POLYETHER POLYOLS PRODUCTION

Basis and Purpose Document
for Proposed Standards

Emission Standards Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
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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 the Production of Polyether Polyols - Basis and Purpose Document for Proposed Standards

1. The standards regulate hazardous air pollutant emissions from the production of polyether polyols. Only polyether polyols production facilities that are part of major sources under Section 112(d) of the Clean Air Act (Act) will be regulated.

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SELECTION OF THE STANDARDS

1.0 INTRODUCTION

Section 112 of the Clean Air Act, as amended in 1990 (1990 Amendments) gives the EPA the authority to establish national standards to reduce air emissions from sources that emit one or more hazardous air pollutants (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 polyether polyols production as a category of major sources.

The end use of a polyether polyol is determined by the properties of the polyol. Polyether polyols fall into two main classifications: high-molecular-weight, linear or slightly branched polyether polyols (urethanes), and low-molecular-weight, highly branched polyether polyols (non-urethanes). The linear or slightly branched polyether polyols serve in flexible applications, such as in flexible slab and molded foam, reaction injection molding, and in other elastomer, sealant, and coating applications. The branched polyether polyols serve in applications requiring rigidity, such as rigid foams, solid or microcellular plastic, and hard, solvent-resistant coatings.

The purpose of this document is to provide the rationale for the selection of the proposed standards for the polyether polyols production source category. In order to provide the background for subsequent discussions, the first section of this document is a summary of the proposed rule. This is followed by a discussion of the rationale for the selection of various aspects of the standards, including the source categories and pollutants to be regulated, the level and format of the standards, and the compliance, reporting, and recordkeeping provisions. The technical memoranda presenting the background information for these issues are presented in the Supplemental Information Document (SID).

The format, reporting, recordkeeping and compliance provisions of the proposed standards were primarily established by the methods used to determine maximum achievable control technology (MACT) floors and regulatory alternatives for this source category. Because the EPA decided to consider the Hazardous Organic National Emission Standards for Hazardous Air Pollutants (HON) when determining the MACT floors and regulatory alternatives for polyether polyols production, the proposed standards for the polyether polyol source category resemble the HON. The rationale for the selection of the HON approach to determine MACT floors and regulatory alternatives is provided in the SID.

2.0 SUMMARY OF THE PROPOSED STANDARDS

This section provides a summary of the proposed regulation. The full regulatory text is available in Docket No. A-96-38, directly from the EPA, or from the Technology Transfer Network (TTN) on the EPA's electronic bulletin board. More information on how to obtain a copy of the proposed regulation is provided in the preamble for the proposed standards.

2.1 The Source Category To Be Regulated

These proposed standards regulate HAP emissions from polyether polyols manufacturing units (PMPU). Polyether polyols are defined as the products formed by the reaction of ethylene oxide (EO), propylene oxide (PO), or other cyclic ethers with compounds having one or more reactive hydrogens (i.e., a hydrogen atom bonded to nitrogen, sulfur, oxygen, phosphorus, etc.). This definition excludes materials regulated as glycols or glycol ethers under the HON. For the proposed rule, an affected source is defined as each group of one or more PMPU and located at a plant site that is a major source.

The EPA decided it was appropriate to subcategorize the source category for purposes of analyzing the MACT floors and regulatory alternatives. The subcategories are polyether polyols made from the polymerization of epoxides and polyether polyols made from the polymerization of tetrahydrofuran (THF). An "epoxide" is a chemical compound consisting of a three-membered cyclic ether. Ethylene oxide (EO) and propylene oxide (PO) are the only epoxides that are listed as HAP. Subcategorization was necessary due to the distinctively different nature of the epoxide and THF processes and the effect of these differences on the applicability of controls. One noteworthy distinction between the two subcategories is that the first group, polyols made with epoxides, uses HAP as the monomer(s), whereas the second group does not use a HAP monomer. Additionally, the first group performs the reaction primarily on a batch basis, while the second group performs the reaction on a continuous basis. Although the level of the proposed standard is identical for wastewater, storage vessels, and equipment leaks, the technical analyses were conducted separately for each subcategory to determine the appropriate level of the standard.

2.2 Relationship to Other Rules

Sources subject to the proposed rule may also be subject to other existing rules. Sources subject to the proposed rule may currently have storage vessels subject to the NSPS for Volatile Organic Liquid Storage Vessels (40 CFR part 60, subpart Kb). After the compliance date for this rule, such storage vessels are only subject to this rule and are no longer required to comply with subpart Kb.

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.

2.3 Pollutants To Be Regulated

Facilities in the source category covered by the proposed rule emit a variety of HAP. The most significant emissions are of the following HAP: EO, PO, hexane, and toluene. These proposed standards would regulate emissions of these compounds, as well as all other organic HAP that are emitted during the production of polyether polyols.

2.4 Affected Emission Points

Emissions from the following types of emission points (i.e., emission source types) are being covered by the proposed rule: storage vessels, process vents, equipment leaks, and wastewater operations.

2.5 Proposed Standards

The standards being proposed for the following emission source types at new and existing facilities have the same group determination criteria and control requirements as those promulgated for the corresponding emission source types at existing sources subject to the HON (Subpart F for general requirements, Subpart G for process vents, wastewater and storage vessels, and Subpart H for equipment leaks): storage vessels; process vents from polyether polyols made with THF; process vents from continuous unit operations that emit nonepoxide HAP while making or modifying polyether polyols with epoxides; equipment leaks; and wastewater.

A specified emission reduction for the combination of all process vent streams within a PMPU is being proposed for process vent epoxide emissions and for nonepoxide HAP emitted from catalyst extraction. For process vents from batch unit operations that emit nonepoxide HAP from the making or modification of the product, this proposed standard requires the Group 1/Group 2 determination to be based on the criteria in the Polymer and Resins I NESHAP. In the event that there may be process vents from continuous unit operations that emit nonepoxide HAP from the making or modification of the product, this proposed standard requires the Group 1/Group 2 determination based on the criteria from the HON.

Tables 1 and 2 summarize the level of control being proposed for new and existing sources, respectively. Where the applicability criteria and required level of control is the same as the HON, this is indicated in the table as "HON." When the table lists "epoxides," it is referring to EO and PO, the HAP monomers used in the polyether polyols process. "Nonepoxide HAP" refers to organic HAP other than EO and PO that are used in the polyether polyols manufacturing process. The following sections describe these proposed standards in more detail, by emission source.

TABLE 1. SUMMARY OF LEVEL OF PROPOSED STANDARDS FOR EXISTING SOURCES

Source Category Subcategory	Emission Sources					
	Storage	**Process Vents**[a]			**Waste water**	**Equip. Leaks**
Polyether Polyols made with THF	HON	The Group 1/Group 2 criteria are from §63.115(d)(1) or (d)(2), and (d)(3) of subpart G. If the collection of vents is Group 1, the control requirement is 98% emission reduction.			HON	HON
		Epoxides	**Nonepoxide HAP in making or modifying the product**	**Nonepoxide HAP in catalyst extraction**		
Polyether Polyols made with Epoxides	HON	98 percent aggregate emission reduction	For process vents from batch unit operations, the Group 1/Group 2 criteria are from 40 CFR 63 Subpart U. If the collection of vents is Group 1, the control requirement is a 90 percent aggregate emission reduction. For process vents from continuous unit operations, the Group 1/Group 2 criteria are from §63.115(d)(1) or (d)(2), and (d)(3) of subpart G. If the collection of vents is Group 1, the control requirement is a 98 percent aggregate emission reduction.	90 percent aggregate emission reduction	HON	HON

[a] For Group 1/Group 2 determination, the appropriate criteria are applied to the combination of all applicable process vents and not to individual process vents.

TABLE 2. SUMMARY OF LEVEL OF PROPOSED STANDARDS FOR NEW SOURCES

<table>
<tr><th rowspan="2">Source Category Subcategory</th><th colspan="6">Emission Sources</th></tr>
<tr><th>Storage</th><th colspan="3">Process Vents[a]</th><th>Waste water</th><th>Equip. Leaks</th></tr>
<tr><td>Polyether Polyols made with THF</td><td>HON</td><td colspan="3">The Group 1/Group 2 criteria are from §63.115(d)(1) or (d)(2), and (d)(3) of subpart G. If the collection of vents is Group 1, the control requirement is 98% emission reduction.</td><td>HON</td><td>HON</td></tr>
<tr><td></td><td></td><th>Epoxides</th><th>Nonepoxide HAP in making or modifying the product</th><th>Nonepoxide HAP in catalyst extraction</th><td></td><td></td></tr>
<tr><td>Polyether Polyols made with Epoxides</td><td>HON</td><td>99.9 percent aggregate emission reduction</td><td>For process vents from batch unit operations, the Group 1/Group 2 criteria are from 40 CFR 63 Subpart U. If the collection of vents is Group 1, the control requirement is a 90 percent aggregate emission reduction.
For process vents from continuous unit operations, the Group 1/Group 2 criteria are from §63.115(d)(1) or (d)(2), and (d)(3) of subpart G. If the collection of vents is Group 1, the control requirement is a 98 percent aggregate emission reduction.</td><td>98 percent aggregate emission reduction</td><td>HON</td><td>HON</td></tr>
</table>

[a] For Group 1/Group 2 determination, the appropriate criteria are applied to the combination of all applicable process vents and not to individual process vents.

