Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

6/12/2015

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

John Cubberly
LUBRIZOL ADVANCED MATERIALS, INC.
1142 N MAIN ST
BOWLING GREEN, OH 43402

RE: FINALAIR POLLUTION PERMIT-TO-INSTALL AND OPERATE
Facility ID: 0387020333
Permit Number: P0087922
Permit Type: Renewal
County: Wood

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA) Air Pollution Permit-to-Install and Operate (PTIO) which will allow you to install, modify, and/or operate the described emissions unit(s) in the manner indicated in the permit. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**

How to appeal this permit

The issuance of this PTIO is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
77 South High Street, 17th Floor
Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

If you have any questions, please contact Ohio EPA DAPC, Northwest District Office at (419)352-8461or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,

Michael E. Hopkins, P.E.
Assistant Chief, Permitting Section, DAPC

Cc: Ohio EPA-NWDO

FINAL

Division of Air Pollution Control
Permit-to-Install and Operate
for
LUBRIZOL ADVANCED MATERIALS, INC.

Facility ID:	0387020333
Permit Number:	P0087922
Permit Type:	Renewal
Issued:	6/12/2015
Effective:	6/12/2015
Expiration:	8/10/2020

Ohio Environmental Protection Agency

Division of Air Pollution Control
Permit-to-Install and Operate
for
LUBRIZOL ADVANCED MATERIALS, INC.

Table of Contents

Authorization 1

A. Standard Terms and Conditions 3

1. What does this permit-to-install and operate ("PTIO") allow me to do? 4
2. Who is responsible for complying with this permit? 4
3. What records must I keep under this permit? 4
4. What are my permit fees and when do I pay them? 4
5. When does my PTIO expire, and when do I need to submit my renewal application? 4
6. What happens to this permit if my project is delayed or I do not install or modify my source? 5
7. What reports must I submit under this permit? 5
8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit? 5
9. What are my obligations when I perform scheduled maintenance on air pollution control equipment? 5
10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report? 6
11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located? 6
12. What happens if one or more emissions units operated under this permit is/are shut down permanently? 6
13. Can I transfer this permit to a new owner or operator? 7
14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"? 7
15. What happens if a portion of this permit is determined to be invalid? 7

B. Facility-Wide Terms and Conditions 8

C. Emissions Unit Terms and Conditions 10

1. P001, Batch Sulfation Process 11
2. P006, Reactor Vessel R-700 19

Authorization

Facility ID:	0387020333
Application Number(s):	A0019016, A0047525
Permit Number:	P0087922
Permit Description:	Renewal PTIO for a pressure/reactor vessel (R-700) that produces amides and a batch reactor that produces sulfates.
Permit Type:	Renewal
Permit Fee:	$0.00
Issue Date:	6/12/2015
Effective Date:	6/12/2015
Expiration Date:	8/10/2020

Permit Evaluation Report (PER) Annual Date: Jan 1 - Dec 31, Due Feb 15

This document constitutes issuance to:

LUBRIZOL ADVANCED MATERIALS, INC.
1142 NORTH MAIN ST
Bowling Green, OH 43402

of a Permit-to-Install and Operate for the emissions unit(s) identified on the following page.

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

Ohio EPA DAPC, Northwest District Office
347 North Dunbridge Road
Bowling Green, OH 43402
(419)352-8461

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

Craig W. Butler
Director

Authorization (continued)

Permit Number: P0087922
Permit Description: Renewal PTIO for a pressure/reactor vessel (R-700) that produces amides and a batch reactor that produces sulfates.

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:	Batch Sulfation Process
Superseded Permit Number:	03-7282
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P006**
Company Equipment ID:	Reactor Vessel R-700
Superseded Permit Number:	03-9528
General Permit Category and Type:	Not Applicable

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:

- 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.

- 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 (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 by up to 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 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 [DO/LAA] 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 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 shutdown 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 beingpermanently shut down without first applying for and obtaining a permit pursuantto 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, you must follow the procedures in OAC Chapter 3745-31, including notifying Ohio EPA or the local air agency of the change in ownership or operator. Any transferee of this permit must 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 permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

   a) For the purpose of a permit-to-install document, the facility-wide terms and conditions 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 permit-to-operate document, the facility-wide terms and conditions 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, Batch Sulfation Process

Operations, Property and/or Equipment Description:

Batch reaction system for the production of (alkyl and alkylether) sulfates.

