04/18/2025

Certified Mail

No	TOXIC REVIEW
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
No	CEMS
No	MACT/GACT
No	NSPS
No	NESHAPS
No	NETTING
No	MODELING SUBMITTED
No	SYNTHETIC MINOR TO AVOID TITLE V
No	FEDERALLY ENFORCABLE PTIO (FEPTIO)
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

Bobby Verbrugge
Alterra Energy, LLC
1200 E. Waterloo Rd.
Akron, OH 44306

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL AND OPERATE

Facility ID: 1677011258
Permit Number: P0133062
Permit Type: Renewal
County: Summit

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install and Operate (PTIO) for the referenced facility has been issued for the emissions unit(s) listed in the Authorization section of the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the permit. A public notice will appear in the Ohio Environmental Protection Agency Weekly Review and Public Notices website, ***Weekly Review and Public Notices***. A copy of the public notice and the draft permit are enclosed. This permit can be accessed electronically on the Ohio EPA document search webpage: ***eDocument Search | Ohio Environmental Protection Agency***. Comments will be accepted as a marked-up copy of the draft permit or in narrative format. Any comments must be sent to the following:

Andrew Hall
Permit Review/Development Section
Ohio EPA, DAPC
50 West Town Street Suite 700
PO Box 1049
Columbus, Ohio 43216-1049

and

Akron Regional Air Quality Management District
1867 West Market St.
Akron, OH 44313

Comments and/or a request for a public hearing will be accepted within 30 days of the date the notice appears on the Ohio EPA Weekly Review and Public Notices website, ***Weekly Review and Public Notices | Ohio Environmental Protection Agency***. You will be notified if a public hearing is scheduled. A decision on issuing a final permit-to-install will be made after consideration of comments received and oral testimony if a public hearing is conducted. Any permit fee that will be due upon issuance of a final Permit-to-Install is indicated in the Authorization section. Please do not submit any payment now. If you have any questions, please contact Akron Regional Air Quality Management District at (330)375-2480.

Sincerely,

Robert Hodanbosi
Chief, Division of Air Pollution Control

cc: U.S. EPA Region 5 Via E-Mail Notification
ARAQMD; Pennsylvania; West Virginia; Canada

PUBLIC NOTICE

The following matters are the subject of this public notice by the Ohio Environmental Protection Agency. The complete public notice, including any additional instructions for submitting comments, requesting information, a public hearing, or filing an appeal may be obtained at: ***Weekly Review and Public Notices | Ohio Environmental Protection Agency*** or Hearing Clerk, Ohio EPA, 50 W. Town St., Columbus, Ohio 43215. Ph: 614-644-2129 email: ***HClerk@epa.ohio.gov***

Draft Air Pollution Permit-to-Install and Operate Renewal

Alterra Energy, LLC
1200 East Waterloo Road

Akron, OH 44306

ID#: P0133062
Date of Action: 04/18/2025
Permit Desc: Renewal PTIO for Plastics Recycling Unit 1.
PUBLIC NOTICE PUBLIC HEARING

Issuance of Draft Air Pollution PTIO Permit

Alterra Energy, LLC

A draft renewal permit has been issued for Alterra Energy, LLC., 1200 East Waterloo Road, Akron, Ohio. A public hearing is scheduled for May 28, 2025, at the Akron-Summit County Public Library, 60 South High Street, Akron, Ohio from 6 to 7:45pm to accept comments on the draft permit. The comment period will be open until June 4, 2025. Email lmiracle@schd.org or send letters to: Laura Miracle, Akron Regional Air Quality Management District, 1867 West Market St., Akron, OH 44313. Ph: (330)375-2480. Persons interested in joining Ohio EPA's mailing list concerning this or similar actions may contact Graham Johnson at Graham.Johnson@epa.ohio.gov

Permit Strategy Write-Up

1. Check all that apply:

☐ Synthetic Minor Determination

☐ Netting Determination

2. Source Description:

This permit is a renewal of the permit-to-install and operate (PTIO) for emissions unit P001, Plastics Recycling Unit 1 (plastics-to-pyrolysis oil unit) with a maximum capacity of 5,000 pounds per hour of plastics feed. Alterra Energy LLC's (Alterra's) plastics recycling line employs an indirect fired pyrolysis kiln to convert hard-to-recycle plastics otherwise disposed of in landfills or incinerators into raw petrochemical feedstock. Pyrolysis is a process that involves the thermal decomposition of organic materials in the absence of oxygen. The petrochemical feedstock is supplied to other chemical manufacturers for use as a raw material to create a variety of products, including brand new plastics, waxes, and other petrochemical products. The process equipment includes an extruder feeding an indirect fired pyrolysis kiln and product condensers. Non-condensable gas from the process is vented to an enclosed vapor combustion unit (VCU) for control of volatile organic compounds (VOC) and hazardous air pollutants (HAPs).

3. Facility Emissions and Attainment Status:

This facility also includes the following permit exempt sources: paved roadways (F001), raw material unloading (F002), raw material feed line 1 (F005), char handling systems line 1 and line 2 (F009 and F010), ground calcium oxide hopper (F011), ground calcium oxide silo 1 (F012), and four storage tanks (T001 – T004). There is also an emergency electric generator (P004) covered by a permit by rule. PTIO P0137038 for the loading operations line 1 and 2 (J001 and J002) is currently being processed concurrently with this permit. Alterra's uncontrolled potential to emit for nitrogen oxides (NOX), carbon monoxide (CO), sulfur dioxide (SO2) and particulate emissions (PE) and the controlled potential to emit for VOC, any individual HAP and combined HAPs are less than the major source threshold for Title V permitting. Summit County is nonattainment for ozone.

4. Source Emissions:

For emissions unit P001, the uncontrolled potential to emit (PTE) for PE and SO2 is less than 10 tons per year. Therefore, Best Available Technology (BAT) does not apply to these pollutants. The PTE for NOX, CO and VOC is 35.2 tons per year, 11.3 tons per year and 34.5 tons per year, respectively. BAT applies to these pollutants. A leak detection and repair (LDAR) program consistent with the requirements of 40 CFR Part 65 (Consolidated Federal Air Rule) Subpart F - Equipment Leaks has been established as BAT for fugitive VOC emissions at Alterra to ensure ongoing compliance with the rolling 12-month VOC emission limitation. With regards to New Source Performance Standard (NSPS) 40 CFR 60, Subpart AAAA, Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999, or for Which Modification or Reconstruction is Commenced After June 6, 2001, emissions unit P001 is exempt from this subpart as a "plastics recycling unit" as long as Alterra maintains the required records specified in 40 CFR 60.1020(h)(1)-(4). Alterra is required in the renewal permit to maintain these records to qualify for this exemption. Maintaining these records allows Alterra to qualify as a plastics recycling unit under this federal rule. As a result, section 129 of the Clean Air Act (CAA) does not apply because P001 is not a municipal waste combustor.

As defined in Part 60.1465, a plastics or rubber recycling unit means an integrated processing unit for which plastics, rubber, or rubber tires are the only feed materials (incidental contaminants may be in the feed materials). The feed materials are processed and marketed to become input feed stock for chemical plants or petroleum refineries. The following three criteria further define a plastics or rubber recycling unit:

(1)Each calendar quarter, the combined weight of the feed stock that a plastics or rubber recycling unit produces must be more than 70 percent of the combined weight of the plastics, rubber, and rubber tires that recycling unit processes.

(2)The plastics, rubber, or rubber tires fed to the recycling unit may originate from separating or diverting plastics, rubber, or rubber tires from municipal or industrial solid waste. The feed materials may include manufacturing scraps, trimmings, and off-specification plastics, rubber, and rubber tire discards.

(3)The plastics, rubber, and rubber tires fed to the recycling unit may contain incidental contaminants (for example, paper labels on plastic bottles or metal rings on plastic bottle caps).

New Source Performance Standards 40 CFR Part 60, Subpart NNN (Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations After December 30, 1983, and on or Before April 25, 2023) and Subpart RRR (Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes After June 29, 1990, and on or Before April 25, 2023) are not applicable regulations for emissions unit P001 because Alterra does not produce any of the chemicals listed in each subpart for sale as a final product or a chemical used in the production of other chemicals or compounds per each subpart's definition of "product". The PTE for Hazardous Air Pollutants (HAP) is 7.03 tons per year for all HAPS combined from the stack and equipment leaks for emissions unit P001. The PTE for hydrochloric acid (HCl) is 1.6 tons per year, the PTE for hydrogen fluoride (HF) is 0.01 tons per year, the PTE for dioxin/furan is well below 1.0 ton per year, the controlled PTE for acetaldehyde is 1.73 tons per year, and the controlled PTE for 1,3-butadiene is 2.47 tons per year. Following Ohio's Air Toxics Policy, air toxics modeling was performed based on the highest expected emission rates for the following hazardous air pollutants: HCl, acetaldehyde, and 1,3-butadiene and showed the predicted one-hour maximum ground level concentration is below the maximum allowable ground level concentration. The permit contains an emission limit for dioxin/furan per Best Available Technology requirements.

5. Conclusion:

The permit terms include emissions limitations consistent with State and federal air pollution control regulations applicable to the source at Alterra and adequate monitoring, recordkeeping, reporting, and emissions testing requirements to demonstrate compliance with these emissions limitations. This permit is being issued as draft-before-final to ensure adequate public notice and participation in the permitting process and to ensure that establishing emissions unit P001 as a "plastics recycling unit" is federally-enforceable under OAC rule 3745-31-05(D).

6. Please provide additional notes or comments as necessary:

Preliminary and updated environmental justice (EJ) screenings were performed on May 12, 2023, June 25, 2024, and July 10, 2024, using U.S. EPA's EJScreen tool. Each EJScreen report analyzed the area within a 1-mile radius of the Alterra Energy facility. EJScreen reports break down areas into demographics and 12 different indices, including environmental indicators such as air toxics cancer risk, Superfund and RMP facility proximity, particulate matter and ozone emissions, and hazardous waste proximity. EJScreen also compares local percentages to state and country values. Based on the most recent report, the mile radius surrounding Alterra

scores at or above the 90th percentile compared to the rest of the state for Particulate Matter 2.5, Ozone, Nitrogen Dioxides, Traffic Proximity, RMP Facility Proximity, Hazardous Waste Proximity, and Wastewater Discharge. The area scores above the 80th percentile in several other categories including Diesel Particulate Matter, Toxic Release to Air, Superfund Proximity, and Underground Storage Tanks. Additionally, US EPA's Demographic Index put the area in the 84th percentile, indicating a high percentage of marginalized communities such as people of color and low-income populations. Ohio EPA used this information to conduct additional outreach, consideration, and analysis while preparing the draft permit terms and conditions. Ohio EPA has maintained increased contact with interested citizens compared to what is typically completed for an operating permit. The permit terms and conditions contain additional LDAR requirements, as well as testing requirements for dioxin/furan, VOC control efficiency, particulate matter, HCl and halogens, and organic and metal HAPs. Copies of these EJ screenings are available upon request from the local air agency (ARAQMD).