2.5.1 Storage Vessels

For polyether polyols made with either epoxides or THF, the storage vessel requirements at new and existing affected sources are identical to the HON storage vessel requirements in subpart G for existing sources. For this proposed rule, a ``storage vessel'' is a tank or other vessel that is associated with a PMPU and that stores a liquid containing one or more organic HAP. The proposed rule specifies assignment procedures for determining whether a storage vessel is associated with a PMPU. The storage vessel provisions do not apply to the following: (1) vessels permanently attached to motor vehicles, (2) pressure vessels designed to operate in excess of 204.9 kilopascals (29.7 pounds per square inch, absolute (psia)), (3) vessels with capacities smaller than 38 cubic meters (m^3)(10,000 gallons), (4) wastewater tanks, and (5) vessels storing liquids that contain HAP only as impurities. An impurity is produced coincidentally with another chemical substance and is processed, used, or distributed with it. The owner or operator must determine if the storage vessel is Group 1 or Group 2; Group 1 storage vessels require control, while Group 2 vessels do not. The criteria for determining whether a storage vessel is Group 1 or Group 2 are shown in Table 3, and are the same as the HON criteria for existing sources.

TABLE 3. GROUP 1 STORAGE VESSEL CRITERIA

Vessel Capacity (cubic meters)	Vapor Pressure[a] (kilopascals)
Existing and new sources	

75 <= capacity < 151	>= 13.1
151 >= capacity	>= 5.2

[a] Maximum true vapor pressure of total HAP at average storage temperature.

The storage provisions require that one of the following control systems be applied to Group 1 storage vessels: (1) an internal floating roof with proper seals and fittings; (2) an external floating roof with proper seals and fittings; (3) an external floating roof converted to an internal floating roof with proper seals and fittings; or (4) a closed vent system with a 95 percent efficient control device. The storage provisions give details on the types of seals and fittings required. Monitoring and compliance provisions include periodic visual inspections of vessels, roof seals, and fittings, as well as internal inspections. If a closed vent system and control device are used, the owner or operator must establish appropriate monitoring procedures. Reports and records of inspections, repairs, and other information necessary to determine compliance are also required by the storage vessels provisions.

2.5.2 Process Vents

There are separate process vent provisions in the proposed rule for the two polyether polyol subcategories. Further, within the polyether polyol subcategory that polymerizes epoxides, there are different emission limits for different pollutants, and for different uses of the organic HAP.

The process vent emissions from polyols made with epoxides were divided into the following three groups: epoxide emissions; nonepoxide HAP emissions from making or altering the product, and; nonepoxide HAP emissions from catalyst extraction.

2.5.2.1 Requirements for Epoxide Emissions

The process vent provisions for epoxide emissions require the owner or operator of existing sources using epoxides to reduce the aggregate total epoxide process vent emissions by 98 weight-percent, and require the owner/operator of new sources using epoxides to reduce the aggregate total process vent emissions by 99.9 weight-percent for new sources.

As an alternative to requiring the owner or operator to achieve the 98 (or 99.9) percent reduction using a conventional control device, the proposed rule also allows the owner or operator to use ‘‘extended cook-out’’ as a means of reducing emissions by the required percentage. This pollution prevention technique reduces emissions by extending the time of reaction, thus leaving fewer unreacted epoxides to be emitted downstream.

As an alternative to the 98 percent emission reduction, owners or operators of existing sources may maintain an epoxide emissions factor from the affected source no greater than 1.7×10^{-2} kilograms of epoxide emissions per megagram of product (kg/Mg). The corresponding epoxide emission factor for new sources is 4.4×10^{-3} kg/Mg. Compliance with this alternative limitation will be achieved by developing and following an epoxide annual emission factor plan, which must include provisions for the monitoring of the process and any control device parameters to demonstrate continuous compliance with the emission factor limitation. A second alternative to the 98 percent emission reduction for epoxide emissions from existing sources is allowed. This alternative emission limit is an epoxide concentration cutoff of 20 parts per million by volume (ppmv) from the outlet of a combustion, recapture, or recovery device.

2.5.2.2 Requirements for Nonepoxide HAP Emissions from Catalyst Extraction

The process vent provisions require the owner or operator of using epoxides to reduce the aggregate total organic HAP emissions by 90 weight percent for existing sources and 98 weight percent from process vents associated with catalyst extraction for new sources. This provision only applies if an organic HAP is used in the catalyst extraction process.

2.5.2.3 Requirements for Nonepoxide HAP Used to Make or Modify the Product

There are separate provisions for process vents from batch and continuous unit operations that use organic HAP to make or alter the product. The approach for both batch and continuous processes is to first determine the group status for the collection of process vents in each PMPU that is associated with the use of organic HAP to make or alter the product. If the combination of vents is determined to be Group 1, the aggregate organic HAP emissions are required to be reduced by 90 percent for process vents from batch unit operations and 98 percent for process vents from continuous unit operations. These requirements are the same for new and existing sources.

For process vents from batch unit operations, the Group 1 criteria are the same as the criteria in the Group 1 Polymers and Resins NESHAP, except that these criteria are applied to the combination of all vents for the proposed polyether polyol rule, and the criteria are applied to individual vents in the Polymers and Resins rule. The Group status is determined by calculating the annual emissions from all of the applicable vents, and using these emissions to calculate a ''cut-off'' flow rate. This cutoff flow rate is then compared to the actual combined annual average flow rate for all the vents. If the actual annual average flow rate is less than the cutoff flow rate, the group of vents is Group 1, and must be controlled by 90 percent.

For process vents from continuous unit operations, the HON Group 1 criteria are used, except that they are applied to the aggregated vent streams. The group of vents are Group 1 if they have a total resource effectiveness index value (TRE) less than or equal to 1.0.

The provisions for nonepoxide HAP emissions from making or altering the product for continuous unit operations are notably different than the provisions for the other continuous process vent provisions in the proposed rule. For the nonepoxide HAP emissions from making or altering the product, the TRE of the combined vent streams is calculated after the final recovery device. Therefore, the recovery device may be used to reduce emissions enough that the TRE is increased and the combined stream becomes Group 2. However, the recovery device may not be used to achieve the required percentage reduction for the combination of process vents that are Group 1.

Monitoring is required for the combination of process vents from continuous unit operations that are Group 2, if the combined stream characteristics result in a TRE index value between 1.0 and 4.0. This monitoring is to ensure that the combination of those streams do not become Group 1, which would then require control.

For both batch and continuous unit operations, the owner or operator can either make the Group 1/Group 2 determination, or the owner or operator can elect to comply directly with the Group 1 control requirements. For process vents from continuous unit operations, the TRE index value is determined after the final 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 §63.115 of subpart G.

Monitoring, reporting, and recordkeeping provisions necessary to demonstrate compliance are also included in the process vent provisions. These provisions are modeled after the analogous process vent provisions in the HON. Compliance with the monitoring provisions is based on a comparison of batch cycle daily average monitored values to enforceable parameter monitoring levels established by the owner or operator.

2.5.2.4 Process Vent Requirements for Polyether Polyols That Use THF as a Reactant

The proposed rule directly references the HON process vent provisions in subpart G for polyether polyols processes that use THF as a reactant. These provisions require a Group 1/Group 2 determination (on an individual vent basis), and the control of Group 1 process vent streams by 98 percent (or the use of a flare).