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. b)(1)c.and d)(3)

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

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)	Hydrochloric acid (HCl) emissions shall not exceed 0.15 pound per hour and 0.66 ton per year Volatile Organic Compounds (VOC) emissions shall not exceed 0.01 pound per hour and 0.04 ton per year
b.	OAC rule 3745-21-07(M)(2)	Exempt, see b)(2)b.
c.	ORC rule 3704.03(F)	See d)(3)

(2) Additional Terms and Conditions

a. The Best Available Technology (BAT) requirements for this emissions unit have been determined to be compliance with the terms and conditions of this permit and the following control requirements:

i. Batch Reactor

(a) The emissions from this emissions unit shall be vented to a two-stage venturi scrubber system and a two-stage packed tower scrubber, in series, at all times the emissions unit is in operation.

(b) The two-stage venturi scrubber system shall achieve a minimum control efficiency of 95% for HCl emissions.

(c) The two-stage packed tower scrubber shall achieve a minimum control efficiency of 95% for HCl emissions using a dilute sodium hydroxide solution to remove any residual HCl gas from the outlet gas stream from the venturi scrubber prior to discharge to the atmosphere.

ii. Batch Neutralizer

(a) The emissions from this emissions unit shall be vented to a packed bed wet (Blender Scrubber), at all times the emissions unit is in operation.

(b) The packed bed wet scrubber shall achieve a minimum control efficiency of 90% for VOC emissions.

b. This emissions unit is exempt from the requirements of OAC rule 3745-21-07(M)(2) pursuant to OAC rule 3745-21-07(M)(3)(C)(iii).

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall properly install, operate, and maintain equipment to continuously monitor the liquid flow rate, operating pressure drop and the pH for both the venturi and two-stage packed tower wet scrubbers during operation of this emissions unit, including periods of startup and shutdown.The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s).

a. The permittee shall collect and record the following information daily, for both scrubbers:

i. scrubber liquid flow rate;

ii. scrubber operating pressure drop; and

iii. pHof the scrubber liquid.

b. Whenever the monitored values for the venturi and two-stage packed tower wet scrubbers liquid flow rate, operating pressure drops and the pH deviates from the

range(s) specified in d)(1)d. and d)(1)e. below, the permittee shall promptly investigate the cause of the deviation.

The permittee shall maintain records of the following information for each investigation:

i. the date and time the deviation began;

ii. the magnitude of the deviation at that time;

iii. the date(s) the investigation was conducted;

iv. the names of the personnel who conducted the investigation; and

v. the findings and recommendations.

c. In response to each deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable ranges/values specified below, unless the permittee determines that corrective action is not necessary.

i. The permittee shall maintain records of the following information for each deviation when it was determined that corrective action was not necessary:

(a) the reason corrective action was not necessary; and

(b) thedate and time the deviation ended.

ii. The permittee shall maintain records of the following information for each deviation when corrective action was taken:

(a) a description of the corrective action;

(b) the date it was completed;

(c) the date and time the deviation ended;

(d) the total period of time (in minutes) during which there was a deviation;

(e) the ranges/values immediately after the corrective action; and

(f) the names of the personnel who performed the work.

iii. Investigation and records required by this paragraph does not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

d. Venturiscrubber indicator ranges

i. The acceptable rage scrubber liquid flow rate, that shall be maintained in order to demonstrate compliance, shall not be less than 250 gallons per minute (gpm) (≥ 250 gpm);

ii. The acceptable range for the pressure drop across the scrubber, that shall be maintained in order to demonstrate compliance, shall be between 0 and 2 inches of water; and

iii. The acceptable range for the pH of the scrubber liquid, that shall be maintained in order to demonstrate compliance, is between 1 and 8.5.

e. Packed tower wet scrubber indicator ranges

i. The acceptable rage scrubber liquid flow rate, that shall be maintained in order to demonstrate compliance, shall not be less than 5 gallons per minute (gpm) (≥ 5 gpm);

ii. The acceptable range for the pressure drop across the scrubber, that shall be maintained in order to demonstrate compliance, shall be between 0 and 3 inches of water; and

iii. The acceptable range for the pH of the scrubber liquid, that shall be maintained in order to demonstrate compliance, is between 12 and 14.