7. Total Permit Allowable Emissions Summary (for informational purposes only):

Pollutant	Tons Per Year
NO_X	35.2
VOC	34.7
CO	13.44
SO_2	<10
PE	<10

Ohio Environmental Protection Agency

DRAFT

Division of Air Pollution Control
Permit-to-Install and Operate

for

Alterra Energy, LLC

Facility ID:	1677011258
Permit Number:	P0133062
Permit Type:	Renewal
Issued:	04/18/2025
Effective:	To be entered upon final issuance
Expiration:	To be entered upon final issuance

Ohio Environmental Protection Agency

Division of Air Pollution Control

Permit-to-Install and Operate

for

Alterra Energy, LLC

Table of Contents

Authorization

Facility ID:	1677011258
Application Number(s):	A0076962, A0077887, A0072225A0076962, A0077887, A0072225
Permit Number:	P0133062
Permit Description:	Renewal PTIO for Plastics Recycling Unit 1.
Permit Type:	Renewal
Permit Fee:	$0.00 *DO NOT send payment at this time, subject to change before final issuance*
Issue Date:	04/18/2025
Effective Date:	To be entered upon final issuance
Expiration Date:	To be entered upon final issuance
Permit Evaluation Report (PER) Annual Date:	To be entered upon final issuance

This document constitutes issuance of a Permit-to-Install and Operate for the emissions unit(s) identified on the following page to:

Alterra Energy, LLC
1200 East Waterloo Road
Akron, OH 44306

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Akron Regional Air Quality Management District
1867 West Market St.
Akron, OH 44313
(330)375-2480

The above-named entity is hereby granted this Permit-to-Install and Operate for the air contaminant source(s) (emissions unit(s)) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the described emissions unit(s) will operate in compliance with applicable State and Federal laws and regulations.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

John Logue
Director

Authorization (continued)

Permit Number:P0133062

Permit Description:Renewal PTIO for Plastics Recycling Unit 1.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	P001
Company Equipment ID:	Plastics Recycling Unit 1 and VCU
Superseded Permit Number:	P0122408
General Permit Category and Type:	Not Applicable

List of Commonly Used Abbreviations

AP-42 = U.S. EPA's Compilation of Air Pollution Emissions Factors	HVLP = high volume, low pressure	PER = Permit Evaluation Report
ASTM = American Society for Testing and Materials	LAER = lowest achievable emission rate	PM = particulate matter
BACT = Best Available Control Technology	lb(s)/hr = pound(s) per hour	PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns
BAT = Best Available Technology	LDAR = leak detection and repair	$PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
CAA = Clean Air Act	LPG = liquefied petroleum gas/propane	ppb = parts per billion
CAM = compliance assurance monitoring	MACT = maximum achievable control technology	ppm = parts per million
CEMS = continuous emissions monitoring system	MAGLC = maximum acceptable ground level concentration	PSD = Prevention of Significant Deterioration
CFC = chlorofluorocarbon	mg/m3 = milligrams per cubic meter	psi = pounds per square inch
CFR = Code of Federal Regulations	MM = million	psia = pounds per square inch absolute
CH_4 = methane	MMBtu = million British Thermal Units	PTE = potential-to-emit
CI = compression ignition	MSDS = material safety data sheet	PTI = Permit-to-Install
CO = carbon monoxide	MSW = municipal solid waste	PTIO = Permit-to-Install and Operate
CO_2 = carbon dioxide	NAAQS = National Ambient Air Quality Standard	PTO = Permit-to-Operate
COM = continuous opacity monitor	NESHAP = National Emission Standard for Hazardous Air Pollutants	PWR = process weight rate
DAPC = Division of Air Pollution Control	NG = natural gas	RACM = reasonably available control measures
DO/LAA = District Office/Local Air Agency	ng/m3 = nanograms per cubic meter	RACT = reasonably available control technology
dscf = dry standard cubic foot	NH_3 = ammonia	RATA = relative accuracy test audit
EAC = emissions activity category	NMHC = non-methane hydrocarbons	RTO = regenerative thermal oxidizer
eDocs = electronic documents database	NMOC = non-methane organic compound	SB265 = Senate Bill 265
ERAC = Environmental Review Appeals Commission	NO = nitrogen oxide	scfm = standard cubic feet per minute
ESP = electrostatic precipitator	NO_2 = nitrogen dioxide	SI = spark ignition
EU = emissions unit	NO_x = nitrogen oxides	SIP = State Implementation Plan
FEPTIO = Federally Enforceable Permit-to-Install and Operate	NSPS = New Source Performance Standard	SO_2 = sulfur dioxide
FER = Fee Emissions Report	NSR = New Source Review	SSMP = startup, shutdown, and malfunction plan
FR = Federal Register	NTV = Non-Title V	TDS = total dissolved solids
GACT = generally achievable control technology	O&M = operation and maintenance	TLV = threshold limit value
GHG = greenhouse gases	OAC = Ohio Administrative Code	TO = thermal oxidizer
gr/dscf = grains per dry standard cubic foot	OC = organic compound	TPH = ton(s) per hour
H_2S = hydrogen sulfide	Ohio EPA = Ohio Environmental Protection Agency	TPY = ton(s) per year
H_2SO_4 = sulfuric acid	ORC = Ohio Revised Code	TSP = total suspended particulates
HAP = hazardous air pollutant	Pb = lead	VE = visible emissions
HCl = hydrogen chloride	PBR = Permit-By-Rule	VMT = vehicle miles traveled
HF = hydrogen fluoride	PCB = polychlorinated biphenyl	VOC = volatile organic compound
Hg = mercury	PE = particulate emissions	WPP = work practice plan
hp = horsepower	PEMS = predictive emissions monitoring system	µg/m3 = micrograms per cubic meter

A. Standard Terms and Conditions

1. What does this permit-to-install and operate (PTIO) allow me to do?

This permit allows you to install and operate the emissions unit(s) identified in this PTIO. You must install and operate the unit(s) in accordance with the application you submitted and all the terms and conditions contained in this PTIO, including emission limits and those terms that ensure compliance with the emission limits (for example, operating, recordkeeping and monitoring requirements).

2. Who is responsible for complying with this permit?

The person identified on the "Authorization" page, above is responsible for complying with this permit until the permit is revoked, terminated, or transferred. "Person" means a person, firm, corporation, association, or partnership. The words "you," "your," or "permittee" refer to the "person" identified on the "Authorization" page above.

The permit applies only to the emissions unit(s) identified in the permit. If you install or modify any other equipment that requires an air permit, you must apply for an additional PTIO(s) for these sources.

3. What records must I keep under this permit?

You must keep all records required by this permit, including monitoring data, test results, strip-chart recordings, calibration data, maintenance records, and any other record required by this permit for five years from the date the record was created. You can keep these records electronically, provided they can be made available to Ohio EPA during an inspection at the facility. Failure to make requested records available to Ohio EPA upon request is a violation of this permit requirement.

4. What are my permit fees and when do I pay them?

There are two fees associated with permitted air contaminant sources in Ohio:

a) PTIO fee. This one-time fee is based on a fee schedule in accordance with Ohio Revised Code (ORC) section 3745.11 or based on a time and materials charge for permit application review and permit processing if required by the Director.

You will be sent an invoice for this fee after you receive this PTIO and payment is due within 30 days of the invoice date. You are required to pay the fee for this PTIO even if you do not install or modify your operations as authorized by this permit.

b) Annual emissions fee. Ohio EPA will assess a separate fee based on the total annual emissions from your facility. You self-report your emissions in accordance with Ohio Administrative Code (OAC) Chapter 3745-78. This fee assessed is based on a fee schedule in ORC section 3745.11 and funds Ohio EPA's permit compliance oversight activities. For facilities that are permitted as synthetic minor sources, the fee schedule is adjusted annually for inflation. Ohio EPA will notify you when it is time to report your emissions and to pay your annual emission fees.

5. When does my PTIO expire, and when do I need to submit my renewal application?

This permit expires on the date identified at the beginning of this permit document (see "Authorization" page above) and you must submit a renewal application to renew the permit. Ohio EPA will send a renewal notice to you approximately six months prior to the expiration date of this permit. However, it is very important that you submit a complete renewal permit application (either electronically through Ohio EPA's eBusiness Center: Air Services web service or postmarked prior to expiration of this permit) even if you do not receive the renewal notice.

If a complete renewal application is submitted before the expiration date, Ohio EPA considers this a timely application for purposes of ORC section 119.06, and you are authorized to continue operating the emissions unit(s) covered by this permit beyond the expiration date of this permit until final action is taken by Ohio EPA on the renewal application.

6. What happens to this permit if my project is delayed or I do not install or modify my source?

This PTIO expires 18 months after the issue date identified on the "Authorization" page above unless otherwise specified if you have not (1) started constructing the new or modified emission sources identified in this permit, or (2) entered into a binding contract to undertake such construction. This deadline can be extended once by 12 months, provided you apply to Ohio EPA for this extension within a reasonable time before the 18-month period has ended and you can show good cause for any such extension.

7. What reports must I submit under this permit?

An annual permit evaluation report (PER) is required in addition to any malfunction reporting required by OAC rule 3745-15-06 or other specific rule-based reporting requirement identified in this permit. Your PER due date is identified in the Authorization section of this permit.

8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and permit evaluation report (PER) obligations under this permit?

If you are required to obtain a Title V permit under OAC Chapter 3745-77 in the future, the permit-to-operate portion of this permit will be superseded by the issued Title V permit. From the effective date of the Title V permit forward, this PTIO will effectively become a PTI (permit-to-install) in accordance with OAC rule 3745-31-02(B). The following terms and conditions of this permit will no longer be applicable after issuance of the Title V permit: Section B, Term 1.b) and Section C, for each emissions unit, Term a)(2).

The PER requirements in this permit remain effective until the date the Title V permit is issued and is effective and cease to apply after the effective date of the Title V permit. The final PER obligation will cover operations up to the effective date of the Title V permit and must be submitted on or before the submission deadline identified in this permit on the last day prior to the effective date of the Title V permit.

9. What are my obligations when I perform scheduled maintenance on air pollution control equipment?

You must perform scheduled maintenance of air pollution control equipment in accordance with OAC rule 3745-15-06(A). If scheduled maintenance requires shutting down or bypassing any air pollution control equipment, you must also shut down the emissions unit(s) served by the air pollution control equipment during maintenance, unless the conditions of OAC rule 3745-15-06(A)(3) are met. Any emissions that exceed permitted amount(s) under this permit (unless specifically exempted by rule) must be reported as deviations in the annual permit evaluation report (PER), including nonexempt excess emissions that occur during approved scheduled maintenance.

10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report?

If you have a reportable malfunction of any emissions unit(s) or any associated air pollution control system, you must report this to the Akron Regional Air Quality Management District in accordance with OAC rule 3745-15-06(B). Malfunctions that must be reported are those that result in emissions that exceed permitted emission levels. It is your responsibility to evaluate control equipment breakdowns and operational upsets to determine if a reportable malfunction has occurred.

If you have a malfunction but determine that it is not a reportable malfunction under OAC rule 3745-15-06(B), it is recommended that you maintain records associated with control equipment breakdown or process upsets. Although it is not a requirement of this permit, Ohio EPA recommends that you maintain records for non-reportable malfunctions.

11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located?

Yes. Under Ohio law, the Director or his/her authorized representative may inspect the facility, conduct tests, examine records or reports to determine compliance with air pollution laws and regulations and the terms and conditions of this permit. You must provide, within a reasonable time, any information Ohio EPA requests either verbally or in writing.

12. What happens if one or more emissions units operated under this permit is/are shut down permanently?

Ohio EPA can terminate the permit terms associated with any permanently shut down emissions unit. "Shut down" means the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31.

You should notify Ohio EPA of any emissions unit that is permanently shut down by submitting a certification that identifies the date on which the emissions unit was permanently shut down. The certification must be submitted by an authorized official from the facility. You cannot continue to operate an emission unit once the certification has been submitted to Ohio EPA by the authorized official.

You must comply with all recordkeeping and reporting for any permanently shut down emissions unit in accordance with the provisions of the permit, regulations or laws that were enforceable during the period of operation, such as the requirement to submit a PER, air fee emission report, or malfunction report. You must also keep all records relating to any permanently shut down emissions unit, generated while the emissions unit was in operation, for at least five years from the date the record was generated.

Again, you cannot resume operation of any emissions unit certified by the authorized official as being permanently shut down without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

13. Can I transfer this permit to a new owner or operator?

You can transfer this permit to a new owner or operator. If you transfer the permit, the new owner or operator must follow the procedures in OAC Chapter 3745-31-07, including notifying Ohio EPA or the local air agency of the change in ownership or operator within thirty days of the transfer date. Any transferee of this permit shall assume the responsibilities of the transferor permit holder.

14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"?

This permit and OAC rule 3745-15-07 prohibit operation of the air contaminant source(s) regulated under this permit in a manner that causes a nuisance. Ohio EPA can require additional controls or modification of the requirements of this permit through enforcement orders or judicial enforcement action if, upon investigation, Ohio EPA determines existing operations are causing a nuisance.

15. What happens if a portion of this permit is determined to be invalid?

If a portion of this permit is determined to be invalid, the remainder of the terms and conditions remain valid and enforceable. The exception is where the enforceability of terms and conditions are dependent on the term or condition that was declared invalid.

B. Facility-Wide Terms and Conditions

1. This permit document constitutes a PTI issued in accordance with ORC 3704.03(F) and a PTO issued in accordance with ORC 3704.03(G).

a) For the purpose of a PTI document, the facility-wide T&C identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) For the purpose of a PTO document, the facility-wide T&C identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

(1) None.

C. Emissions Unit Terms and Conditions

1. P001, Plastics Recycling Unit 1 and VCU

Operations, Property and/or Equipment Description:

Plastics Recycling Unit 1, with a maximum rated capacity of 5,000 pounds per hour, which includes an extruder feeding an indirect heated pyrolysis kiln, condensers, a vapor combustor unit (VCU) as control and a process heater.

a) This permit document constitutes a PTI issued in accordance with ORC 3704.03(F) and a PTO issued in accordance with ORC 3704.03(G).

(1) For the purpose of a PTI document, the EU T&C identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. b)(1)g., d)(18)-d)(21) and e)(4).

(2) For the purposes of a PTO document, the EU T&C identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. b)(1)c., d)(1) and e)(2).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3)	Install an enclosed VCU with a control efficiency of not less than 98%, by weight, for volatile organic compounds (VOC). Carbon monoxide (CO) emissions shall not exceed 1.12 tons per month as a rolling 12-month average*. Nitrogen oxides (NO_X) emissions shall not exceed 2.93 tons per month as a rolling 12-month average*. Dioxins/furans (total mass basis) emissions from the VCU stack shall not exceed $1.30x10^{-05}$ mg/dscm.