2.5.3 **Wastewater Operations**

For both polyether polyol subcategories, the proposed wastewater provisions are identical to the wastewater provisions in subparts F and G. The proposed rule applies to water containing HAP, raw material, intermediate, product, co-product, or waste material that exits any polyether polyols production process unit equipment and has either (1) a total organic HAP concentration of 5 ppmw or greater and a flow rate of 0.02 liters per minute (lpm) or greater; or (2) a total organic HAP concentration of 10,000 ppmw or greater at any flow rate. "Wastewater," as defined in §63.101 of subpart F, encompasses both maintenance wastewater and process wastewater. The process wastewater provisions also apply to HAP-containing residuals that are generated from the management and treatment of Group 1 wastewater streams. Examples of process wastewater streams include, but are not limited to, wastewater streams exiting process unit equipment (e.g., condenser stream decanter water), feed tank drawdown, vessel washout/cleaning that is part of the routine batch cycle, and residuals recovered from waste management units. Examples of maintenance wastewater streams are those generated by descaling of heat exchanger tube bundles, cleaning of distillation column traps, and draining of pumps into an individual drain system.

2.5.3.1 **Maintenance wastewater**

For maintenance wastewater, the proposed rule incorporates the requirements of §63.105 of subpart F for maintenance wastewater. This requires owners or operators to prepare a description of procedures that will be used to manage HAP-containing wastewater created during maintenance activities, and to implement these procedures.

2.5.3.2 <u>Process wastewater</u>

The Group 1/Group 2 approach from the HON is also used for these proposed wastewater provisions, with Group 1 process wastewater streams requiring control and Group 2 process wastewater streams not requiring control. For existing and new sources, a Group 1 wastewater stream is one with a total annual average concentration of organic HAP greater than or equal to 10,000 ppmw at any flow rate, or with an average flow rate greater than or equal to 10 lpm and a total organic HAP average concentration greater than or equal to 1,000 ppmw.

An owner or operator may determine the organic HAP concentration and flow rate of a wastewater stream either (1) at the point of determination (POD); or (2) downstream of POD. If wastewater stream characteristics are determined downstream of the POD, an owner or operator must make corrections for (1) losses by air emissions; (2) reduction of organic HAP concentration or changes in flow rate by mixing with other water or wastewater streams; and (3) reduction in flow rate or organic HAP concentration by treating or otherwise handling the wastewater stream to remove or destroy HAP. An owner or operator can determine the flow rate and organic HAP concentration for the POD by (1) sampling; (2) using engineering knowledge; or (3) using pilot-scale or bench-scale test data. Both the applicability determination and the Group 1/Group 2 determination must reflect the wastewater characteristics before losses due to volatilization, a concentration differential due to dilution, or a change in organic HAP concentration or flow rate due to treatment.

There are instances in which an owner or operator can bypass the group determination. An owner or operator is allowed to designate a wastewater stream or mixture of wastewater streams to be a Group 1 wastewater stream without actually determining the flow rate and organic HAP concentration for the POD. Using this option, an owner or operator can simply declare that a wastewater stream or mixture of wastewater streams is a Group 1 wastewater stream and that the emissions from the stream(s) are controlled from the POD through treatment. Also, an owner or operator who elects to use the process unit alternative in §63.138(d) of subpart G or the 95-percent biological treatment option in section 63.138(e) of subpart G is not required to make a Group 1/Group 2 determination. However, the owner or operator is required to determine the wastewater stream characteristics (i.e., organic HAP concentration and flow rate) for the designated Group 1 wastewater stream in order to establish the treatment requirements in §63.138.

Controls must be applied to Group 1 wastewater streams, unless the source complies with the source-wide mass flow rate provisions of §§63.138(c)(5) or (c)(6) of subpart G; or implements process changes that reduce emission as specified in §63.138(c)(7) of subpart G. Control requirements include (1) suppressing emissions from the POD to the treatment device; (2) recycling the wastewater stream or treating the wastewater stream to the required F_r values for each organic HAP as listed in table 9 of subpart G (The required F_r values in table 9 of subpart G are "fraction removed" (or removal efficiency) based on a steam stripper, with specified operating parameters, as the control technology); (3) recycling any residuals or treating any residuals to destroy the total combined HAP mass flow rate by 99 percent or more; and (4) controlling the air emissions generated by treatment processes. While emission controls are not required for Group 2 wastewater streams, owners or operators may opt to include them in management and treatment options.

Suppression of emissions from the POD to the treatment device will be achieved by using covers and enclosures and closed-vent systems to collect organic HAP vapors from the wastewater and convey them to treatment devices. Air emissions routed through closed-vent systems from covers, enclosures, and treatment processes must be reduced by 95 percent for combustion or recovery devices; or to a level of 20 ppmv for combustion devices.

The treatment requirements are designed to reduce the organic HAP content in the wastewater prior to placement in units without air emissions controls, and thus to reduce the HAP emissions to the atmosphere. Section G of the preamble provides several compliance options, including percent reduction, effluent concentration limitations, and mass removal.

For demonstrating compliance with the various requirements, owners or operators have a choice of using a specified design, conducting performance tests, or documenting engineering calculations. Appropriate compliance, monitoring, reporting, and recordkeeping provisions are included in the regulation.

2.5.4 **Equipment Leaks**

The equipment leak provisions in the proposed rule refer directly to the requirements contained in subpart H. The standards would apply to equipment in organic HAP service 300 or more hours per year that is associated with a PMPU, including valves, pumps, connectors, compressors, pressure relief devices, open-ended valves or lines, sampling connection systems, instrumentation systems, surge control vessels, bottoms receivers, and agitators. The provisions also apply to closed-vent systems and control devices used to control emissions from any of the listed equipment.

2.5.4.1 **Pumps and valves**

This proposed standard requires leak detection and repair (LDAR) for pumps in light liquid service and for valves in gas or light liquid service. The proposed standards for both will be implemented in three phases. The first and second phases for both types of equipment consist of an LDAR program, with lower leak definitions in the second phase. The LDAR program involves a periodic check for organic vapor leaks with a portable instrument; if leaks are found, they must be repaired within a certain period of time. In the third phase, the periodic monitoring (a work practice standard) is combined with a performance requirement for an allowable percent leaking components.

The standard requires monthly monitoring of pumps using an instrument and weekly visual inspections for indications of leaks. In the first two phases of the valve standard, quarterly monitoring is required. In phase three, semiannual monitoring may be used by process units with less than 1 percent leaking valves and annual monitoring may be used by process units with less than 0.5 percent leaking valves.

In phase three, if the base performance levels for a type of equipment are not achieved, owners or operators must, in the case of pumps, enter into a quality improvement program (QIP), and, in the case of valves, may either enter into a QIP or implement monthly LDAR. The QIP is a concept that enables plants exceeding the base performance levels to eventually achieve the desired levels without incurring penalty or being in a noncompliance status. As long as the requirements of the QIP are met, the plant is in compliance. The basic QIP consists of information gathering, determining superior performing technologies, and replacing poorer performers with the superior technologies until the base performance levels are achieved.

2.5.4.2 Connectors

The rule also requires LDAR for connectors in gas or light liquid service. The monitoring frequency for connectors is determined by the percent leaking connectors in the process unit and the consistency of performance. Process units that have 0.5 percent or greater leaking connectors are required to monitor all connectors annually. Units that have less than 0.5 percent may monitor biannually and units that show less than 0.5 percent for two monitoring cycles may monitor once every four years.

2.5.4.3 Other equipment

Subpart H also contains standards for other types of equipment, compressors, open-ended lines, pressure relief devices, and sampling connection systems. Compressors are required to be controlled using a barrier-fluid seal system, by a closed vent system to a control device, or must be demonstrated to have no leaks greater than 500 ppm HAP. Sampling connections must be closed-purge or closed-loop systems, or must be controlled using a closed vent system to a control device. Agitators must either be monitored for leaks or use systems that are better designed, such as dual mechanical seals. Pumps, valves, connectors, and agitators in heavy liquid service; instrumentation systems; and pressure relief devices in liquid service are subject to instrumental monitoring only if evidence of a potential leak is found through sight, sound, or smell. Instrumentation systems consist of smaller pipes and tubing that carry samples of process fluids to be analyzed to determine process operating conditions or systems for measurement of process conditions.

Surge control vessels and bottoms receivers are required to be controlled using a closed vent system vented to a control device. However, the applicability of controls to surge control vessels and bottoms receivers is based on the size of the vessel and the vapor pressure of the contents. The criteria for determining whether controls are required for surge control vessels and bottoms receivers are the same as for Group 1 storage vessels.

2.5.4.4 Other equipment leak provisions

Under certain conditions, delay of repair beyond the required period may be acceptable. Examples of these situations include where: (1) a piece of equipment cannot be repaired without a process shutdown, (2) equipment is taken out of HAP service, (3) emissions from repair will exceed emissions from delay of repair until the next shutdown, and (4) equipment such as pumps with single mechanical seals, will be replaced with equipment with better leak performance, such as dual mechanical seals.

