3. In all cases, the MACT floor for equipment leaks was less stringent than the HON.

TABLE 6-3. SUMMARY OF MACT FLOOR STRINGENCY

	Existing Subcategories			New Subcategories		
	<[a]	≃[b]	>[c]	<[a]	≃[b]	>[c]
Storage Vessels	0	15	3	0	13	5
Process Vents	2	14	2	2	14	2
Wastewater Streams	1	17	0	1	17	0

[a] Number of subcategories where MACT floor is less stringent than selected set of rules/guidances

[b] MACT floor equivalent to selected set of rules/guidances.

[c] MACT floor more stringent than selected set of rules/guidances.

The MACT floor analysis for process contact cooling towers associated with PET production followed the methodology described in Section 6.2, however, quickly deviated from it due the availability of a more stringent, cost effective option. The MACT floor for process contact cooling towers at existing sources, as reflected in the existing control level, was qualitatively compared to the cooling tower provisions of the Polymers NSPS and found to be less stringent. (Note: None of the facilities that had process contact cooling towers controlled emissions from this emission point.) For new sources, the MACT floor was based on a facility that used ethylene glycol jets, as opposed to steam jets, and did not have a cooling tower. In addition to eliminating the need for a cooling tower, the use of ethylene glycol jets prevents the generation of the vacuum system wastewater stream(s). This level of control was compared to the Polymers NSPS cooling tower provisions and found to be more stringent. Therefore, the MACT floor for new sources was informally defined (i.e., not defined in regulatory terms) as "no process contact cooling tower" and "no vacuum system wastewater." This option was then considered as a regulatory alternative for existing sources and was found to be a cost effective option.

7.0 SUMMARY OF ENVIRONMENTAL, ENERGY, COST, AND ECONOMIC IMPACT

This section presents the air, non-air environmental (waste and solid waste), energy, cost, and economic impacts resulting from the control of organic HAP emissions under the proposed rule.

7.1 FACILITIES AFFECTED BY THESE NESHAP

The proposed rule would affect ABS, SAN, MABS, MBS, polystyrene, PET, and nitrile facilities that are major sources in themselves, or that are located within a major source. Based on available information, all of the facilities at which these thermoplastics are produced were judged to be major sources for the purpose of developing these standards. (Final determination of major source status occurs as part of the compliance determination process undertaken by each individual source.)

Impacts are presented relative to a baseline reflecting the level of control in the absence of the rule. The current level of control was well understood since emissions and control data were collected on each facility included in the analysis. The estimates of impacts include applying control to: (1) existing facilities and (2) new facilities (i.e., those that are expected to begin operation through 1999).

The expected growth rate in each of the seven listed source categories was analyzed (see the impacts memorandum in Docket No. A-92-45, Category II-B). Based on this analysis, the following average annual growth rates (percent per year) through 1999 were estimated:

- ABS - 4 percent
- SAN - 4 percent
- MABS - 3 percent
- MBS - 3 percent
- polystyrene - 3 percent
- PET - 10 percent for bottle-grade resins and 4 percent for other PET resins
- nitrile - 3 percent.

The impacts for existing sources were estimated by bringing each facility's control level up to the proposed standards. For new sources, impacts were based on identifying the number of new facilities required to meet the expected growth within the source category, identifying the types of facilities (e.g., batch versus continuous) that would be built, and then selecting a subset of the existing facilities to represent the expected growth. The impacts on these "new" facilities were determined by applying the proposed standards for new sources to the selected subset of facilities assuming the existing level of control. This methodology is discussed in detail in the impacts memorandum

contained in Docket No. A-92-45, Category II-B and in the SID.

7.2 PRIMARY AIR IMPACTS

The proposed standards are estimated to reduce organic HAP emissions from all existing sources by 11,750 Mg/yr from a baseline level of 24,780 Mg/yr. This is a 47 percent reduction. For new facilities, the proposed standards are estimated to reduce organic HAP emissions by 7,395 Mg/yr from a baseline level of 14,920 Mg/yr, for a 50 percent reduction. Table 7-1 summarizes the organic HAP emission reductions for each individual subcategory.

TABLE 7-1. ORGANIC HAP EMISSIONS AND EMISSION REDUCTIONS

Subcategory	Existing Sources			New Sources		
	Baseline, Mg/yr	Emission Reduction, Mg/yr	Percent Reduction	Baseline, Mg/yr	Emission Reduction, Mg/yr	Percent Reduction
ABS, continuous mass	240	190	80%	95	87	92%
ABS, continuous emulsion[a]	1,110	>180	>16%	400	>115	>29%
ABS, batch emulsion	500	56	11%	35	15	43%
ABS, batch suspension	15	5	33%	13	5	38%
ABS, latex	3	2	67%	--	--	--
SAN, continuous	110	65	60%	40	25	63%
SAN, batch	35	13	37%	20	6	30%
ASA/AMSAN	100	94	94%	--	--	--
MABS[a]	86	>38	>44%	--	--	--
MBS	190	130	68%	20	16	80%
Polystyrene, continuous	1,440	1,060	74%	330	240	73%
Polystyrene, batch	190	130	68%	--	--	--
Expandable polystyrene	450	92	20%	--	--	--
PET-TPA, continuous	6,090	2,400	40%	6,090	2,200	36%
PET-TPA, batch[a]	1,310	>6	>1%	1,310	>6	>1%
PET-DMT, continuous	4,480	2,330	52%	3,190	1,810	57%
PET-DMT, batch	8,400	4,950	59%	3,380	2,870	85%
Nitrile	30	10	33%	--	--	--
Totals[b]	24,780	11,750	47%	14,920	7,395	50%

-- No new growth projected, therefore, no impacts expected.
[a] A portion of the emission reductions for this subcategory are confidential business information.
[b] Total values are affected by the subcategories for which some data are confidential business information.

7.3 NON-AIR ENVIRONMENTAL IMPACTS

The proposed standards are not expected to generate any adverse water impacts. Depending on the methods selected to comply with the proposed prohibition of cooling tower water in contact condensers, the amount of wastewater generated at PET facilities could decrease.

The proposed standards are not expected to increase the generation of solid waste at any Group IV thermoplastic facility.

7.4 ENERGY IMPACTS

Energy impacts include increased energy use (fuel) for the operation of control equipment, energy credits attributable to the prevention of organic HAP emissions from equipment leaks, and emissions of particulates, sulfur dioxides (SO_x), and nitrogen oxide (NO_x) (secondary air impacts) associated with increased energy use. Under the proposed rule, energy use is expected to increase by approximately 30,000 barrels of oil per year for existing sources and 44,000 for new sources. The emissions of secondary air pollutants associated with this energy increase are 70 Mg/yr for existing sources and 80 Mg/yr for new sources. At the same time, energy credits attributable to the prevention of organic HAP emissions from equipment leaks are approximately 17,000 barrels of oil per year for existing sources and 8,000 for new sources. This results in

a net increase of approximately 13,000 barrels of oil per year for existing sources and 36,000 for new sources.

These figures are related to the control of process vents, wastewater operations, and equipment leaks. Energy impacts related to storage vessels were not estimated since many storage vessels would be controlled through the use of internal floating roofs which do not have any associated energy impacts. Further, the estimates above do not include the projected energy savings associated with control of emissions from process contact cooling towers and vacuum system wastewater associated with the manufacture of PET. The majority of existing vacuum systems are operated with steam jets, which are very energy intensive. The precise affect of the proposed rule on the use of steam jets cannot be predicted with accuracy. However, it is anticipated by the EPA that compliance with the proposed rule will, in almost all cases, decrease the energy demand of the vacuum systems.

Given the relatively small energy impacts projected for the control of process vents, wastewater operations, and equipment leaks and the projected energy savings associated with control of vacuum system air emissions, the EPA has judged the energy impacts associated with the proposed rule to be acceptable.

7.5 COST IMPACTS

Cost impacts include the capital costs of new control equipment, the cost of energy (supplemental fuel, steam, and electricity) required to operate control equipment, operation and maintenance costs, and the cost savings generated by reducing the loss of valuable product in the form of emissions. Also, cost impacts include the costs of monitoring, recordkeeping, and reporting associated with the proposed standards. Average cost effectiveness ($/Mg of pollutant removed) is also presented as part of cost impacts and is determined by dividing the annual cost by the annual emission reduction. Table 7-2 presents the estimated capital and annual costs and average cost effectiveness by subcategory.

TABLE 7-2. SUMMARY OF COST IMPACTS

Subcategory	Existing Sources			New Sources		
	Total Capital Cost, $1000	Total Annual Costs, $1000/yr	Average Cost-Effectiveness ($/Mg)	Total Capital Cost, $1000	Total Annual Costs, $1000/yr	Average Cost-Effectiveness ($/Mg)
ABS, continuous mass	210	100	550	150	38	430
ABS, continuous emulsion[a]	>3,540	>1,300	<7,160	>3,490	>1,730	<14,970
ABS, batch emulsion	430	310	5,550	18	14	960
ABS, batch suspension	28	19	3,570	28	19	3,760
ABS, latex	0.5	-0.5	-240	--	--	--
SAN, continuous	450	160	2,520	180	38	1,490
SAN, batch	80	33	2,520	1	-1.3	-210
ASA/AMSAN	550	200	2,150	--	--	--
MABS[a]	90	>-2	>-50	--	--	--
MBS	550	360	2,720	440	234	14,200
Polystyrene, continuous	770	280	260	200	90	350
Polystyrene, batch	300	160	1,270	--	--	--
Expandable polystyrene	110	50	540	--	--	--
PET-TPA, continuous	40,790	2,970	1,230	2,160	-3,926	-1,770
PET-TPA, batch[a]	>30	>18	<3,180	>30	>18	<3,180
PET-DMT, continuous	28,250	3,010	1,300	2,200	-970	-540
PET-DMT, batch	22,080	3,360	680	1,440	-38	-13
Nitrile	9	7	660	--	--	--
Totals[b]	98,270	12,330	1,050	10,340	-2,750	-370

-- No new growth projected, therefore no impacts expected.
[a] A portion of the costs and/or emission reductions for this subcategory are confidential business information.
[b] Total values are affected by the subcategories for which some data are confidential business information.

Under the proposed rule, it is estimated that total capital costs for existing sources would be $98 million (1989 dollars), and total annual costs would by $12.3 million (1989 dollars) per year. It is expected that the actual compliance cost impacts of the proposed rule would be less than presented because of the potential to use common control devices, upgrade existing control devices, use other less expensive control technologies, implement pollution prevention technologies, or use emissions averaging. Since the effect of such practices is highly site-specific and data were unavailable to estimate how often the lower cost compliance practices could be utilized, it is not possible to quantify the amount by which actual compliance costs would be reduced.

7.6 ECONOMIC IMPACTS

The economic impact analysis for the selected regulatory alternatives shows that the estimated price increases for the affected chemicals range from 0.1 percent for nitrile to 2.8 percent for SAN. Estimated decreases in output range from 0.1 percent for polystyrene to 4.6 percent for SAN. Net annual exports (exports minus imports) are predicted to decrease by an average of 2.5 percent.

As many as five PET facilities and one ABS facility are at risk of discontinuing PET and ABS production, respectively, due to the burden of compliance with the standard. This does not mean that the facilities affected

face the risk of closure. The facilities affected will continue to produce other chemicals whose processes are not affected by this standard.

Three assumptions in the analysis likely lead to an overestimate of the number of facilities at risk of discontinuing production of affected chemicals. First, the economic analysis model assumes that all PET and ABS facilities compete in a national market, though in reality some facilities may be protected from some competitors by regional or local trade barriers.

Second, it is assumed that the facilities with the highest control cost per unit of production also have the highest baseline production costs per unit. This assumption may not always be true since the baseline production costs per unit are not known, and thus the estimated number of facilities that would discontinue production of affected chemicals may be too high.

Third, for the production of PET, the selected regulatory alternative includes the control of organic HAP emissions from the vacuum system and process contact cooling tower. Control of these emissions is the highest cost item in the selected regulatory alternative and is the biggest contributor to the risk of facilities discontinuing PET production. The economic analysis is based on the use of ethylene glycol jets to control these emissions. There are a number of potential control technologies for these

emissions that are expected by the EPA to have lower costs, but costs for these control technologies were not calculated. Ethylene glycol jets are being used by at least two facilities and data were available from one facility. The EPA has and will continue to investigate other control technologies for control of these emissions. The EPA invites comment and data on other control technologies.

8.0 SELECTION OF THE STANDARDS

The purpose of this chapter is to provide the rationale for the selection of the standards for the Group IV thermoplastic subcategories. In order to provide background for the subsequent discussions, the first section of this chapter is a summary of the proposed rule. This is followed by a discussion of the rationale for the selection of the level and format of the standards and the compliance, reporting, and recordkeeping provisions.

The format, reporting, recordkeeping, and compliance provisions of the proposed standards are primarily a result of the method used to determine MACT floors and regulatory alternatives. In other words, the decision to use the HON, the Batch Processes Act, and the Polymers NSPS in determining the MACT floors and regulatory alternatives predetermined that the proposed standards would resemble these standards. A description of the approach used to determine MACT floors and regulatory alternatives is provided in Chapter 6.

8.1 SUMMARY OF THE PROPOSED STANDARDS

This section provides a summary of the proposed standards. The full regulatory text is available in Docket No. A-92-45, directly from the EPA, or from the Technology

Transfer Network (TTN) on the EPA's electronic bulletin boards. More information on how to obtain a copy of the proposed standards are provided in the preamble.

8.1.1 Source Categories to be Regulated

The proposed standards would regulate organic HAP process emissions from facilities in one of the 18 thermoplastic subcategories listed below, provided that a facility is determined to be a major source. For the proposed rule, an affected source is defined as one of the following:

- All organic HAP emission points at a facility using a continuous emulsion process to produce ABS.
- All organic HAP emission points at a facility using a continuous mass process to produce ABS.
- All organic HAP emission points at a facility using a batch emulsion process to produce ABS.
- All organic HAP emission points at a facility using a batch suspension process to produce ABS.
- All organic HAP emission points at a facility using a batch latex process to produce ABS.
- All organic HAP emission points at a facility producing MABS.
- All organic HAP emission points at a facility producing MBS.
- All organic HAP emission points at a facility using a continuous process to produce SAN.
- All organic HAP emission points at a facility using a batch process to produce SAN.
- All organic HAP emission points at a facility producing ASA/AMSAN.
- All organic HAP emission points at a facility using a continuous process to produce polystyrene.

- All organic HAP emission points at a facility using a batch process to produce polystyrene.
- All organic HAP emission points at a facility producing EPS.
- All organic HAP emission points at a facility using a continuous TPA process to produce PET and any collocated solid state processes.
- All organic HAP emission points at a facility using a batch TPA process to produce PET and any collocated solid state processes.
- All organic HAP emission points at a facility using a continuous DMT process to produce PET and any collocated solid state processes
- All organic HAP emission points at a facility using a batch DMT process to produce PET and any collocated solid state processes.
- All organic HAP emission points at a facility producing nitrile resins.