		Fugitive emissions of VOC shall not exceed 0.55 ton per month as a rolling 12-month average for equipment leaks. See b)(2)e. through b)(2)h., d)(5) – d)(17), e)(5) – e)(8) below. *Combined emissions from the stacks of the process heater and the VCU.
b.	OAC rule 3745-31-05(A)(3)(a)(ii)	The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the particulate emissions (PE) and sulfur dioxide (SO_2) emissions from this air contaminant sources since the uncontrolled potentials to emit for PE and SO_2 are less than 10 tons per year.
c.	OAC rule 3745-31-05(D)	The permittee shall comply with the monitoring and record keeping requirements in d)(1)a. through d)(1)c. below and the reporting requirements in e)(2) below as permit terms and conditions to establish P001 as a plastics recycling unit consistent with the definition in 40 CFR Part 60, Subpart AAAA. See b)(2)d. below.
d.	OAC rule 3745-17-07(A) (Process Heater and Enclosed VCU Stacks)	Visible PE from the stacks serving this emissions unit shall not exceed 20% opacity as a six-minute average, except as provided by rule.
e.	OAC rule 3745-17-10(B) (Process Heater Stack)	PE shall not exceed 0.020 pound per million Btu of actual heat input.
f.	OAC rule 3745-17-11 (Exhaust of Enclosed VCU)	PE shall not exceed 7.58 pounds per hour. (Based on a maximum hourly process weight rate of 2.5 tons per hour)

g.	OAC rule 3745-114-01	See d)(18) through d)(21) and e)(4) below.

(2) Additional Terms and Conditions

a. All captured VOC emissions from this EU excluding VOC emissions from the process heater shall be vented to a flare (i.e., an enclosed VCU).

b. The permittee shall properly install, operate, and maintain a device to continuously monitor the pilot flame when the EU is in operation. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

c. Prior to making any change(s) to this EU, such as production capacity, the types and/or quantities of materials processed, or anything else that increases the potential emissions of any air pollutant, the permittee shall apply for and obtain either a modification to the permit to install and operate (PTIO) or a new final PTIO prior to the change(s).

d. Consistent with the requirements of 40 CFR Part 60, Subpart AAAA, this facility is exempt from this subpart provided that the unit meets the definition below:

i. Plastics or rubber recycling unit means an integrated processing unit for which plastics, rubber, or rubber tires are the only feed materials (incidental contaminants may be in the feed materials). The feed materials are processed and marketed to become input feed stock for chemical plants or petroleum refineries. The following three criteria further define a plastics or rubber recycling unit:

(a) Each calendar quarter, the combined weight of the feed stock that a plastics or rubber recycling unit produces must be more than 70 percent of the combined weight of the plastics, rubber, and rubber tires that recycling unit processes.

(b) The plastics, rubber, or rubber tires fed to the recycling unit may originate from separating or diverting plastics, rubber, or rubber tires from municipal or industrial solid waste. The feed materials may include manufacturing scraps, trimmings, and off-specification plastics, rubber, and rubber tire discards.

(c) The plastics, rubber, and rubber tires fed to the recycling unit may contain incidental contaminants (for example, paper labels on plastic bottles or metal rings on plastic bottle caps).

e. The leak detection and repair (LDAR) program shall apply to each piece of equipment in VOC service.

f. A piece of equipment is considered to be in VOC service unless it can be determined that the VOC content of the process fluid, which is contained in or contacts the piece of equipment, can be reasonably expected to never exceed ten percent by weight.

g. Equipment means each of the following: pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, connector, and instrumentation system.

h. The facility shall be in compliance with the LDAR program requirements as specified in this permit no later than the date of the final issuance of this permit.

c) Operational Restrictions

(1) A pilot flame shall be maintained at all times in the flare's pilot light burner. The presence of the pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame.

(2) This emissions unit (EU) and all associated equipment and grounds shall be designed, operated, and maintained to prevent the emission of objectionable odors.

(3) The permittee shall combust only natural gas and/or process gas in the VCU.

(4) The permittee shall combust only natural gas in the process heater.

(5) The feedstock for this EU shall be limited to refuse derived/end of life plastics. Plastic types which have been determined to be an acceptable feedstock include materials recovery facility (MRF) plastics, residue streams from recycling facilities, and industrial plastics.

(6) All feedstock materials shall be unloaded inside the building unless fully contained.

(7) The process gas that is generated by this EU (other than the process heater) shall be vented to the VCU. The process gas produced shall not be vented directly into the atmosphere except under a malfunction situation in accordance with OAC rule 3745-15-06(B).

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall collect and record the following information on a quarterly basis for this EU:

a. the weights of plastics processed;

b. the weights of feed stocks produced and marketed from chemical plants and petroleum refineries; and

c. the name and address of the purchaser of those feed stocks.

(2) The permittee shall record all periods of time during which there was no pilot flame or the flare was inoperable.

(3) For each day during which the permittee combusts a fuel other than natural gas in the process heater, the permittee shall maintain a record of the type and quantity of fuel combusted in the process heater.

(4) For each day during which the permittee combusts a fuel other than natural gas and/or process gas in the VCU, the permittee shall maintain a record of the type and quantity of fuel combusted in the VCU.

LDAR Program

(5) Equipment Identification

a. General Equipment Identification

Equipment in VOC service shall be identified. Identification of the equipment does not require physical tagging of the equipment. For example, the equipment may be identified on a plant site plan, in log entries, by designation of process unit boundaries, by some form of weatherproof identification, or by other appropriate methods.

b. Additional equipment identification

In addition to the general identification required by "a" above, equipment subject to any of the provisions in d)(8) through d)(15) below shall be specifically identified as required in "i" through "iv" below, as applicable.

i. Connectors

Except for ceramic or ceramic-lined connectors meeting the provisions of d)(10)d.ii. below, and instrumentation systems identified pursuant to "iii" below, identify the connectors subject to the requirements of the LDAR program. Connectors need not be individually identified if all connectors in a designated area or length of pipe subject to the LDAR program are identified as a group, and the number of connectors subject is indicated. With respect to connectors, the identification shall be complete no later than the final issuance of this permit.

ii. Pressure relief devices

Identify the pressure relief devices equipped with rupture disks under the provisions of d)(12)c. below.

iii. Instrumentation systems

Identify instrumentation systems subject to the provisions of the LDAR program. Individual components in an instrumentation system need not be identified.

iv. Equipment in service less than 300 hours per calendar year

Identify either by list, location (area or group), or other method, equipment in regulated material service less than 300 hours per calendar year within a process unit subject to the provisions of the LDAR program.

c. Special equipment designations: Equipment that is unsafe or difficult-to-monitor

i. Designation and criteria for unsafe-to-monitor

Valves meeting the provisions of d)(8)d.i. below, pumps meeting the provisions of d)(9)d.iv. below, and connectors meeting the provisions of d)(10)d.i. below may be designated unsafe-to-monitor if the permittee determines that monitoring personnel would be exposed to an immediate danger as a

consequence of complying with the monitoring requirements of the LDAR program.

ii. Designation and criteria for difficult-to-monitor

Valves meeting the provisions of d)(8)d.ii. below may be designated difficult-to-monitor if the provisions of "(a)" below apply.

(a) The owner or operator of the valve:

(i) Determines that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters (7 feet) above a support surface, or it is not accessible in a safe manner when it is in VOC service; or

(ii) Designates less than 3 percent of the total number of valves within the process unit as difficult-to-monitor.

iii. Identification of unsafe or difficult-to-monitor equipment

The permittee shall record the identity of equipment designated as unsafe-to-monitor according to the provisions of "c.i" above and the planned schedule for monitoring this equipment. The permittee shall record the identity of equipment designated as difficult-to-monitor according to the provisions of "c.ii" above, the planned schedule for monitoring this equipment, and an explanation why the equipment is difficult-to-monitor.

iv. Written plan requirements

(a) The owner or operator of equipment designated as unsafe-to-monitor according to the provisions of "c.i" above shall have a written plan that requires monitoring of the equipment as frequently as practical during safe-to-monitor times, but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in d)(7) below if a leak is detected.

(b) The owner or operator of equipment designated as difficult-to-monitor according to the provisions of "c.ii" above shall have a written plan that requires monitoring of the equipment at least once per calendar year and repair of the equipment according to the procedures in d)(7) below if a leak is detected.

d. Special equipment designations: Equipment that is unsafe to repair

i. Designation and criteria

Connectors subject to the provisions of d)(7)d. below may be designated unsafe to repair if the permittee determines that repair personnel would be exposed to an immediate danger as a consequence of complying with the repair

requirements of the LDAR program, and if the connector will be repaired before the end of the next process unit shutdown as specified in d(7)d. below.

ii. Identification of equipment

The identity of connectors designated as unsafe to repair and an explanation why the connector is unsafe to repair shall be recorded.

e. Special equipment designations: Compressors operating with an instrument reading of less than 500 parts per million

Identify the compressors that the permittee elects to designate as operating with an instrument reading of less than 500 parts per million under the provisions of d)(13)d. below.

f. Special equipment designations: Equipment in heavy liquid service

The owner or operator of equipment in heavy liquid service shall comply with the requirements of either "i" or "ii" below as provided in "iii" below.

i. Retain information, data, and analyses used to determine that a piece of equipment is in heavy liquid service.

ii. When requested by the Director (the appropriate Ohio EPA DO/LAA), demonstrate that the piece of equipment or process is in heavy liquid service.

iii. A determination or demonstration that a piece of equipment or process is in heavy liquid service shall include an analysis or demonstration that the process fluids do not meet the definition of "in light liquid service" which means that a piece of equipment in VOC service contains a liquid that meets the following conditions:

(a) The vapor pressure of one or more of the organic compounds is greater than 0.3 kilopascals at 20 °C (0.04 pounds per square inch at 68 °F);

(b) The total concentration of the pure organic compound constituents having a vapor pressure greater than 0.3 kilopascals at 20 °C (0.04 pounds per square inch at 68 °F) is equal to or greater than 20 percent by weight of the total process stream; and

(c) The fluid is a liquid at operating conditions. (Note: Vapor pressures may be determined by standard reference texts or American Society for Testing and Materials (ASTM) D-2879, available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103; or University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.)

Examples of information that could document this include, but are not limited to, records of chemicals purchased for the process, analyses of process stream composition, engineering calculations, or process knowledge.

(6) Instrument and Sensory Monitoring for Leaks

a. Monitoring for leaks

The permittee shall monitor equipment in VOC service as specified below:

i. Instrument monitoring for leaks

(a) Valves in gas/vapor service and in light liquid service shall be monitored pursuant to d)(8)a. below.

(b) Pumps in light liquid service shall be monitored pursuant to d)(9)a. below.

(c) Connectors in gas/vapor service and in light liquid service shall be monitored pursuant to d)(10)a. below.

(d) Pressure relief devices in gas/vapor service shall be monitored pursuant to d)(12)a. and d)(12)b. below.

(e) Compressors designated to operate with an instrument reading less than 500 parts per million as described in d)(5)e. above shall be monitored pursuant to d)(13)d. below.

ii. Sensory monitoring for leaks

(a) Pumps in light liquid service shall be observed pursuant to d)(9)a.iv. below and d)(9)d.i.(e) below.

b. Instrument monitoring methods

Instrument monitoring as required by the LDAR program shall comply with the requirements specified in “i” through “v” below:

i. Monitoring method

Monitoring shall comply with Method 21 of appendix A of 40 CFR part 60, except as otherwise provided in this section.

ii. Detection instrument performance criteria

(a) Except as provided for in “(b)” below, the detection instrument shall meet the performance criteria of Method 21 of 40 CFR part 60, Appendix A except the instrument response factor criteria in section 3.1.2(a) of Method 21 shall be for the representative composition of the process fluid not each individual organic compound in the stream. For process streams that contain nitrogen, air, water, or other inerts that are not organic hazardous air pollutants or volatile organic compounds, the response factor shall be determined on an inert-free basis. The response factor may be determined at any concentration for which

monitoring for leaks will be conducted. Maintain the record specified by d)(17)b.viii. below.

(b) If no instrument is available at the plant site that will meet the performance criteria specified "(a)" above, the instrument readings may be adjusted by multiplying by the representative response factor of the process fluid calculated on an inert-free basis as described in "(a)" above.

iii. Detection instrument calibration procedure

The detection instrument shall be calibrated before use on each day of its use by the procedures specified in Method 21 of 40 CFR part 60, Appendix A.

iv. Detection instrument calibration gas

Calibration gases shall be zero air (less than 10 parts per million of hydrocarbon in air) and the gases specified in "(a)" below except as provided in "(b)" below.