In addition, specific alternative standards are included for batch processes and enclosed buildings. For batch processes, the owner or operator can choose either to meet standards similar to those for continuous processes with monitoring frequency pro-rated to time in use of HAP, or to periodically pressure test the entire system. For enclosed buildings, the owner or operator may forego monitoring if the building is kept under a negative pressure and emission are routed through a closed vent system to an approved control device.

The equipment leak standards require the use of leak detection instruments that meet the performance criteria in Method 21 of appendix A of part 60. Method 21 requires a portable organic vapor analyzer to monitor for leaks from equipment in use. Test procedures using either a gas or a liquid for pressure testing the batch system are specified to detect for leaks.

The standards would require certain records to demonstrate compliance with the standard, and the records must be retained in a readily accessible recordkeeping system. Subpart H requires that the following records be maintained for equipment that would be subject to the standards: information on the testing associated with batch processes, design specifications of closed vent systems and control devices, test results from performance tests, and information required by equipment in the QIP.

2.5.5 Recordkeeping and Reporting Requirements

Specific recordkeeping and reporting requirements related to each emission source type are included in the applicable sections of the proposed rule. Section 63.1439 of the proposed rule provides general reporting, recordkeeping, and testing requirements.

The general reporting, recordkeeping, and testing requirements of this subpart are very similar to those found in subparts F and G. The proposed rule also incorporates 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. This rule incorporates the March 16, 1994 promulgated General Provisions. However, the EPA is in the process of drafting amendments to the General Provisions. If this subpart is promulgated subsequent to the promulgation of the amendments to the General Provisions, the amended General Provisions will be incorporated into this subpart.

The proposed rule requires sources to keep records and submit reports of information necessary to determine applicability and document compliance. The proposed rule requires retention of hourly average values of monitored parameters for continuous process vents. For batch process vents, the proposed rule requires retention of daily average values of monitored parameters. If there is a monitoring parameter excursion for either batch or continuous process vents, the 15-minute values for the excursion period must be retained. The proposed rule also requires that records of all residual HAP content test results must be kept for five years.

Section 63.1439 of the proposed rule lists the following types of reports that must be submitted to the Administrator, as appropriate: (1) Start-up, shutdown, and malfunction plan; (2) Application for Approval of Construction or Reconstruction; (3) Initial Notification; (4) Precompliance Report; (5) Notification of Compliance Status; (6) Periodic Reports; (7) other reports; and (8) Operating permit application. The requirements for each of the eight types of reports are summarized below. This list of reports in §63.1435 incorporates the reporting requirements of subpart H: (1) An Initial Notification; (2) a Notification of Compliance Status; and (3) Periodic Reports.

2.5.5.1 **Start-up, shutdown, and malfunction plan**

The plan would describe procedures for operating and maintaining the affected source during periods of start-up, shutdown, and malfunction and a program for corrective action for malfunctioning process and air pollution equipment used to comply with this subpart.

2.5.5.2 **Application for Approval of Construction or Reconstruction**

For new affected sources, the proposed rule would require the affected source to comply with the following provisions from subpart A: §63.5(d)(1)(ii)(H), (d)(1)(iii), (d)(2), and (d)(3)(ii) of subpart A.

2.5.5.3 **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. Owners or operators can submit one Initial Notification to comply with both the requirements of section 63.1439 of the proposed rule and the requirements for equipment leaks subject to subpart H. The notification must list the processes that are subject to the proposed rule, and which provisions may apply (e.g., storage vessels, continuous process vents, batch process vents, wastewater, and/or equipment leak provisions). A detailed identification of emission points is not necessary for the Initial Notification. The notification must, however, include a statement of whether the source expects that it can achieve compliance by the specified compliance date.

2.5.5.4 Precompliance Report

The Precompliance Report would be required for affected sources requesting an extension for compliance, or requesting approval to use alternative monitoring parameters, alternative continuous monitoring and recordkeeping, or alternative controls.

2.5.5.5 **Notification of Compliance Status**

The Notification of Compliance Status would be required to be submitted within 150 days after the source's compliance date. It shall contain the information for emission points that need to comply with the rule, to demonstrate that compliance has been achieved. Such information includes, but is not limited to, the results of any performance test for continuous and/or batch process vents, ECO, or wastewater emission points; one complete test report for each test method used for a particular kind of emission point; 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 emissions credits and debits for emissions averaging. The Notification of Compliance Status required by subpart H for equipment leaks must be submitted within 90 days after the compliance date.

2.5.5.6 **Periodic Reports**

Generally, Periodic Reports would be submitted semiannually. However, 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 one percent of the operating time in a reporting period, or the monitoring system is out of service for more than five percent of the time, the regulatory authority may request that the owner or operator submit quarterly reports for that emission point. After one 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 continuously monitored parameters, the Periodic Report must report when "excursions" occur. Table 4 shows what constitutes an excursion.

TABLE 4. SUMMARY OF EXCURSIONS

Emission source type	Type of excursion	Description of excursion
Continuous Process Vents.	Daily average exceedance.	When the daily average of a monitored parameter is above the maximum, or below the minimum, established level
	Insufficient monitoring data.	Insufficient monitoring data is when an owner or operator fails to obtain a valid hour of data for at least 75 percent of the operating hours during an operating day. Four 15-minute parameter measurements must be obtained to constitute a valid hour of data.
Batch Process Vents.	Batch cycle daily average exceedance for control techniques other than ECO.	When the batch cycle daily average of a monitored parameter is above the maximum, or below the minimum, established level.
	Batch cycle daily average exceedance for ECO.	When the batch cycle's value of a monitored parameter is above the maximum, or below the minimum, established level.
	Insufficient monitoring data.	Insufficient monitoring data is when an owner or operator fails to obtain valid parameter measurements for at least 75 percent of the 15-minute periods during an operating day.

Periodic Reports would also include results of any performance tests conducted during the reporting period and instances when required inspections revealed problems. Additional information on the source that is required to be reported under its operating permit or Implementation Plan would also be described in Periodic Reports.

Periodic Reports for subpart H must be submitted every six months and must contain summary information on the LDAR program changes to the process unit, changes in monitoring frequency or monitoring alternatives, and/or initiation of a QIP.

2.5.5.7 Other Reports

Other reports required under the proposed rule include process changes that change the compliance status of process vents, requests for extensions of the allowable repair period, and notifications of inspections for storage vessels and wastewater.

2.5.5.8 Operating Permit Application

An owner or operator who submits an operating permit application instead of a Precompliance Report shall submit the information specified in the Precompliance Report, as applicable, with the operating permit application.

3.0 RATIONALE FOR THE SELECTION OF POLLUTANT AND SOURCE CATEGORY FOR CONTROL

The source category selected for the development of this proposed rule was listed in the source category list published on July 16, 1992 (57 FR 31576). The way in which source categories or subcategories are defined is important, because it dictates the basis upon which the MACT floor is determined. The definition of the source category or subcategory describes the "pool" of facilities that can be used to define the MACT floor. This means that the MACT floor must be determined on the same basis upon which the source category is defined.

As discussed in section 2.1 of this document, the polyether polyols production source category was separated into two subcategories due to the process. These subcategories are polyether polyols made with EO or PO (epoxides), and polyether polyols made with THF. Information gathered during the development of this proposed rule indicated that facilities in both of these subcategories are major sources, or are located at major source plant sites.

The Agency obtained data from facilities that make polyether products by polymerizing a compound having multiple reactive hydrogen atoms, resulting in the formation of a ''polyol,'' and products made by polymerizing a compound with a single reactive hydrogen, which forms a ''mono-ol.'' The Agency then investigated the distinctions between the production units and the emissions controls for products from these two groups. The Agency found no fundamental difference between the processes, the chemistry, the emissions, or the types of control equipment. Further, many producers use the same process equipment to produce polyols and mono-ols, yet they generically refer to both types of products as ''polyols.'' Therefore, for the purposes of this regulation, the Agency intends the term ''polyether polyols'' to represent both polyether polyols and polyether mono-ols.

In defining the affected source for the regulation, the EPA considered two options. One option was to define an affected source as all the PMPUs at the same plant site. The second option was to define the affected source as each individual PMPU. The latter definition of an affected source was chosen because multiple reactor trains, or multiple PMPUs, are typically vented to the same header then to the same control device. Also, different reactor trains often use the same wastewater treatment system or storage vessel(s). With this broad affected source definition, the applicability requirements would be the same if two separate facilities delineate their reactor trains as separate PMPUs or deem them to be part of one large PMPU.

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

Emissions from the production of polyether polyols were identified as occurring from storage vessels, process vents, equipment leaks, and wastewater operations. The proposed regulation includes standards for all of these emission source types.