These ranges/values are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA Northwest District Office. The permittee may request revisions to the ranges/values based upon information obtained during future emission tests that demonstrate compliance with the allowable emission rate for this emissions unit. In addition, approved revisions to the ranges/values will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

(2) The permittee shall properly install, operate, and maintain equipment to continuously monitor the liquid flow rate and operating pressure dropfor the blender scrubber during operation of this emissions unit, including periods of startup and shutdown.The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s).

a. The permittee shall collect and record the following information daily:

i. scrubber liquid flow rate; and

ii. scrubber operating pressure drop.

b. Whenever the monitored values for the blender scrubber’s liquid flow rate and operating pressure drop deviates from the range(s) specified in d)(1)d. below, the permittee shall promptly investigate the cause of the deviation.

The permittee shall maintain records of the following information for each investigation:

i. the date and time the deviation began;

ii. the magnitude of the deviation at that time;

iii. the date(s) the investigation was conducted;

iv. the names of the personnel who conducted the investigation; and

v. the findings and recommendations.

c. In response to each deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable ranges/values specified below, unless the permittee determines that corrective action is not necessary.

i. The permittee shall maintain records of the following information for each deviation when it was determined that corrective action was not necessary:

(a) the reason corrective action was not necessary; and

(b) thedate and time the deviation ended.

ii. The permittee shall maintain records of the following information for each deviation when corrective action was taken:

(a) a description of the corrective action;

(b) the date it was completed;

(c) the date and time the deviation ended;

(d) the total period of time (in minutes) during which there was a deviation;

(e) the ranges/values immediately after the corrective action; and

(f) the names of the personnel who performed the work.

iii. Investigation and records required by this paragraph does not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

d. <u>Blender scrubber indicator ranges</u>

i. The acceptable rage scrubber liquid flow rate, that shall be maintained in order to demonstrate compliance, shall not be less than 4 gallons per minute (gpm) (≥ 4 gpm); and

ii. The acceptable range for the pressure drop across the scrubber, that shall be maintained in order to demonstrate compliance, shall be between 0 and 2 inches of water.

e. These ranges/values are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA Northwest District Office. The permittee may request revisions to the ranges/values based upon information obtained during future emission tests that demonstrate compliance with the allowable emission rate for this emissions unit. In addition, approved revisions to the ranges/values will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

(3) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary because the emissions unit’s maximum annual emissions for each toxic air contaminant, as defined in OAC rule 3745-114-01, will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install and operate (PTIO) prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that changes in the composition of the materials, or use of new materials, that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTIO.

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve months for each air contaminant source identified in this permit.

(2) The reports required by this permit may be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal; or they may be mailed as a hard copy to the appropriate district office or local air agency.

f) Testing Requirements

(1) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emissions testing shall be conducted no later than 180 days of the effective date of this permit.

b. The emission testing shall be conducted to demonstrate compliance with:

i. the HCl limitation of 0.15 lb/hr;

ii. the VOC limitation of 0.01 lb/hr; and

iii. the control efficiencies of the venturi scrubbers, the two-stage packed bed tower scrubber and the blender scrubber.

c. The following test method(s) shall be employed to demonstrate compliance with the above emission limitations and verify emission factors:

i. For HCl, Methods 1 - 4 and 26 or 26A, as set forth in of 40 CFR Part 60, Appendix A; and

ii. For VOC, Method 18, 25 and/or 25A as set forth in of 40 CFR Part 60, Appendix A.

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA, Northwest District Office.

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

e. The tests shall be conducted while this emissions unit is operating at its maximum capacity and producing highest-emitting material, unless otherwise specified or approved by the Ohio EPA, Division of Air Pollution Control. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Division of Air Pollution Control. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the times and dates of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northwest District Office's refusal to accept the results of the emissions tests.

f. Personnel from the Ohio EPA Northwest District Office shall be permitted to witness the test, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions unit and/or the performance of the control equipment. A comprehensive written report on the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Division of Air Pollution Control within 30 days following completion of the tests.

(2) 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. <u>Emission Limitation:</u>

HCl emissions shall not exceed 0.15lb/hour and0.66 ton/year

Applicable Compliance Method:

Compliance shall be demonstrated with the hourly emission limitation in accordance with the testing requirements in f)(1).