(a) Mixtures of methane in air at a concentration no more than 2,000 parts per million greater than the leak definition concentration of the equipment monitored. If the monitoring instrument's design allows for multiple calibration scales, then the lower scale shall be calibrated with a calibration gas that is no higher than 2,000 parts per million above the concentration specified as a leak, and the highest scale shall be calibrated with a calibration gas that is approximately equal to 10,000 parts per million. If only one scale on an instrument will be used during monitoring, the permittee need not calibrate the scales that will not be used during that day's monitoring.

(b) A calibration gas other than methane in air may be used if the instrument does not respond to methane or if the instrument does not meet the performance criteria specified in "b.ii.(a)" above. In such cases, the calibration gas may be a mixture of one or more of the compounds to be measured in air.

v. Monitoring performance

Monitoring shall be performed when the equipment is in VOC service or is in use with any other detectable material.

vi. Monitoring Data

Monitoring data obtained prior to the final issuance of this permit that do not meet the criteria specified in "i" through "v" above may still be used to qualify initially for less frequent monitoring under the provisions in d)(8)a.v., d)(8)a.iii., or d)(8)a.iv. below for valves or d)(10)a.iii. below for connectors, provided the departures from the criteria or from the specified monitoring frequency of d)(8)a.iii. or d)(8)a.iv. below are minor and do not significantly affect the quality

of the data. Examples of minor departures are monitoring at a slightly different frequency (such as every 6 weeks instead of monthly or quarterly), following the performance criteria of section 3.1.2(a) of Method 21 of 40 CFR part 60, Appendix A instead of "b.ii" above, or monitoring using a different leak definition if the data would indicate the presence or absence of a leak at the concentration specified in the LDAR program. Failure to use a calibrated instrument is not considered a minor departure.

c. Instrument monitoring readings and background adjustments

The permittee may elect to adjust or not to adjust the instrument readings for background. If the permittee elects not to adjust instrument readings for background, the permittee shall monitor the equipment according to the procedures specified in "b.i" through "b.v" above. In such cases, all instrument readings shall be compared directly to the applicable leak definition for the monitored equipment to determine whether there is a leak or to determine compliance with d)(12) below (pressure relief devices) or d)(13)d. below (alternative compressor standard). If the permittee elects to adjust instrument readings for background, the permittee shall monitor the equipment according to the following procedures:

i. The requirements of "b.i" through "b.v" above shall apply.

ii. The background level shall be determined using the procedures in Method 21 of 40 CFR part 60, Appendix A.

iii. The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Method 21 of 40 CFR part 60, Appendix A.

iv. The arithmetic difference between the maximum concentration indicated by the instrument and the background level shall be compared to the applicable leak definition for the monitored equipment to determine whether there is a leak or to determine compliance with d)(12)a. below (pressure relief devices) or d)(13)d. below (alternative compressor standard).

d. Sensory monitoring methods

Sensory monitoring consists of visual, audible, olfactory, or any other detection method used to determine a potential leak to the atmosphere.

e. Leaking equipment identification and records

i. When each leak is detected, a weatherproof and readily visible identification shall be attached to the leaking equipment.

ii. When each leak is detected, the information specified below shall be recorded and kept:

(a) The instrument, the equipment identification, and the instrument operator's name, initials, or identification number if a leak is detected or confirmed by instrument monitoring.

(b) The date the leak was detected.

(7) Leak Repair

a. Leak repair schedule

The permittee shall repair each leak detected as soon as practical but not later than 15 calendar days after it is detected except as provided “c” below or “d” below. A first attempt at repair shall be made no later than five calendar days after the leak is detected. First attempt at repair for pumps includes, but is not limited to, tightening the packing gland nuts and/or ensuring that the seal flush is operating at design pressure and temperature. First attempt at repair for valves includes, but is not limited to, tightening the bonnet bolts, and/or replacing the bonnet bolts, and/or tightening the packing gland nuts, and/or injecting lubricant into the lubricated packing.

b. Leak identification removal

i. Valves and connectors

The leak identification on a valve in gas/vapor or light liquid service may be removed after it has been monitored as specified in d)(8)c.ii. below and no leak has been detected during that monitoring. The leak identification on a connector in gas/vapor or light liquid service may be removed after it has been monitored as specified in d)(10)a.iii. below and no leak has been detected during that monitoring.

ii. Other equipment

The identification that has been placed pursuant to d)(6)e.i. below on equipment determined to have a leak, except for a valve or for a connector that is subject to the provisions of d)(10)a.iii. below, may be removed after it is repaired.

c. Delay of repair

Delay of repair is allowed for any of the conditions specified in “i” through “v” below. The permittee shall maintain a record of the facts that explain any delay of repairs and, where appropriate, why repair within 15 days was technically infeasible without a process unit shutdown.

i. Delay of repair of equipment for which leaks have been detected is allowed if repair within 15 days after a leak is detected is technically infeasible without a process unit shutdown. Repair of this equipment shall occur as soon as practical, but no later than the end of the next process unit shutdown, except as provided in “v” below.

ii. Delay of repair of equipment for which leaks have been detected is allowed for equipment that is isolated from the process and that does not remain in VOC service.

iii. Delay of repair for valves and connectors is also allowed if the following provisions are met:

(a) The permittee determines that emissions of purged material resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair; and

(b) When repair procedures are effected, the purged material is collected and routed to a process or fuel gas system or is collected and destroyed or recovered in a control device.

iv. Delay of repair for pumps is also allowed if the following provisions are met:

(a) Repair requires replacing the existing seal design with a new system that the permittee has determined under the provisions of d)(16)d. below will provide better performance or one of the following specifications are met:

(i) A dual mechanical seal system that meets the requirements of d)(9)d.i. below will be installed; or

(ii) A pump that meets the requirements of d)(9)d.ii. below will be installed.

(b) Repair is completed as soon as practical but not later than 6 months after the leak was detected.

v. Delay of repair beyond a process unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the process unit shutdown, and valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the second process unit shutdown will not be allowed unless the third process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

d. Unsafe-to-repair: Connectors

Any connector that is designated as described in d)(5)d. above as an unsafe-to-repair connector is exempt from the requirements of d)(10)c. below and “a” above if the provisions of d)(5)d. above are met.

e. Leak repair records

For each leak detected, the information specified below shall be recorded and kept as required by the Standard Terms and Conditions of this permit:

i. The date of first attempt to repair the leak.

ii. The date of successful repair of the leak.

iii. Maximum instrument reading measured by Method 21 of 40 CFR part 60, Appendix A at the time the leak is successfully repaired or determined to be nonrepairable.

iv. "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak as specified below:

(a) The permittee may develop a written procedure that identifies the conditions that justify a delay of repair. In such cases, reasons for delay of repair may be documented by citing the relevant sections of the written procedure.

(b) If delay of repair was caused by depletion of stocked parts, there must be documentation that the spare parts were sufficiently stocked onsite before depletion and the reason for depletion.

v. Dates of process unit shutdowns that occur while the equipment is unrepaired.

(8) Valves in Gas/Vapor Service and in Light Liquid Service

a. Leak detection

Unless otherwise specified in "d" below, the permittee shall monitor all valves at the intervals specified in "iii" and/or "iv" below and shall comply with all other provisions of this section.

i. Monitoring method

The valves shall be monitored to detect leaks by the method specified in d)(6)b. and d)(6)c. above.

ii. Instrument reading that defines a leak

The instrument reading that defines a leak is 500 parts per million or greater.

iii. Monitoring frequency

The permittee shall monitor valves for leaks at the intervals specified in "(a)" through "(e)" below and shall keep the record specified in "(f)" below.

(a) If at least the greater of two valves or 2 percent of the valves in a process unit leak, as calculated according to "b" below, the permittee shall monitor each valve once per month.

(b) At process units with less than the greater of two leaking valves or 2 percent leaking valves, the permittee shall monitor each valve once each quarter except as provided in "(c)" through "(e)" below.

(c) At process units with less than 1 percent leaking valves, the permittee may elect to monitor each valve once every 2 quarters.

(d) At process units with less than 0.5 percent leaking valves, the permittee may elect to monitor each valve once every 4 quarters.

(e) At process units with less than 0.25 percent leaking valves, the permittee may elect to monitor each valve once every 2 years.

(f) The permittee shall keep a record of the monitoring schedule for each process unit.

iv. Valve subgrouping

The permittee may choose to subdivide the valves in the applicable process unit or group of process units and apply the provisions of "a.iii" above to each subgroup. If the permittee elects to subdivide the valves in the applicable process unit or group of process units, then the provisions of "(a)" through "(f)" below apply.

(a) The overall performance of total valves in the applicable process unit or group of process units to be subdivided shall be less than 2 percent leaking valves, as detected according to "a.i" and "a.ii" above and as calculated according to "b.i" and "b.ii" below.

(b) The initial assignment or subsequent reassignment of valves to subgroups shall be governed by the following provisions:

(i) The permittee shall determine which valves are assigned to each subgroup. Valves with less than 1 year of monitoring data or valves not monitored within the last 12 months must be placed initially into the most frequently monitored subgroup until at least 1 year of monitoring data have been obtained.

(ii) Any valve or group of valves can be reassigned from a less frequently monitored subgroup to a more frequently monitored subgroup provided that the valves to be reassigned were monitored during the most recent monitoring period for the less frequently monitored subgroup. The monitoring results must be included with that less frequently monitored subgroup's associated percent leaking valves calculation for that monitoring event.

(iii) Any valve or group of valves can be reassigned from a more frequently monitored subgroup to a less frequently monitored subgroup provided that the valves to be reassigned have not leaked for the period of the less frequently monitored subgroup (for example, for the last 12 months, if the valve or group of

valves is to be reassigned to a subgroup being monitored annually). Nonrepairable valves may not be reassigned to a less frequently monitored subgroup.

(c) The permittee shall determine every 6 months if the overall performance of total valves in the applicable process unit or group of process units is less than 2 percent leaking valves and so indicate the performance in the next periodic report. If the overall performance of total valves in the applicable process unit or group of process units is 2 percent leaking valves or greater, the permittee shall no longer subgroup and shall revert to the program required in "a.i" through "a.iii" above for that applicable process unit or group of process units. The permittee can again elect to comply with the valve subgrouping procedures of "a.iv" above if future overall performance of total valves in the process unit or group of process units is again less than 2 percent. The overall performance of total valves in the applicable process unit or group of process units shall be calculated as a weighted average of the percent leaking valves of each subgroup according to the equation below:

$$\%V_{LO} = \frac{\sum_{i=1}^{n}(\%V_{Li} \times V_i)}{\sum_{i=1}^{n} V_i}$$

Where:

$\%V_{LO}$ = Overall performance of total valves in the applicable process unit or group of process units.

$\%V_{Li}$ = Percent leaking valves in subgroup i, most recent value calculated according to the procedures in "b.i.(b)" below and "b.ii" below.

V_i = Number of valves in subgroup i.

n = Number of subgroups.

(d) The permittee shall maintain the following records:

(i) Which valves are assigned to each subgroup;

(ii) Monitoring results and calculations made for each subgroup for each monitoring period;

(iii) Which valves are reassigned, the last monitoring result prior to reassignment, and when they were reassigned; and

(iv) The results of the semiannual overall performance calculation required in "a.iv.(c)" above.

(e) To determine the monitoring frequency for each subgroup, the calculation procedures of "b" below shall be used.

(f) Except for the overall performance calculations required by "a.iv.(a)" and "a.iv.(c)" above, each subgroup shall be treated as if it were a separate process unit for the purposes of applying the provisions of this section.

v. The use of monitoring data generated before the valve became subject to the LDAR program to qualify initially for less frequent monitoring is governed by the provisions of d)(6)b.vi. above.

b. Percent leaking valves calculation

i. Calculation basis and procedures

(a) The permittee shall decide no later than the final issuance date of this permit-to-install and operate (PTIO) or upon revision of the PTIO whether to calculate percent leaking valves on a process unit or group of process units basis. Once the permittee has decided, all subsequent percentage calculations shall be made on the same basis, and this shall be the basis used for comparison with the subgrouping criteria specified in "a.iv.(a)" above.

(b) The percent leaking valves for each monitoring period for each process unit or valve subgroup, as provided in "a.iv" above, shall be calculated using the equation below:

$$\%V_L = \left(\frac{V_L}{V_T}\right) \times 100$$

Where:

$\%V_L$ = Percent leaking valves.

V_L = Number of valves found leaking, including those valves found leaking pursuant to "c.ii.(c)(i)" and "c.ii.(c)(ii)" below and excluding nonrepairable valves as provided in "b.iii" below.