Epoxides, the primary HAP reactants, are much more reactive than any other HAP used in the process and typically have more stringent controls due to the explosive nature of EO. Epoxide emissions are typically controlled by scrubbers. The scrubbers control efficiency varies depending on the solute's solubility in the scrubbing liquid and its volatility. Therefore, a given scrubber operating at the same conditions for EO control will get a different control efficiency for PO and yet another control efficiency for another HAP.

Some facilities also remove the catalyst used in the reaction, while others do not, depending on customer specifications for purity of the product. The catalyst is typically a basic compound that is usually neutralized with an acid. Sometimes, this neutralization is the only additional processing required. For those products that require further processing, the salt that is formed from the acid neutralization step is removed. Catalyst extraction can be conducted by mechanically separating the catalyst salt from the product(i.e., using filters or presses), or by solvent extraction. Catalyst extraction using solvents requires additional unit operations which may or may not be physically attached to the processing units. The solvent used could be a HAP, either hexane or toluene. Assuming a scrubber is used to control process vent emissions, the emissions from the HAP solvent are not controlled to the same level as the epoxide emissions. Further, solvent HAP emissions are sometimes controlled with a different control device than that used for the epoxides, and are sometimes uncontrolled.

In addition to the epoxide emissions and the HAP emissions from catalyst extraction, there are also HAP emissions from ‘‘incidental’’ HAP that are used as initiators and solvents in the reaction. The quantities of HAP used in this fashion are small, and the emissions are generally vented to the same control device as the epoxide emissions. As stated above, for a given scrubber, the control efficiency for a nonepoxide HAP will usually be less than the control efficiency for an epoxide. Further, if an extended cookout is used as the control option, then there could be minimal, if any, emission reduction for the emissions of nonepoxide HAP.

5.0 RATIONALE FOR THE SELECTION OF REGULATORY ALTERNATIVES FOR EXISTING SOURCES

The approach for evaluating the MACT floors and determining regulatory alternatives is discussed in detail in the SID and is summarized in this section. This section summarizes the MACT floors and regulatory alternatives more stringent than the MACT floors considered by the EPA, and the rationale for the selection of the level of the proposed standards for new and existing sources.

5.1 The Maximum Achievable Control Technology Floor for Existing and New Sources

The MACT floor level of control was identified for each emission source grouping for both polyether polyols subcategories (i.e., polyether polyols made with epoxides and polyether polyols made with THF).

The EPA first considered a direct approach of comparing the control technologies from the different sources to determine the MACT floors. However, problems arose with this approach due to the variations in control options and the inability to quantify and numerically calculate average performance levels for the best performing 12 percent of the facilities. Therefore, the EPA studied methods to simplify the MACT floor analysis, and decided to use the HON (40 CFR 63, subparts F, G, and H), in the MACT floor analysis as the primary approach.

5.1.1 The Maximum Achievable Control Technology Floor Analyses Approach for Storage Vessels, Equipment Leaks and Wastewater

There are many similarities between the equipment, emissions, and control techniques associated with the polyether polyols industry and the synthetic organic chemical manufacturing industry (SOCMI), which is regulated by the HON. The HAP reactants and solvents used in the polyols industry are all SOCMI chemicals, and many polyols processes are co-located with SOCMI processes.

The HON contains emission limitations for five emission source types, and three of these emission limitations were directly applied in the polyether polyols regulatory effort: storage vessels, wastewater, and equipment leaks. For each emission source type, applicability is based on the "generic" characteristics of the emission point, such as HAP emissions, HAP concentration, flow rate, size of the equipment, etc. Thus, these applicability determinations could easily be applied to polyether polyols production sources.

A HON-based approach was practical, because the HON provides "ready-made" alternatives. That is, the HON analysis takes into account equipment type, equipment size, equipment contents, stream characteristics, and other important aspects of the emission source that should be considered in the floor determination.

Because of the similarities between the SOCMI and polyether polyols industries, the EPA concluded that the HON requirements for storage vessels, wastewater, and equipment leaks were appropriate to use in defining the MACT floor for the polyether polyols production industry. As noted above, the intent of this approach is to determine how controls at existing polyols facilities compare to the level of control that would be required by the HON for all emission types except process vent emissions.

The HON-based type of analysis does not provide specific numeric values for the MACT floor. Rather, the conclusion of each floor analysis using this HON-based approach is whether the MACT floor is less stringent than, more stringent than, or equal to, the HON-level of control. For each facility in each subcategory, the existing controls were identified for each emission point. The existing level of control was then compared to the level of control that would be required by the HON, and the emission point was characterized as being controlled at a level less stringent than the HON requirements (less than HON), a level equivalent to the HON requirements (equal to HON), or a level more stringent than the HON requirements (greater than HON).

After each emission point at each facility was characterized, all emission points of a given emission source type were grouped together and a facility-wide determination was made for each emission source type. For instance, if a storage vessel was controlled at a level less stringent than the HON, and no other storage vessel was controlled at a level more stringent than the HON, the facility was classified as "less than HON" for storage vessels. If all controls at the facility were equivalent to the HON levels, the facility was classified as "equal to HON." If one or more points was controlled at a level more stringent than the HON, and no point of the same type was controlled at a level less stringent than the HON at that facility, the facility was classified as "greater than HON."

It is important to note, however, that if an emission point was uncontrolled, and the HON would not require control for that point, the level of control is equivalent to the HON level of control. Therefore, the floor for a subcategory could be the HON, when in fact all emission points of that particular emission source type were uncontrolled.

If a facility reported different levels of control (in comparison to the HON) within one emission source type, an additional analysis was necessary to classify the facility. In these situations, the existing emission level was compared to the emission level that would be required if HON controls were applied. If the existing emissions were less than the HON-level emissions, the facility was classified "greater than HON," but if the HON-level emissions were lower than the existing emissions, the facility was classified "less than HON."

The floor for each emission source type was defined for storage, wastewater and equipment leaks for both subcategories as less than, equal to, or greater than, the HON level of control. The HON-based approach used for new sources was similar to the existing source approach. The level of control for each emission point was compared with the level that would be required by the HON existing source requirements.

5.1.2 The Maximum Achievable Control Technology Floor Analyses Approach for Process Vents

For process vents a different approach from the HON-approach was utilized, because several facilities reported pollution prevention techniques (i.e., extended cookout) for which the EPA wanted to give credit. During the presumptive MACT (PMACT) process, the EPA first proposed the use of emission factors to establish the MACT floor. Industry representatives insisted that emission factors were influenced by individual product properties. They noted that the reactivity of PO is an order of magnitude slower than EO; therefore, there would be twice as many uncontrolled PO emissions as EO emissions from the same PMPU if PO was the last reactant added versus if EO was the last reactant added. They reported that the emission factor approach favored facilities that predominately use EO over similarly equipped facilities that use PO. Industry representatives commented that they did not like this emission factor approach without subcategorizing all the possible "classes" of products. They stated that this classification was necessary because the control efficiency for EO is better than that for PO for a given recovery device, and the approach of one emission factor for the source category would not be fair to facilities that use more PO than EO in their product mix. Industry representatives requested that the EPA utilize a percent emission reduction approach to calculate the MACT floor instead of the emission factor approach, stating that they would cooperate with the EPA in developing an emission reduction calculation for the ECO. Therefore, this approach was abandoned in favor of quantifying a percent emission reduction.

The percent emission reduction approach calculated aggregated emission reduction from all the process vent emissions within a PMPU, for every facility in the database. The following calculation was used:

$$R = [(\Sigma E_u - \Sigma E_c)/\Sigma E_u] \times 100\%$$

where:

R = Emission reduction, percentage;

E_u = Uncontrolled epoxide process vent emissions, pounds per year, (lb/yr); and

E_c = Controlled epoxide process vent emissions, lb/yr.

5.1.3 Maximum Achievable Control Technology Floor Analysis Results for Polyether Polyols made with Epoxides

Tables 5 and 6 present the MACT floors for existing and new sources producing polyether polyols with epoxides. The sections that follow describe the rationale for these conclusions.