The annual emission limitation was developed by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hours and dividing by 2,000. Therefore, provided compliance is demonstrated with the hourly emission limitation compliance with the annual emission limitation shall also be demonstrated.

b. Emission Limitation:

95% HClcontrol efficiency for the venturi scrubbers
95% HCl control efficiency for the two-stage packed bed wet scrubber
90% VOC control efficiency for the blender scrubber

Applicable Compliance Method:

Compliance shall be demonstrated with the control efficiencies in accordance with the testing requirements in f)(1).

c. Emission Limitation:

VOC emissions shall not exceed 0.01lb/hour and0.04ton/year

Applicable Compliance Method:

Compliance shall be demonstrated with the hourly emission limitation in accordance with the testing requirements in f)(1).

The annual emission limitation was developed by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hours and dividing by 2,000. Therefore, provided compliance is demonstrated with the hourly emission limitation compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

(1) None.

2. P006, Reactor Vessel R-700

Operations, Property and/or Equipment Description:

Pressure/vacuum reactor vessel used for the batch production of amides.

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. b)(1)b., d)(2), d)(3) and e)(2)

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

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)	Volatile Organic Compounds (VOC) emissions shall not exceed 0.30 pound per hour and 1.31 tons per year See b)(2)a.
b.	ORC rule 3704.03(F)	See d)(7), d)(8) and e)(2)

(2) Additional Terms and Conditions

a. The Best Available Technology (BAT) requirements for this emissions unit have been determined to be compliance with the terms and conditions of this permit and the following control requirements:

i. The emissions from this emissions unit shall be vented to a vacuum pump scrubber (which is followed by a packed bed tower scrubber); or a packed tower wet scrubber at all times the emissions unit is in operation.

ii. The vacuum pump scrubber shall achieve a minimum overall control efficiency of95% for VOC emissions using a dilute acidic solution to remove VOC emissions.

iii. The packed tower wet scrubber shall achieve a minimum overall control efficiency of90% for VOC emissions.

b. All of the VOC emissions are considered to be methanol which is a Hazardous Air Pollutant (HAP).

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall properly install, operate, and maintain equipment to continuously monitor the liquid flow rate, operating pressure drop and the pH for each of the vacuum pump scrubber and the packed bed tower scrubber during operation of this emissions unit, including periods of startup and shutdown.The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s).

a. The permittee shall collect and record the following information daily, for both scrubbers:

i. scrubber liquid flow rate;

ii. scrubber operating pressure drop; and

iii. pHof the scrubber liquid.

b. Whenever the monitored values for the venturi and two-stage packed tower wet scrubbers liquid flow rate, operating pressure drops and the pH deviates from the range(s) specified in d)(1)d. below, the permittee shall promptly investigate the cause of the deviation.

The permittee shall maintain records of the following information for each investigation:

i. the date and time the deviation began;

ii. the magnitude of the deviation at that time;

iii. the date(s) the investigation was conducted;

iv. the names of the personnel who conducted the investigation; and

v. the findings and recommendations.

c. In response to each deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable ranges/values specified below, unless the permittee determines that corrective action is not necessary.

i. The permittee shall maintain records of the following information for each deviation when it was determined that corrective action was not necessary:

(a) the reason corrective action was not necessary; and

(b) thedate and time the deviation ended.

ii. The permittee shall maintain records of the following information for each deviation when corrective action was taken:

(a) a description of the corrective action;

(b) the date it was completed;

(c) the date and time the deviation ended;

(d) the total period of time (in minutes) during which there was a deviation;

(e) the ranges/values immediately after the corrective action; and

(f) the names of the personnel who performed the work.

iii. Investigation and records required by this paragraph does not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

d. <u>Vacuum pump and packed bed tower scrubber indicator ranges</u>

i. The acceptable rage scrubber liquid flow rate, that shall be maintained in order to demonstrate compliance, shall not be less than 2 gallons per minute (gpm) (≥ 2 gpm);

ii. The acceptable range for the pressure drop across the scrubber, that shall be maintained in order to demonstrate compliance, shall be between 0 and 2 inches of water; and

iii. The acceptable range for the pH of the scrubber liquid, that shall be maintained in order to demonstrate compliance, is between 3 and 4.

e. These ranges/values are effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA Northwest District Office. The permittee may request revisions to the ranges/values based upon information obtained during future emission tests that demonstrate compliance with the allowable emission rate for this emissions unit.