The proposed rule regulates emissions from solid state PET processes if they are collocated with a TPA or DMT fed PET process, but does not regulate emissions from independently located solid state PET processes (i.e., those that purchase low molecular weight PET from an off-site source). As part of the rulemaking, information was submitted by the industry for collocated solid state PET processes, but none was submitted for independently located solid state PET processes. (Note: the data request did not distinguish solid state as a separate process which might have precipitated companies not submitting data concerning PET produced by this process.) In addition, the EPA believes that independently located solid state PET processes are likely to be non-major sources because there

is not a significant source of organic HAP emissions from the solid state process. The emissions from a solid state process are typically the result of release of residual monomer in the low molecular weight PET. For these reasons, the EPA chose not to include independently located solid state PET processes in the proposed rule.

8.1.2 Relationship to Other Rules

Sources subject to the proposed rule are also subject to other existing rules. In some cases, the proposed rule supersedes existing rules and affected sources are no longer required to comply with the existing rule. In other cases, there is no conflict between the existing rule and the proposed rule, and in these cases, the affected source must comply with both rules.

Sources subject to the proposed rule and subject to the NESHAP for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks (40 CFR part 63, subpart I) are required to continue to comply with subpart I until the compliance date of the proposed rule. After the compliance date of the proposed rule, compliance with the proposed rule will constitute compliance with subpart I.

Sources subject to the proposed rule may have storage vessels subject to the NSPS for Volatile Organic Liquid Storage Vessels (40 CFR part 60, subpart Kb). After the compliance date for the proposed rule, such storage vessels

are only subject to the proposed rule and are no longer required to comply with subpart Kb.

Some sources subject to the proposed rule that produce PET polymers or polystyrene are also subject to the NSPS (40 CFR part 60, subpart DDD). After the compliance date for the proposed rule, such affected sources are only subject to the proposed rule and are no longer required to comply with the Polymers NSPS. As part of this rulemaking, it is proposed to modify subpart DDD to exclude reference to the manufacture of polystyrene and PET.

Sources subject to the proposed rule may have cooling towers subject to the NESHAP for Industrial Cooling Towers (40 CFR part 63, subpart Q). There is no conflict between the requirements of subpart Q and the proposed rule. Therefore, sources subject to both rules must comply with both rules.

8.1.3 Pollutants to be Regulated

The subcategories covered by the proposed rule emit a variety of organic HAP. Among the most significant emissions of organic HAP are the following: styrene, acrylonitrile, and butadiene from styrene-based resin production, which includes the production of ABS, SAN, MABS, MBS, and polystyrene; acrylonitrile from nitrile resin production; and ethylene glycol, methanol, acetaldehyde, and dioxane from PET production. The proposed standards would

regulate emissions of these compounds, as well as a variety of other organic HAP that are emitted.

8.1.4 Affected Emission Points

Emissions from the following types of emission points are being covered by the proposed rule: storage vessels, process vents, equipment leaks, wastewater operations, and heat exchange systems to include process contact cooling towers.

8.1.5 Proposed Standards

With relatively few exceptions, the standards being proposed for storage vessels, continuous process vents, equipment leaks, wastewater operations, and heat exchange systems are the same as those promulgated for the corresponding type of emission point at facilities subject to the HON (40 CFR 63, subparts F, G, H, and I). The proposed standards also require emissions from batch process vents to be reduced by at least 90 percent or to be controlled in a flare that meets the requirements of §63.11(b) of subpart A of 40 CFR part 63. (The criteria used to determine which batch process vents require control was based on the approach described in the Batch Processes ACT.) The standards being proposed today for certain continuous process vents from polystyrene facilities and from PET facilities using a continuous process require the same levels of control as were promulgated for these facilities under the Polymers NSPS. Finally, for PET

facilities, the proposed standards would prohibit the use of cooling tower water in contact condensers in the vacuum systems and would require that all vacuum system wastewater containing any of the organic HAP identified in Table 9 of the HON wastewater provisions be controlled to the same level of control as required under the HON, regardless of the wastewater streams organic HAP content or flowrate.

Under the proposed standards, emissions from existing or new batch process vents, heat exchange systems excluding process contact cooling towers, and equipment leaks are required to be controlled to the levels specified in the proposed standards. Emissions from existing storage vessels, continuous process vents, process wastewater streams, and process contact cooling towers are required to be controlled to the levels specified in the proposed standards or alternatively, the emissions averaging compliance approach specified in the rule may be used. Emissions from new storage vessels, continuous process vents, process wastewater streams, and process contact cooling towers are required to be controlled to the levels specified in the proposed standards. The emissions averaging compliance approach may not be used for new sources.

Tables 8-1 and 8-2 summarize the level of control being proposed. For those types of emission points where the level of control is the same as the HON, this is indicated

TABLE 8-1. SUMMARY OF PROPOSED STANDARDS FOR EXISTING SOURCES IN RELATIONSHIP TO SUBPARTS G AND H of 40 CFR PART 63 AND THE POLYMERS NSPS

Subcategory	Type of Emission Point				
	Storage vessels	Process Vents	Equipment Leaks	Wastewater	Heat Exchange Systems
ABS, continuous emulsion	HON	HON	HON	HON	HON for heat exchange systems.
ABS, continuous mass	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
ABS, batch emulsion	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
ABS, batch suspension	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
ABS, latex	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
MABS	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
MBS	HON	Continuous Process Vents: MACT Floor Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
SAN, continuous	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
SAN, batch	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
ASA/AMSAN	MACT Floor	MACT Floor	HON	No control	HON for heat exchange systems.

TABLE 8-1. SUMMARY OF PROPOSED STANDARDS FOR EXISTING SOURCES IN RELATIONSHIP TO SUBPARTS G AND H of 40 CFR PART 63 AND THE POLYMERS NSPS (Continued)

Subcategory	Type of Emission Point				
	Storage vessels	Process Vents	Equipment Leaks	Wastewater	Heat Exchange Systems
Polystyrene, continuous	MACT Floor	Continuous Process Vents from material recovery: same as subpart DDD Other Continuous Process vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
Polystyrene, batch	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
Expandable polystyrene	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.
PET-TPA, continuous	HON	Continuous Process Vents from raw material preparation and polymerization reaction sections: same as subpart DDD Other Continuous Process vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON for wastewater (including all vacuum system generated wastewater).[a]	No cooling tower water allowed in vacuum system contact condensers. HON for heat exchange systems.
PET - TPA, batch - DMT, batch	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON for wastewater (including all vacuum system generated wastewater).[b]	No cooling tower water allowed in vacuum system contact condensers. HON for heat exchange systems.

TABLE 8-1. SUMMARY OF PROPOSED STANDARDS FOR EXISTING SOURCES IN RELATIONSHIP TO SUBPARTS G AND H of 40 CFR PART 63 AND THE POLYMERS NSPS (Continued)

Subcategory	Type of Emission Point				
	Storage vessels	Process Vents	Equipment Leaks	Wastewater	Heat Exchange Systems
PET - DMT, continuous	HON	Continuous Process Vents from material recovery and polymerization reaction sections: same as subpart DDD Other Continuous Process vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON for wastewater (including all vacuum system generated wastewater).	No cooling tower water allowed in vacuum system contact condensers. HON for heat exchange systems.
Nitrile	MACT Floor	Continuous Process Vents: HON Batch Process Vents: 90% reduction or compliant flare	HON	HON	HON for heat exchange systems.

[a] Vacuum System wastewater streams containing any organic HAP identified in Table 9 of the HON wastewater provisions (subpart G) shall be considered Group 1 and are required to be controlled.

TABLE 8-2. SUMMARY OF PROPOSED STANDARDS FOR NEW SOURCES IN RELATIONSHIP TO SUBPARTS G & H of 40 CFR PART 63 AND THE POLYMERS NSPS

Subcategory	Type of Emission Point				
	Storage vessels	Process Vents	Equipment Leaks	Wastewater	Heat Exchange Systems
ABS, continuous emulsion	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
ABS, continuous mass	Regulatory Alternative 2[a]	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
ABS. batch emulsion	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
ABS. batch suspension	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
ABS, latex	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
MABS	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
MBS	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
SAN, continuous	MACT Floor	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
SAN, batch	HON	MACT Floor	HON	HON	HON for heat exchange systems.
ASA/AMSAN	MACT Floor	MACT Floor	HON	No control	HON for heat exchange systems.

TABLE 8-2. SUMMARY OF PROPOSED STANDARDS FOR NEW SOURCES IN RELATIONSHIP TO SUBPARTS G & H of 40 CFR PART 63 AND THE POLYMERS NSPS (Continued)

Subcategory	Type of Emission Point				
	Storage vessels	Process Vents	Equipment Leaks	Wastewater	Heat Exchange Systems
Polystyrene, continuous	MACT Floor	Continuous Process Vents from material recovery: Same as subpart DDD Other Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
Polystyrene, batch	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
Expandable polystyrene	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.
PET - TPA, continuous	HON	Continuous Process Vents from raw material preparation and polymerization reaction sections: same as subpart DDD Other Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON for wastewater (including all vacuum system generated wastewater).[b]	No cooling tower water allowed in vacuum system contact condensers. HON for heat exchange systems.
PET - TPA, batch - DMT, batch	HON	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON for wastewater (including all vacuum system generated wastewater).[b]	No cooling tower water allowed in vacuum system contact condensers. HON for heat exchange systems.

TABLE 8-2. SUMMARY OF PROPOSED STANDARDS FOR NEW SOURCES IN RELATIONSHIP TO SUBPARTS G & H of 40 CFR PART 63 AND THE POLYMERS NSPS (Concluded)

Subcategory	Type of Emission Point				
	Storage vessels	Process Vents	Equipment Leaks	Wastewater	Heat Exchange Systems
PET - DMT, continuous	HON	Continuous Process Vents from material recovery and polymerization reaction sections: same as subpart DDD Other Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON for wastewater (including all vacuum system generated wastewater).[b]	No cooling tower water allowed in vacuum system contact condensers. HON for heat exchange systems.
Nitrile	MACT Floor	Continuous Process Vents: HON Batch Process Vents: 90% reduction or a compliant flare	HON	HON	HON for heat exchange systems.

[a] The proposed standard is more stringent than the MACT floor, which is more stringent than the HON.
[b] Vacuum system wastewater streams containing any organic HAP identified in Table 9 of the HON wastewater provisions (subpart G) shall be considered Group 1 and are required to be controlled.

in the table by the acronym "HON." Similarly, where the proposed level of control is the same as promulgated under the Polymers NSPS, this is indicated by the use of the words "same as under subpart DDD." Finally, where the proposed level of control is more stringent than the level of control in the HON or in subpart DDD for that type of emission point, the words "MACT floor" are used.

8.1.5.1 Storage Vessels. Tables 8-3 and 8-4 summarize the proposed standards for existing and new storage vessels, respectively. The proposed standards would require owners and operators to first determine whether or not a storage vessel was required to be controlled. This is done through the application of certain criteria to each storage vessel. For those storage vessels determined to require control, the proposed rule then specifies the level of control required.

TABLE 8-3. PROPOSED STANDARDS FOR EXISTING STORAGE VESSELS

Subcategory	Applicability Criteria[a]	Level of Control[b]
All ABS SAN, continuous SAN, batch MABS MBS Polystyrene batch All PET Nitrile (except as noted below)	vapor pressure ≥0.75 psia and capacity ≥40,000 gallons[c] vapor pressure ≥1.9 psia and capacity ≥20,000 gallons[c]	If vapor pressure is <11.1 psia:[d] 1. fixed roof and internal floating roof; or 2. external floating roof; or 3. an external floating roof converted to an internal floating roof; or 4. a closed vent system and control device If vapor pressure ≥11.1 psia: a closed vent system and control device[d]
ASA/AMSAN	AMST for capacities ≥10,200 gallons	98 percent reduction
	styrene/acrylonitrile for capacities ≥1,000 gallons	98 percent reduction
	acrylonitrile for capacities ≥20,000 gallons	98 percent reduction
	any other chemical: vapor pressure ≥0.75 psia and capacity ≥40,000 gallons[c] vapor pressure ≥1.9 psia and capacity ≥20,000 gallons[c]	If vapor pressure is <11.1 psia: 1. fixed roof and internal floating roof; or 2. external floating roof; or 3. an external floating roof converted to an internal floating roof; or 4. a closed vent system and control device If vapor pressure ≥11.1 psia: a closed vent system and control device[d]
Nitrile	Control all acrylonitrile storage vessels ≥ 3,500 gallons	(same as the HON level of control)
Polystyrene, continuous	vapor pressure ≥ 0.28 psia and capacity ≥ 20,000 gallons vapor pressure ≥ 2.08 psia and capacity ≥ 10,000 but less than 20,000 gallons.	(same as the HON level of control).

[a] Storage vessels that meet the criteria are defined as Group 1 storage vessels and control of their emissions would be required. Storage vessels that do not meet the criteria are defined as Group 2 storage vessels and control of their emissions is not required.

[b] Required for Group 1 storage vessels only.

[c] The applicability criteria for these subcategories are the same as in the HON.

[d] The level of control is the same as the HON.

KEY: AMST = alpha methyl styrene

TABLE 8-4. PROPOSED STANDARDS FOR NEW STORAGE VESSELS

Subcategory	Applicability Criteria[a]	Level of Control[b]
All ABS (except CM) SAN, batch MABS MBS Polystyrene, batch All PET Nitrile (except as noted below)	vapor pressure ≥0.1 psia and capacity ≥40,000 gallons[c] vapor pressure ≥1.9 psia and capacity ≥10,000 gallons[c]	If vapor pressure is <11.1 psia:[d] 1. fixed roof and internal floating roof; or 2. external floating roof; or 3. an external floating roof converted to an internal floating roof; or 4. a closed vent system and control device If vapor pressure ≥11.1 psia: a closed vent system and control device[d]
ABS, continuous mass	VP ≥ 1.9 psia and capacity ≥10,000 gallons and <12,000 gallons styrene for capacities ≥12,000 gallons VP ≥ 0.0782 psia and ≥12,000 gallons	(same as the HON level of control)
SAN, continuous	VP ≥ 0.0735 to <0.1 psia and capacity ≥600,000 gallons VP ≥ 0.1 to <1.45 psia and ≥40,000 gallons VP ≥ 1.45 to <14.7 psia and capacity ≥8,000 to <40,000 gallons	90 percent reduction (same as the HON level of control) 98 percent reduction
ASA/AMSAN	AMST for capacities ≥10,200 gallons styrene/acrylonitrile for capacities ≥1,000 gallons acrylonitrile for capacities ≥20,000 gallons any other chemical: vapor pressure ≥0.1 psia and capacity ≥40,000 gallons[c] vapor pressure ≥1.9 psia and capacity ≥10,000 gallons[c]	98 percent reduction 98 percent reduction 98 percent reduction (same as the HON level of control)
Nitrile	Control all acrylonitrile storage vessels ≥ 3,500 gallons	(same as the HON level of control)
Polystyrene, continuous	vapor pressure ≥ 0.78 psia and capacity ≥ 29,000 gallons vapor pressure ≥ 0.09 psia and capacity ≥ 12,000 but less than 29,000 gallons. vapor pressure ≥ 1.1 psia and capacity ≥ 5,170 but less than 12,000 gallons.	(same as the HON level of control)

Footnotes to TABLE 8-4.