Table 5. MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY FLOORS FOR EXISTING SOURCES OF POLYETHER POLYOLS WITH EPOXIDES

Storage	Process Vent	Equipment	Wastewater

Storage	Process Vent			Equipment Leaks	Wastewater
	Oxides	**Nonepoxides from making or modifying the product**	**Nonepoxide from catalyst extraction**		
HON	98 percent	0 percent	90 percent	HON	No control

Table 6. MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY FLOORS FOR NEW SOURCES OF POLYETHER POLYOLS WITH EPOXIDES

Storage	**Process Vent**			**Equipment Leaks**	**Wastewater**
	Oxides	**Nonepoxides from making or modifying the product**	**Nonepoxide from catalyst extraction**		
HON	99.9 percent	39 percent	98 percent	HON	No control

5.1.3.1 **Storage Vessels**

The MACT floor level of control for storage vessels at existing sources that make polyether polyols with oxides was determined to be the HON level of control and applicability. The rationale for this determination follows. The majority of the vessels were pressurized (which are exempt from the HON requirements), with only four facilities reporting vessels that were HON Group 1 storage vessels (see Table 3 for the applicability cutoffs). It was determined that these four facilities have storage vessels that would require control under the HON. Three of these four facilities with HON Group 1 storage vessels have HON reference control technologies on their HON Group 1 storage vessels; therefore, the MACT floor level of control for storage vessels at existing sources was determined to be equal to the level of control in the HON. No facility had controls more stringent than the HON level of control for their Group 1 vessels; therefore, the MACT floor level of control for storage vessels at new sources is the HON existing source storage vessel level of control.

5.1.3.2 **Equipment Leaks**

The database of 13 facilities reporting equipment leak information indicated that nine out of 13 facilities have LDAR programs in place. Of the nine LDAR programs in place, six were reported to be equal to the level of stringency required by the HON (i.e., in terms of monitoring frequency and leak definition). No facility reported an equipment leak emission control program more stringent than the HON existing source level of control. Therefore, the MACT floor level of control for equipment leaks for new and existing sources was determined to be the level of control required by the HON (40 CFR 63, subpart H).

5.1.3.3 Process Vents

Three sets of MACT floor levels of control were established for process vent emissions: one for epoxides (EO and PO) emissions; a second for nonepoxide HAP emissions from catalyst extraction; and a third for emissions of nonepoxide HAP used to make or modify the product. For the epoxide subcategory, the MACT floor levels were established by determining the average emission control for the best performing 12 percent of the facilities with respect to the emission point. Since it was assumed that the EPA's database of 28 facilities making polyols with epoxides is representative of the industry as a whole, the best performing 12 percent of the database was equated with the best performing 3.36 facilities. In calculating the "average" emission control, the median approach was used to measure central tendency where there was a wide range of values within the best performing facilities. For new sources, the MACT floor levels were established by determining the emission control for the best controlled facility for that emission point of the subcategory.

5.1.3.3.1 Epoxide Emissions

The MACT floor for epoxide emissions from process vents at existing facilities that produce polyether polyols with epoxides was calculated as the median of the top twelve percent of the database. The MACT floor was calculated to be a 98.1 percent control efficiency, and was rounded to 98 percent since the standard is technology based and it is believed that facilities would not use a different control technology to meet a standard that is a tenth of a percent more stringent.

The MACT floor level of control for epoxide emissions from process vents at new sources was determined to be a control efficiency of 99.9 percent. This new source MACT floor was based on a facility that reported a control efficiency of 99.9 percent.

5.1.3.3.2 Nonepoxide HAP Emissions from Catalyst Extraction

For nonepoxide HAP emissions from catalyst extraction, the MACT floor was determined as the median of the data in the database, which was 90 weight percent aggregated emission reduction for existing sources. The MACT floor level of control for new sources was determined to be 98 weight percent aggregated emission reduction.

5.1.3.3.3 **Nonepoxide HAP From Making or Modifying the Product**

For nonepoxide HAP process vent emissions from making or modifying the product at existing sources, the MACT floor level of control was calculated using the median of the top twelve percent. The existing source MACT floor level of control for nonepoxide HAP emissions from making or modifying the product was determined to be no control. The new source MACT floor level of control for nonepoxide HAP process vent emissions was determined to be 39.0 percent control efficiency.

5.1.3.4 **Wastewater**

The MACT floor level of control for wastewater for new and existing sources was identified to be less than the HON level of control. In fact, the level of control is no control. The database indicated that only two facilities in the database reported Group 1 wastewater streams that require controls according to the HON, and neither facility controlled air emissions from these wastewater streams. Further, of the Group 2 wastewater streams that were reported, none had air emission controls.

5.1.4 **Maximum Achievable Control Technology Floors for Polyether Polyols Made with Tetrahydrofuran**

Only one of the two facilities in the database for the THF subcategory use and emit organic HAP. Therefore, the MACT floor analysis was based on the one facility that uses and emits HAP. This one source also sets the level of control for the new source MACT floor for THF polymerization.

Table 7 summarizes the MACT floor determination. The following sections present a summary of the analysis for this determination.

Table 7. MACT FLOOR FOR EXISTING AND NEW SOURCES OF POLYETHER POLYOLS MADE WITH TETRAHYDROFURAN

Storage	Process Vents	Equipment Leak	Wastewater
No control	No control	No control	No control

5.1.4.1 Storage Vessels

The MACT floor level of control for new and existing sources was identified as the HON level of control. Only one of the THF facilities had a storage vessel for HAP. This storage vessel was a Group 2 vessel that does not require controls (see Table 3 for the Group 1/Group 2 determination) and did not have a control.

5.1.4.2 Process Vents

The facility that uses organic HAP in its process does not control the process vent emissions of the organic HAP. The second facility in the database emits hydrogen fluoride and has minimal controls (approximately 20 percent emission reduction) on these emissions. Therefore, the MACT floor level of control for process vents from polyether polyols produced using THF at existing sources was identified to be no control.

5.1.4.3 Equipment Leaks

No control of emissions from equipment leaks was reported at the facility that polymerizes THF. Therefore, the MACT floor for equipment leaks at existing and new facilities was determined to be less than the HON level of control. More specifically, the MACT floor level of control is no control.

5.1.4.4 Wastewater

The MACT floor for wastewater for existing and new facilities that produce polyols by polymerization of THF was determined to be equal to the HON level of control. No Group 1 wastewater streams were reported and no controls were reported for the Group 2 wastewater streams reported. More specifically, the MACT floor level of control is no control.

5.2 The Rationale for the More Stringent Regulatory Alternative Considered for Existing Sources

Only one regulatory alternative more stringent than the MACT floor level of control was developed and considered for each subcategory. Table 8 presents the MACT floor and the regulatory alternative for existing sources
or each subcategory. The rationale for the level of this alternative is discussed below.

5.2.1 Polyether Polyols made with Epoxides Subcategory

The MACT floor level of control for storage vessels and equipment leaks was equal to the HON level of control. Therefore, the regulatory alternative included the HON level of control for these emission types.

The MACT floor level of control was determined to be less stringent than the HON level of control (i.e., no control) for wastewater emissions. The HON level of control was considered for the regulatory alternative. The HON level of control was considered for wastewater because it had received extensive evaluation during the development of the HON, at which time the EPA concluded that the cost and other impacts of the HON-level of control were reasonable. Therefore, the regulatory alternative included the HON level of control for wastewater.

During the development of the HON, alternatives more stringent than the promulgated levels were considered and rejected by the EPA. Therefore, it was unnecessary to consider controls more stringent than the HON levels, since this industry closely mirrors the SOCMI and the EPA had previously considered them unacceptable for the HON.

Table 8. SUMMARY OF EXISTING SOURCE REGULATORY ALTERNATIVES FOR POLYETHER POLYOLS

Subcategory	Existing Source Regulatory Alternatives					
	Storage	Process Vents			Wastewater	Equipment leaks
Polyols made with THF MACT Floor Reg Alt I	No control HON	0 percent HON			No control HON	No control HON
		Epoxides	Nonepoxides from making or modifying the product	Nonepoxides from catalyst extraction		
Polyols made with epoxides MACT Floor Reg Alt I	HON HON	98 percent 98 percent	0 percent HON or Batch ACT	90 percent 90 percent	No control HON	HON HON

For the process vent regulatory alternatives, an emission reduction format was chosen and applied to the three groups of HAP process vent emissions: epoxide emissions; nonepoxide HAP emissions from the making or modification of the product, and; nonepoxide HAP emissions from catalyst extraction. The MACT floor level of control for epoxide process vent emissions was considered sufficiently stringent since it mirrored the highest level of control in the batch ACT (without performing a cost effectiveness analysis to determine applicability). Therefore, no levels of control more stringent than the floor were evaluated.