V_T = The sum of the total number of valves monitored.

ii. Calculation for monitoring frequency

When determining monitoring frequency for each process unit or valve subgroup subject to monthly, quarterly, or semiannual monitoring frequencies, the percent leaking valves shall be the arithmetic average of the percent leaking valves from the last two monitoring periods. When determining monitoring frequency for each process unit or valve subgroup subject to annual or biennial (once every 2 years) monitoring frequencies, the percent leaking valves shall be

the arithmetic average of the percent leaking valves from the last three monitoring periods.

iii. Nonrepairable valves

(a) Nonrepairable valves shall be included in the calculation of percent leaking valves the first time the valve is identified as leaking and nonrepairable and as required to comply with "(b)" below. Otherwise, a number of nonrepairable valves (identified and included in the percent leaking valves calculation in a previous period) up to a maximum of 1 percent of the total number of valves in regulated material service at a process unit may be excluded from calculation of percent leaking valves for subsequent monitoring periods.

(b) If the number of nonrepairable valves exceeds 1 percent of the total number of valves in regulated material service at a process unit, the number of nonrepairable valves exceeding 1 percent of the total number of valves in regulated material service shall be included in the calculation of percent leaking valves.

c. Leak repair

i. If a leak is determined pursuant to "a" above, "d.i" below, or "d.ii" below, then the leak shall be repaired using the procedures in d)(7) above, as applicable.

ii. After a leak determined under "a" above or "d.ii" below has been repaired, the valve shall be monitored at least once within the first 3 months after its repair. The monitoring required by "c" is in addition to the monitoring required to satisfy the definition of repair.

(a) The monitoring shall be conducted as specified in d)(6)b. and d)(6)c. above, as appropriate, to determine whether the valve has resumed leaking.

(b) Periodic monitoring required by "a" above may be used to satisfy the requirements of "c" if the timing of the monitoring period coincides with the time specified in "c". Alternatively, other monitoring may be performed to satisfy the requirements of "c" regardless of whether the timing of the monitoring period for periodic monitoring coincides with the time specified in "c".

(c) If a leak is detected by monitoring that is conducted under "c.ii" above, the permittee shall comply with the following provisions to determine whether that valve must be counted as a leaking valve for purposes of "b.i.(b)" above:

(i) If the permittee elected to use periodic monitoring required by "a" above to satisfy the requirements of "c.ii" above, then the valve shall be counted as a leaking valve.

(ii) If the permittee elected to use other monitoring, prior to the periodic monitoring required by "a" above, to satisfy the requirements of "c.ii" above, then the valve shall be counted as a leaking valve unless it is repaired and shown by periodic monitoring not to be leaking.

d. Special provisions for valves

i. Unsafe-to-monitor valves

Any valve that is designated as described in d)(5)c.i. above as an unsafe-to-monitor valve is exempt from the requirements of "a" and "c.ii" above, and the permittee shall monitor the valve according to the written plan specified in d)(5)c.iv. above.

ii. Difficult-to-monitor valves

Any valve that is designated as described in d)(5)c.ii. above as a difficult-to-monitor valve is exempt from the requirements of "a" above, and the permittee shall monitor the valve according to the written plan specified in d)(5)c.iv. above.

iii. Less than 250 valves

Any equipment located at a plant site with fewer than 250 valves in regulated material service is exempt from the requirements for monthly monitoring "a.iii.(a)" above. Instead, the permittee shall monitor each valve in regulated material service for leaks once each quarter or comply with "a.iii.(c), (d), or (e)" above except as provided in "i" and "ii" above.

(9) Pumps in Light Liquid Service

a. Leak detection

Unless otherwise specified "d" below, the permittee shall monitor each pump to detect leaks and shall comply with all other provisions of this section.

i. The pumps shall be monitored monthly to detect leaks by the method specified in d)(6)b. and d)(6)c. above.

ii. The following leak definitions determined through instrument readings apply:

(a) 5,000 parts per million or greater for pumps handling polymerizing monomers;

(b) 2,000 parts per million or greater for pumps in food/medical service; and

(c) 1,000 parts per million or greater for all other pumps.

iii. Leak Repair Exemption

For pumps to which a 1,000 parts per million leak definition applies, repair is not required unless an instrument reading of 2,000 parts per million or greater is detected.

iv. Visual Inspection

Each pump shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal. The permittee shall document that the inspection was conducted and the date of the inspection. If there are indications of liquids dripping from the pump seal at the time of the weekly inspection, the permittee shall comply with either of the following procedures:

(a) The permittee shall monitor the pump as specified in d)(6)b. and d)(6)c. above unless the pump has already been monitored since the last routine monthly monitoring required by "a.i" above. If monitoring is performed and the instrument reading indicates a leak as specified in "a.ii" above, a leak is detected and the leak shall be repaired using the procedures in d)(7) above, except as specified in "a.iii" above; or

(b) The permittee shall eliminate the visual indications of liquids dripping.

b. Percent leaking pumps calculation

i. The permittee shall decide final issuance of this PTIO or upon revision of the PTIO whether to calculate percent leaking pumps on a process unit basis or group of process units basis. Once the permittee has decided, all subsequent percentage calculations shall be made on the same basis.

ii. If, when calculated on a 6-month rolling average, at least the greater of either 10 percent of the pumps in a process unit or three pumps in a process unit leak, the permittee shall implement a quality improvement program for pumps that complies with the requirements of d)(16) below.

iii. The number of pumps at a process unit shall be the sum of all the pumps in regulated material service, except that pumps found leaking in a continuous process unit within 1 month after startup of the pump shall not count in the percent leaking pumps calculation for that one monitoring period only.

iv. Percent leaking pumps shall be determined by equation below:

$$\%P_L = \left(\frac{(P_L - P_S)}{(P_T - P_S)}\right) \times 100$$

Where:

$\%P_L$ = Percent leaking pumps.

P_L = Number of pumps found leaking as determined through monthly monitoring as required in "a.i" above.

P_S = Number of pumps leaking within 1 month of startup during the current monitoring period.

P_T = Total pumps in regulated material service, including those meeting the criteria in "d.i", "d.ii", "d.iii", and "d.iv" below.

c. Leak repair

If a leak is detected pursuant to "a" above, then the leak shall be repaired using the procedures in d)(7) above, as applicable.

d. Special provisions for pumps

i. Dual Mechanical Seal Pumps

Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of "a" above, provided the requirements specified in "(a)" through "(h)" below are met.

(a) The permittee determines, based on design considerations and operating experience, criteria applicable to the presence and frequency of drips and to the sensor that indicates failure of the seal system, the barrier fluid system, or both. The permittee shall keep records of the design criteria and an explanation of the design criteria, and any changes to these criteria and the reasons for the changes.

(b) Each dual mechanical seal system shall meet the following requirements:

(i) Operated with the barrier fluid at a pressure that is at all times (except periods of start-up, shutdown, or malfunction) greater than the pump stuffing box pressure; or

(ii) Equipped with a closed-loop system that purges the barrier fluid into a process stream.

(c) The barrier fluid is not in light liquid service.

(d) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

(e) Each pump is checked by visual inspection each calendar week for indications of liquids dripping from the pump seal. The permittee shall document that the inspection was conducted and the date of the inspection. If there are indications of liquids dripping from the pump

seal at the time of the weekly inspection, the permittee shall follow either one of the following procedures prior to the next required inspection:

(i) The permittee shall monitor the pump as specified in d)(6)b. and d)(6)c. above to determine if there is a leak of regulated material in the barrier fluid. If an instrument reading of 1,000 parts per million or greater is measured, a leak is detected and it shall be repaired using the procedures in d)(7) above; or

(ii) The permittee shall eliminate the visual indications of liquids dripping.

(f) If indications of liquids dripping from the pump seal exceed the criteria established in "(a)" above, or if based on the criteria established in "(a)" above the sensor indicates failure of the seal system, the barrier fluid system, or both, a leak is detected.

(g) Each sensor as described in "(d)" above is observed daily or is equipped with an alarm unless the pump is located within the boundary of an unmanned plant site.

(h) When a leak is detected pursuant to "(f)" above, it shall be repaired as specified in d)(7) above.

ii. Any pump that is designed with no externally actuated shaft penetrating the pump housing is exempt from the requirements of "a" above.

iii. If more than 90 percent of the pumps at a process unit meet the criteria in either "d.i" or "d.ii" above, the process unit is exempt from the percent leaking calculation in "b" above.

iv. Any pump that is designated as described in d)(5)c.i. above as an unsafe-to-monitor pump is exempt from the requirements of "a" above, the monitoring and inspection requirements of "d.i.(e)" through "d.i(h)" above, and the permittee shall monitor and repair the pump according to the written plan specified in d)(5)c.iv. above.

(10) Connectors in gas/vapor service and in light liquid service

Except as allowed in "d" below, the permittee shall monitor all connectors in each process unit initially for leaks by the final issuance of this permit. If all connectors in each process unit have been monitored for leaks prior to the final issuance of this permit, no initial monitoring is required provided either no process changes have been made since the monitoring or the permittee can determine that the results of the monitoring, with or without adjustments, reliably demonstrate compliance despite process changes. If required to monitor because of a process change, the permittee is required to monitor only those connectors involved in the process change.

a. Leak detection

Except as allowed in "d" below, the permittee shall monitor all connectors in gas/vapor and light liquid service as specified in "iii" below.

i. The connectors shall be monitored to detect leaks by the method specified in d)(6)b. and d)(6)c. above.

ii. If an instrument reading greater than or equal to 500 parts per million is measured, a leak is detected.

iii. Monitoring periods

The permittee shall perform monitoring, as specified in "(a)" through "(c)" below, and shall comply with the requirements of "(d)" and "(e)" below. The required period in which monitoring must be conducted shall be determined from "(a)" through "(c)" below using the monitoring results from the preceding monitoring period. The percent leaking connectors shall be calculated as specified in "b" below.

(a) If the percent leaking connectors in the process unit was greater than or equal to 0.5 percent, then monitor within 12 months (1 year).

(b) If the percent leaking connectors in the process unit was greater than or equal to 0.25 percent but less than 0.5 percent, then monitor within 4 years. The permittee may comply with the requirements of this paragraph by monitoring at least 40 percent of the connectors within 2 years of the start of the monitoring period, provided all connectors have been monitored by the end of the 4-year monitoring period.

(c) If the percent leaking connectors in the process unit was less than 0.25 percent, then monitor as provided in "(i)" below and either "(ii)" or "(iii)" below, as appropriate.

(i) The permittee shall monitor at least 50 percent of the connectors within 4 years of the start of the monitoring period.

(ii) If the percent leaking connectors calculated from the monitoring results in "(i)" above is greater than or equal to 0.35 percent of the monitored connectors, the permittee shall monitor as soon as practical, but within the next 6 months, all connectors that have not yet been monitored during the monitoring period. At the conclusion of monitoring, a new monitoring period shall be started pursuant to "a.iii" above, based on the percent leaking connectors of the total monitored connectors.

(iii) If the percent leaking connectors calculated from the monitoring results in "(i)" above is less than 0.35 percent of the

monitored connectors, the permittee shall monitor all connectors that have not yet been monitored within 8 years of the start of the monitoring period.

(d) If, during the monitoring conducted pursuant to "a.iii.(a)" through "a.iii.(c)" above, a connector is found to be leaking, it shall be re-monitored once within 90 days after repair to confirm that it is not leaking.

(e) The permittee shall keep a record of the start date and end date of each monitoring period under this section for each process unit.

b. Percent Leaking Connectors Calculation

For use in determining the monitoring frequency as specified in "a.iii" above, the percent leaking connectors as used in "a.iii" above shall be calculated by using the equation below:

$$\%C_L = \frac{C_L}{C_T} \times 100$$

Where:

$\%C_L$ = Percent leaking connectors as determined through periodic monitoring required in "a.iii.(a)" through "a.iii.(c)" above.

C_L = Number of connectors measured at 500 parts per million or greater by the method specified in d)(6)b. above.

C_T = Total number of monitored connectors in the process unit.

c. Leak repair

If a leak is detected pursuant to "a" above then the leak shall be repaired using the procedures in d)(7) above, as applicable.

d. Special provisions for connectors

i. Unsafe-to-monitor connector

Any connector that is designated, as described in d)(5)c.i. above, as an unsafe-to-monitor connector is exempt from the requirements of "a" above and the permittee shall monitor according to the written plan specified in d)(5)c.iv. above.

ii. Inaccessible, ceramic, or ceramic-lined connectors

(a) Any connector that is inaccessible or that is ceramic or ceramic-lined (for example, porcelain, glass, or glass-lined), is exempt from the monitoring requirements of "a" above and from the recordkeeping and reporting requirements of d)(17), e)(5), and e)(6) below. An inaccessible connector is one that meets any of the following provisions, as applicable:

(i) Buried;

(ii) Insulated in a manner that prevents access to the connector by a monitor probe;

(iii) Obstructed by equipment or piping that prevents access to the connector by a monitor probe;

(iv) Unable to be reached from a wheeled scissor-lift or hydraulic-type scaffold that would allow access to connectors up to 7.6 meters (25 feet) above the ground;

(v) Inaccessible because it would require elevating the monitoring personnel more than 2 meters (7 feet) above a permanent support surface or would require the erection of scaffold;

(vi) Not able to be accessed at any time in a safe manner to perform monitoring. Unsafe access includes, but is not limited to, the use of a wheeled scissor-lift on unstable or uneven terrain, the use of a motorized man-lift basket in areas where an ignition potential exists, or access would require near proximity to hazards such as electrical lines or would risk damage to equipment.