[a] Storage vessels that meet the criteria are defined as Group 1 storage vessels and control of their emissions would be required. Storage vessels that do not meet the criteria are defined as Group 2 storage vessels and control of their emissions is not required.

[b] Required for Group 1 storage vessels only.

[c] The applicability criteria for these subcategories are the same as those in the HON.

[d] The level of control is the same as in the HON.

KEY: VP = vapor pressure; AMST = alpha methyl styrene

8.1.5.1.1 Applicability Criteria. For most existing and new storage vessels, the proposed criteria for determining which storage vessels are to be controlled are identical to the criteria from the HON storage vessel provisions and are based on storage vessel capacity and vapor pressure of the stored material. Typically, vapor pressures and storage vessel capacity criteria that determine Group 1 or Group 2 status are different for existing and new sources. As in the HON, if a storage vessel meets the applicability criteria and is required to be controlled under the proposed rule, it is referred to as a Group 1 storage vessel. If a storage vessel is not required to apply controls, it is referred to as a Group 2 storage vessel.

For new ABS, continuous mass facilities, the applicability criteria also rely on vapor pressure and storage vessel capacity, but use different levels of each for defining a Group 1 storage vessel (see Table 8-4).

For new continuous SAN facilities, the proposed standards for storage vessels rely on five different combinations of vapor pressure and storage vessel capacity to determine Group 1 storage vessels. These combinations of vapor pressure and storage vessel capacity are shown in Table 8-4.

For existing continuous polystyrene facilities, the proposed standards for storage vessels rely on two combinations of vapor pressure and storage vessel capacity

to determine Group 1 storage vessels. These combination of vapor pressure and storage vessel capacity are shown in Table 8-3.

For new continuous polystyrene facilities, the proposed standards for storage vessels rely on three combinations of vapor pressure and storage vessel capacity to determine Group 1 storage vessels. These combinations of vapor pressure and storage vessel capacity are shown in Table 8-4.

For existing and new ASA/AMSAN facilities, the proposed standards for storage vessels have two parts to the applicability criteria. The first part identifies specific chemical and storage vessel capacity combinations. The second part applies vapor pressure and storage vessel criteria for storage vessels containing chemicals not specifically identified.

For existing and new nitrile facilities, all acrylonitrile storage vessels with capacities greater than or equal to 3,500 gallons are required to be controlled. For all other chemicals, the applicability criteria are the same as in the HON.

8.1.5.1.2 Level of Control. Except for the subcategories discussed below, the level of control required for storage vessels determined to be Group 1 storage vessels under the appropriate applicability criteria in the proposed rule is either technical modification to the tank (e.g., the installation of an internal floating roof) or the use of a

closed vent system and control device that is generally required to achieve at least 95 percent emission reduction. (This is the same level of control as required under the HON.) For all subcategories, storage vessels determined to be Group 2 are not required to be controlled.

For new continuous SAN facilities, different levels of control for two of the five applicability criteria combinations are being proposed. For the applicability combination of vapor pressure greater than 0.0735 but less than 0.1 pounds per square inch absolute (psia) and storage vessel capacity greater than or equal to 600,000 gallons, the proposed standards would require an emission reduction of 90 percent or more. For the applicability combination of vapor pressure greater than or equal to 1.45 but less than 14.7 psia and storage vessel capacity greater than or equal to 8,000 gallons but less than 40,000 gallons, the proposed standard would require an emission reduction of 98 percent or more.

For ASA/AMSAN facilities, different levels of control for storage vessels determined to be Group 1 based on the specific chemical/storage vessel capacity combination criteria are being proposed. For these storage vessels, the proposed standard would require an emission reduction of 98 percent or more.

8.1.5.2 Process Vents. As for storage vessels, the proposed standards for process vents require owners and

operators to first determine whether or not a process vent (or set of process vents) requires control and, if so, then specifies the level of control required.

8.1.5.2.1 Applicability Criteria. Tables 8-5 and 8-6 summarize the proposed applicability criteria for continuous and batch process vents at existing and new facilities, respectively. As for storage vessels, process vents that meet the applicability criteria are referred to as Group 1 process vents and those that do not are referred to as Group 2 process vents. With the exceptions discussed below, the proposed rule would require control of only those process vents determined to be Group 1 process vents under the appropriate criteria.

TABLE 8-5. SUMMARY OF PROPOSED PROCESS VENT APPLICABILITY CRITERIA FOR EXISTING FACILITIES

Process Vents	Subcategory	Applicability Criteria	
Continuous Unit Operations	All (except as specified below)	TRE[a] ≤ 1	
	MBS	TRE[a] ≤ 3.7	
	ASA/AMSAN	None. All vents are required to be controlled	
	Polystyrene, continuous: material recovery	None. Must meet standard	
	PET/DMT, continuous: material recovery	0.12 kg TOC per Mg product[b]	
	PET/DMT, continuous: polymerization reaction	None. Must meet standard	
	PET/TPA, continuous: raw material preparation and polymerization reaction	None. Must meet standard	
Batch Unit Operations	All	Stream Volatility	Flowrate Regression Equation[c]
		Low	(0.00437) AE - 51.6[d]
		Moderate	(0.00187) AE - 14.0[d]
		High	(0.00081) AE - 8.5[d]

[a] The total resource effectiveness (TRE) value is a reflection of the cost effectiveness of controlling an individual process vent. There are different TRE coefficients for existing and new process vents.
[b] If emissions from the described process vents are greater than the applicability criteria, control is required.
[c] If actual stream flowrate (standard cubic meters per minute) is less than the flowrate calculated by the regression equation, the process vent is required to be controlled.
[d] AE = annual emissions in kilograms per year.

TABLE 8-6. SUMMARY OF PROPOSED PROCESS VENT APPLICABILITY CRITERIA FOR NEW FACILITIES

Process Vents	Subcategory	Applicability Criteria	
Continuous Unit Operations	All (except as specified below)	TRE[a] ≤ 1	
	SAN, batch	None. Must meet standard.	
	ASA/AMSAN	None. All vents are required to be controlled.	
	Polystyrene, continuous: material recovery	None. Must meet standard.	
	PET/DMT, continuous: material recovery and polymerization reaction	None. Must meet standard.	
	PET/TPA, continuous: Raw material preparation and polymerization reaction	None. Must meet standard.	
Batch Unit Operations	All (except as specified below)	Stream Volatility	Flowrate Regression Equation[b]
		Low	(0.00437) AE - 51.6[c]
		Moderate	(0.00187) AE - 14.0[c]
		High	(0.00081) AE - 8.5[c]
	SAN, batch	None. Must meet standard.	

[a] The total resource effectiveness (TRE) value is a reflection of the cost effectiveness of controlling an individual process vent. There are different TRE coefficients for existing and new process vents.
[b] If actual stream flowrate (standard cubic meters per minute) is less than the flowrate calculated by the regression equation, the process vent is required to be controlled.
[c] AE = annual emissions in kilograms per year.

Except for certain PET and polystyrene continuous process vents, Group 1 continuous process vents are determined by comparing each process vent's total resource effectiveness (TRE) value to a TRE value of unity. The TRE is a reflection of the costs and other associated impacts of controlling an individual process vent. It is determined based on process vent stream characteristics such as emissions (mass per hour), heat content, and flowrate. The procedure in the proposed rule for determining Group 1 process vents is the same procedure as in the HON.

Except for continuous process vents at existing MBS facilities, continuous process vents with a TRE value of 1 or less would be classified as a Group 1 process vent. For continuous process vents at existing MBS facilities, a TRE value of 3.7 or less defines a Group 1 process vent.

As seen in Tables 8-5 and 8-6, there are no applicability criteria specified for several subcategories. At these facilities, a Group 1/Group 2 status determination does not need to be made and all process vents are required to be controlled.

For process vents associated with the material recovery section from existing PET facilities using a continuous DMT process, Group 1 process vents are determined by comparing uncontrolled emission rates with threshold emission rates. Process vents associated with the material recovery section at an existing PET facility using a continuous DMT

process would be considered Group 1 process vents if the uncontrolled emission rate is greater than 0.12 kg TOC per Mg of product (see Table 8-5). For other process vents at existing and new polystyrene and PET facilities (see Tables 8-5 and 8-6), there are no applicability criteria. These process vents must meet the proposed standards.

For process vents from batch unit operations, the process vent is first characterized as to its volatility - low, medium, or high. Next, the estimate of the stream's annual emissions is entered in the appropriate flowrate regression equation. If the actual flowrate is less than the calculated flowrate, then the batch process vent is a Group 1 vent under these standards, and control is required. As seen in Tables 8-5 and 8-6, the batch process vent applicability criteria are the same for existing and new sources, except for new SAN batch facilities.

For new SAN batch facilities, there are no applicability criteria for individual process vent streams; all process vents are subject to control in that the proposed standard for these facilities requires an overall emission reduction of 84 percent from all process vents.

A batch process vent that is combined with a continuous process vent prior to a control or recovery device is not required to comply with the batch process vent provisions if there are no emissions to the atmosphere up until the point the batch vent stream is combined with the continuous vent

stream. The combined vent would be required to comply with the continuous process vent provisions. The presence of a batch process vent in a continuous process vent stream would necessitate that all applicability tests and performance tests be conducted while the batch process vent is emitting (i.e. at maximum operating conditions).

8.1.5.2.2 Level of Control. For continuous process vents, most of the facilities are required to control Group 1 process vents by at least 98 percent. If a flare is used, it must meet the design and operating requirements of §63.11(b) of subpart A of 40 CFR part 63. Exceptions to this are discussed in the paragraphs below.

For continuous process emissions from the material recovery section of polystyrene plants using a continuous process, the proposed standards would (1) limit the emissions of total organic compounds (TOC) (minus methane and ethane) to 0.0036 kilograms (kg) of TOC per megagram (Mg) of product (0.0036 pounds (lbs) TOC/1,000 lbs of product) from each material recovery section, or (2) limit the outlet gas temperature from each final condenser in each material recovery section to -25°C (-13°F), or (3) reduce emissions from each material recovery section by 98 weight percent or to 20 parts per million by volume (ppmv). These are the same requirements as in the Polymer NSPS.

For PET facilities using a continuous TPA process, the proposed standards would limit continuous process vent

emissions from (1) the raw material preparation section to 0.04 kg TOC/Mg of product and (2) the polymerization reaction section to 0.02 kg TOC/Mg of product. Similarly, for PET facilities using a continuous DMT process, the proposed standards would limit continuous process vent emissions from (1) the material recovery section to 0.018 kg TOC/Mg of product or the temperature to 37°F from each final condenser in the material recovery section and (2) the polymerization reaction section to 0.02 kg TOC/Mg of product. These are also the same requirements that are in the Polymers NSPS, with the exception that cooling tower emissions would not be considered as part of the polymerization reaction section.

For Group 1 continuous process emissions from other process sections at polystyrene and PET facilities, the proposed standards would require emission reduction by at least 98 percent or control by a flare that meets the requirements of §63.11(b) of subpart A of 40 CFR part 63.

For batch process vents, the proposed standards would require Group 1 process vents from batch unit operations to be controlled by at least 90 percent.

There are three subcategories where the proposed standards are based on the MACT floor. These subcategories are existing MBS facilities, existing and new ASA/AMSAN facilities, and new SAN, batch facilities.

For existing MBS facilities, the proposed standards require continuous process vents at facilities to either (1) meet an emission level of 0.000590 kg of emissions per megagram of product for all continuous process vents or (2) control all continuous process vents with a TRE of 3.7 or less by at least 98 percent. The TRE is to be calculated for each process vent using the same TRE coefficients as for other existing sources. The development of the MACT floor and applicability criteria for MBS existing sources is documented in Docket A-92-45, Category II-B and in the SID.

For both existing and new ASA/AMSAN facilities, the proposed rule requires all process vents (continuous and batch) at both existing and new facilities to control emissions by at least 98 percent.

For new SAN, batch facilities, the proposed rule requires an overall emission reduction of 84 percent of process vent emissions.

8.1.5.3 Equipment Leaks. For all the subcategories, both existing and new facilities would be required to implement a leak detection and repair (LDAR) program. With a few exceptions, the LDAR program being proposed is the same as that specified in the HON (40 CFR part 63, subpart H) and the National Emission Standards for Organic HAP for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks (40 CFR part 63, subpart I). Under the proposed standards, work practice requirements to reduce

emissions from equipment that are in volatile HAP service for 300 or more hours per year are specified. The proposed standards define "in volatile HAP service" as being in contact with or containing process fluid that contains a total of 5 percent or more total HAP. Equipment subject to the proposed standards are: valves, pumps, compressors, connectors, pressure relief devices, open-ended valves or lines, sampling connection systems, instrumentation systems, agitators, surge control vessels, bottoms receivers, and closed-vent systems and control devices.

Affected sources currently complying with the NESHAP for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks (40 CFR part 63, subpart I) are required to continue to comply with subpart I until the compliance date of the proposed rule. Further, affected sources complying with subpart I through a quality improvement program shall be allowed to continue these programs without interruption as part of complying with the proposed rule. In other words, becoming subject to the proposed rule does not restart or reset the "compliance clock" as it relates to reduced burden earned through a quality improvement program.

8.1.5.4 Wastewater. Except for ASA/AMSAN facilities, the proposed standards require owners and operators to determine for each wastewater stream at its point of generation whether it is a Group 1 or Group 2 wastewater stream. As for process vents, Group 1 wastewater streams are required

to be controlled, while Group 2 wastewater streams are not required to be controlled. The wastewater stream characteristics used to make the Group 1/Group 2 applicability determination are flowrate and organic HAP concentration. The proposed criteria for determining Group 1 wastewater streams are presented in Table 8-7 and are the same as used in the HON. The level of control required for Group 1 wastewater streams is dependent upon the organic HAP constituents in the wastewater stream. The levels of control proposed for these standards are the same as those for the HON. The proposed rule would not control wastewater emissions from any existing or new ASA/AMSAN facilities.

TABLE 8-7. PROPOSED WASTEWATER APPLICABILITY CRITERIA[a,b]

Existing Source Criteria	New Source Criteria
VOHAP[c] concentration ≥ 10,000 ppmw	Same as existing criteria
<u>or</u>	<u>and</u>
VOHAP[c] concentration ≥ 1,000 ppmw <u>and</u> flow rate ≥ 10 liters per minute	for a subset of organic HAP...VOHAP[c] concentration ≥10 ppmw <u>and</u> flowrate ≥0.02 liters per minute

[a] Wastewater streams meeting these criteria are considered Group 1 wastewater streams and control is required.