The MACT floor level of control for nonepoxide HAP emissions from making or altering the product was determined to be an aggregated control efficiency of 0 percent. The EPA determined that the applicability criteria from either the HON or the Batch ACT could be applied for process vents from continuous or batch unit operations, respectively. The Group determination was deemed appropriate because the equation in the HON for determining Group 1/Group 2 applicability, the total resource effectiveness index (TRE) has an inherent cost effectiveness value in it. After determining the Group status, the control requirement from the HON, a 98 percent control efficiency, was used in this regulatory alternative as well. If the process vent was from a batch unit operation the group determination was used based on equations first developed in the "Control of Volatile Organic Compound Emissions From Batch Processes" (EPA-453/R-93-017) (Batch ACT), and used in the Polymer and Resins I NESHAP. This alternative control technique (ACT) document provides guidance to State and local air pollution regulatory agencies on the development of regulations for air emissions from batch processes. Due to the similarities between the processes studied in the Batch ACT and the polyols production batch unit operations, and the general nature of the applicability criteria, the EPA concluded that these criteria were appropriate to use in defining the alternatives for process vents from batch unit operations in the polyols production industry. The 90-percent control level from the Batch ACT was selected because the facilities that did report controls on these streams, reported condensers, and 90 percent was the lowest control efficiency achieved. Further, the estimated cost-effectiveness for this level was comparable to the cost-effectiveness of the HON continuous vent provisions. Based on these previous analyses, the EPA determined that it was acceptable to consider the single regulatory alternative beyond the MACT floor level.

5.2.2 Polyether Polyols made with Tetrahydrofuran

The MACT floor level of control for all the emission types was determined to be less stringent than the HON level of control. For these same reasons as presented for the other subcategory, the regulatory alternative included the HON level of control for storage vessels, equipment leaks, and wastewater. For the process vent emissions, similar to the other subcategory, the HON or Batch ACT Group determination was included in the regulatory alternative.

5.3 The Rationale for More Stringent the Regulatory Alternatives Considered for New Sources

For new sources, only one regulatory alternatives more stringent than the MACT floor was considered. Table 9 presents the MACT floor and the regulatory alternative for new sources. The rationale for the level of this alternative is discussed below.

5.3.1 Polyether Polyols made with Epoxides Subcategory

For storage and equipment leaks, the MACT floor level of control for these emission types was equal to the HON level of control for existing sources. The EPA determined it was not necessary to evaluate the HON level of control for new sources, because no facilities in the database reported this level of control. Therefore, the regulatory

Table 9. SUMMARY OF NEW SOURCE REGULATORY ALTERNATIVES FOR POLYETHER POLYOLS

<table>
<tr><th rowspan="2">Subcategory</th><th colspan="6">Existing Source Regulatory Alternatives</th></tr>
<tr><th>Storage</th><th colspan="3">Process Vents</th><th>Wastewater</th><th>Equipment leaks</th></tr>
<tr><td>Polyols made with THF
MACT Floor
Reg Alt I</td><td>No control
HON</td><td colspan="3">0 percent
HON</td><td>No control
HON</td><td>No control
HON</td></tr>
<tr><td rowspan="2">Polyols made with epoxides
MACT Floor
Reg Alt I</td><td rowspan="2">HON
HON</td><td>Epoxides</td><td>Nonepoxides from making or modifying the product</td><td>Nonepoxides from catalyst extraction</td><td rowspan="2">No control
HON</td><td rowspan="2">HON
HON</td></tr>
<tr><td>99.9 percent
99.9 percent</td><td>39 percent
HON or Batch ACT</td><td>98 percent
98 percent</td></tr>
</table>

alternative consisted of the MACT floor level of control for these two emission types.

For wastewater, the MACT floor level of control was less stringent than the HON level of control. Similar to the explanation for existing sources, the EPA considered this option to be appropriate because when the EPA developed the HON, the cost effectiveness of the control options were considered in the group determination. The new source HON level of control was not considered because none of the facilities in the database reported any controls for wastewater emissions. Therefore, the regulatory alternative included the existing source HON level of control for wastewater.

For epoxide emissions from process vents, the MACT floor level of control was 99.9 percent control efficiency. The EPA did not evaluate options more stringent than this level of control, because this control efficiency is already more stringent than that required in the HON. Also, for nonepoxide HAP process vent emissions from catalyst extraction, the MACT floor level of control was determined to be 98 percent aggregated emission reduction. This level of control was the highest in the database, and was determined to be adequate for this emission type.

For nonepoxide emissions from making or altering the product, the MACT floor level of control was less stringent than the HON level of control. Because the levels of control for the HON and the Batch ACT are already above the level of control of the floor for this emission type, and because no one source in the database demonstrated control levels more stringent than the existing source HON or Batch ACT levels of control, no new source levels of control from the HON/Batch ACT were considered.

5.3.2 Polyether Polyols made with THF Subcategory

For the subcategory of polyether polyols made with THF, as stated above, there is only one source in the database. Therefore, the MACT floor for existing sources and new sources is the same. The rationale to consider the more stringent control levels than the MACT floor levels of control were discussed previously in the existing source section. Also discussed previously, the EPA did not determine any need to examine new source levels of control from the HON for the new source regulatory alternative.

5.4 RATIONALE FOR THE SELECTION OF CONTROL LEVELS OF THE PROPOSED STANDARDS

The MACT floor level of control for each emission type was presented previously in this document. The regulatory alternative represents a level of control more stringent than the MACT floor. Table 10 shows the cost-effectiveness values for all options more stringent than the MACT floor, as well as the overall cost effectiveness for the regulatory alternative for each subcategory.

The regulatory alternative represents a level of control more stringent than the MACT floor. As shown in the Table 10, the highest cost-effectiveness for an individual emission source type for either subcategory is $3,500 per megagram. The overall regulatory alternative cost-effectiveness values for the regulatory alternative for polyether polyols made with epoxides is $3,500 per megagram and $3,400 per megagram for polyether polyols made with THF. The incremental cost-effectiveness values for going to this regulatory alternative from the MACT floor is equal to the cost effectiveness of that option. Considering these cost impacts, as well as non-air environmental and energy impacts, the EPA judged that the level of control for this regulatory alternative was reasonable. Therefore, the EPA selected the regulatory alternative as the level of the proposed standards. The EPA selected the regulatory alternative more stringent than the floor for new sources. New sources were not projected for the next five years; therefore, no impact analysis or cost effectiveness value calculations were conducted for new sources.

Table 10. INCREMENTAL COST EFFECTIVENESS VALUES OF REGULATORY OPTIONS MORE STRINGENT THAN THE FLOOR - EXISTING SOURCES

Source Category Subcategory	**Incremental Cost Effectiveness of Options More Stringent than the MACT Floor ($/Mg)**						
	Storage	**Process Vents**			**Wastewater**	**Equipment Leaks**	**Overall**
		Epoxides	**Nonepoxide HAP in making or modifying the product**	**Nonepoxide HAP in catalyst extraction**			
Polyether Polyols made with THF	0	3,400			0	0	3,400
Polyether Polyols made with Epoxides	FLOOR	FLOOR	0	FLOOR	3,500	FLOOR	3,500

6.0 RATIONALE FOR THE SELECTION OF THE FORMATS OF THE PROPOSED STANDARDS

As discussed in the introduction to this chapter, the decision to use the HON in the determination of most of the MACT floor and regulatory alternative levels of control predetermined that the format of the proposed rule would resemble the HON. Therefore, the proposed standards would adopt the formats found in the HON for storage vessels, nonepoxide process vents from continuous unit operations that make or modify the product, wastewater, and equipment leaks. Similarly, the format of the applicability provisions of the batch process vent provisions would be adopted from the Polymer and Resins I NESHAP. The Federal Register notice for the proposed HON (57 FR 62608, December 31, 1992) provides the rationale for the selection of the specific formats used in the HON. The Basis and Purpose Document from the Polymer and Resins I NESHAP refers to the Batch Processes ACT document where the rationale for the selection of the recommended formats for batch process vents are discussed.

In addition to adopting formats of existing standards, the proposed rule also contains standards for controlling epoxide emissions from process operations and nonepoxide HAP in catalyst extraction. The format for both of these proposed process vent standards is a minimum aggregated control efficiency for the total of all applicable emissions within a PMPU. The following sections provide, on an emission source type basis, more detailed discussions of the rationale for the selection of the formats of the proposed standards.

6.1 Storage Vessels

For storage vessels the format of these proposed standards is dependent on the method selected to comply with the standards. If tank improvements (e.g., internal or external floating roofs with proper seals and fittings) are selected, the format is a combination of design, equipment, work practice, and operational standards. If a closed vent system and control device are selected, the format is a combination of design and equipment standards.

6.2 Process Vents

6.2.1 Process Vents in the Polyether Polyols with Tetrahydrofuran Subcategory

For process vents in the subcategory that uses THF, the format of the proposed standard is adopted from the HON. As with storage vessels, the format is also dependent on the method selected to comply with the standards. If a flare is selected, the format is a combination of equipment and operating specifications. If a control device other than a flare is used, the formats are a percent reduction and an outlet concentration.