(b) If any inaccessible, ceramic, or ceramic-lined connector is observed by visual, audible, olfactory, or other means to be leaking, the visual, audible, olfactory, or other indications of a leak to the atmosphere shall be eliminated as soon as practical.

(11) Pumps, valves, and connectors in heavy liquid service; pressure relief devices in liquid service; and instrumentation systems

a. Leak detection

The permittee shall comply with the following:

i. Monitoring Method

Pumps, valves, and connectors in heavy liquid service; pressure relief devices in light liquid or heavy liquid service; and instrumentation systems shall be monitored within 5 calendar days by the method specified in d)(6)b. and d)(6)c. above if evidence of a potential leak to the atmosphere is found by visual, audible, olfactory, or any other detection method, unless the potential leak is repaired as required in “b” below.

ii. Instrument Reading that Defines a Leak

If an instrument reading of 5,000 parts per million or greater for pumps handling polymerizing monomers, 2,000 parts per million or greater for all other pumps (including pumps in food/medical service), or 500 parts per million or greater

for valves, connectors, instrumentation systems, and pressure relief devices is measured pursuant to "i" above, a leak is detected and it shall be repaired pursuant to d)(7) above, as applicable.

b. Leak repair

For equipment identified in "a" above that is not monitored by the method specified in d)(6)b. above, repaired shall mean that the visual, audible, olfactory, or other indications of a leak to the atmosphere have been eliminated; that no bubbles are observed at potential leak sites during a leak check using soap solution; or that the system will hold a test pressure.

(12) Pressure relief devices in gas/vapor service

a. Compliance standard

Except during pressure releases as provided for in "b" below, each pressure relief device in gas/vapor service shall be operated with an instrument reading of less than 500 parts per million as measured by the method specified in d)(6)b. and d)(6)c. above.

b. Pressure relief requirements

i. After each pressure release, the pressure relief device shall be returned to a condition indicated by an instrument reading of less than 500 parts per million, as soon as practical, but no later than 5 calendar days after each pressure release except as provided in d)(7)c. above.

ii. The pressure relief device shall be monitored no later than 5 calendar days after the pressure release and being returned to regulated material service to confirm the condition indicated by an instrument reading of less than 500 parts per million as measured by the method specified in d)(6)b. and d)(6)c. above.

iii. The permittee shall record the dates and results of the monitoring required by "ii" above following a pressure release including maximum instrument reading measured during the monitoring and the background level measured if the instrument reading is adjusted for background.

c. Rupture disk exemption

Any pressure relief device that is equipped with a rupture disk upstream of the pressure relief device is exempt from the requirements of "a" and "b" above provided the permittee installs a new rupture disk upstream of the pressure relief device as soon as practical after each pressure release, but no later than 5 calendar days after each pressure release except as provided in d)(7)c. above.

(13) Compressors

a. Seal system standard

Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluid to the atmosphere except as provided

in “d” below. Each compressor seal system shall meet any one of the following requirements:

i. Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure at all times (except during periods of start-up, shutdown, or malfunction); or

ii. Equipped with a closed-loop system that purges the barrier fluid directly into a process stream.

b. Barrier fluid system

The barrier fluid shall not be in light liquid service. Each barrier fluid system shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both. Each sensor shall be observed daily or shall be equipped with an alarm unless the compressor is located within the boundary of an unmanned plant site.

c. Failure criterion and leak detection

i. The permittee shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both. If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion, a leak is detected and shall be repaired pursuant to d)(7) above, as applicable.

ii. The permittee shall keep records of the design criteria and an explanation of the design criteria, and any changes to these criteria and the reasons for the changes.

d. Alternative compressor standard

i. Any compressor that is designated as described in d)(5)e. above shall operate at all times with an instrument reading of less than 500 parts per million. A compressor so designated is exempt from the requirements of “a” through “c” above and if the compressor is demonstrated initially upon designation, annually, and at other times requested by the Administrator to be operating with an instrument reading of less than 500 parts per million as measured by the method specified in d)(6)b. and d)(6)c. above.

ii. The permittee shall record the dates and results of each compliance test including the background level measured and the maximum instrument reading measured during each compliance test.

(14) Sampling connection systems

a. Equipment requirement

Each sampling connection system shall be equipped with a closed-purge, closed-loop, or closed vent system except as provided in “c” below. Gases displaced during filling of the sample container are not required to be collected or captured.

b. Equipment design and operation

Each closed-purge, closed-loop, or closed vent system as required in "a" above shall meet the following applicable requirements:

i. The system shall return the purged process fluid directly to a process line or to a fuel gas system; or

ii. Collect and recycle the purged process fluid to a process; or

iii. Collect, store, and transport the purged process fluid to any of the following systems or facilities:

(a) A waste management unit as defined in 40 CFR 63.111, if the waste management unit is complying with the provisions of 40 CFR part 63, subpart G, applicable to Group 1 wastewater streams. For sources referenced to this part from 40 CFR part 63, subpart H, and if the purged process fluid does not contain any organic HAP listed in table 9 of 40 CFR part 63, subpart G, the waste management unit need not be subject to and operated in compliance with the requirements of 40 CFR part 63, subpart G, applicable to Group 1 wastewater steams provided the facility has a National Pollution Discharge Elimination System (NPDES) permit or sends the wastewater to an NPDES-permitted facility; or

(b) A treatment, storage, or disposal facility subject to regulation under 40 CFR part 262, 264, 265, or 266; or

(c) A facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the process fluids are not hazardous waste as defined in 40 CFR part 261; and

iv. Containers that are part of a closed-purge system must be covered or closed when not being filled or emptied.

c. In-situ sampling systems

In-situ sampling systems and sampling systems without purges are exempt from the requirements of "a" and "b" above.

(15) Open-ended valves or lines

a. Equipment and operational requirements

i. Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve except as provided in "b" and "c" below. The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line, or during maintenance. The operational provisions of "ii" and "iii" below also apply.

ii. Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

iii. When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with "i" above at all other times.

b. Emergency shutdown exemption

Open-ended valves or lines in an emergency shutdown system that are designed to open automatically in the event of a process upset are exempt from the requirements of "a" above.

c. Polymerizing materials exemption

Open-ended valves or lines containing materials that would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system as specified in "a" above are exempt from the requirements of "a" above.

(16) Quality improvement program for pumps

a. If, on a 6-month rolling average, at least the greater of either 10 percent of the pumps in a process unit (or plant site) or three pumps in a process unit (or plant site) leak, the permittee shall comply with the following requirements:

i. Pumps that are in food/medical service or in polymerizing monomer service shall comply with all requirements except for those specified in "d.viii" below.

ii. Pumps that are not in food/medical or polymerizing monomer service shall comply with all requirements of this section.

b. Exiting the QIP

The permittee shall comply with the requirements of this section until the number of leaking pumps is less than the greater of either 10 percent of the pumps or three pumps calculated as a 6-month rolling average in the process unit (or plant site). Once the performance level is achieved, the permittee shall comply with the requirements in d)(9) above.

c. Resumption of QIP

If in a subsequent monitoring period, the process unit (or plant site) has the greater of either 10 percent of the pumps leaking or three pumps leaking (calculated as a 6-month rolling average), the permittee shall resume the quality improvement program starting at performance trials.

d. QIP requirements

The quality improvement program shall meet the requirements specified in "i" through "viii" below.

i. The permittee shall comply with the requirements in d)(9) above.

ii. Data Collection

The permittee shall collect the data specified in "(a)" through "(e)" below and maintain records for each pump in each process unit (or plant site) subject to the quality improvement program. The data may be collected and the records may be maintained on a process unit or plant site basis.

(a) Pump type (for example, piston, horizontal or vertical centrifugal, gear, bellows); pump manufacturer; seal type and manufacturer; pump design (for example, external shaft, flanged body); materials of construction; if applicable, barrier fluid or packing material; and year installed.

(b) Service characteristics of the stream such as discharge pressure, temperature, flow rate, corrosivity, and annual operating hours.

(c) The maximum instrument readings observed in each monitoring observation before repair, response factor for the stream if appropriate, instrument model number, and date of the observation.

(d) If a leak is detected, the repair methods used and the instrument readings after repair.

(e) If the data will be analyzed as part of a larger analysis program involving data from other plants or other types of process units, a description of any maintenance or quality assurance programs used in the process unit that are intended to improve emission performance.

iii. The permittee shall continue to collect data on the pumps as long as the process unit (or plant site) remains in the quality improvement program.

iv. Pump or Pump Seal Inspection

The permittee shall inspect all pumps or pump seals that exhibited frequent seal failures and were removed from the process unit due to leaks. The inspection shall determine the probable cause of the pump seal failure or of the pump leak and shall include recommendations, as appropriate, for design changes or changes in specifications to reduce leak potential.

v. Data analysis

(a) The permittee shall analyze the data collected to comply with the requirements of "d.ii" above to determine the services, operating or maintenance practices, and pump or pump seal designs or technologies that have poorer than average emission performance and those that have better than average emission performance. The analysis shall determine if specific trouble areas can be identified on the

basis of service, operating conditions or maintenance practices, equipment design, or other process-specific factors.

(b) The analysis shall also be used to determine if there are superior performing pump or pump seal technologies that are applicable to the service(s), operating conditions, or pump or pump seal designs associated with poorer than average emission performance. A superior performing pump or pump seal technology is one with a leak frequency of less than 10 percent for specific applications in the process unit or plant site. A candidate superior performing pump or pump seal technology is one demonstrated or reported in the available literature or through a group study as having low emission performance and as being capable of achieving less than 10 percent leaking pumps in the process unit (or plant site).

(c) The analysis shall include consideration of the following information:

(i) The data obtained from the inspections of pumps and pump seals removed from the process unit due to leaks;

(ii) Information from the available literature and from the experience of other plant sites that will identify pump designs or technologies and operating conditions associated with low emission performance for specific services; and

(iii) Information on limitations on the service conditions for the pump seal technology operating conditions as well as information on maintenance procedures to ensure continued low emission performance.

(d) The data analysis may be conducted through an inter- or intracompany program (or through some combination of the two approaches) and may be for a single process unit, a plant site, a company, or a group of process units.

(e) The first analysis of the data shall be completed no later than 18 months after the start of the quality improvement program. The first analysis shall be performed using data collected for a minimum of 6 months. An analysis of the data shall be done each year the process unit is in the quality improvement program.

vi. Trial evaluation program

A trial evaluation program shall be conducted at each plant site for which the data analysis does not identify use of superior performing pump seal technology or pumps that can be applied to the areas identified as having poorer than average performance except as provided in “(e)” below. The trial

program shall be used to evaluate the feasibility of using in the process unit (or plant site) the pump designs or seal technologies, and operating and maintenance practices that have been identified by others as having low emission performance.

(a) The trial evaluation program shall include on-line trials of pump seal technologies or pump designs and operating and maintenance practices that have been identified in the available literature or in analysis by others as having the ability to perform with leak rates below 10 percent in similar services, as having low probability of failure, or as having no external actuating mechanism in contact with the process fluid. If any of the candidate superior performing pump seal technologies or pumps is not included in the performance trials, the reasons for rejecting specific technologies from consideration shall be documented as required in "e.iii.(b)" below.

(b) The number of pump seal technologies or pumps in the trial evaluation program shall be the lesser of 1 percent or two pumps for programs involving single process units, and the lesser of 1 percent or five pumps for programs involving a plant site or groups of process units. The minimum number of pumps or pump seal technologies in a trial program shall be one.

(c) The trial evaluation program shall specify and include documentation of the following information:

(i) The candidate superior performing pump seal designs or technologies to be evaluated, the stages for evaluating the identified candidate pump designs or pump seal technologies, including the time period necessary to test the applicability;

(ii) The frequency of monitoring or inspection of the equipment;

(iii) The range of operating conditions over which the component will be evaluated; and

(iv) Conclusions regarding the emission performance and the appropriate operating conditions and services for the trial pump seal technologies or pumps.

(d) The performance trials shall initially be conducted at least for a 6-month period beginning not later than 18 months after the start of the quality improvement program. No later than 24 months after the start of the quality improvement program, the permittee shall have identified pump seal technologies or pump designs that, combined with appropriate process, operating, and maintenance practices, operate with low emission performance for specific applications in the

process unit. The permittee shall continue to conduct performance trials as long as no superior performing design or technology has been identified, except as provided in "(f)" below. The initial list of superior emission performance pump designs or pump seal technologies shall be amended in the future, as appropriate, as additional information and experience are obtained.