[b] There are exemptions for minimal flowrates and concentrations.

[c] VOHAP = volatile organic HAP.

The proposed standards require owners and operators to comply with the maintenance wastewater requirements in §63.105 of subpart F of part 63. These provisions require owners and operators to include a description of procedures for managing wastewaters generated during maintenance in their start-up, shutdown and malfunction plan. The start-up, shutdown, and malfunction plan is required under subpart A of part 63.

8.1.5.5 Heat Exchange Systems and Process Contact Cooling Towers. The proposed standards would require a monitoring program to detect leakage of organic HAP from the process into the cooling water. The proposed monitoring program is the same as that in the HON (subpart F). The proposed rule would also prohibit the use of cooling tower water in contact condensers in the vacuum systems at PET facilities. Further, if a wastewater stream is generated from the vacuum system and it contains any of the organic HAP identified in Table 9 of the HON wastewater provisions (subpart G), the proposed rule would require it to be controlled regardless of its organic HAP concentration or flowrate. The level of control required is the same as that for a Group 1 wastewater stream.

These provisions for control of emissions from process contact cooling towers are independent of the provisions of the NESHAP for Industrial Cooling Towers (40 CFR Part 63,

Subpart Q) which may also be applicable to these cooling towers.

8.1.5.6 Emissions Averaging. The proposed standards would apply essentially the same emissions averaging scheme as has been adopted by the HON, although the emissions averaging provisions of the proposed rule are entirely contained in the proposed rule instead of referring to the subpart G emissions averaging provisions. Under the proposed rule, emissions averaging would be allowed among five collocated existing emission points belonging to the same subcategory. This number may be increased by three additional points if pollution prevention measures are to be used to control emission points to be included in the average. However, emissions from batch process vents and equipment leaks, would not be allowed to be averaged. The owner or operator must demonstrate that the averaging scheme will not result in greater hazard or risk relative to strict compliance with the standards in the absence of averaging.

8.1.5.7 Compliance and performance test provisions and monitoring requirements. Compliance and performance test provisions and monitoring requirements contained in the proposed rule are very similar to those found in the HON (subpart G). Each type of emission point is discussed briefly in the paragraphs below. Also, significant differences from the parameter monitoring requirements found in subpart G are discussed.

8.1.5.7.1 Continuous Process Vents. The proposed regulations for process vents from continuous unit operations (continuous process vents) require the owner or operator to either calculate a TRE index value to determine whether each continuous process vent is a Group 1 or Group 2 vent, or the owner or operator can elect to comply with the control requirements without calculating the TRE index. The TRE index value is determined after the last recovery device in the process or prior to venting to the atmosphere. The TRE calculation involves an emissions test or engineering assessment and use of the TRE equations in the proposed rule.

Performance test provisions are included for Group 1 continuous process vents to verify that the control device achieves the required performance. Monitoring provisions necessary to demonstrate compliance are also included in the proposed rule.

Compliance provisions for continuous process vents at polystyrene and PET facilities are included in the proposed rule. For owners or operators electing to comply with a kg TOC/Mg of product limit, procedures to demonstrate compliance are provided. Also, procedures are included in the proposed rule to demonstrate compliance with the requirement to reduce overall process vent emissions (continuous and batch) by 84 percent for new SAN, batch facilities.

8.1.5.7.2 Batch Process Vents. Similar to the provisions for continuous process vents, there is a procedure for determining which batch process vents are Group 1 and which are Group 2. This procedure is based on annual emissions and annual average flowrate of the batch process vent. Equations for estimating annual emissions and annual average flowrates are provided in the proposed rule.

Performance test provisions are included for Group 1 batch process vents to verify that the control or recovery device achieves the required performance. Monitoring provisions necessary to demonstrate compliance are also included in the proposed rule.

For Group 2 batch process vents, the proposed rule requires owners and operators to establish a batch cycle limitation. The batch cycle limitation limits the number of batch cycles that can be accomplished for a given batch unit operation per year (i.e., for the operations that feed a single batch process vent). This enforceable limitation ensures that a Group 2 batch process vent does not become a Group 1 batch process vent as a result of running more batches than anticipated when the group determination was made. The determination of the batch cycle limitation is not tied to any previous production amounts. An affected source may set the batch cycle limitation at any level it desires as long as the batch process vent remains a Group 2 batch process vent. Alternatively the proposed rule would

allow owners and operators to declare any Group 2 batch process vent to be a Group 1 batch process vent. In such cases, control of the batch process vent is required.

As described in Section 8.1.5.2.1, procedures are included in the proposed rule to demonstrate compliance with the requirement to reduce overall process vent emissions (continuous and batch) by 84 percent for new SAN, batch facilities.

8.1.5.7.3 Storage Vessels. Monitoring and compliance provisions include periodic visual inspections of vessels, roof seals, and fittings, as well as internal inspections. If a control device is used, the owner or operator must identify the appropriate monitoring procedures to be followed in order to demonstrate compliance. Monitoring parameters and procedures for many of the control devices likely to be used are already identified in other parts of the proposed rule. Reports and records of inspections, repairs, and other information necessary to determine compliance are also required by the proposed rule.

8.1.5.7.4 Wastewater. For demonstrating compliance with the various requirements, the proposed rule allows the owners or operators to either conduct performance tests or to document compliance using engineering calculations. Appropriate compliance and monitoring provisions are included in the regulation.

8.1.5.7.5 Equipment Leaks. The proposed rule retains the use of Method 21 to detect leaks. Method 21 requires a portable organic vapor analyzer to monitor for leaks from equipment in use. A "leak" is a concentration specified in the regulation for the type of equipment being monitored and is based on the instrument response to methane (the calibration gas) in air. The observed screening value may require adjustment for response factor relative to methane if the weighted response factor of the stream exceeds a specified multiplier. The proposed rule requires the use of Method 18 to determine the organic content of a process stream. Test procedures using either a gas or a liquid for pressure testing the batch system are specified to test for leaks.

8.1.5.7.6 Heat Exchange Systems. Monitoring of cooling water is required to detect leaks in noncontact heat exchange systems. If a leak is detected, the heat exchange system must be repaired.

8.1.5.7.7 Process Contact Cooling Towers. Owners and operators of sources subject to these provisions are required to indicate in their Implementation Plan and Notification of Compliance Status report that cooling tower water will not be used in contact condensers associated with vacuum systems.

8.1.5.7.8 Continuous Parameter Monitoring. When compared to the HON, the proposed rule contains two significant

differences related to continuous parameter monitoring. First, the proposed rule does not allow any excused excursions. The proposed rule, as did subpart G requires at least 75 percent of monitoring data to constitute a valid days worth of data for continuous and batch process vents. Failure to have a valid day's worth of monitoring data is considered an excursion. The criteria for determining a valid day's or hour's worth of data are provided in the proposed rule. Second, the procedure for determining the parameter monitoring level for continuous and batch process vents is both more specific and restrictive than the procedure in the HON because it relies exclusively on performance tests.

8.1.5.8 Recordkeeping and Reporting Requirements. The general recordkeeping and reporting requirements of this subpart are very similar to those found in the HON. The proposed rule also relies on the provisions of subpart A of part 63. A table included in the proposed rule designates which sections of subpart A apply to the proposed rule. Specific recordkeeping and reporting requirements for each type of emission point are also included in the proposed rule.

The proposed rule requires sources to keep records and submit reports of information necessary to document compliance. Records must be kept for 5 years. The following six types of reports must be submitted to the

Administrator as appropriate: (1) Initial Notification, (2) Implementation Plan (if an operating permit application has not been submitted or, for new sources, an application for approval of construction or reconstruction), (3) Emissions Averaging Plan, (4) Notification of Compliance Status, (5) Periodic Reports, and (6) other reports. The requirements for each of the six types of reports are summarized below. In addition, affected sources complying with the equipment leak requirements contained in subpart H must follow the recordkeeping and reporting requirements of subpart H.

8.1.5.8.1 Initial Notification. The Initial Notification is due 120 days after the date of promulgation for existing sources. For new sources, it is due 180 days before commencement of construction or reconstruction, or 45 days after promulgation, whichever is later. The notification must list the thermoplastic processes that are subject to the proposed rule, and which provisions may apply (e.g., continuous process vents, batch process vents, storage vessels, wastewater, and/or equipment leak provisions). A detailed identification of emission points is not necessary for the Initial Notification. The notification, however, must include a statement of whether the affected source expects that it can achieve compliance by the specified compliance date.

8.1.5.8.2 Implementation Plan. The Implementation Plan details how the affected source plans to comply. An Implementation Plan would be required only for affected sources that have not yet submitted an operating permit application or for new sources that have not yet submitted the same information as part of their application for approval of construction or reconstruction.

The Implementation Plan would be due 12 months prior to the date of compliance. For new sources, Implementation Plans would be submitted with the Notification of Compliance Status.

The information in the Implementation Plan should be incorporated into the affected source's operating permit application. The terms and conditions of the plan, as approved by the permit authority, would then be incorporated into the operating permit.

The Implementation Plan would include a list of emission points subject to the continuous process vents, batch process vents, storage vessels, wastewater, heat exchange system, process contact cooling tower, and equipment leak provisions and, as applicable, whether each emission point (e.g., storage vessel or process vent) is Group 1 or Group 2. The control technology or method of compliance planned for each Group 1 emission point must be specified.

The plan must also certify that appropriate testing, monitoring, reporting, and recordkeeping will be done for each Group 1 emission point. If an affected source requests approval to monitor a unique parameter, a rationale must be included.

8.1.5.8.3 Emissions Averaging Plan. The Emissions Averaging Plan would be due 18 months prior to the date of compliance. New sources are not allowed to comply through the use of emissions averaging.

For points included in emissions averaging, the Emissions Averaging Plan would include: an identification of all points in the average and whether they are Group 1 or Group 2 points; the specific control technique or pollution prevention measure that will be applied to each point; the control efficiency for each control used in the average; the projected credit or debit generated by each point; and the overall expected credits and debits. The plan must include a demonstration that the emissions averaging scheme will not result in greater hazard or risk than if the emission points would comply with the standards in the absence of averaging. The plan must also certify that the same types of testing, monitoring, reporting, and recordkeeping that are required by the proposed rule for Group 1 points will be done for all points (both Group 1 and Group 2) included in an emissions average. If an affected source requests approval to monitor a unique parameter or use a unique recordkeeping and

reporting system, a rationale must be included in the Emissions Averaging Plan.

8.1.5.8.4 Notification of Compliance Status. The Notification of Compliance Status would be required 150 days after the affected source's compliance date. It contains the information for Group 1 emission points and for all emission points in emissions averages, necessary to demonstrate that compliance has been achieved. Such information includes, but is not limited to, the results of any performance tests for continuous and/or batch process vents and wastewater emission points; one complete test report for each test method used for a particular kind of emission point; TRE determinations for continuous process vents; group determinations for batch process vents; design analyses for storage vessels and wastewater emission points; monitored parameter levels for each emission point and supporting data for the designated level; and values of all parameters used to calculate emission credits and debits for emissions averaging.

8.1.5.8.5 Periodic Reports. Generally, Periodic Reports would be submitted semiannually. However, there are two exceptions. First, quarterly reports must be submitted for all points included in an emissions average. Second, if monitoring results show that the parameter values for an emission point are above the maximum or below the minimum established levels for more than 1 percent of the operating

time in a reporting period, or the monitoring system is out of service for more than 5 percent of the time, the regulatory authority may request that the owner or operator submit quarterly reports for that emission point. After 1 year, semiannual reporting can be resumed, unless the regulatory authority requests continuation of quarterly reports.

All Periodic Reports would include information required to be reported under the recordkeeping and reporting provisions for each emission point. For emission points involved in emissions averages, the report would include the results of the calculations of credits and debits for each month and for the quarter. For continuously monitored parameters, the data on those periods when the parameters are above the maximum or below the minimum established levels are included in the reports. Periodic Reports would also include results of any performance tests conducted during the reporting period and instances when required inspections revealed problems. Additional information the affected source is required to report under its operating permit or Implementation Plan would also be described in Periodic Reports.

8.1.5.8.6 Other reports. Other reports required under the proposed rule include: reports of start-up, shutdown, and malfunction; process changes that change the compliance status of process vents; and requests for extensions of

repair and notifications of inspections for storage vessels and wastewater.

In addition, quarterly reporting of the number of batch cycles accomplished for Group 2 batch process vents is required. Every fourth quarterly report would be required to include the total batch cycles accomplished during the previous 12 months, and a statement whether the owner or operator is in compliance with the batch cycle limitation.

8.2 RATIONALE FOR THE SELECTION OF EMISSION POINTS TO BE COVERED BY THE PROPOSED STANDARDS

Emissions from the production of Group IV thermoplastics were identified as occurring from storage vessels, process vents, equipment leaks, wastewater operations, and heat exchange systems to include process contact cooling towers. The EPA is proposing standards for all of these types of emission points in the proposed rule.

8.3 RATIONALE FOR THE SELECTION OF THE PROPOSED STANDARDS

The approach for determining the MACT floor and developing regulatory alternatives is discussed in Chapter 6.0. Chapter 6.0 also presents in tabular form the results of the MACT floor analysis and identifies the selected regulatory alternative. This chapter discusses the results of the MACT floor analysis and provides the rationale for the selection of the proposed standards. Throughout Sections 8.3.1 and 8.3.2, the use of the term "HON" in reference to process vents is meant to include the Batch

Processes ACT. When a sentence states "the HON was equivalent to the MACT floor for process vents," it should be understood that the HON and Batch Processes ACT were equivalent to the MACT floor for process vents.

In some instances, the EPA has required control more stringent than that required by the MACT floor. In these instances, the EPA has judged the impacts to be reasonable. The EPA specifically solicits comments on these decisions.

8.3.1 Selection of the Standards for Existing Sources

The following paragraphs discuss the selection of the standards for existing sources for each subcategory.

ABS, Continuous Emulsion Process

Based on available information, there are two existing facilities in the U.S. at which ABS is produced using a continuous emulsion process. The information on controls at both facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative considered for existing continuous emulsion ABS facilities consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is

equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions and costs associated with implementing the HON equipment leak requirements compared to the existing levels of control. These impacts are based on confidential information and cannot be presented. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing continuous emulsion ABS facilities.

ABS, Continuous Mass Process

Based on available information, there are five existing facilities in the U.S. at which ABS is produced using a continuous mass process. The information on controls at all five facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process

vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative considered for existing continuous mass ABS facilities consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (171 Mg/yr) and costs ($70,000/yr) associated with implementing the HON equipment leak requirements compared to the existing levels of control. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing continuous mass ABS facilities.

ABS, Batch Emulsion Process

Based on available information, there are four existing facilities in the U.S. at which ABS is produced using a batch emulsion process. The information on controls at all

four facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative considered for existing batch emulsion ABS facilities consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (37 Mg/yr) and costs ($28,000/yr) associated with implementing the HON equipment leak requirements compared to the existing levels of control. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing batch emulsion ABS facilities.