In addition, approved revisions to the ranges/values will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

(2) The permit to install and operate (PTIO) for this emissions unit P006 was evaluated based on the actual materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied to this emissions unit for each toxic pollutant, using data from the permit to install application, and modeling was performed for the toxic pollutant(s) emitted at over a ton per year using the SCREEN3 model or other Ohio EPA approved model. The predicted 1-hour maximum ground-level concentration result(s) from the use of the SCREEN3 (or other approved) model, was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC), and calculated as required in Engineering Guide #70. The following summarizes the results of the modeling for the "worst case" pollutant(s):

a. Pollutant: methanol
TLV (µg/m3): 262,000
Maximum Hourly Emission Rate (lbs/hr): 0.30
Predicted 1-Hour Maximum Ground-Level Concentration (µg/m3): 132.8
MAGLC (µg/m3): 6238

The above described evaluation demonstrated that the maximum ground level concentration for the new or modified source is less than eighty per cent of the MAGLC.

Prior to making any physical changes to or changes in the method of operation of the emissions unit(s), that could impact the parameters or values that were used in the predicted 1-hour maximum ground-level concentration, the permittee shall re-model the change(s) to demonstrate that the MAGLC has not been exceeded. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

b. changes in the composition of the materials used or the use of new materials, that would result in the emission of a compound or chemical with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled, as documented in the most current version of the American Conference of Governmental Industrial Hygienists' (ACGIH's) handbook entitled "TLVs and BEIs" ("Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices");

c. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

d. physical changes to the emissions unit or its exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to the emissions of any type of toxic air contaminant not previously emitted, and a modification of the existing PTIO will not be required, even if the toxic air contaminant emissions are greater than the de minimis level in OAC rule 3745-15-05. If the change(s) meet(s) the definition of a “modification” under other provisions of the rule, then the permittee shall obtain a final PTIO prior to the change.

(3) 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 (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 in accordance with the “Toxic Air Contaminant Statute”, ORC 3704.03(F);

c. a copy of the computer model run(s), that established the predicted 1-hour maximum ground-level concentration that demonstrated the emissions unit(s) 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; and

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 emissions unit(s) or the materials applied.

e) Reporting Requirements

(1) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA District Office or Local Air Agency by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve months for each air contaminant source identified in this permit.

(2) The permittee shall include any changes made to a parameter or value used in the dispersion model, that was used to demonstrate compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration, in the annual PER. If no changes to the emissions, emissions unit(s), or the exhaust stack have been made, then the report shall include a statement to this effect.

(3) The reports required by this permit may be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal; or they may be mailed as a hard copy to the appropriate district office or local air agency.

f) Testing Requirements

(1) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emissions testing shall be conducted no later than 180 days of the effective date of this permit.

b. The emission testing shall be conducted to demonstrate compliance with:

i. the VOC limitation of 0.30 lb/hr; and

ii. the control efficiency of the vacuum pump scrubber and/or the packed bed tower scrubber.

c. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

i. Methods 1 - 4 and Method 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA, Northwest District Office.

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

e. The tests shall be conducted while this emissions unit is operating at its maximum capacity and producing highest-emitting material, unless otherwise specified or approved by the Ohio EPA, Division of Air Pollution Control. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Division of Air Pollution Control. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the times and dates of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northwest District Office's refusal to accept the results of the emissions tests.

f. Personnel from the Ohio EPA Northwest District Office shall be permitted to witness the test, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions unit and/or the performance of the control equipment. A comprehensive written report on the emissions tests shall be signed by the person or persons responsible for the

tests and submitted to the Ohio EPA Division of Air Pollution Control within 30 days following completion of the tests.

(2) 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:

VOC emissions shall not exceed 0.30lb/hour and1.31tons/year

Applicable Compliance Method:

Compliance shall be demonstrated with the hourly emission limitation in accordance with the testing requirements in f)(1).

The annual emission limitation was developed by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hours and dividing by 2,000. Therefore, provided compliance is demonstrated with the hourly emission limitation compliance with the annual emission limitation shall also be demonstrated.

b. Emission Limitation:

95% VOC control efficiency for the vacuum pump scrubber; and/or

90% VOC control efficiency for the packed bed tower scrubber

Applicable Compliance Method:

Compliance shall be demonstrated with the control efficiency of each scrubber in accordance with the testing requirements in f)(1).

g) Miscellaneous Requirements

(1) None.