(e) Any plant site with fewer than 400 valves and owned by a corporation with fewer than 100 employees shall be exempt from trial evaluations of pump seals or pump designs. Plant sites exempt from the trial evaluations of pumps shall begin the pump seal or pump replacement program at the start of the fourth year of the quality improvement program.

(f) A permittee who has conducted performance trials on all alternative superior emission performance technologies suitable for the required applications in the process unit may stop conducting performance trials provided that a superior performing design or technology has been demonstrated, or there are no technically feasible alternative superior technologies remaining. The permittee shall prepare an engineering evaluation documenting the physical, chemical, or engineering basis for the judgment that the superior emission performance technology is technically infeasible or demonstrating that it would not reduce emissions.

vii. Quality Assurance Program

Each permittee shall prepare and implement a pump quality assurance program that details purchasing specifications and maintenance procedures for all pumps and pump seals in the process unit. The quality assurance program may establish any number of categories, or classes, of pumps as needed to distinguish among operating conditions and services associated with poorer than average emission performance, as well as those associated with better than average emission performance. The quality assurance program shall be developed considering the findings of the data analysis required under "d.v" above, if applicable; the findings of the trial evaluation required in "d.vi" above; and the operating conditions in the process unit. The quality assurance program shall be updated each year as long as the process unit has the greater of either 10 percent or more leaking pumps or has three leaking pumps.

(a) The quality assurance program shall meet the following requirements:

(i) Establish minimum design standards for each category of pumps or pump seal technology. The design standards shall specify known critical parameters such as tolerance, manufacturer, materials of construction, previous usage, or other applicable identified critical parameters;

(ii) Require that all equipment orders specify the design standard (or minimum tolerances) for the pump or the pump seal;

(iii) Provide for an audit procedure for quality control of purchased equipment to ensure conformance with purchase specifications. The audit program may be conducted by the owner or operator of the plant site or process unit or by a designated representative; and

(iv) Detail off-line pump maintenance and repair procedures. These procedures shall include provisions to ensure that rebuilt or refurbished pumps and pump seals will meet the design specifications for the pump category and will operate so that emissions are minimized.

(b) The quality assurance program shall be established no later than the start of the third year of the quality improvement program for plant sites with 400 or more valves or 100 or more employees, and no later than the start of the fourth year of the quality improvement program for plant sites with less than 400 valves and less than 100 employees.

viii. Pump or Pump Seal Replacement

Beginning at the start of the third year of the quality improvement program for plant sites with 400 or more valves or 100 or more employees and at the start of the fourth year of the quality improvement program for plant sites with less than 400 valves and less than 100 employees, the permittee shall replace as described in “(a)” and “(b)” below the pumps or pump seals that are not superior emission performance technology with pumps or pump seals that have been identified as superior emission performance technology and that comply with the quality assurance standards for the pump category. Superior emission performance technology is that category or design of pumps or pump seals with emission performance that, when combined with appropriate process, operating, and maintenance practices, will result in less than 10 percent leaking pumps for specific applications in the process unit or plant site. Superior emission performance technology includes material or design changes to the existing pump, pump seal, seal support system, installation of multiple mechanical seals or equivalent, or pump replacement.

(a) Pumps or pump seals shall be replaced at the rate of 20 percent per year based on the total number of pumps in light liquid service. The calculated value shall be rounded to the nearest nonzero integer value. The minimum number of pumps or pump seals shall be one. Pump replacement shall continue until all pumps subject to the requirements of d)(9) above are pumps determined to be superior performance technology.

(b) The permittee may delay replacement of pump seals or pumps with superior technology until the next planned process unit shutdown provided the number of pump seals and pumps replaced is equivalent to the 20 percent or greater annual replacement rate.

(c) The pumps shall be maintained as specified in the quality assurance program.

e. QIP Recordkeeping

In addition to the records required by "d.ii" above, the permittee shall maintain records for the period of the quality improvement program for the process unit as specified in "i" through "vi" below.

i. When using a pump quality improvement program as specified in this section, record the following information:

(a) The rolling average percent leaking pumps.

(b) Documentation of all inspections conducted under the requirements of "d.iv" above and any recommendations for design or specification changes to reduce leak frequency.

(c) The beginning and ending dates while meeting the requirements of "d" above.

ii. If a leak is not repaired within 15 calendar days after discovery of the leak, the reason for the delay and the expected date of successful repair.

iii. Records of all analyses required in "d" above. The records will include the following information:

(a) A list identifying areas associated with poorer than average performance and the associated service characteristics of the stream, the operating conditions, and the maintenance practices.

(b) The reasons for rejecting specific candidate superior emission performing pump technology from performance trials.

(c) The list of candidate superior emission performing valve or pump technologies and documentation of the performance trial program items required under "d.vi.(c)" above.

(d) The beginning date and duration of performance trials of each candidate superior emission performing technology.

iv. All records documenting the quality assurance program for pumps as specified in "d.vii" above, including records indicating that all pumps replaced or

modified during the period of the quality improvement program are in compliance with the quality assurance.

v. Records documenting compliance with the 20 percent or greater annual replacement rate for pumps as specified in "d.viii" above.

vi. Information and data to show the corporation has fewer than 100 employees, including employees providing professional and technical contracted services.

(17) LDAR Recordkeeping Provisions

a. Recordkeeping system

The permittee may comply with the recordkeeping requirements for these regulated sources in one recordkeeping system. The recordkeeping system shall identify each record by regulated source and the type of program being implemented (for example, quarterly monitoring, quality improvement) for each type of equipment. The records are summarized in "b" and "c" below.

b. General equipment leak records

i. As specified in d)(5)a. through d)(5)c. above, the permittee shall keep general and specific equipment identification if the equipment is not physically tagged and the permittee is electing to identify the equipment subject to the LDAR program through written documentation such as a log or other designation.

ii. The permittee shall keep a written plan as specified in d)(5)c.iv. above for any equipment that is designated as unsafe- or difficult-to-monitor.

iii. The permittee shall maintain a record of the identity and an explanation as specified in d)(5)d.ii. above for any equipment that is designated as unsafe to repair.

iv. As specified in d)(5)e. above, the permittee shall maintain a record of the identity of compressors operating with an instrument reading of less than 500 parts per million.

v. The permittee shall keep records associated with the determination that equipment is in heavy liquid service as specified in d)(5)f. above.

vi. The permittee shall keep records for leaking equipment as specified in d)(6)e.ii. above.

vii. The permittee shall keep records for leak repair as specified in d)(7)e. above and records for delay of repair as specified in d)(7)c. above.

viii. For instrument response factor criteria determinations performed pursuant to d)(6)b.ii.(a) above, the permittee shall maintain a record of an engineering assessment that identifies the representative composition of the process fluid. The assessment shall be based on knowledge of the compounds present in the

process, similarity of response factors for the materials present, the range of compositions encountered during monitoring, or other information available to the owner or operator.

ix. The permittee shall keep records of the detection limit calibration as specified in d)(6)b.iii. above.

c. Specific equipment leak records

i. For valves, the permittee shall maintain the following records:

(a) The monitoring schedule for each process unit as specified in d)(8)a.iii.(f) above.

(b) The valve subgrouping records specified in d)(8)a.iv.(d) above, if applicable.

ii. For pumps, the permittee shall maintain the following records:

(a) Documentation of pump visual inspections as specified in d)(9)a.iv. above.

(b) Documentation of dual mechanical seal pump visual inspections as specified in d)(9)a.iv.(e) above.

(c) For the criteria as to the presence and frequency of drips for dual mechanical seal pumps, records of the design criteria and explanations and any changes and the reason for the changes, as specified in d)(9)d.i.(a) above.

iii. For connectors, the permittee shall maintain the records specified in d)(10)a.iii.(e) above which identify a monitoring schedule for each process unit.

iv. For pressure relief devices in gas/vapor or light liquid service, the permittee shall keep records of the dates and results of monitoring following a pressure release, as specified in d)(12)b.iii. above, or the date the rupture disk is replaced as specified in d)(12)c. above.

v. For compressors, the permittee shall maintain the following records:

(a) For criteria as to failure of the seal system and/or the barrier fluid system, record the design criteria and explanations and any changes and the reason for the changes, as specified in d)(13)c.ii. above.

(b) For compressors operating under the alternative compressor standard, record the dates and results of each compliance test as specified in d)(13)d.ii. above.

vi. For a pump QIP program, the permittee shall maintain the following records:

(a) Individual pump records as specified in d)(16)d.ii. above.

(b) Trial evaluation program documentation as specified in d)(16)d.vi.(c) above.

(c) Engineering evaluation documenting the basis for judgement that superior emission performance technology is not applicable as specified in d)(16)d.vi.(f) above.

(d) Quality assurance program documentation as specified in d)(16)d.vii. above.

(e) QIP records as specified in d)(16)e. above.

Air Toxic Modeling

(18) The PTIO applications A0072225 and A0076962 for EU P001 were evaluated based on the actual materials and the design parameters of the EU's exhaust system, as specified by the permittee. The Toxic Air Contaminant Statute, ORC 3704.03(F), was applied to this EU for each toxic air contaminant listed in OAC rule 3745-114-01 using data from the permit application; and modeling was performed for each toxic air contaminant with a potential to emit over one ton per year (tpy) using an air dispersion model such as AERSCREEN, AERMOD, ISCST3 or other Ohio EPA-approved model. The predicted one-hour maximum ground level concentration results from the approved air dispersion model, were compared to the maximum acceptable ground level concentration (MAGLC), calculated as described in Ohio EPA guidance document entitled "Review of New Sources of Air Toxic Emissions, Option A," as follows:

a. The exposure limit, expressed as a time-weighted average concentration for a conventional eight-hour workday and a 40-hour workweek, for each toxic compound emitted from the EU (as determined from the raw materials processed and/or coatings or other materials applied), has been documented from one of the following sources and in the following order of preference (TLV was and shall be used, if the chemical is listed):

i. Threshold limit value (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices" shall be used, if the chemical is listed; or

ii. Short-term exposure limit (STEL) or the ceiling value from the ACGIH "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; the STEL or ceiling value is multiplied by 0.737 to convert the 15-minute exposure limit to an equivalent eight-hour TLV.

b. The TLV is divided by 10 to adjust the standard from the working population to the general public.

c. This standard is adjusted to account for the duration of the exposure or the operating hours of the EU, that is, X hours per day and Y days per week, from that of eight hours per day and five days per week.

d. The resulting calculation shall be used to determine the MAGLC:

$$\frac{TLV}{10} \times \frac{8}{X} \times \frac{5}{Y} = 4\frac{TLV}{XY} = MAGLC$$

e. The following summarizes the results of dispersion modeling for the significant toxic contaminant(s) (emitted at one tpy or more) or worst-case scenario:

i. Toxic Contaminant: hydrogen chloride

TLV (mg/m3): 2.2

Maximum Hourly Emissions Rate (lb/hr): 0.36

Predicted One-Hour Maximum Ground Level Concentration (µg/m3): 4.26

MAGLC (µg/m3): 52.3

ii. Toxic Contaminant: acetaldehyde

TLV (mg/m3): 33

Maximum Hourly Emissions Rate (lb/hr): 0.40

Predicted One-Hour Maximum Ground Level Concentration (µg/m3): 59.7

MAGLC (µg/m3): 790

iii. Toxic Contaminant: 1,3-butadiene

TLV (mg/m3): 4.4

Maximum Hourly Emissions Rate (lb/hr): 0.56

Predicted One-Hour Maximum Ground Level Concentration (µg/m3): 82.0

MAGLC (µg/m3): 105

The permittee has demonstrated that emissions of hydrogen chloride, acetaldehyde and 1,3-butadiene from EU P001, are calculated to be less than 80 percent of the MAGLC; any new raw material or processing agent shall not be applied without evaluating each component toxic air contaminant in accordance with the Toxic Air Contaminant Statute, ORC 3704.03(F).

(19) Prior to making any physical changes to or changes in the method of operation of the EU that could impact the parameters or values that were used in the predicted one-hour maximum ground level concentration, the permittee shall re-model any change to demonstrate that the MAGLC has not been exceeded. Changes that can affect the parameters/values used in determining the one-hour maximum ground-level concentration include, but are not limited to, the following:

a. Changes in the composition of the materials used or the use of new materials, that would result in the emissions of a new toxic air contaminant with a lower TLV than the lowest TLV previously modeled.

b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any toxic air contaminant listed in OAC rule 3745-114-01, that was modeled from the initial (or last) application.

c. Physical changes to the EU or exhaust parameters (for example, increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines the Toxic Air Contaminant Statute, ORC 3704.03(F), will be satisfied for the above changes, Ohio EPA will not consider a change to be a modification under OAC rule 3745-31-01 solely due to a non-restrictive change to a parameter or process operation, where compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F), has been documented. If each change meets the definition of a modification, the permittee shall apply for and obtain a final PTIO prior to the change. The director may consider any significant departure from the operations of the EU described in the permit application as a modification that results in greater emissions than the emissions rate modeled to determine the ground-level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

(20) The permittee shall collect, record and retain the following information for each toxic evaluation conducted to determine compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F):

a. A description of the parameters/values used in each compliance demonstration and the parameters or values changed for any re-evaluation of the toxic(s) modeled (for example, the composition of materials, new toxic contaminants emitted, change in stack/exhaust parameters, etc.).

b. The MAGLC for each significant toxic contaminant or worst-case contaminant, calculated per the Toxic Air Contaminant Statute, ORC 3704.03(F).

c. A copy of the computer model run(s), that established the predicted one-hour maximum ground level concentration that demonstrated the EU to be in compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F), initially and for each change that requires re-evaluation of the toxic air contaminant emissions.

d. The documentation of the initial evaluation of compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F), and documentation of any determination that was conducted to re-evaluate compliance due to a change made to the EU or the materials applied.