ABS, Batch Suspension Process

Based on available information, there are two existing facilities in the U.S. at which ABS is produced using a batch suspension process. The information on controls at both facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative considered for existing batch suspension ABS facilities consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions of 5 Mg/yr and a very small cost savings associated with implementing the HON equipment leak requirements compared to the existing levels of control. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this

level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing batch suspension ABS facilities.

ABS, Latex Process

Based on available information, there is one existing facility in the U.S. at which ABS is produced using a latex process. The information on controls at this facility was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative considered for existing ABS latex facilities consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions of 2 Mg/yr and a

cost savings of $500/yr associated with implementing the HON equipment leak requirements compared to the existing levels of control. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing ABS latex facilities.

MABS Process

Based on available information, there is one existing facility in the U.S. at which ABS is produced. The information on controls at this facility was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative considered for existing MABS facilities consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON

requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions and costs associated with implementing the HON equipment leak requirements compared to the existing levels of control. These impacts are based on confidential information and cannot be presented. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing MABS facilities.

MBS Process

Based on available information, there are three existing facilities in the U.S. at which MBS is produced. The information on controls at all three facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels and wastewater, that the HON was less stringent than the MACT floor for process vents, and that the HON was more stringent than the MACT floor for equipment leaks.

Since the HON was determined to be less stringent than the MACT floor for process vents, the EPA defined the MACT

floor and included it as part of the first regulatory alternative (Regulatory Alternative 1). The EPA analyzed several options for defining the MACT floor. These options were a TRE, an emission factor, a percent reduction, and various combinations of these. Based on this analysis (see Docket A-92-45, Category II-B), the EPA determined that the option of either complying with a TRE or an emission factor was the best representation of the MACT floor.

The first regulatory alternative considered for existing MBS facilities consisted of applying the MACT floor to process vents and the HON to storage vessels, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (109 Mg/yr) and costs ($44,000/yr) associated with implementing the HON equipment leak requirements compared to the existing levels of control. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator

selected Regulatory Alternative 1 as the proposed standard for existing MBS facilities.

SAN, Continuous Process

Based on available information, there are three existing facilities in the U.S. at which SAN is produced using a continuous process. The information on controls at all three facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, wastewater, and process vents, and the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for existing SAN facilities using a continuous process consisted of applying the HON to each of the four types of emission points. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (46 Mg/yr) and costs ($55,000/yr) associated with implementing the HON equipment leak requirements compared to the existing level

of controls. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for existing SAN facilities using a continuous process.

SAN, Batch Processes

Based on available information, there are two existing facilities in the U.S. at which SAN is produced using a batch process. The information on controls at both facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, wastewater, and process vents, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for existing SAN facilities using a batch process consisted of applying the HON to each of the four types of emission points. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to

achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (7 Mg/yr) and cost savings ($1,200/yr) associated with implementing the HON equipment leak requirements compared to the existing level of controls. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing SAN facilities using a batch process.

ASA/AMSAN Process

Based on available information, only one facility in the U.S. produces ASA/AMSAN. The information on the controls used at this one facility was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was less stringent than the MACT floor for storage vessels and process vents, and the HON was more stringent than the MACT floor for equipment leaks and wastewater emissions.

Since the HON was determined to be less stringent than the MACT floor for storage vessels and process vents, the EPA defined the MACT floor and included it as part of the first regulatory alternative (Regulatory Alternative 1). Since there is only one facility in this subcategory, the MACT floor is equivalent to the existing level of control.

For storage vessels, the EPA evaluated three options for defining the MACT floor. These options were: (1) define vapor pressure and storage vessel capacity combinations; (2) define chemical type and storage vessel capacity combinations; and (3) Option 2 supplemented by Option 1 for chemicals not specified under Option 2. Based on this analysis (see Docket A-92-45, Category II-B), the EPA determined that the best option for defining the MACT floor was to use vapor pressure and storage vessel size combinations. For process vents, the one facility controls all process vents. Therefore, the best representation of the MACT floor is the same - control of all process vents.

The first regulatory alternative considered for the existing ASA/AMSAN facility consisted of applying the MACT floor to storage vessels and process vents and the HON to equipment leaks and wastewater. For storage vessels and process vents, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks and wastewater, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (89 Mg/yr) and costs ($74,000/yr) associated with implementing the HON equipment leaks requirements compared to the existing level

of control. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. The EPA also estimated the emission reductions (5 Mg/yr) and costs ($127,000/yr) associated with implementing the HON wastewater requirements. The EPA found these impacts were not reasonable. No additional regulatory alternatives were identified. Based on these considerations, the Administrator selected Regulatory Alternative 1 for storage vessels, process vents, and equipment leaks as the proposed standard for existing ASA/AMSAN facilities. No standards are being proposed for wastewater emissions.

Polystyrene, Continuous Processes

Based on available information, there are 22 facilities in the U.S. at which polystyrene is being produced using a continuous process. The information on controls for the best performing five facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor, the HON, and the Polymers NSPS, the EPA determined that the HON and Polymers NSPS were equivalent to the MACT floor for process vents, the HON was equivalent to the MACT floor for wastewater, the HON was more stringent than the MACT floor for equipment leaks, and the HON was less stringent than the MACT floor for storage vessels.

The first regulatory alternative (Regulatory Alternative 1) considered for existing polystyrene facilities using a continuous process consisted of applying 1) the MACT floor to storage vessels, 2) the HON and Polymers NSPS to process vents, and 3) the HON to wastewater, and equipment leaks. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

The EPA estimated the emission reductions and costs associated with implementing those requirements in Regulatory Alternative 1 that are more stringent than the MACT floor (see Table 8-8). Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that those portions of Regulatory Alternative 1 more stringent than the MACT floor were reasonable. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing polystyrene facilities using a continuous process.

TABLE 8-8. REGULATORY ALTERNATIVE IMPACTS FOR EXISTING POLYSTYRENE CONTINUOUS FACILITIES

Regulatory Alternative	Emission Reduction Mg/yr	Total Annual Costs, $1,000/yr	Cost-Effectiveness, $/Mg
			Average
Existing Control	--	--	--
1	897	414	460

Polystyrene, Batch Processes

Based on available information, there are 11 existing facilities in the U.S. at which polystyrene is produced using a batch process. The information on controls for the best performing five facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks and process vents.

The first regulatory alternative (Regulatory Alternative 1) considered for existing polystyrene facilities using a batch process consisted of applying the HON to each of the four types of emission points. For storage vessels and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For process vents and equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (139 Mg/yr) and cost savings ($119,000/yr) associated with implementing the HON to process vents and equipment leaks compared to the existing level of controls.

Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing polystyrene facilities using a batch process.

Expandable Polystyrene Processes

Based on available information, there are 7 existing facilities in the U.S. at which expandable polystyrene is produced. The information on controls for the best performing five facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, wastewater, and process vents, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for existing expandable polystyrene facilities consisted of applying the HON to each of the four types of emission points. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor,

and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (92 Mg/yr) and cost savings ($49,000/yr) associated with implementing the HON equipment leak requirements compared to the existing level of controls. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing expandable polystyrene facilities.

PET - TPA, Continuous Processes

Based on available information, there are 12 facilities in the U.S. at which PET is being produced using the TPA continuous process. The information on controls for the best performing five facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor, the HON, and the Polymers NSPS, the EPA determined that the HON was equivalent to the MACT floor for storage vessels and wastewater, that the HON and Polymers NSPS were equivalent to the MACT floor for process vents, and that the HON was more stringent than the MACT floor for equipment leaks.

As has been discussed earlier, process contact cooling towers are addressed by the Polymers NSPS. Of those

facilities with process contact cooling towers as a type of emission point, none control the emissions from the cooling towers. Based on this information, the EPA determined that the MACT floor for process contact cooling towers at existing facilities using a TPA continuous process was no control. Thus, the Polymers 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 Polymers NSPS.

The first regulatory alternative (Regulatory Alternative 1) considered for existing PET sources using a continuous TPA process consisted of applying the HON to storage vessels, equipment leaks, and wastewater and applying the HON and Polymers NSPS to process vents. In addition, the HON wastewater applicability criteria were applied to the vacuum system generated wastewater as part of the first regulatory alternative. For storage vessels, process vents, and (non-vacuum system generated) wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks and vacuum system generated wastewater, Regulatory Alternative 1 is more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

A second regulatory alternative was developed for existing PET facilities using a continuous TPA process. In the second regulatory alternative, control of emissions from the process contact cooling tower, which result from the vacuum system generated wastewater, was considered by prohibiting the use of cooling tower water in the contact condensers in the vacuum system. For the purposes of this analysis, this prohibition was assumed to be implemented by replacing the existing steam jet vacuum systems with ethylene glycol jet vacuum systems. (Other methods for achieving this prohibition were judged by the EPA to obtain equivalent results at less cost.) The requirements for storage vessels, process vents, equipment leaks, and wastewater remained the same. No additional regulatory alternatives were identified.

The EPA estimated the emission reductions and costs associated with implementing those requirements in Regulatory Alternatives 1 and 2 that are more stringent than the MACT floor (see Table 8-9). Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that those portions of Regulatory Alternative 2 more stringent than the MACT floor were reasonable. Therefore, the Administrator selected Regulatory Alternative 2 as the proposed standard for existing PET facilities using a continuous TPA process. The EPA solicits comment on this decision to go beyond the MACT floor.

TABLE 8-9. REGULATORY ALTERNATIVE IMPACTS FOR EXISTING TPA CONTINUOUS FACILITIES

Regulatory Alternative	Emission Reduction Mg/yr	Total Annual Costs, $1,000/yr	Cost-Effectiveness, $/Mg	
			Average	Incremental
Existing Control	--	--	--	--
1	1,380	1,441	1,040	--
2	2,472	3,436	1,390	1,830

Based on the available data, the Polymers NSPS requirements did not gain any additional control over and above that which the HON would obtain. Since there does not appear to be any impact from the Polymers NSPS on existing continuous TPA facilities, the EPA is specifically requesting comments on whether to adopt a combination of the Polymers NSPS and HON or only the HON for this subcategory. In support of their position, commenters are specifically requested to provide documentation on (1) which emission streams would be required to be controlled or not controlled and (2) for each stream that would be required to be controlled, which rule (HON or Polymers NSPS or both) would require control, the emission reduction as the result of control, and the costs of control. The regulatory alternative selected for the final standard could range from the Polymers NSPS to the HON or a combination of both, depending on the data submitted.

PET - TPA, Batch Processes

Only one facility in the U.S. has been identified as producing PET using a batch TPA process. The information on the controls used at this facility was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the HON and the MACT floor, the HON was determined to be equivalent to the MACT floor for storage vessels, wastewater, and process vents, and the HON was

determined to be more stringent than the MACT floor for equipment leaks.

The one facility using the batch TPA process does not control emissions from the process contact cooling tower. Therefore, the MACT floor for process contact cooling towers is no control. One potential regulatory alternative is to apply the requirements for cooling towers from the Polymers NSPS. However, as discussed earlier, several methods, including ethylene glycol jets, were determined to be more cost effective in reducing emissions from process contact cooling towers.

The first regulatory alternative (Regulatory Alternative 1) considered for the existing PET facility using a batch TPA process consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater (including vacuum system generated wastewater). For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks and vacuum system generated wastewater, Regulatory Alternative 1 is more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor control level would be incurred.

A second regulatory alternative was developed for batch TPA processes. As for continuous TPA processes, in the second regulatory alternative, control of emissions from the cooling tower was considered through the replacement of existing steam jet vacuum systems with ethylene glycol jet vacuum systems. Requirements for the other types of emission points remained the same. No additional regulatory alternatives were identified.

The EPA estimated the emission reductions and costs associated with implementing those requirements in Regulatory Alternatives 1 and 2 that are more stringent than the MACT floor (see Table 8-10). Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that those portions of Regulatory Alternative 2 more stringent than the MACT floor were reasonable. Therefore, the Administrator selected Regulatory Alternative 2 as the proposed standard for existing PET facilities using a batch TPA process.

TABLE 8-10. REGULATORY ALTERNATIVE IMPACTS FOR EXISTING TPA BATCH FACILITIES

Regulatory Alternative	Emission Reduction Mg/yr	Total Annual Costs, $1,000/yr	Cost-Effectiveness, $/Mg
			Average
Existing Control	--	--	--
1	5.6	18	3,180
2[a]	CBI	CBI	CBI

[a] Impacts for the control included in this regulatory alternative are based on confidential information and cannot be presented.

PET - DMT, Continuous Processes

Based on available information, there are 10 facilities in the U.S. at which PET is produced using a DMT continuous process. The information on controls for the best performing five facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor, the HON, and the Polymers NSPS, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

As has been discussed earlier, process contact cooling towers are addressed by the Polymers NSPS. Of those facilities with process contact cooling towers as a type of emission point, none control the emissions from the cooling towers. Based on this information, the EPA determined that the MACT floor for process contact cooling towers at existing facilities using a continuous DMT process was no control, and the Polymers NSPS is more stringent than the MACT floor. However, also as noted earlier, ethylene glycol jets were determined to be more cost effective in reducing emissions.

The first regulatory alternative (Regulatory Alternative 1) considered for existing PET sources using a continuous DMT process consisted of applying the HON to storage vessels, process vents, equipment leaks, and

wastewater (including the vacuum system generated wastewater). For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

A second regulatory alternative was developed for continuous DMT processes. The second regulatory alternative also considered the application of the Polymers NSPS to process emissions from the material recovery section and the polymerization reaction section, in addition to the HON for other process vents. As for continuous TPA processes, in the second regulatory alternative, control of emissions from the cooling tower was considered through the replacement of existing steam jet vacuum systems with ethylene glycol jet vacuum systems. The requirements for storage vessels, equipment leaks, and wastewater remained the same. No additional regulatory alternatives were identified.

The EPA estimated the emission reductions and costs associated with implementing those requirements in Regulatory Alternatives 1 and 2 that are more stringent than the MACT floor (see Table 8-11). Considering these impacts, as well as non-air environmental and energy impacts, the EPA

TABLE 8-11. REGULATORY ALTERNATIVE IMPACTS FOR EXISTING DMT BATCH FACILITIES

Regulatory Alternative	Emission Reduction Mg/yr	Total Annual Costs, $1,000/yr	Cost-Effectiveness, $/Mg	
			Average	Incremental
Existing Control	--	--	--	--
1	1,190	1,489	1,250	--
2	1,881	2,909	1,546	2,050

judged that those portions of Regulatory Alternative 2 more stringent than the MACT floor were reasonable. Therefore, the EPA selected Regulatory Alternative 2 as the proposed standard for existing PET facilities using a continuous DMT process. The EPA solicits comment on this decision to go beyond the MACT floor.