6.2.2 Epoxide Process Vent Emissions in the Polyether Polyol with Epoxide Subcategory

For epoxide emissions from process vents that make polyether polyols using epoxides, the format of these proposed standards is a percent reduction from the aggregate of all process vents streams within the PMPU. A PMPU basis was chosen for all the process vent standards because the vents and venting episodes from one or more reactor trains are interrelated in that they are commonly put into the same header and fed to a single control device.

6.2.3 Nonepoxide Organic HAP Process Vent Emissions from Making or Modifying the Product in the Polyether Polyol with Epoxide Subcategory

Process vent emissions from the use of nonepoxide organic HAP to make or modify the polyether polyol product can be from either a batch unit operation or a continuous unit operation.

For process vents from continuous unit operations, the format of the proposed standards is adopted from the HON. The format is also dependent on the method selected to comply with the standards. If a flare is selected, the format is a combination of equipment and operating specifications. If a control device other than a flare is used, the formats are a percent reduction and an outlet concentration.

HAP emissions from a Group 1 batch process vent must reduce HAP emissions by 90-percent over the batch cycle. During a production cycle in a batch unit operation, there are often emission episodes resulting from several different steps of the batch process. The vent streams from each of these emission episodes can differ significantly in flow rate, HAP concentration, and other characteristics important in the ability to apply controls. The 90-percent control requirement is on a batch cycle basis, rather than a continuous basis, to allow owners and operators the flexibility to control emission episodes to varying levels, as long as the 90-percent reduction for all emission episodes in the cycle is accomplished.

6.2.4 Nonepoxide Organic HAP from Catalyst Extraction in the Polyether Polyol with Epoxide Subcategory

The process vents with organic HAP resulting from the use of organic HAP in catalyst extraction are continuous vents that have adopted a 90 percent aggregate emission reduction format for the subcategory that uses epoxides. This was chosen to allow for the most flexibility with respect to control options.

6.3 Equipment Leaks

For equipment leaks from both subcategories, these proposed standards incorporate several formats: equipment, design, lowest allowable performance levels (e.g., maximum allowable percent leaking valves), work practices, and operational practices. Different formats are necessary for different types of equipment, available control techniques, and applicability of the measurement method. In addition, a work practice standard is adopted for equipment leaks resulting in the emission of HAP from cooling towers at all facilities producing polyether polyols. This standard requires the leak detection and repair of leaks of HAP into cooling tower water.

6.4 Wastewater Operations

For wastewater streams requiring control from both subcategories, these proposed standards incorporate several formats: equipment, operational, work practice, and emission standards. The particular format selected depends on which portion of the wastewater stream is involved. For transport and handling equipment, the selected format is a combination of equipment standards and work practices. For the reduction of HAP from the wastewater stream itself, several alternative formats are incorporated, including five alternative numerical emission limit formats (overall percent reduction for total organic HAP, individual HAP percent reduction, effluent concentration limit for total organic HAP, individual organic HAP effluent concentration limits, and mass removal for HAP) and equipment design and operation standards for a steam stripper. For vapor recovery and destruction devices other than flares, the format is a weight percent reduction. For flares, the format is a combination of equipment and operating specifications.

7.0 RATIONALE FOR THE SELECTION OF COMPLIANCE AND PERFORMANCE TEST PROVISIONS

For the most part, the control devices and level of control required by the proposed rule are modeled after those in subparts F, G, H and U. Further, the control devices likely to be used in complying with the proposed requirements for batch process vents were already considered as part of subparts G and U. 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 preambles to the proposed subpart and promulgated subparts F, G, H, and U it is not repeated here in the same depth. The paragraphs below briefly discuss the rationale for the selected provisions for each emission source type. Later in this section, the rationale for the use of parameter monitoring and for the overall compliance certification provisions are presented.

7.1 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 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.

7.2 Process Vents

7.2.1 Group Determination for Process Vents from Continuous Unit Operations

Except as discussed in the next paragraph, the proposed rule requires each owner or operator to determine for the combination of process vents from a continuous unit operation whether the combination of the vents is a Group 1 or Group 2. There are three group determination procedures: (1) process vent flow rate measurement, (2) process vent 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.

Alternatively, an owner or operator may choose to comply directly with the requirement to reduce organic HAP emissions by 98 weight percent or to an outlet concentration of 20 ppmv.

7.2.2 Group Determination for Process Vents from Batch Unit Operations

As for process vents from continuous unit operations, some process vents from batch unit operations 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 process vents from batch unit operations. These procedures are taken from the Batch ACT document. The Batch ACT describes applicability criteria (i.e., annual emissions and annual average flowrate) for distinguishing between process vents from batch unit operations 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 ACT document.

The proposed rule allows the determination of annual HAP emissions using a series of equations that are from the Batch ACT and included in the rule. As an option to using these equation, owners and operators can use testing to determine emissions. The proposed rule requires that testing be conducted to determine flow rates for each batch emission episode, which are then used to calculate an annual average flow rate.

For the same reasons the proposed rule requires a performance test and continuous monitoring of a control device for a process vent from a continuous unit operation, performance tests and continuous monitoring are required for the control or recovery devices used by a source to comply with the process vent from batch unit operations control requirement. Also, the monitoring parameters selected for recovery devices were presented and discussed as part of the process vent from continuous unit operations provisions and in the preamble to the proposed subpart G. Compliance for process vents from batch unit operations is on a batch-cycle basis, rather than on a continuous basis.

7.2.3 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) some boilers and process heaters smaller than 44 MW (150 million Btu/hr), and (3) extended cookout. 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 meet the requirements in Section 63.11 for operating conditions.

7.2.4 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.

7.2.5 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 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 process vents from continuous unit operations that have TRE index values greater than 1.0 but less than or equal to 4.0, 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 two common types of recovery devices, and present the parameters for carbon absorption in the event that this recovery device is used: exit temperature of the absorbing liquid and exit specific gravity for absorbers; exit temperature for condensers; and 1) total regeneration stream mass flow during carbon bed regeneration cycle and 2) 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.

7.3 Wastewater Operations

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 organic HAP concentration of HAP in the stream. The organic HAP concentration can be quantified as a flow-weighted annual average for total organic HAP or for individually-speciated 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.

7.4 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.

In addition, periodic monitoring for leaks is required to demonstrate compliance for heat exchange systems. 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 source.

8.0 RATIONALE FOR THE SELECTION OF MONITORING REQUIREMENTS

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. 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 Act requires enhanced monitoring and compliance certifications of all major stationary sources. The annual compliance certifications determine 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 sources to establish site-specific parameter levels. 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 process vents from continuous and batch unit operations, complying using add-on control, is based on performance tests.

For process vents from batch unit operations and continuous unit operations complying using add-on controls, the proposed rule requires the 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 not in accordance with the established level, 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 gives the owner or operator a reasonable period of time to take action. If a shorter averaging period (for example 3 hours) was selected, 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. Parameter monitoring problems not addressed under the startup, shutdown, and malfunction plan will not result in an excursion if at sufficient data are available. For example, for process vents from continuous unit operations, a 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. Excused excursions are not included in the proposed rule because most continuous monitoring system problems can be dealt with within the context of the startup, shutdown, and malfunction plan required under subpart A.

Consistent with the proposed parameter monitoring requirements for process vents, the EPA is proposing that failure to provide sufficient monitoring data for at least 75 percent of required batches is a violation of the standard. However, the definition of insufficient monitoring data for a process vent from a batch unit operation required further EPA consideration. For process vents from continuous unit operations, the period is an hour, and an hour is considered to have sufficient monitoring data only if four 15-minute parameter values are recorded.

When ECO is used as a control technique, the owner or operator is required to monitor one of the parameters listed: time from the end of the epoxide feed; the epoxide partial pressure in the reactor, or; the direct measurement of epoxide concentration in the reactor liquid at the end of the ECO. This data is required for every batch whose air emissions are controlled by ECO.

9.0 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.

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.

As discussed in section 2.5.5, the proposed rule requires sources to submit the following eight types of reports:

1. Startup, shutdown, and malfunction plan,
2. Application for Approval of Construction or Reconstruction,
3. Initial Notification,
4. Precompliance Report,
5. Notification of Compliance Status,
6. Periodic Reports,
7. other reports, and
8. Operating permit application.

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.

10.0 OPERATING PERMIT PROGRAM

Under Title V of the 1990 Amendments, all HAP-emitting 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 that 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 permitting program, the owner or operator of a source must submit the application under the General Provisions of 40 CFR part 63.