(21) The permittee shall maintain a record of any change made to a parameter or value entered in the dispersion model used to demonstrate compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F), through the predicted one-hour maximum ground level concentration. The record shall include the date and reason(s) for the change and if the change would increase the ground-level concentration.

e) Reporting Requirements

(1) The permittee shall submit an annual PER to Ohio EPA by the due date identified in the Authorization section of this permit. The PER shall cover a reporting period of no more than 12 months for each air contaminant source identified in this permit.

(2) The permittee shall submit quarterly reports that include the information in d)(1)a. through d)(1)c. above and shall also identify if the weight of the plastics in the feed stock was less than 70 percent that the recycling unit processed for the quarter and the actual weight percent of plastics in the feed stock processed for the quarter.

(3) The permittee shall identify in the annual PER all periods of time during which the pilot flame was not functioning properly or the flare was not maintained as required in this permit. The reports shall include the date, time, and duration of each such period.

Air Toxic Reporting

(4) The permittee shall include any changes made to a parameter or value entered into the dispersion model used to demonstrate compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F), through the predicted one-hour maximum ground-level concentration in the annual PER. If no changes to the emissions, EU or the exhaust stack(s) have been made, then the report shall include a statement to this effect.

LDAR Reporting

(5) Initial Compliance Status Report

The permittee shall submit an Initial Compliance Status Report within 60 days of the final issuance of this permit. The notification shall provide the following information for each process unit subject to the requirements of the LDAR program:

a. Process unit identification;

b. Number of each equipment type (for example, valves, pumps) excluding equipment in vacuum service; and

c. Method of compliance with the standard (for example, “monthly leak detection and repair” or “equipped with dual mechanical seals”).

(6) Periodic reports

The permittee shall submit semiannual reports that include the information specified in “a” through “g” below, as applicable.

a. For the equipment specified in “i” through “iv” below, report in a summary format by equipment type the number of components for which leaks were detected, and for valves, pumps, and connectors show the percent leakers and the total number of components monitored. Also include the number of leaking components that were not repaired as required by d)(7)a. above, and for valves identify the number of components that are determined by d)(8)b.iii. above to be nonrepairable.

i. Valves in gas/vapor service and in light liquid service pursuant to d)(8)a. and d)(8)b. above.

ii. Pumps in light liquid service pursuant to d)(9)a. and d)(9)b. above.

iii. Connectors in gas/vapor service and in light liquid service pursuant to d)(10)a. and d)(10)b. above.

iv. Compressors pursuant to d)(13)c. above.

b. Where any delay of repair is utilized pursuant to d)(7)c. above, report that delay of repair has occurred and report the number of instances of delay of repair.

c. If applicable, report the valve subgrouping information specified in d)(8).a.iv.(d) above.

d. For pressure relief devices in gas/vapor service pursuant to d)(12)a. above and for compressors pursuant to d)(13)d. above that are to be operated at a leak detection instrument reading of less than 500 parts per million, report the results of all monitoring to show compliance conducted within the semiannual reporting period.

e. Report, if applicable, the initiation of a monthly monitoring program for valves pursuant to d)(8)a.iii.(a) above.

f. Report, if applicable, the initiation of a quality improvement program for pumps pursuant to d)(16) above.

g. Report the information listed in e)(5) above for the Initial Compliance Status Report for process units with later compliance dates. Report any revisions to items reported in an earlier Initial Compliance Status Report if the method of compliance has changed since the last report.

These reports shall be submitted to the director (the appropriate Ohio EPA DO/LAA) by January 31 and July 31 of each year and shall cover the previous 6-month period.

(7) The permittee shall submit in the periodic reports the following information:

a. Total number of valves in each subgroup; and

b. Results of the semiannual overall performance calculation required by paragraph d)(8)a.iv.(c) above.

(8) The permittee shall notify the Ohio EPA DO/LAA no later than 30 days prior to the beginning of the next monitoring period of the decision to begin or end subgrouping valves. The notification shall identify the participating process units and the number of valves assigned to each subgroup, if applicable. The notification may be included in a periodic report if the periodic report is submitted no later than 30 days prior to the beginning of the next monitoring period.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible PE from the stacks serving this EU shall not exceed 20% opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, compliance with the stack visible PE limitation above shall be determined through visible emissions observations performed in accordance with U.S. EPA Method 9.

b. Emission Limitation:

CO emissions shall not exceed 1.12 tons per month as a rolling 12-month average.

Applicable Compliance Method:

Compliance with the monthly CO emission limitation above shall be calculated according to the following formula:

$$E = \frac{[(EF_{NG}) \times (M_{VCU} + M_{PH})] \times 8760 \frac{\text{hours}}{\text{year}}}{12 \text{ months} \times 2000 \frac{\text{pounds}}{\text{ton}}}$$

EF_{NG} = CO emission factor for natural gas combustion (84 lb/MMscf*, AP 42 table 1.4-1)

M_{VCU} = maximum flow rate of natural gas for the VCU in MMscf/hour (0.0204 MMscf/hr)

M_{PH} = maximum flow rate of natural gas for the process heater in MMscf/hr (0.0102 MMscf/hr)

NG = natural gas

PH = process heater

VCU = vapor combustor unit

If required, compliance with the monthly CO emission limitation above shall be determined through stack testing in accordance with Methods 1 - 4 and 10 of 40 CFR Part 60, Appendix A.

*Emission factor from AP-42 Table 1.4-1.

c. Emission Limitation:

NO_X emissions shall not exceed 2.93 tons per month as a rolling 12-month average.

Applicable Compliance Method:

Compliance with the monthly NO_X emission limitation above shall be calculated according to the following formula:

$$E = \frac{[(ER_{VCU}) + (EF_{NG} \times M_{PH})] \times 8760 \frac{\text{hours}}{\text{year}}}{12 \text{ months} \times 2000 \frac{\text{pounds}}{\text{ton}}}$$

ER_{VCU} = NO_X emission rate from the most recent stack test, in pounds per hour

EF_{NG} = NO_X emission factor for natural gas combustion (100 lb/MMscf*, AP 42 table 1.4-1)

M_{PH} = maximum flow rate of natural gas for the process heater in MMscf/hr (0.0102 MMscf/hr)

NG = natural gas

PH = process heater

VCU = vapor combustor unit

If required, compliance with the monthly NOX emission limitation above shall be determined through stack testing in accordance with Methods 1 - 4 and 7 or 7E, as appropriate, of 40 CFR Part 60, Appendix A.

*Emission factor from AP-42 Table 1.4-1.

d. Emission Limitation:

PE shall not exceed 0.020 pound per million Btu of actual heat input.

Applicable Compliance Method:

Compliance with the PE limitation above shall be calculated by dividing the emissions factor from AP-42, "Compilation of Air Pollutant Emission Factors", 5th Edition, Section 1.4 (7/98) by the heat content of natural gas as follows:

$$\text{Emission Rate}\left(\frac{\text{lb of PE}}{\text{MM Btu}}\right) = \frac{7.6\frac{\text{lbs of PE}}{\text{MM scf}}}{1020\frac{\text{Btu}}{\text{scf}}} = 0.007\frac{\text{lb of PE}}{\text{MM Btu}}$$

If required, compliance with the PE limitation above shall be determined through stack testing in accordance with Methods 1 - 5 of 40 CFR Part 60, Appendix A and the procedures specified in OAC rule 3745-17-03(B)(9).

e. Emission Limitation:

PE shall not exceed 7.58 pounds per hour.

Applicable Compliance Method:

Compliance with the hourly PE limitation above shall be determined through stack testing in accordance with Methods 1 - 5 of 40 CFR Part 60, Appendix A and the procedures specified in OAC rule 3745-17-03(B)(10) as described in f)(2) below.

f. Emission Limitation:

Dioxins/furans (total mass basis) emissions from the VCU stack shall not exceed 1.30×10^{-05} mg/dscm.

Applicable Compliance Method:

Compliance with the dioxins/furan emission limitation above shall be determined through stack testing in accordance with Methods 1 - 4 and 23 of 40 CFR Part 60, Appendix A as described in f)(2) below.

g. Emission Limitation:

Install an enclosed VCU with a control efficiency of not less than 98%, by weight, for VOC.

Applicable Compliance Method:

Compliance with the VOC control efficiency limitation above shall be determined through stack testing in accordance with Methods 1 - 4 and 18, 25, or 25A, as appropriate, of 40 CFR Part 60, Appendix A as described in f)(2) below.

h. Emission Limitation:

Fugitive emissions of VOC shall not exceed 0.55 ton per month as a rolling 12-month average for equipment leaks.

Applicable Compliance Method:

Compliance with the average monthly fugitive VOC emission limitation above was determined using the equations and emission factors contained in USEPA's "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-017, November 1995).

(2) The permittee shall conduct, or have conducted, emissions testing for this EU per the following requirements:

a. The emission testing shall be conducted by May 22, 2026.

b. The emission testing shall be conducted to demonstrate compliance with the dioxins/furans (total mass basis) emission limitation, the VOC control efficiency for the VCU, the particulate emissions limitation for the VCU and to quantify emissions from hydrogen halide and halogen emissions and hazardous air pollutants (organic and metal).

c. The following test method(s) shall be employed to demonstrate compliance with the allowable emission limitations and control efficiency of the VCU:

For particulate emissions outlet emission testing, Methods 1 - 5 of 40 CFR Part 60, Appendix A;

For dioxins/furans (total mass basis), polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) outlet emission testing, Method 23 of 40 CFR Part 60, Appendix A;

For VOC inlet and outlet emission testing, Methods 1 - 4 and 18, 25, or 25A, as appropriate, of 40 CFR Part 60, Appendix A;

For HAPs speciation inlet emission testing, U.S. EPA Method TO-15;

For formaldehyde inlet and outlet emission testing, Methods 1 - 4 of 40 CFR Part 60, Appendix A and Method 320 or 323 of 40 CFR Part 63, Appendix A;

For hydrogen halide and halogen emissions outlet emission testing, Methods 1 - 4 and 26 or 26A, as appropriate, of 40 CFR Part 60, Appendix A; and

For metals outlet emission testing, Methods 1 - 4 and 29 of 40 CFR Part 60, Appendix A.

Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

d. The VOC control efficiency (that is, the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined per the test methods and procedures specified in 3745-21-10 or an alternative test protocol approved by Ohio EPA. The test methods and procedures selected shall be based on a consideration of the diversity of the organic species present and the total concentration, and on a consideration of the potential presence of interfering gases.

e. During the emissions testing, the EU shall be operated under operational conditions approved in advance by the appropriate Ohio EPA DO/LAA. Operational conditions that may need to be approved include, but are not limited to, the production rate, the type of material processed, material make-up (solvent content, etc.) or control equipment operational limitations (burner temperature, precipitator voltage, etc.). In general, testing shall be done under the worst case conditions expected during the life of the permit. As part of the information provided in the Intent to Test (ITT) notification form described below, the permittee shall provide a description of the EU operational conditions they will meet during the emissions testing and describe why they believe the worst case operating conditions will be met. Prior to conducting the test(s), the permittee shall confirm with the appropriate Ohio EPA DO/LAA that the proposed operating conditions constitute the worst case. Failure to test under the approved conditions may result in Ohio EPA not accepting the test results as a demonstration of compliance.

f. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an ITT notification to the appropriate Ohio EPA DO/LAA. The ITT notification shall describe in detail the proposed test methods and procedures, the EU operating parameters, the time(s) and date(s) of the test(s) and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA DO/LAA's refusal to accept the results of the emission test(s).

g. Personnel from the appropriate Ohio EPA DO/LAA shall be permitted to witness the test(s), examine the testing equipment and acquire data and information necessary to ensure that the operation of the EU and the testing procedures provide a valid characterization of the emissions from the EU and/or the performance of the control equipment.

h. A comprehensive written report on the results of the emissions test(s) shall be signed by the person(s) responsible for the tests and submitted to the appropriate Ohio EPA DO/LAA within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA DO/LAA.

g) Miscellaneous Requirements

(1) None.