Based on the available data, the Polymers NSPS applied to continuous DMT process sources was estimated to obtain additional control from process vents in the material recovery section over and above what the HON would obtain, but not for the polymerization reaction section. Since the impact of the Polymers NSPS on existing facilities is unclear, the EPA is specifically requesting comments on whether to adopt a combination of the Polymers NSPS and HON or only the HON for this subcategory. In support of their position, commenters are specifically requested to provide documentation on which emission streams would be required to be controlled or not controlled and, for each stream that would be required to be controlled, which rule (HON or Polymers NSPS or both) would require control, the emission reduction as the result of control, and the costs of control. The regulatory alternative selected for the final standard could range from the Polymers NSPS to the HON or a combination of both, depending on the data submitted.

PET - DMT, Batch Processes

Based on available information, there are 10 facilities in the U.S. at which PET is produced using a batch DMT process. The information on controls for the best performing five facilities was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that HON was equivalent to the MACT floor for storage vessels, wastewater, and process vents, and that the HON was more stringent than the MACT floor for equipment leaks.

Of those facilities with process contact cooling towers as a type of emission point, none control the cooling tower emissions. Based on this information, the EPA determined that the MACT floor for process contact cooling towers at existing facilities using a batch DMT process was no control. One potential regulatory alternative is to apply the requirements for cooling towers from the Polymers NSPS. However, as noted earlier, ethylene glycol jets were determined to be more cost effective in reducing emissions from process contact cooling towers than the requirements of subpart DDD.

The first regulatory alternative (Regulatory Alternative 1) considered for existing PET sources using a batch DMT process consisted of applying the HON to storage vessels, process vents, equipment leaks, and wastewater.

For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks and vacuum system generated wastewater, the HON is more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

A second regulatory alternative was developed for batch DMT processes. As for continuous TPA processes, in the second regulatory alternative, control of emissions from the process contact cooling tower was considered through the replacement of existing steam jet vacuum systems with ethylene glycol jet vacuum systems. The requirements for the remaining types of emission points remained the same. No additional regulatory alternatives were identified.

The EPA estimated the emission reductions and costs associated with implementing the requirements in Regulatory Alternatives 1 and 2 that are more stringent than the MACT floor (see Table 8-12). Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that those portions of Regulatory Alternative 2 more stringent than the MACT floor were reasonable. Therefore, the EPA selected Regulatory Alternative 2 as the proposed standard for existing PET facilities using a batch DMT process.

TABLE 8-12. REGULATORY ALTERNATIVE IMPACTS FOR EXISTING DMT BATCH FACILITIES

Regulatory Alternative	Emission Reduction Mg/yr	Total Annual Costs, $1,000/yr	Cost-Effectiveness, $/Mg	
			Average	Incremental
Existing Control	--	--	--	--
1	2,567	12,023	4,680	--
2	4,551	2,741	602	-4,680

Nitrile Resin Process

Based on available information, only one facility in the U.S. produces nitrile resin. The information on the controls used at this one facility was used to evaluate the MACT floor. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was less stringent than the MACT floor for storage vessels, more stringent than the MACT floor for process vents and equipment leaks, and equivalent to the MACT floor for wastewater emissions.

Since the HON was determined to be less stringent than the MACT floor for storage vessels, the EPA defined the MACT floor and included it as part of the first regulatory alternative (Regulatory Alternative 1). Since there is only one facility in this subcategory, the MACT floor is equivalent to the existing level of control. The EPA determined that the best representation of the current level of control for storage vessels is the control of all acrylonitrile tanks of at least 3,500 gallons capacity and the application of the HON applicability criteria for all other chemical storage vessels (see Docket A-92-45, Category II-B).

The first regulatory alternative considered for the existing nitrile resin facility consisted of applying the MACT floor to storage vessels and the HON to process vents, equipment leaks, and wastewater. For storage vessels and

wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For process vents and equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (10 Mg/yr) and costs ($6,600/yr) associated with implementing the HON process vents and equipment leaks requirements compared to the existing level of control. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. No additional regulatory alternatives were identified. Based on these considerations, the Administrator selected Regulatory Alternative 1 as the proposed standard for existing nitrile resin facilities.

8.3.2 Selection of the Standards for New Sources

The following paragraphs discuss the selection of the standards for new sources for each subcategory.

ABS, Continuous Emulsion Process

As noted earlier, the EPA identified two facilities in the U.S. at which ABS is produced using a continuous emulsion process. The information on controls at both facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based

on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for new ABS facilities using a continuous emulsion process was the HON for storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions and costs associated with implementing the HON equipment leak requirements. These impacts are based on confidential information and cannot be presented. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new ABS facilities using a continuous emulsion process.

ABS, Continuous Mass Process

As noted earlier, the EPA identified five facilities in the U.S. at which ABS is produced using a continuous mass process. The information on controls at all five facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was less stringent than the MACT floor for storage vessels, the HON was equivalent to the MACT floor for process vents and wastewater, and the HON was more stringent than the MACT floor for equipment leaks.

Since the HON was less stringent than the MACT floor for storage vessels, the EPA defined the MACT floor. Three options were considered for defining the MACT floor: (1) define vapor pressure and storage vessel capacity combinations; (2) define chemical type and storage vessel capacity combinations; and (3) Option 2 supplemented by Option 1 for chemicals not specified under Option 2. Based on this analysis (see Docket A-92-45, Category II-B), the EPA determined that the best option for defining the MACT floor was to use vapor pressure and storage vessel size combinations.

The first regulatory alternative (Regulatory Alternative 1) considered for new ABS facilities using a continuous mass process was the MACT floor for storage

vessels and the HON for process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA developed a second regulatory alternative, which considered more stringent controls on storage tanks.

The EPA estimated the emission reductions and costs associated with implementing those requirements of Regulatory Alternatives 1 and 2 that are more stringent than the MACT floor. For Regulatory Alternative 2, the EPA estimated 86 Mg/yr of emission reduction at a cost of $38,000. These estimates, however, do not reflect the cost of the more stringent storage vessel requirements in Regulatory Alternative 2, because the facility selected to represent new growth would not be affected by the more stringent requirements. The EPA estimated the emission reduction and costs of the more stringent storage vessel requirement for the facility on which the storage vessel MACT floor was based. For this facility, the more stringent storage vessels requirements would reduce emissions by 0.75 Mg/yr and a cost of $4,650/yr. Considering these impacts,

as well as non-air environmental and energy impacts, the EPA judged that the level of control under Regulatory Alternative 2 was reasonable. Therefore, the Administrator selected Regulatory Alternative 2 as the proposed standard for new ABS facilities using a continuous mass process.

ABS, Batch Emulsion Process

As noted earlier, the EPA identified four facilities in the U.S. at which ABS is produced using a batch emulsion process. The information on controls at all four facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, wastewater and process vents, and the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for new ABS facilities using a batch emulsion process was the HON for storage vessels, equipment leaks, process vents and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs

beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (15 Mg/yr) and costs ($14,000/yr) associated with implementing the HON equipment leak requirements. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new ABS facilities using a batch emulsion process.

ABS, Batch Suspension Process

As noted earlier, the EPA identified two facilities in the U.S. at which ABS is produced using a batch suspension process. The information on controls at both facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, wastewater, and process vents, and the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for new ABS facilities using a batch suspension process was the HON for storage vessels, equipment leaks, process vents, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus no

emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions of 5 Mg/yr and a cost savings of $500/yr associated with implementing the HON equipment leak requirements. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new ABS facilities using a batch suspension process.

ABS, Latex Process

As noted earlier, the EPA identified one facility in the U.S. at which ABS is produced using a latex process. The information on controls at this facility was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for new ABS latex facilities was

the HON for storage vessels, process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions and costs associated with implementing the HON equipment leak requirements for any new facilities based on existing facilities. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new ABS latex facilities.

MABS Process

The EPA identified one facility in the U.S. at which MABS is produced. The information on controls at this facility was used to identify the best levels of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process

vents, and wastewater, and more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for new MABS facilities consisted of applying the HON to all types of emission points. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions and costs associated with implementing the HON equipment leak requirements for any new facilities based on existing facilities. These impacts are based on confidential information and cannot be presented. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new MABS facilities.

MBS Process

The EPA identified three facilities in the U.S. at which MBS is produced. The information on controls at all three facilities was used to identify the best levels of

control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, equipment leaks, and wastewater.

The first regulatory alternative (Regulatory Alternative 1) considered for new MBS facilities consisted of applying the HON to all types of emission points. For all types of emission points, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new MBS facilities.

SAN, Continuous Process

As noted earlier, the EPA identified three facilities in the U.S. at which SAN is produced using a continuous process. The information on controls at all three facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was less stringent than the MACT floor for storage vessels, the HON was equivalent to the MACT floor for process vents and wastewater, and the HON was more stringent than the MACT floor for equipment leaks.

Since the HON was less stringent than the MACT floor for storage vessels, the EPA defined the MACT floor. Three options were considered for defining the MACT floor: (1) define vapor pressure and storage vessel capacity combinations; (2) define chemical type and storage vessel capacity combinations; and (3) Option 2 supplemented by Option 1 for chemicals not specified under Option 2. Based on this analysis (see Docket A-92-45, Category II-B), the EPA determined that the best option for defining the MACT floor was to use vapor pressure and storage vessel size combinations.

The first regulatory alternative (Regulatory Alternative 1) considered for new SAN facilities using a continuous process was the MACT floor for storage vessels and the HON for process vents, equipment leaks, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (25 Mg/yr) and costs ($38,000/yr) associated with implementing the HON equipment leak requirements. Considering these impacts, as

well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new SAN facilities using a continuous process.

SAN, Batch Processes

The EPA identified two existing facilities in the U.S. at which SAN is produced using a batch process. The information on controls at both facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels and wastewater, that the HON was less stringent than the MACT floor for process vents, and that the HON was more stringent than the MACT floor for equipment leaks.

Since the HON and Batch Processes ACT were less stringent than the MACT floor for process vents, the EPA defined the MACT floor. The EPA considered an emission factor and a percent reduction for defining the MACT floor. Based on its analysis (see Docket A-92-45, Category II-B), the EPA determined that percent reduction was the best option for defining the MACT floor.

The first regulatory alternative (Regulatory Alternative 1) considered for new SAN facilities using a

batch process consisted of applying the HON to storage vessels, equipment leaks, and wastewater, and the MACT floor to process vents. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (6.4 Mg/yr) and costs ($1,300/yr) associated with implementing the HON equipment leak requirements. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for new SAN facilities using a batch process.

ASA/AMSAN Facilities

As noted earlier, only one facility in the U.S. was identified as producing ASA/AMSAN resins. Since there is only one facility, the MACT floor for new facilities is the same as for existing facilities, and the relationship of the current level of control to the HON was found to be the same as that for ASA/AMSAN existing facilities. For these

reasons, the EPA is proposing the same standards for new ASA/AMSAN facilities as for existing ASA/AMSAN facilities.

Polystyrene, Continuous Processes

As noted earlier, the EPA identified 22 facilities in the U.S. at which polystyrene is produced using a continuous process. The information on controls at all 22 facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor, the HON, and the Polymers NSPS, the EPA determined that the HON was equivalent to the MACT floor for wastewater, that the HON and Polymers NSPS were equivalent to the MACT floor for process vents, that the HON was more stringent than the MACT floor for equipment leaks and that the HON was less stringent than the MACT floor for storage vessels.

The first regulatory alternative (Regulatory Alternative 1) considered for new polystyrene facilities using a continuous process consisted of applying the MACT floor to storage vessels, applying the HON to process vents from process sections other than the material recovery section, equipment leaks, and wastewater, and applying the Polymers NSPS to process vents from the material recovery section. For storage vessels, wastewater, and process vents, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those

required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions (212 Mg/yr) and costs ($85,600/yr) associated with implementing the HON requirements for equipment leaks. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new polystyrene facilities using a continuous process.

Polystyrene, Batch Processes

The EPA identified 11 existing facilities in the U.S. at which polystyrene is produced using a batch process. The information on controls at these 11 facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels and wastewater, and that the HON was more stringent than the MACT floor for process vents and equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for new polystyrene facilities using a batch process consisted of applying the HON to

storage vessels, equipment leaks, process vents, and wastewater. For storage vessels and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For process vents and equipment leaks, the HON requirements, are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions and costs associated with implementing the HON equipment leak and process vent requirements for any new facilities based on existing facilities. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for new polystyrene facilities using a batch process.

Expandable Polystyrene Processes

The EPA identified 7 existing facilities in the U.S. at which expandable polystyrene is produced. The information on controls at these 7 facilities was used to identify the best level of control (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for

storage vessels, process vents, and wastewater, and that the HON was more stringent than the MACT floor for equipment leaks.

The first regulatory alternative (Regulatory Alternative 1) considered for new expandable polystyrene facilities consisted of applying the HON to storage vessels, equipment leaks, process vents, and wastewater. For storage vessels, process vents, and wastewater, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred. The EPA estimated the emission reductions and costs associated with implementing the HON equipment leak requirements for any new facility based on existing facilities. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the Administrator selected Regulatory Alternative 1 as the proposed standard for new expandable polystyrene facilities.

PET - TPA, Continuous Processes

As noted earlier, 12 facilities in the U.S. were identified at which PET is being produced using a continuous TPA process. The information on controls at all 12

facilities was used to determine the best levels of controls (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor, the HON, and Polymers NSPS the EPA determined that the HON was equivalent to the MACT floor for storage vessels, and wastewater, that the HON and Polymers NSPS were equivalent to the MACT floor for process vents, and that the HON was more stringent than the MACT floor for equipment leaks. In addition, it was determined that the best controlled facility did not have a process contact cooling tower and used ethylene glycol jets in its vacuum system. Therefore, these emission reduction design aspects of a continuous TPA facility were determined to be part of the MACT floor for this subcategory.

The first regulatory alternative (Regulatory Alternative 1) considered for new PET facilities using a continuous TPA process consisted of applying 1) the HON to storage vessels, equipment leaks, and wastewater, 2) the HON and Polymers NSPS to process vents, and 3) prohibiting the use of cooling tower water in the contact condensers in the vacuum system. For all emission points other than equipment leaks, Regulatory Alternative 1 is equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred under Regulatory Alternative 1. For equipment leaks, the HON requirements are more stringent than the MACT

floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

The EPA estimated the emission reductions (473 Mg/yr) and costs ($744,000/yr) associated with implementing the HON equipment leaks requirements. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new PET facilities using the continuous TPA process.

PET - TPA, Batch Processes

Only one facility in the U.S. has been identified as producing PET using a batch TPA process. The information on the controls used at this facility was used to determine the best levels of control (i.e., MACT floor) for storage vessels, process vents, equipment leaks, and wastewater. However, for process contact cooling towers, the EPA determined that it was appropriate to look to similar sources outside the subcategory for determining the best level of control. As presented previously for continuous TPA processes, the best level of control is represented by no process contact cooling tower and the use of ethylene glycol jets in the vacuum system. The EPA believes that this level of control represents the MACT floor for facilities using a batch TPA process.

Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and wastewater, and the HON is more stringent than the MACT floor for equipment leaks. Further, the EPA judged that prohibiting the use of cooling tower water in the contact condensers in the vacuum system is equivalent to the MACT floor.

The first regulatory alternative (Regulatory Alternative 1) considered for the new PET facilities using a batch TPA process consisted of applying the HON to storage vessels, equipment leaks, process vents, and wastewater, and prohibiting the use of cooling tower water in the contact condensers in the vacuum system. For all emission points other than equipment leaks, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor control level would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

The EPA estimated the emission reductions (5.6 Mg/yr) and costs ($17,700/yr) associated with implementing the HON equipment leak requirements. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable.

Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new PET facilities using a batch TPA process.

PET - DMT, Continuous Processes

The EPA identified 10 facilities in the U.S. at which PET is produced using a DMT continuous process. The information on controls at all 10 facilities was used to determine the best level of control (i.e., MACT floor) for each emission source type. Based on the analysis for determining the relationship between the MACT floor, the HON, and Polymers NSPS, the EPA determined that the HON was equivalent to the MACT floor for storage vessels and wastewater, the HON and Polymers NSPS were equivalent to the MACT floor for process vents, and the HON was more stringent than the MACT floor for equipment leaks. In addition, it was determined that the best controlled facility did not have a process contact cooling tower and used ethylene glycol jets in its vacuum system. Therefore, these emission reduction design aspects of a continuous DMT facility were determined to be part of the MACT floor for this subcategory.

The first regulatory alternative (Regulatory Alternative 1) considered for new PET facilities using a continuous DMT process consisted of applying 1) the HON to storage vessels, equipment leaks, and wastewater, 2) the HON and Polymers NSPS to process vents, and 3) prohibiting the

use of cooling tower water in the contact condensers in the vacuum system. For all emission points other than equipment leaks, Regulatory Alternative 1 is equivalent to the MACT floor; thus no emission reductions or costs beyond those required to achieve the MACT floor control level would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

The EPA estimated the emission reductions (903 Mg/yr) and costs ($988,000/yr) associated with implementing the HON equipment leak requirements. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new PET facilities using a continuous DMT process.

PET - DMT, Batch Processes

As noted earlier, the EPA identified 10 facilities in the U.S. at which PET is produced using a DMT batch process. The information on controls at all 10 facilities was used to determine the best levels of controls (i.e., MACT floor) for each type of emission point. Based on the analysis for determining the relationship between the MACT floor and the HON, the EPA determined that the HON was equivalent to the MACT floor for storage vessels, process vents, and

wastewater, and the HON was more stringent than the MACT floor for equipment leaks. In addition, it was determined that the best controlled facility did not have a process contact cooling tower. Therefore, the EPA has defined the MACT floor for new batch DMT facilities as "no process contact cooling towers".

As for batch TPA facilities, the EPA determined that it was appropriate to look to similar sources outside the subcategory for determining the best level of control for the control of emissions from the vacuum system generated wastewater. As presented previously for continuous TPA processes, the best level of control is represented by no process contact cooling tower and the use of ethylene glycol jets in the vacuum system. As discussed above, "no process contact cooling towers" was determined to be part of the MACT floor for new facilities using a batch DMT process. The EPA believes that the use of ethylene glycol jets also represents the MACT floor for new facilities using a batch DMT process.

The first regulatory alternative (Regulatory Alternative 1) considered for new PET facilities using a batch DMT process consisted of applying the HON to storage vessels, equipment leaks, process vents and wastewater, and prohibiting the use of cooling tower water in the contact condensers in the vacuum system. For all emission points other than equipment leaks, Regulatory Alternative 1 is

equivalent to the MACT floor; thus, no emission reductions or costs beyond those required to achieve the MACT floor level of control would be incurred. For equipment leaks, the HON requirements are more stringent than the MACT floor, and emission reductions and costs beyond those required to achieve the MACT floor level of control would be incurred.

The EPA estimated the emission reductions (408 Mg/yr) and costs ($569,000/yr) associated with implementing the HON equipment leak requirements. Considering these impacts, as well as non-air environmental and energy impacts, the EPA judged that this level of control was reasonable. Therefore, the EPA selected Regulatory Alternative 1 as the proposed standard for new PET facilities using a batch DMT process.

Nitrile Resin Process

As noted earlier, only one facility in the U.S. was identified as producing nitrile resins. Since there is only one facility, the MACT floor for new facilities is the same as for existing facilities, and the relationship of the current level of control to the HON was found to be the same as that for ASA/AMSAN existing nitrile resin facilities. For these reasons, the EPA is proposing the same standards for new nitrile resin facilities as for existing nitrile resin facilities.

8.4 RATIONALE FOR THE SELECTION OF THE FORMAT OF THE PROPOSED STANDARDS

The proposed standards adopt the formats found in the HON, the Batch Processes ACT, and Polymers NSPS. The Federal Register notice for the HON (57 FR 62608; December 31, 1992) provides the rationale for the selection of the specific formats used in the final rule for the HON. The Batch Processes ACT document discusses the selection of formats presented by the ACT. The Federal Register notice for the Polymers NSPS (57 FR 36678, September 30, 1987) provides the rationale for the selection of the formats associated with the process vent limits. The EPA finds no reason for changing those formats and, therefore, has adopted the same formats for this rule as have been promulgated for the HON and Polymers NSPS and as were presented in the Batch Processes ACT.

In addition to adopting various portions of existing standards, the proposed rule also contains standards for controlling process contact cooling tower emissions at PET facilities by prohibiting the use of cooling tower water in contact condensers in the vacuum system and requiring any vacuum system generated wastewater to be controlled, regardless of its organic HAP content or flowrate, provided the organic HAP present in the stream are specified on Table 9 of the HON wastewater provisions. In some cases, the standards are a more stringent version of the HON, yet

the format of the standard remains the same as the HON format. In other cases, a format found in the HON (i.e., percent reduction) is used with a slight variation. All of these situations are discussed in the following paragraphs.

As has been discussed, the best controlled PET facilities for process contact cooling towers are those that an ethylene glycol jet vacuum system, which eliminates the process contact cooling tower and other vacuum system generated wastewater emissions. Since there are no known demonstrated techniques for eliminating organic HAP emissions from process contact cooling towers, the only format possible was a work practice/design standard. Rather than dictating the use of a specific type of vacuum system (i.e., the use of ethylene glycol jets), the EPA is proposing to (1) prohibit the use of cooling tower water in contact condensers in the vacuum system and (2) since some vacuum systems still may generate some wastewater, require all vacuum system generated wastewater be controlled, regardless of its organic HAP content or flowrate provided the organic HAP present in the stream are specified on Table 9 of the HON wastewater provisions.

For the following types of emission points for the indicated subcategories, a more stringent version of the HON is being proposed as the standard: (1) storage vessels at existing and new ASA/AMSAN facilities, new SAN facilities using a continuous process, new ABS facilities using a

continuous mass process, existing and new nitrile resin facilities, and existing and new polystyrene facilities and (2) process vents at existing MBS facilities, existing and new ASA/AMSAN facilities, and new SAN facilities using a batch process. For most of these situations, the EPA finds no reason for changing the HON formats and, therefore, have adopted the HON formats for this rule. The following paragraphs discuss those situations where alternative formats have been adopted for storage tanks and process vents.

For storage vessels at existing and new ASA/AMSAN facilities and some storage vessels at new SAN continuous facilities, the format of the standard is a percent reduction. In both cases, the choice of format was greatly influenced by the uniqueness of the facilities in the subcategory. There is only one identified facility producing ASA/AMSAN and the basis of the standard for new SAN continuous facilities is the one "best controlled" facility. In each case, the available data for the facility considered led the EPA to select a percent reduction format. Other format options (e.g., design and equipment standards) would not have accurately represented the level of control being achieved at these facilities.

For process vents at existing and new ASA/AMSAN facilities, the uniqueness of the subcategory greatly influences the format of the proposed standard. Only one

facility in the U.S. that produces ASA/AMSAN was identified and, based on the available data, every process vent is controlled through combustion. The most appropriate formats for representing the performance capabilities of combustion units is percent reduction or concentration (parts per million). These formats were therefore selected for the proposed standards, which require these process vents to be reduced by at least 98 percent or to 20 ppmv, whichever is less stringent.

For process vents at new SAN batch facilities, a percent reduction format was selected. Three other options that were considered were identifying specific process vents to be controlled, a "TRE-like" approach, or an emission factor. Because of the possibility of different process vent configurations between facilities and different emission characteristics for process vents with the same name (e.g., dryer vent), a format that identified specific process vents for control was not accepted. Because stream characteristics of batch process vents are difficult to describe and stream characteristic data were not available, a "TRE-like" approach could not be used. Finally, because the MACT floor for new sources is based on a single facility (i.e., the best controlled facility), use of an emission factor would reveal confidential production data. After these considerations, the EPA found a percent reduction format to be the most widely applicable.

8.5 RATIONALE FOR THE SELECTION OF COMPLIANCE AND PERFORMANCE TEST PROVISIONS AND MONITORING REQUIREMENTS

For the most part, the level of control required by the proposed rule are the same as those in the HON or Polymers NSPS. Further, the control devices likely to be used in complying with the proposed requirements for batch process vents were already considered as part of the HON. As a result, the EPA has determined that there is no need to change performance testing provisions or the parameters selected for monitoring. Since the rationale for the selected provisions has been presented in detail in the proposal and promulgation preambles to the HON, it is not repeated here in the same depth. The paragraphs below briefly discuss the rationale for the selected provisions for each type of emission point. Later in this section, the rationales for the use of parameter monitoring and the overall compliance certification provisions are presented.

8.5.1 Continuous Process Vents

The proposed rule specifies the group determination procedures, performance tests, monitoring requirements, and test methods necessary to determine whether a process vent from a continuous unit operation is required to be controlled and to demonstrate that the allowed emission levels are achieved when controls are applied. The following paragraphs discuss each of these.

8.5.1.1 Group determination procedures

Except as discussed in the next paragraph, the proposed rule requires each owner or operator to determine for each continuous process vent whether the vent is a Group 1 or Group 2 process vent. There are three group determination procedures: (1) process vent flowrate measurement, (2) process vent organic HAP concentration measurement, and (3) TRE index value determination. A detailed discussion of the rationale for these three procedures is found on pages 62636-62637 of Federal Register Vol. 57, No. 252, December 31, 1992.

An owner or operator may chose to comply directly with the requirement to reduce organic HAP emissions by 98 weight-percent or to an outlet concentration of 20 ppmv through use of a control device.

Finally, for continuous process vents at some subcategories (e.g., ASA/AMSAN), a Group 1/Group 2 determination is not required.

8.5.1.2 Performance test

Initial performance tests are required for all control devices other than flares and certain boilers and process heaters. Specifically, testing would be required for: (1) incinerators, (2) scrubbers used with combustion devices to control halogenated vent streams, and (3) some boilers and process heaters smaller than 44 megawatts (MW) [150 million British thermal units (Btu/hr)]. Performance

tests are being required because they (1) ensure that a control device achieves the required control level and (2) serve as the basis for establishing operating parameter levels required for monitoring.

Because their percent reduction and outlet concentration cannot feasibly be measured, flares are not required to be tested and instead must meet the requirements in Section 63.11 for operating conditions.

8.5.1.3 Test methods

The proposed process vent provisions would require the use of approved test methods to ensure consistent and verifiable results for group determination procedures, initial performance tests, and compliance demonstrations.

8.5.1.4 Monitoring

Control devices used to comply with the proposed rule need to be maintained and operated properly if the required level of control is to be achieved on a continuing basis. Monitoring of the control device operating parameters can be used to ensure that such proper operation and maintenance are occurring.

The proposed standard lists the parameters that can be monitored for the common types of combustion devices: firebox temperature for thermal incinerators; temperature upstream and downstream of the catalyst bed for catalytic incinerators; firebox temperature for boilers and process heaters; and presence of a flame at the pilot light for

flares. These parameters were selected because they are good indicators of combustion device performance, and instruments are readily available at a reasonable cost to continuously monitor these parameters. The proposed rule also allows the owner or operator to request to monitor other parameters on a site-specific basis. The proposed rule also specifies monitoring requirements for scrubbers installed to remove halogens and hydrogen halides from the combustor outlet.

The proposed standard would require the owner or operator to establish site-specific parameter levels through the Notification of Compliance Status report and operating permit. Site-specific parameter levels accommodate site-specific differences in control design and process vent stream characteristics.

For Group 2 continuous process vents that have TRE index values greater than 1.0 but less than or equal to 4.0 (greater than 3.7 but less than 6.7 for continuous process vents at existing MBS facilities), monitoring of the final recovery device would be required to ensure that it continues to be operated as it was during the group determination test when the initial TRE index value was calculated. Improper recovery device operation and maintenance could lead to increased organic HAP concentration, potentially reducing the TRE index value below 1.0, and causing the vent to become a Group 1 process

vent. Continuous monitoring will ensure continued good performance of recovery devices. The TRE index value monitoring level of 4.0 is being proposed because the variability of the process parameters established during normal operating conditions are unlikely to vary to the extent that a TRE value above 4.0 would be reduced to a TRE level less than 1.0 and thus require control.

The proposed rule specifies the parameters that can be monitored for the three common types of recovery devices: 1) exit temperature of the absorbing liquid and exit specific gravity for absorbers; 2) exit temperature for condensers; and 3) total regeneration stream mass flow during carbon bed regeneration cycle and temperature of the carbon bed after regeneration for carbon adsorbers. These parameters were selected because they are good indicators of recovery device performance, and instruments are readily available at a reasonable cost to continuously monitor these process parameters. The proposed rule also allows the owner or operator to request to monitor parameters on a site-specific basis. The owner or operator would establish a site-specific level for the parameters through the Notification of Compliance Status report and operating permit.

8.5.2 Batch Process Vents

As for continuous process vents, some batch process vents are more cost effective to control than others.

Therefore, cost effectiveness is related to the procedures that are being proposed for the group determination for batch process vents. These procedures are taken from the Batch Processes Alternative Control Technologies (ACT) document. The Batch Processes ACT describes applicability criteria (i.e., annual emissions and annual average flowrate) for distinguishing between batch process vents that are cost effective to control and those that are not. The rationale for these applicability criteria and procedures is presented in depth in the Batch Processes ACT document.

For the same reasons the proposed rule requires a performance test and continuous monitoring of a control device for a continuous process vent, performance tests and continuous monitoring are required for the control or recovery device used by an affected source to comply with the batch process vents control requirement. Also, the monitoring parameters selected for recovery devices were presented and discussed as part of the continuous process vent provisions and in the preamble to the proposed subpart G.

Because compliance with the batch process vent standards is determined on an annual basis, the EPA established the batch cycle limitation for Group 2 batch process vents in an attempt to minimize the number of Group 2 batch process vents that would become non-compliant. The

purpose of the batch cycle limitation, and quarterly reporting of the number of batch cycles accomplished, is to ensure that a Group 2 batch process vent does not become a Group 1 batch process vent simply due to accomplishing more batch cycles in a year than were anticipated at the time the initial group determination was made. As mentioned earlier, an affected source may set the batch cycle limitation at any level it desires as long as the batch process vent remains a Group 2 batch process vent. Since this may prove too "restrictive" for an owner or operator, the proposed rule allows an owner or operator to declare any batch process vent Group 1 and control as required by the proposed rule.

Like continuous process vents, owners or operators are not required to make a Group 1/Group 2 determination for all batch process vents. The proposed standards for process vents, continuous and batch, at new SAN batch facilities require an 84 percent emission reduction in overall process vent emissions. The proposed standards do not require a Group 1/Group 2 determination.

8.5.3 Storage Vessels

The proposed storage vessel provisions require control by tank improvements or a closed vent system and control device; however, the choice of control technologies is limited depending on the material stored. For vessels storing liquids with vapor pressures less than 76.6 kilopascals (kPa), either control option may be

selected. However, for vessels storing liquids with vapor pressures greater than or equal to 76.6 kPa, tank improvements do not achieve the expected level of emission reductions. As a result, Group 1 storage vessels containing liquids with a maximum true vapor pressure of organic HAP greater than or equal to 76.6 kPa must be controlled with a closed vent system and control device.

8.5.4 Wastewater

Two important parameters must be quantified initially, and whenever process changes are made, to determine whether a process wastewater stream is a Group 1 or Group 2 stream. These parameters are the annual wastewater quantity for a stream and the volatile organic HAP (VOHAP) concentration in the stream. The VOHAP concentration can be quantified as a flow-weighted annual average for total VOHAP or for individually-speciated organic HAP. Several methods are allowed by the proposed rule for determining both of these parameters.

Initial performance tests for control of Group 1 wastewater streams are not required by the proposed rule. For treatment processes and control devices, facilities have the choice of using either performance tests or engineering calculations to demonstrate the compliance of those units with the standards. Engineering calculations, supported by the appropriate documentation, have been allowed to provide a less costly alternative to that of actual testing.

A performance test is not specified for the design steam stripper. Installation of the specified equipment, along with monitoring to show attainment of the specified operating parameter levels, demonstrates compliance with the equipment design and operation provisions. Thus, a performance test is not necessary.

The proposed process wastewater provisions include requirements for periodic monitoring and inspections to ensure proper operation and maintenance of the control system and continued compliance.

8.5.5 Equipment Leaks

The proposed rule retains the use of Method 21 to detect leaks of organic compounds from equipment; however, several modifications were made to the existing procedures. These modifications consist of changes to the calibration gases required, addition of procedures for response factor correction, and addition of procedures for pressure testing of batch processes. The bases for the changes to the provisions are presented in the preamble to the proposed subpart H.

8.5.6 Heat Exchange Systems

Periodic monitoring for leaks is required to demonstrate compliance for this type of emission point. The frequency of periodic monitoring becomes less frequent as data show that leaks are not present. This monitoring

system is proposed to minimize the burden on the affected source.

8.5.7 Process Contact Cooling Towers

Since the proposed rule prohibits the use of cooling tower water in contact condensers associated with vacuum systems, there are no continual monitoring or compliance activities. Instead, owners or operators must initially state that they will comply with the rule in their Implementation Plan and Notification of Compliance Status.

8.6 RATIONALE FOR THE SELECTION OF PARAMETER MONITORING AND COMPLIANCE CERTIFICATION PROVISIONS

The proposed rule requires monitoring of control and recovery device operating parameters and reporting of periods when parameter values are above maximum or below minimum established levels. Under the NSPS and NESHAP programs, parameter monitoring has traditionally been used as a tool in determining whether control devices are being maintained and operated properly. However, Section 114(a)(3) of the Act and Section 70.6(c) of the operating permit rule (57 FR 32251) require the submission of "compliance certifications" from sources subject to the operating permit program. Section 114(a)(3) of the amended Act requires enhanced monitoring and compliance certifications of all major stationary sources. The annual compliance certifications certify whether compliance has been continuous or intermittent. Enhanced monitoring shall

be capable of detecting deviations from each applicable emission limitation or standard with sufficient representativeness, accuracy, precision, reliability, frequency, and timeliness to determine if compliance is continuous during a reporting period. The monitoring in this regulation satisfies the requirements of enhanced monitoring.

In light of these requirements, the EPA has considered how sources subject to this rule would demonstrate compliance. The EPA has concluded that operating parameter monitoring can be used for this purpose.

For the proposed rule, the EPA is requiring affected sources to establish site-specific parameter levels. Although in previous NSPS and NESHAP, the EPA has specified a pre-determined range of operating parameter values, such values could be considered inadequate given the increased importance of parameter monitoring in determining and certifying compliance due to the new requirements in Section 114 of the Act. Allowing site-specific levels for monitored parameters accommodates site-specific variation in emission point characteristics and control device designs. The proposed procedure for establishing operating parameter levels for continuous and batch process vents is based on performance tests.

The proposed rule requires the affected source to record daily average values for continuously monitored

parameters. The daily average is the average of all of the 15-minute values generated by the continuous recorder during the operating day. If the daily average value is outside the established range, it must be reported. The daily averaging period was selected because the purpose of monitoring data is to ensure proper operation and maintenance of the control device. Because it often takes from 12 to 24 hours to correct a problem, this averaging period was considered to best reflect operation and maintenance practices. This averaging period therefore gives the owner or operator a reasonable period of time to take action. If a shorter averaging period (for example 3 hours) was selected, affected sources would be likely to have multiple excursions caused by the same operational problem because it would not be possible to correct problems in one 3-hour reporting period.

In the proposed rule, as in subpart G, at least 75 percent of monitoring data is required to constitute a valid day's worth of data. For example, for continuous process vents an affected source needs to have valid monitoring data for at least 75 percent of the operating hours in a given operating day to have a valid day's worth of monitoring data.

Whereas the HON allows excused excursions to reflect the uncertainty of parameter monitoring, the proposed rule does not allow excused excursions. Excused excursions are

not included in the proposed rule because most continuous monitoring system problems can be dealt with in the context of the start-up, shutdown, and malfunction plan required under subpart A.

8.7 RATIONALE FOR THE SELECTION OF RECORDKEEPING AND REPORTING REQUIREMENTS

The general recordkeeping and reporting requirements of this subpart are very similar to those found in subpart G of part 63. The proposed rule also relies on the provisions of subpart A of part 63. A table included in the proposed rule designates which sections of subpart A apply to the proposed rule.

The proposed rule would require affected sources to submit the following six types of reports:

1. Initial Notification,
2. Implementation Plan (if an operating permit application has not been submitted or, for new sources, an application for approval of construction or reconstruction),
3. Emissions Averaging Plan,
4. Notification of Compliance Status,
5. Periodic Reports, and
6. Other reports.

The purpose and contents of each of these reports are described in this section. The wording of the proposed rule requires all draft reports to be submitted to the

"Administrator". The term Administrator means either the Administrator of the EPA, an EPA regional office, a State agency, or other authority that has been delegated the authority to implement this rule. In most cases, reports will be sent to State agencies. Addresses are provided in subpart A of part 63.

Records of reported information and other information necessary to document compliance with the regulation are generally required to be kept for 5 years. A few records pertaining to equipment design would be kept for the life of the equipment.

8.7.1 Initial Notification

The proposed rule would require owners or operators who are subject to the proposed rule to submit an Initial Notification. This report will establish an early dialog between the affected source and the regulatory agency, allowing both to plan for compliance activities. The notification is due 120 days after the date of promulgation for existing sources. For new sources, it is due 180 days before commencement of construction or reconstruction, or 45 days after promulgation, whichever is later.

The notification must list the thermoplastic processes at the source that are subject to the proposed rule, and which provisions may apply (e.g., continuous process vents, batch process vents, etc.). A detailed identification of emission points is not required. The Initial Notification

must include a statement of whether the affected source can achieve compliance by the specified compliance date.

8.7.2 Implementation Plan

The Implementation Plan details how the affected source plans to comply. Implementation Plans are only required for affected sources that have not submitted an operating permit application or application for approval of construction or reconstruction. An operating permit application would contain all the types of information required in the Implementation Plan, so it would be redundant to require affected sources to submit both.

Existing sources must submit the Implementation Plan 12 months prior to the compliance date. For new sources, Implementation Plans would be submitted with the Notification of Compliance Status. It is critical that regulatory authorities have the Implementation Plans well before the compliance date so they can plan their implementation and enforcement activities. The early submission of these plans may also benefit regulated sources by allowing them to receive any feedback on their control plans prior to the actual compliance dates.

8.7.3 Emissions Averaging Plan

The Emissions Averaging Plan is required 18 months prior to the compliance date to allow time for review and approval of the average. Because of the complexities and site-specific nature of emissions averaging, an approval

process is necessary to assure that compliance through averaging would not result in greater hazard or risk than compliance without averaging and that the specific averaging plan will result in emissions credits outweighing debits. The Emissions Averaging Plans must be more detailed and thorough than an Implementation Plan. The additional information is necessary for the reviewing authority to make an informed decision about approving the average. The projected credits and debits included in the Emissions Averaging Plan may be based on calculations, design analyses, or engineering assessments instead of measured values. This flexibility is provided because, in many cases, control measures will not have been implemented at the time the plan is due and actual measurements would not be possible.

8.7.4 Notification of Compliance Status

The Notification of Compliance Status would be submitted 150 days after the affected source's compliance date. It contains the information necessary to demonstrate that compliance has been achieved, such as the results of performance tests, TRE determinations, and design analyses.

Affected sources with a large number of emission points are likely to be submitting results of multiple performance tests for each kind of emission point. For each test method used for a particular kind of emission point (e.g., a process vent), one complete test report would be submitted.

For additional tests performed for the same kind of emission point using the same method, the results would be submitted, but a complete test report is not required. Results would include values needed to determine compliance (e.g., inlet and outlet concentrations, flowrates, percent reduction) as well as the values of monitored parameters averaged over the period of the test. The submission of one test report will allow the regulatory authority to verify that the affected source has followed the correct sampling and analytical procedures and has done calculations correctly. Complete test reports for other emission points may be kept at the plant rather than submitted. This reporting system was established to ensure that reviewing authorities have sufficient information to evaluate the monitoring and testing used to demonstrate compliance while minimizing the reporting burden.

Another type of information to be included in the Notification of Compliance Status is the specific level for each monitored parameter for each emission point, and the rationale for why this level indicates proper operation of the control device. (If this level has already been established in the operating permit, it does not need to be repeated in the Notification of Compliance Status). As an example, for a process vent controlled by an incinerator, the notification would include the site-specific minimum firebox temperature that will ensure proper operation of the

incinerator, and the data and rationale to support this minimum temperature.

For emission points included in an emissions average, the notification would also include the measured or calculated values of all parameters needed to calculate emission credits and debits, and the result of the calculation for the first quarter. This information is needed to ensure that the points in the average are being controlled as described in the Emissions Averaging Plan and that the average itself is balancing as planned.

8.7.5 Periodic Reports

Periodic Reports are required to ensure that the standards continue to be met and that control devices are operated and maintained properly. Generally, Periodic Reports would be submitted semiannually, however, quarterly reports must be submitted in some instances.

Periodic Reports specify periods when the values of monitored parameters are above the maximum or below the minimum established level specified in the Notification of Compliance Status or operating permit. For continuously monitored parameters, records must be kept of the parameter value recorded once every 15 minutes. If a parameter is monitored more frequently than once every 15 minutes, the 15-minute averages may be kept instead of the individual values. This requirement ensures that there will be enough monitoring values recorded to be representative of the

monitoring period without requiring the affected source to retain additional data on file and readily accessible.

For some types of emission points and controls, periodic (e.g., monthly, quarterly, or annual) inspections or measurements are required instead of continuous monitoring. Records that such inspections or measurements were done must be kept; but results are included in Periodic Reports only if a problem is found. This requirement is designed to minimize the recordkeeping and reporting burden of the proposed rule.

For emission points included in an emissions average, the results of the quarterly credit and debit calculation are also included in the Periodic Reports, so the reviewing authority can ensure that the quarterly requirements for the average have been met.

8.7.6 Other Reports

There are a very limited number of other reports. Where possible, the proposed rule is structured to allow information to be reported in the semiannual (or quarterly) Periodic Reports. However, in a few cases, it is necessary for the affected source to provide information to the regulatory authority shortly before or after a specific event. For example, if a process change is made that causes a continuous or batch process vent to change from Group 2 to Group 1, the affected source must report the change within 90 days. For storage vessels, notification prior to

internal tank inspections is required to allow the regulatory authority to have an observer present. For storage and wastewater, if an owner or operator requests an extension of the repair period or a delay of repair, the request needs to be submitted separately from the Periodic Reports because the requests require a quick response from the reviewing authority. Certain notifications and reports required by subpart A of part 63 must also be submitted.

8.7.7 Possible Alternative Recordkeeping Requirements

The proposed rule requires affected sources to keep readily accessible records of monitored parameters. For those control devices that must be monitored continuously, records which include at least one monitored value for every 15 minutes of operation are considered sufficient. These monitoring records must be maintained for 5 years. However, there are some existing monitoring systems that might not satisfy these requirements. To comply with the proposed rule, affected sources have the flexibility to request approval for the use of alternative recordkeeping systems under the proposed rule or under provisions of subpart A of part 63.

8.8 OPERATING PERMIT PROGRAM

Under Title V of the 1990 Amendments, facilities subject to this rule will be required to obtain an operating permit.

Oftentimes, emission limits, monitoring, and reporting and recordkeeping requirements are scattered among numerous provisions of State implementation plans (SIP's) or Federal regulations. As discussed in the proposed rule for the operating permit program published on May 10, 1991 (58 FR 21712), this new permit program would include in a single document all of the requirements that pertain to a single source. Once a State's permit program has been approved, each facility containing a source within that State must apply for and obtain an operating permit. If the State wherein the source is located does not have an approved operating permit program, the owner or operator of a source must submit the application under the General Provisions of 40 CFR part 63.

9.0 REFERENCES

1. Harper, Charles A. Handbook of Plastics, Elastomers, and Composites. McGraw-Hill, Inc., New York, 1992, p.10.5.

2. Protocol for Equipment Leak Emission Estimates. EPA-453-/R-93-026. Environmental Protection Agency, Research Triangle Park, NC. June 1993.

TECHNICAL REPORT DATA
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1. REPORT NO. EPA-453/R-95-004a	2.	3. RECIPIENT'S ACCESSION NO.
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16. ABSTRACT

This document provides the background information and rationale for the decisions made in the (proposed) standards setting process for the thermoplastics manufacturing industry. The affected industry is described, the baseline organic HAP emissions are presented as are the predicted impacts associated with the selected regulatory alternatives. The rational for the alternatives and the selected proposed standard is given.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field.Group
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